

# **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

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CPA 21

Methane Recovery and Power Generation Project

Ref. No. 5979-007

CPA-21 Methane Recovery and Combustion with Renewable Energy Generation from Anaerobic Animal Manure Management Systems under the Land Bank of the Philippines' Carbon Finance Support Facility

June 2019

## LIST OF ABBREVIATIONS

|      |   |
|------|---|
| BOD  | Biological Oxygen Demand                        |
| CDM  | Clean Development Mechanism                     |
| CFSF | Carbon Finance Support Facility                 |
| CMR  | Compliance Monitoring Report                    |
| CSR  | Corporate Social Responsibility                 |
| DENR | Department of Environment and Natural Resources |
| DNA  | Designated National Authority                   |
| DO   | Dissolved Oxygen                                |
| DOE  | Designated Operational Entity                   |
| DP   | Discharge Permit                                |
| ECC  | Environmental Compliance Certificate            |
| EMB  | Environmental Management Bureau                 |
| EMF  | Environmental Monitoring Fund                   |
| EPMD | Environmental Program and Management Department |
| ERPA | Emissions Reduction Purchase Agreement          |
| ESMP | Environmental and Social Management Plan        |
| ESSF | Environmental and Social Safeguards Framework   |
| LBP  | Land Bank of the Philippines                    |
| MOA  | Memorandum of Agreement                         |
| MRF  | Methane Recovery Facility                       |
| MSDS | Materials Safety Data Sheet                     |
| PCO  | Pollution Control Officer                       |
| P.D. | Presidential Decree                             |
| PoA  | Program of Activity                             |
| PPE  | Personal Protective Equipment                   |
| PTO  | Permit to Operate                               |
| R.A. | Republic Act                                    |
| SMR  | Self-Monitoring Report                          |
| SPA  | Subproject Agreement                            |
| TSD  | Treatment / Storage / Disposal                  |
| TSS  | Total Suspended Solids                          |
| WTF  | Water Treatment Facility                        |

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## **PURPOSE OF THE DOCUMENT**

This Environmental and Social Management Plan (ESMP) is prepared as part of the requirements of the Safeguards Framework for Clean Development Mechanism (CDM) projects implemented under the Carbon Finance Support Facility (CFSF) of the Land Bank of the Philippines (LBP). The Environmental and Social Safeguards Framework (ESSF) was developed to ensure the establishment of protection, compliance, and mitigation measures for relevant environmental and social aspects of projects under the CDM program which covers the Methane Recovery and Power Generation Projects in pig farms.

### **Scope**

Since the Methane Recovery and Power Generation Project is a key component of CPA 21's wastewater treatment facility (WWTF) – which handles the primary waste (manure) produced by its operations – this ESMP thus encompasses the operations of the entire farm described herein

## 1 PROJECT SUMMARY

The Methane Recovery and Power Generation Project of CPA 21, is an initiative developed under LANDBANK's CFSF. Its goal is to capture greenhouse gases, particularly methane from piggery wastewaters that would otherwise dissipate into the atmosphere, and convert them into electrical energy.

### 1.1 Proponent Profile

Proponent: CPA 21  
Business Address: Cebu City, Philippines  
President & CEO:

Farm Name: CPA 21  
Project Site: Pinamungahan, Cebu  
Farm Coordinates:

Project Type: Livestock Project  
Philippine Standard  
Industrial Classification: 0145 - Hog Farming

Contact Persons CPA 21

Farm Manager:  
Telephone No.:  
Pollution Control Officer:  
Telephone No.:

#### **LANDBANK**

##### Lending Programs

##### Management Group:

Designation: Emellie V. Tamayo  
Head / First Vice President  
Telephone No.: (632) 405-7309  
Fax No.: (632) 528-8542

##### Environmental Program

##### Management Department: Prudencio E. Calado III

Designation: Head / Assistant Vice President  
Telephone No.: (632) 405-7339  
Fax No.: (632) 528-8484

## 1.2 Pig Farm Profile

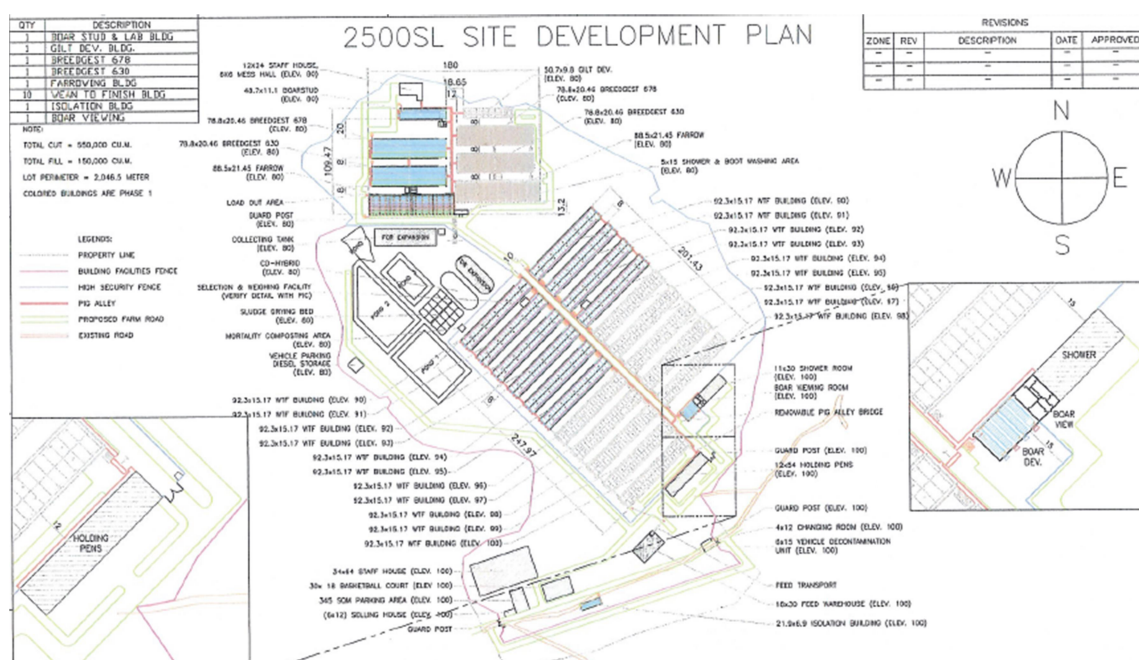


Figure 1. Site layout of CPA 21

Farm area: 182,247 m<sup>2</sup>  
 Production: Farrow-to-Finish  
 Housing type: Tunnel Ventilated

Capacity: 20,000 heads  
 Average population: -

No. of Employees: 77  
 Operating hours: 24

Facilities observed at the farm are as follows: pig houses (29), staff house compound, administrative office (1, under construction), canteen (1), rest rooms, lagoons (4), biodigesters (2, 1-under construction), materials recovery facility (2), and groundwater extraction wells (2).

Water for the Farm's operations is sourced from two groundwater extraction wells found within the farm. The farm management has started its application to the National Water Resources Board (NWRB) for groundwater extraction well use. The farm is also connected to the local water district.

As of the site visit on December 2019, pig wastes are being directed to the site's 1<sup>st</sup> biodigester system. The farm currently does not utilize the methane produced for electricity production. Instead, the methane is flared. The farm intends to produce electricity once their 2<sup>nd</sup> biodigester is operational.

The Farm is connected to the grid of a local electricity concessionaire, Cebu III Electric Cooperative Inc (CIBECO III).

### 1.3 Project Description

The project covers the operation and installation of an anaerobic digester system and its ancillary facilities, including post-treatment wastewater lagoons and a biogas-powered electricity generation system. These are collectively referred to as the farm's methane recovery facility (MRF).

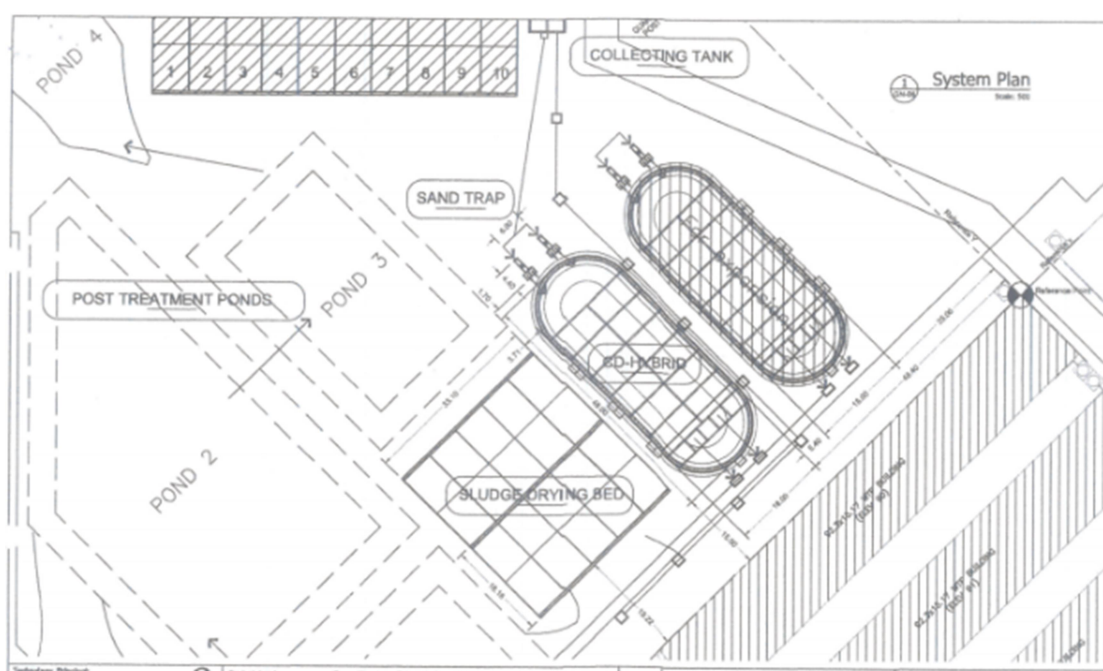
#### 1.3.1 Components and Design

CPA 21's wastewater treatment process is as follows:

- *Pre-Treatment*, which involves the breaking down of relatively large digestible particles in wastewaters prior to entering the reactors;
- *Anaerobic digestion*, or the disintegration of biodegradable materials in the wastewaters through biological processes facilitated by microbes which thrive in the conditions promoted by the reactor; and
- *Post-Treatment* of biogas, effluent, and sludge resulting from anaerobic digestion.

Components of the farm's wastewater treatment facility will be updated once their biodigester systems are operational.

The biodigester, by design, is able to accommodate 4,320 m<sup>3</sup> of pig wastes and capture enough methane to power the project facilities for an amount of time per day. The design and layout of the WWTF are in the construction plans in Appendix A. Properties and specifications of the WWT-MRFs, including capacities, outputs, and efficiencies, will be detailed in the succeeding version of this ESMP (see Section 4).



**Figure 2.** Floor plan of the biodigester of CPA 21



Biodigester 2



Clarifying Lagoon



Table 1 presents the particular processes and components involved in the treatment of wastewaters in the Farm.

**Table 1.** Specifications of CPA 21's Wastewater Treatment Facility-Methane Recovery Facility

| Specifications of CH-121's Wastewater Treatment Facility Methane Recovery Facility |          |                                    |                                     |                     |  |  |
|--|----------|------------------------------------|-------------------------------------|---------------------|--|--|
| Phase  |          | Process                            | Component                           | No. of Units        | Description / Equipment                              |  |
| Pre-treatment  | Settling |                                    | Sand Traps                          | 2                   | 5.25 m x 2 m x 6 m                                   |  |
|  |          |                                    | Collection tank                     | 1                   | 2.5 m x 3.5 m x 1.5 m                                |  |
| Anaerobic treatment  |          | anaerobic digestion / fermentation | Biogas reactor fermentation chamber | 1                   | 48 m x 12 m x 1.5 m                                  |  |
|  |          |                                    | Biogas reactor fermentation chamber | 1                   | -not specified, under construction as of site visit- |  |
| Post-treatment   |          | Biogas                             | combustion                          | scrubber system     | 1  | -not specified-                        |
|  |          |                                    |                                     | generator set       | 1  | 280 kVa                                |
|  |          | Effluent                           | clarification (settling, aeration)  | Post treatment pond | 4  | -not specified-                        |
|  |          | Sludge                             | Drying                              | Sludge drying bed   | 1  | Concrete construction, multi-chambered |

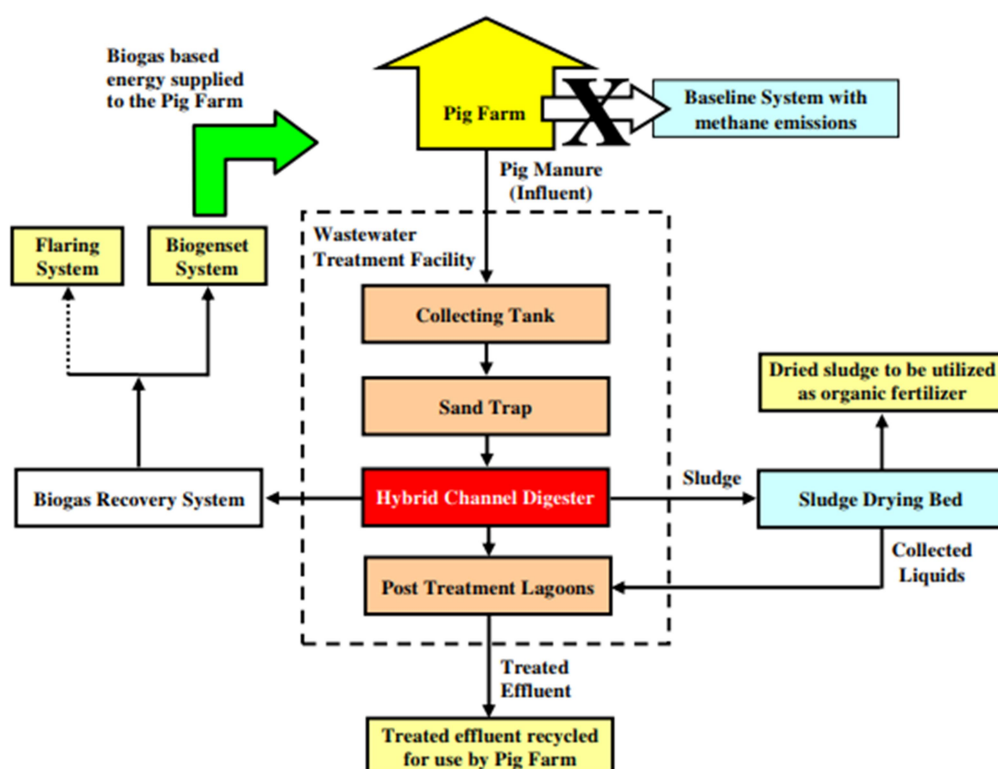
### 1.3.2 Operation

Wastewater from the pig sheds are channeled to a covered drainage system constructed beneath and around the pig sheds. Wastewaters flow through the drainage system towards the concrete underground biodigester. A system of screens ensures that solids are unable to enter the biodigester system.

The biodigester processes the wastewater through anaerobic digestion to produce methane. The methane is channeled via blowers to the methane containment tank. The pressure build-up within the containment tank allows the methane to flow through a series of scrubbers and to the biogas generator set for conversion to electricity.

The effluent from produced by the biodigester is then directed to a lagoon for drying.

The figure below illustrates the processes involved in wastewater treatment and methane recovery:



#### 1.4 Existing Environmental Conditions in the Farm

CPA 21 is a 182,247 m<sup>2</sup> facility located in Pinamuhangan, Cebu, Philippines.

##### 1.4.1 Land Classification and Use

The land on which the farm is situated is classified as an agro-industrial zone. The farm is surrounded by coconut plantations and low-density residential areas.



Figure 3. Map of the Philippines showing the location of Pinamungahan, Cebu

#### **1.4.2 Climate**

Köppen-Geiger system classifies the climate in Pinamungahan as tropical, with rainfall even in the dry season. Pinamungahan has an average annual temperature of 27.5 °C and an average annual precipitation of 1665 mm.

#### **1.4.3 Topography and Soil**

The Farm sits on hilly land that decreases in slope towards the northeast and is primarily composed of croplands. (<http://www.namria.gov.ph/3721-III-Carcar.html>).

#### **1.4.4 Water Resources**

The Tañon Strait is located approximately 3 km northeast of the farm. The strait was proclaimed as a protected seascape by virtue of Proclamation No. 1234, Series of 1998.

#### **1.4.5 Natural Hazards**

As per the Landslide and Flood Susceptibility Map of Pinamuhangan Quadrangle, Cebu Province, Philippines, the area on which the farm is located has a moderate susceptibility to landslides. <http://r7.mgb.gov.ph/wp-content/uploads/Files/GeohazardMaps/Cebu/pinamungahan.png>

#### **1.4.6 People and Communities**

Low-density residential areas are located in the immediate vicinity of the farm.



## 2 ENVIRONMENTAL DUE DILIGENCE

### 2.1 Impact Assessment

#### 2.1.1 Positive Impacts

The Project improves CPA 21's method of handling and disposing pig manure and liquid waste. At present, the biodigester functions as the Farm's main wastewater treatment facility, significantly improving the quality of and minimizing foul smell from its effluent. And, more importantly, by providing a mechanism to capture methane and use it as a source of energy, the Project has been helping the Farm abate its overall greenhouse gas emission. With a capacity to accommodate the wastes from 20,000 heads, the Project is estimated to reduce greenhouse gas emissions equivalent to 21,749 tCO<sub>2</sub>e every year.

Also, having been included in the CDM program, the farm has the opportunity to earn monetary incentives by selling their carbon credits.

#### 2.1.2 Negative Impacts

Certain aspects of the pig farms' and the project's operations inevitably result in potential harm to the environment, including generation wastewaters; hazardous and non-hazardous wastes; air pollutants; foul odors, noise, dust and other nuisance; and depletion of natural resources. These pose inherent risks to environmental quality and natural ecosystems and to health and safety of workers, communities, and livestock.

### 2.2 Due Diligence

CPA 21 is compliant to all the regulatory safeguards as shown in the succeeding tables, as enforced by the Philippine government, demonstrating due diligence of the Proponent.

#### 2.2.1 Legal Framework

The farm operates in the context of laws prescribing the regulatory safeguards in the tables below.

**Table 2.** Environmental documents and statutory requirements regulating the operations of CPA 21.

| Document   | Particulars      |   |
|--|------------------|---|
| Environmental Compliance Certificate (ECC)                       | Reference No.    | ECC-R07-1505-0073   |
|  | Issuing Agency   | DENR-EMB Region 7   |
|  | Date of Issuance | May 5, 2015   |
|  | Validity         | - no expiration -   |
|  | Conditions       | <ul style="list-style-type: none"> <li>• area of operation: 182,247 sqm</li> <li>• maximum population: 20,000 heads</li> </ul>  |
| Discharge Permit for Water Pollution Source / Control Facilities | Reference No.    | for renewal   |
|  | Issuing Agency   | Application submitted to DENR-EMB Region 7  |
|  | Date of Issuance | Application submitted November 11, 2018   |
|  | Validity         | NA  |
|  | Conditions       | NA  |
| Permit to Operate Air Pollution Source Control Installations     | Reference No.    | TPOA-16-H-072233-006  |
|  | Issuing Agency   | DENR-EMB Region 7   |
|  | Date of Issuance | August 26, 2016   |
|  | Validity         | November 26, 2016   |
|  | Conditions       | <ul style="list-style-type: none"> <li>• two units 320 kW Diesel Generator Set</li> <li>• two units 250 kW Diesel Generator Set</li> <li>• *documents for renewal submitted on November 21, 2018</li> </ul> |
| Hazardous Waste Generator ID                                     | Registration No. | M-GR-R7-22-03379  |
|  | Approving Agency | DENR-EMB Region 7   |
|  | Date of Approval | September 4, 2018   |
|  | Validity         | NA  |
|  | Conditions       | <ul style="list-style-type: none"> <li>• Mercury and mercury compounds (busted fluorescent lamps);</li> <li>• Arsenic and its compounds (busted LED bulbs)</li> </ul>                                       |
| Water Permit   | Reference No.    | (For Application)   |

|                               |                |                                |
|-------------------------------|----------------|--------------------------------|
|                               | Issuing Agency | National Water Resources Board |
| PCO Accreditation Certificate |                |                                |
|                               |                |                                |
|                               |                |                                |

^ Environmental Management Bureau

a Self-Monitoring Report; b Compliance Monitoring Report

**Table 3.** Permits ensuring the safety of CPA 21's facilities and operation

| Document         | Particulars       |  |
|------------------|-------------------|--|
| Business Permit  | Permit No.        | AVAILABLE and UP TO DATE   |
|                  | Issuing Agency    |  |
|                  | Date of Issuance  |  |
|                  | Validity          |  |
|                  | Prerequisites     | <ul style="list-style-type: none"> <li>• Building Permit</li> <li>• Occupancy Permit</li> <li>• Zoning Clearance</li> <li>• Fire Clearance</li> <li>• Sanitary permit</li> </ul> |
| Zoning Clearance | Registration No.  | AVAILABLE and UP TO DATE   |
|                  | Approving Agency  |  |
|                  | Date of Approval  |  |
|                  | Validity          |  |
|                  | Prerequisites     | <ul style="list-style-type: none"> <li>• Inspection of facility</li> </ul>   |
| Fire Clearance   | Conditions        | •  |
|                  | Accreditation No. | AVAILABLE and UP TO DATE   |
|                  | Issuing Agency    |  |
|                  | Date of Issuance  |  |
|                  | Validity          |  |
| Sanitary Permit  | Prerequisites     | <ul style="list-style-type: none"> <li>• Microbial water analysis</li> <li>• Pest control</li> <li>• Health certificate of employees</li> </ul>                                  |
|                  | Conditions        | •  |
|                  | Reference No.     | • AVAILABLE and UP TO DATE   |
|                  | Issuing Agency    | •  |
|                  | Date of Issuance  | •  |
| Sanitary Permit  | Validity          | •  |
|                  | Prerequisites     | •  |
|                  | Conditions        | •  |

## 2.2.2 Preventive and Mitigating Actions for Major Negative Impacts and Risks

### *Wastewaters*

- ↪ Surfacewater contamination is prevented by treating all pig wastewaters in the WWTFs. The WWTF is kept in optimal working condition through regular inspection and maintenance activities. This ensures that effluents meet Class C quality standards set by EMB.
- ↪ Biodigesters have been constructed with durable materials.
- ↪ Technical specifications and actual performance of the WWTF-MRF will be determined to know the system's efficiency. Information on these will enable the farm to optimize its operations and improve (or maintain) the WWTF-MRF's performance.

### *Hazardous Wastes*

- ↪ The farm is registered as hazardous waste generator and is able to dispose through accredited TSD (transport, storage, disposal) providers.
- ↪ Currently, pig carcasses are placed in a mortality pit.

### *Odor*

- ↪ Treatment in the WWTF-MRF has significantly abated odors coming from effluents.
- ↪ Trees have been planted within and around the farm.
- ↪ The farm houses pigs in tunnel-ventilated pig houses.
- ↪ The biogas collection system has been constructed with durable materials and is kept in good working condition through regular inspection and maintenance activities.

### *Groundwater Depletion*

- ↪ Water conservation measures are being implemented in the farm.
- ↪ The farm has started to secure a Water Permit to comply with existing regulations and recompense for its consumption of groundwater.

## 2.2.3 Environmental Management and Monitoring Plan

Table 3 summarizes the measures intended to address the environmental impacts and risks identified in Section 2.1.2. Adequate training will be given to concerned employees to ensure that the content of this environmental management plan will be properly carried out.

| IMPACT  | SOURCE / ACTIVITY   | MEASURES   | STATUS                      |   |                       | MONITORING METHOD   | FREQUENCY  | PARAMETER / INDICATOR  | RESPONSIBLE ENTITY          | REPORTING TO                       | Cost, Php                     |
|---|---|--|-----------------------------|---|-----------------------|---|--|--|-----------------------------|------------------------------------|-------------------------------|
|   |   |  | Existing / Current Practice | For Implementation / Under Construction | Adoption Under Review |   |  |  |                             |                                    |                               |
| A. Wastewater   |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
| a.1 generation of wastewater  | pig raising   | water conservation strategies  | ✓                           |   |                       | quantify wastewater production  | monthly  | volume of wastewater produced  | Engineering                 | PCO, Department head               | -                             |
|   |   | treatment of wastewater in WWTF  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| a.2 generation of domestic wastewater   | general farm activities                                     | water conservation strategies  | ✓                           |   |                       | check siphoning and hauling records   | every 5 years                                    | volume of sewage hauled  | Farm personnel              | Farm manager                       | -                             |
|   |   | sewage septic tanks  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | sewage disposal in treatment plants  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| B. Solid Waste  |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
| b.1 generation of manure, sludge  | pig raising, feed wastage, WTF                              | minimize feed wastage<br>- automated feeding system;<br>- regular inspection and maintenance of feed delivery system | ✓                           |   |                       | quantify (dried) sludge produced  | annually   | amount of sludge produced  | Farm personnel              | Farm manager                       | Php 30,000 monthly            |
|   |   | treatment of manure in WWTF  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | sludge used as soil conditioner  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| b.2 generation of (non-infectious) carcasses, blood   | injuries, adverse environmental conditions, etc.            | observe sound pig raising practices and biosecurity measures   | ✓                           |   |                       | weigh disposed materials  | daily  | weight of materials disposed   | Farm personnel              | Farm manager                       | Php 30,000 monthly            |
|   |   | regular inspection and preventive maintenance of equipment regulating pig environment                                | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | carcass disposal burial; composting is being considered  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| b.3 generation of general solid wastes  | general farm activities                                     | waste segregation  | ✓                           |   |                       | weigh solid wastes disposed of (recyclables and residuals)  | every hauling                                    | weight / details on wastes generated, stored, and disposed of  | Farm personnel              | Farm manager, PCO                  | Php 3,000 montly              |
|   |   | provides adequate collection bins, storage area in strategic locations   | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | reduce, reuse, recycle / selling of recyclables  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| C. Hazardous Materials  |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
| c.1 generation of hazardous, toxic wastes   | facilities' operation and maintenance                       | monitor resource usage to avoid expiration of chemicals, etc.  | ✓                           |   |                       | quantify each type of hazardous waste produced / stored and disposed of (check hazardous waste manifests) | every hauling and disposal                       | quantity of each hazardous waste type stored and disposed  | Farm pesrnnnel, Engineering | PCO, Farm manager, Department head | Hauling costs                 |
|   |   | disposal through accredited TSD  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | reusing, recycling certain materials (for various construction and maintenance activities)                           | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| c.2 generation of infectious, pathological wastes, carcasses  | veterinary activities, infections, outbreaks                | carcass disposal through burial; composting is being considered  | ✓                           |   |                       |   |  |  |                             |                                    | Php 3,000 monthly             |
|   |   | pathological / innfectious materials disposed in concrete septic vault   | ✓                           |   |                       |   |  |  |                             |                                    |                               |
| D. Air Pollution  |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
| d.1 generation of biogas  | anaerobic digestion   | capturing through biodigesters and combustion using biogas-fueled engine   | ✓                           |   |                       | record electric meter reading of biogas gensets   | Daily  | kWh produced   | Farm pesrnnnel, Engineering | PCO, Department head               |                               |
| d.2 generation of air pollutants  | vehicles, stand-by generator sets (fossil fuel combustion)  | operate machineries according to manufacturer's instruction  | ✓                           |   |                       | review inspection and maintenance record  | monthly  | number and details of machinery issues noted   | Farm pesrnnnel              | PCO                                | Php 120,000 maintenance costs |
|   |   | use of diesel with low sulfur content  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | regular inspection and preventive maintenance of equipment   | ✓                           |   |                       | emission testing  | annually or every 5 years                        | emissions standards  |                             |                                    |                               |
| E. Risk of Environmental Degradation  |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
|   |   |  |                             |   |                       |   |  |  |                             |                                    |                               |
| e.1 (risk of) surface water and groundwater quality degradation, disruption of soil properties, contamination | e.1.1 wastewater collection, transport, treatment, disposal | operates WWTF as prescribed  | ✓                           |   |                       | effluent sampling and testing by an EMB-accredited laboratory   | quarterly - more frequently during rainy seasons | effluent quality indicators: BOD, TSS, ammonia, phosphate (must meet standards for Class C effluent) | Farm pesrnnnel, Engineering | Farm Manager, PCO, Department head | Php 120,000 maintenance costs |
|   |   | regular inspection and preventive maintenance of WWTF; regular desludging  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | maintainance of vegetation (filter strips) around lagoons  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | ensures effluents meet EMB standards^  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   | e.1.2 sludge management, storage, leachate                  | drying of sludge and using it as soil amendment  | ✓                           |   |                       | review inspection and maintenance record  | monthly - more frequent during rainy seasons     | number and details of leak / breach incidents  | Farm personnel              | PCO                                | Php 3,000 monthly             |
|   |   | regular inspection and preventive maintenance of drying bed  | ✓                           |   |                       |   |  |  |                             |                                    |                               |
|   |   | maintainance of vegetation (filter strips) around drying bed   | ✓                           |   |                       |   |  |  |                             |                                    |                               |

|   |   |  |   |   |  |  |  |  |                          |  |   |
|---|---|--|---|---|--|--|--|--|--------------------------|--|---|
|   | e.1.3<br>pathological<br>wastes, carcass<br>disposal, leachate                                    | establish vegetative filter strips around disposal site                              | ✓ |   |  | review inspection and maintenance<br>record  | monthly<br>- more<br>frequent<br>during<br>rainy<br>season                         | number and details of<br>leak / breach incidents                     | Farm personnel / haulers | PCO                                      | Landscaping<br>costs                                  |
|   | e.1.4 handling,<br>transport, storage,<br>disposal of<br>hazardous and<br>infectious<br>materials | uses materials according to registered use / manufacturer's<br>instruction           | ✓ |   |  | review inspection and maintenance<br>record  | weekly   | number and details of<br>leak / breach incidents                     | Farm personnel           | Farm manager,<br>PCO                     | Construction<br>costs for<br>storage areas            |
|   |   | use of suitable containers with labels   | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provides secured collection and storage area   | ✓ |   |  |  |  |  |                          |  |   |
|   |   | regular inspection of storage, disposal facilities                                   | ✓ |   |  |  |  |  |                          |  |   |
|   |   | will make MSDS available on-site of use  |   | ✓ |  |  |  |  |                          |  |   |
|   |   | will develop and observe safety protocols  |   | ✓ |  |  |  |  |                          |  |   |
|   |   | will install appropriate signage, warnings   |   | ✓ |  |  |  |  |                          |  |   |
|   |   | will provide spill kits on storage areas   |   | ✓ |  |  |  |  |                          |  |   |
|   |   | will prepare a contingency response plan   |   | ✓ |  |  |  |  |                          |  |   |
|   |   | will provide adequate training to staff on handling of<br>hazardous materials        |   | ✓ |  |  |  |  |                          |  |   |
| e.2 (risk of)<br>pollution from<br>fugitive biogas      | biogas collection,<br>storage,<br>combustion  | operates MRF as prescribed   | ✓ |   |  | review inspection and maintenance<br>record  | monthly  | number and details of<br>leak / breach incidents<br>(odor detection) | Farm personnel           | PCO                                      | Php 33,000<br>per month for<br>maintenance            |
|   |   | regular inspection (leak test) and preventive maintenance of<br>MRF                  | ✓ |   |  |  |  |  |                          |  |   |
| <b>F. Health and Safety – Anaerobic Digester System</b> |   |  |   |   |  |  |  |  |                          |  |   |
| f.1 explosion<br>hazards                                | biogas collection,<br>storage,<br>combustion  | No smoking or hot works in the vicinity of biogas facility                           | ✓ | ✓ |  | review inspection and maintenance<br>records, incident reports, complaints<br>register | monthly  | number and details of<br>explosion, fire incidents                   | Engineering,             | Department head,<br>Farm manager         | Signage costs,<br>Php 120,000<br>maintenance<br>costs |
|   |   | Restrict access to biogas facility   |   |   |  |  |  |  |                          |  |   |
|   |   | Place signages   |   |   |  |  |  |  |                          |  |   |
|   |   | Regular maintenance of biogas system   |   |   |  |  |  |  |                          |  |   |
| f.2 asphyxiation  | biogas  | Buddy system when conducting work  | ✓ | ✓ |  | review incident reports  | monthly  | number and details of<br>asphyxiation, poisoning<br>incidents        | Engineering              | Department head,<br>Farm manager,<br>PCO | Php 120,000<br>maintenance<br>costs                   |
|   |   | Restrict access to biogas facility   |   |   |  |  |  |  |                          |  |   |
|   |   | Regular maintenance of biogas system   |   |   |  |  |  |  |                          |  |   |
| f.3 chemical hazards                                    | sludge  | Use appropriate PPE  | ✓ | ✓ |  | review incident reports  | monthly  | number and details of<br>infection, infestation<br>incidents         | Engineering              | Department head,<br>Farm manager         | PPE costs   |
|   |   |  |   |   |  | review results of health checks  | annually   |  |                          |  |   |
| <b>G. Health and Safety – General Farm Operations</b>   |   |  |   |   |  |  |  |  |                          |  |   |
| f.1 odor - nuisance,<br>discomfort, health<br>issues    | f.1.1 pig houses,<br>manure   | regular cleaning of pig houses and flushing of drains                                | ✓ |   |  | review complaints register   | every two<br>weeks<br>- more<br>frequent<br>during<br>typhoon<br>(windy)<br>season | number and details of<br>odor complaints                             | Farm personnel           | Farm manager                             | PPE costs   |
|   |   | tunnel ventilated buildings  | ✓ |   |  |  |  |  |                          |  |   |
|   |   | maintains existing vegetation, will plant trees                                      | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |
|   | f.1.2 WTF,<br>effluent, MRF   | gas trapping and combustion through MRF  | ✓ |   |  |  |  |  |                          |  |   |
|   |   | will ensure adequate retention time of wastewaters in the<br>biodigester is achieved | ✓ |   |  |  |  |  |                          |  |   |
|   |   | regular inspection and preventive maintenance of WWTF-<br>MRF                        | ✓ |   |  |  |  |  |                          |  |   |
|   |   | prevent overtopping, spillage (see e.1.1)  | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |
|   | f.1.3<br>decomposing<br>materials (sludge<br>and organic<br>solids)                               | ensure sludge pile is well aerated, prevent waterlogging                             | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |
|   | f.1.4<br>decomposing<br>materials<br>(placental<br>materials and<br>carcasses)                    | disposal through burial, composting  | ✓ |   |  |  |  |  |                          |  |   |
|   |   | prevent leakage of leachate in disposal sites (see e.1.3)                            | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |
| f.2 noise - nuisance,<br>discomfort                     | f.2.1 pigs  | automated feeding system   | ✓ |   |  | review complaints register   | monthly  | number and details of<br>noise complaint                             | Farm pesronnel           | Farm manager                             | PPE Costs   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |
|   |   | Maintains existing vegetation, will plant trees                                      | ✓ |   |  |  |  |  |                          |  |   |
|   | f.2.2 vehicles,<br>machineries  | operate equipment, machineries according to<br>manufacturer's instruction            | ✓ |   |  |  |  |  |                          |  | Landscaping<br>costs                                  |
|   |   | regular inspection and preventive maintenance of<br>machineries                      | ✓ |   |  |  |  |  |                          |  |   |
|   |   | generator sets are fitted with mufflers  | ✓ |   |  |  |  |  |                          |  |   |
|   |   | provision and use of appropriate PPE   | ✓ |   |  |  |  |  |                          |  |   |

|  |  |   |   |   |  |  |   |   |                                |                   |  |
|--|--|---|---|---|--|--|---|---|--------------------------------|-------------------|--|
| f.3 dust - nuisance, discomfort, health issues   | f.2.1 pig houses, feed handling  | limits dust-generating activities during day time, low wind movement (as much as it is practical)         | ✓ |   |  | review complaints register   | quarterly - more frequent during typhoon (windy) season | number and details of dust complaints                       | Farm pesronnel, admin officers | Farm manager      | PPE costs<br><br>Php 120,000 maintenance costs   |
|  |  | tunnel ventilation system prevents dust build up  | ✓ |   |  |  |   |   |                                |                   |  |
|  | f.2.2 composting areas, dried compost handling   | use of appropriate containers, barriers   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | damping of dried materials  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | limit dust-generating activities during day time and low wind movement (as much as it is practical)       | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | provision and use of appropriate PPE  | ✓ |   |  |  |   |   |                                |                   |  |
|  | f.2.3 vehicles, machineries  | sealing and damping of unpaved roads  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | limits vehiclular speed on unsealed roads   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | operates feedmill in an enclosed area   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | limit dust-generating activities during day time, low wind movement (as much as it is practical)          | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | provision and use of appropriate PPE  | ✓ |   |  |  |   |   |                                |                   |  |
| f.4 pest and vermin proliferation / infestation - nuisance, health issues                              | decomposing materials and sources of odors   | implement odor control measures (see f.1)   | ✓ |   |  | review inspection results records and complaints register  | monthly - more frequent during rainy season             | number and details of incidents, complaints                 | Farm personnel                 | PCO               | Php 25,000 monthly pest control  |
|  |  | imlement pest, vermin control measures (use of baits and traps)   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | observes good houskeeping practices   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | regular inspection of farm facilities, surroundings   | ✓ |   |  |  |   |   |                                |                   |  |
| f.5 health hazards, (risk of) contracting infectious diseases, sustaining injuries, livestock outbreak | handling, transport, storage of hazardous and infectious materials, movement of carrier pests and vermin, handling of ill pigs | adequate training on handling of hazardous, infectious materials  | ✓ |   |  | review incident reports, inspection records and complaints register, results of employees' regular health checks | monthly   | number and details of illness, injury incidents, complaints | Farm pesronnel                 | PCO, Farm manager | Php 350 daily wage for technical pesonnel<br><br>Equipment costs<br><br>Php 25,000 monthy pest contril |
|  |  | provision and use of appropriate equipment for handling and storage of hazardous and infectious materials | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | enforce, observe biosecurity measures, health and safety protocols  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | observe measures for safe handling of hazardous and infectious materials (see e.1.3 & e.1.4)              | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | implement pest and vermin control measures (see f.4)  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | regular inspection of farm facilities, surroundings   | ✓ |   |  |  |   |   |                                |                   |  |
| f.6 explosion, fire hazard   | biogas collection, storage, combustion   | WWTF-MRF constructed with durable materials   | ✓ |   |  | review inspection and maintenance records, incident reports, complaints register                                 | monthly   | number and details of explosion, fire incidents             | Farm personnel                 | PCO, Farm manager | Signage printing costs   |
|  |  | operates WWTF-MRF according to design   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | regular monitoring of pressure within the MRF system  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | regular inspection (leak test) and preventive maintenance of MRF  | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | restricts access to MRF   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | prohibits ignition sources (smoking) near MRF   |   | ✓ |  |  |   |   |                                |                   |  |
|  |  | will install signage and warnings   |   | ✓ |  |  |   |   |                                |                   |  |
|  |  | reporting and recording of explosion, fire incidents  |   | ✓ |  |  |   |   |                                |                   |  |
| f.7 drowning hazard  | open ponds, lagoons, tanks   | restrict access to WTF, install fences  |   | ✓ |  | review incident reports  | monthly   | number and details of drowning incidents                    | Farm pesronnel                 | PCO               | Php 350 daily wage for technical personnel   |
|  |  | install signage and warnings  |   | ✓ |  |  |   |   |                                |                   |  |
|  |  | reporting and recording of drowning incidents   |   | ✓ |  |  |   |   |                                |                   |  |
|  |  |   |   |   |  |  |   |   |                                |                   |  |
| f.8 freshwater depletion   | pig raising and general farm activities  | water conservation strategies   | ✓ |   |  | quantify volume of freshwater consumption  | monthly   | volume of freshwater consumed                               | Farm personnel                 | Farm manager      | -  |
|  |  | effluent recycling  | ✓ |   |  |  |   |   |                                |                   |  |
| f.9 consumption of non-renewable resource (fossil fuels for power)                                     | pig raising and general farm activities  | energy conservation strategies  | ✓ |   |  | estimate power consumption from billing for electricity  | monthly   | kWh consumed  | Farm personnel                 | PCO               | -  |
|  |  | use of energy-efficient equipment   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | uses electricity generated using biogas   | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | pig buildings have concrete walls and roofing, providing efficient insulation against ambient heat        | ✓ |   |  |  |   |   |                                |                   |  |
|  |  | thermostat controlled cooling system have auto shut off feature   | ✓ |   |  |  |   |   |                                |                   |  |
| f.11 (risk of) erosion   | rainwater runoff   | plant various tree species and vegetation along roads and slopes  | ✓ |   |  | review inspection records  | monthly - more frequent during rainy season             | number and details of erosion incidents                     | Farm personnel                 | Farm manager      | Php 300 daily wage for maintenance workers   |

BOD Biological Oxygen Demand  
MSDS Materials Safety Data Sheet  
PCO Pollution Control Officer  
PPE Personal Protective Equipment

SMR Self-Monitoring Report  
TSS Total Suspended Solids

#### 2.2.4 Contingency Response

Below is an overview of CPA 21's current preparation and action plan in response to the following:

- a. Fire
  - Fire extinguishers are available at strategic locations around the farm. Pig houses are also equipped with water taps and sprinklers from which water for putting out fire can be sourced.
- b. Earthquake
  - The open grounds at the exterior of the farm are designated as evacuation areas for when an earthquake occurs.
- c. Outbreak
  - In the event of a livestock disease outbreak, quarantine measures are instinctively applied. Movement of humans and animals in and out of the farm is restricted and instructions from the farm's consultant veterinarian are carried out.
- d. Power outage
  - Should there be power interruption, a diesel-fueled standby generator is able to supply the farm's electricity needs, in addition to the biogas genset.
- e. Health emergencies
  - First aid kits are readily available on site for minor injuries. Farm personnel also have access to vehicles which can be used for transporting cases needing more advanced medical care.

In the interim, CPA 21 hereby commits to develop a more comprehensive contingency preparedness and response plan that will address incidents of fire; natural hazards (typhoon, earthquake); outbreak; health emergencies; and environmental emergencies (leaks and spills of wastewaters and hazardous wastes, WWTF-MRF system breakdowns). This plan will be appended in the succeeding version of this ESMP.

#### 2.2.5 Occupational Health and Safety

In addition to the health and safety measures presented in Table 3, CPA 21 will develop a more comprehensive health and safety risk management plan which will deal with general occupational health and safety issues associated with work in the farm. Health complaints and accidents will be recorded in a register and will serve as indicators of the plans effectiveness, together with results of workers' annual health check-ups. This plan will be appended in the succeeding version of this ESMP

#### 2.2.6 Biosecurity

The farms requires all visitors to follow a 7-day decontamination procedure. Visitors are not allowed to visit the farm less than seven days from a visit to another pig farm. Visitors are also required to bathe and wear the farm's uniform during their time within CPA 21's premises. Vehicles entering the premises are also decontaminated using a chemical wash.

### 2.3 Monitoring, Reporting and Auditing

The proponent will perform the monitoring plan in Table 3 and conduct regular inspection of its facilities not only for internal purposes but also to satisfy the requirements of the Environmental Management Bureau (EMB) for periodic self-monitoring reports (SMR). In addition, assessments will also be initiated during or immediately after incidents that may have compromised the integrity of the farm's facilities, especially the WWTF-MRF, and caused the release of pollutants in the environment. A registry of such incidents and other environmental emergencies and accidents will be maintained in the farm and its details reported in the SMR.

The SMR will contain the results of audits on the farm's environmental performance in terms of resource utilization, waste management, regulatory compliance, and fulfillment of environmental

commitments among others. This document will be tendered to EMB quarterly. LBP-EPMD (Environmental Program and Management Department) will also be provided with copies of this document for reference and review purposes.

The owner, the farm manager and the farm's Pollution Control Officer (PCO), have been tasked to ensure that the farm is compliant with pertinent environmental regulations, including those listed in Table 3, and is performing its environmental commitments, including the implementation of this ESMP.

During the implementation of the CDM Program, LBP-EPMD will conduct monitoring activities in the farm at least twice a year to help the proponent execute, identify gaps in, and improve and update this management plan.



### 3 SOCIAL DUE DILIGENCE

Below are some of the Proponents efforts to ensure that CPA 21 does not infringe upon the social rights of its employees and the Farm's host community.

#### 3.1 Consultation and Participation

Prior to construction, the Proponent, together with LBP-EPMD, identified the Project's stakeholders who were afterwards invited, through letters and notices, to a consultative meeting for the Project's establishment on February 12, 2016. The stakeholder consultation was attended by 26 individuals from various institutions including farm representatives, Landbank personnel, and barangay officials.

All relevant information, especially those that pertain to the Project's environmental and social impacts, were communicated to the stakeholders during the consultations. Issues and queries raised all satisfactorily addressed by the Proponent and the other presenters.

#### 3.2 Grievance Redress Mechanism

The Farm's manager and PCO are hereby designated to be the main contact person for stakeholders regarding grievances, feedbacks, and queries related to the Project. He is also to be in charge of ensuring that the details of complaints and the actions made to address the same will be recorded truthfully.

Such information shall be part of the regular monitoring report for the Project and will be made available to relevant stakeholders.

Issues not resolved at the Project level (by the Proponent) will be raised to the following third party institutions for arbitration and possible resolution:

- Office of the Barangay Chairman  
All complaints shall be initially entertained and attempted to be resolved in the *barangay* where the Farm is situated. The *barangay* concerned will facilitate the negotiation process and LBP-EPMD will ensure that the complainant is properly represented.
- Municipal Office  
Should no agreement be reached at the *barangay* level, the matter will be elevated to a municipal government office. Depending on the nature of the complaint, grievances may be addressed to the Municipal Health Office, Agriculturist Office, Environment and Natural Resources Office, or any relevant municipal agency.
- LBP  
LBP through EPMD will take part on the resolution process only after the aggravated party has gone through the previous levels and finds the decisions rendered there unacceptable. EPMD will coordinate with the Proponent to ensure that issues regarding the latter's project are resolved to the best interest of the complainant.

To further ensure the Proponent's accountability, contact details of the Farm's management and LPB-EPMD shall be provided to stakeholders during consultations and through postings at public notice boards (including at the Farm's main gate). For the Project of CPA 21 the following individuals will serve as grievance administrators:

- Prudencio E. Calado III  
Head/Assistant Vice President, LBP-EPMD  
Telephone No.: (632) 405-7339  
Fax No.: (632) 528-8484

### **3.3 Information Disclosure**

This ESMP and other relevant information regarding the Project will be published in LANDBANKS's website where it can be readily accessed by the public. Printed copies of this document will be submitted to DENR-EMB Region 7 and will also be available in Barangay Sacsac's office, in LANDBANK's library (1598 M.H. Del Pilar cor Dr. J. Quintos St., Malate, Manila, Philippines), and in World Bank's Infoshop.

### **3.4 Equal Opportunity**

CPA 21 is an equal opportunity employer, not regarding gender, age, disability, and ethnicity in evaluating and hiring potential employees. The farm currently employs 104 personnel (77 males and 27 females). Males are generally assigned to work in maintaining the pig houses and handling pigs. Whereas females are assigned to the farrowing houses, and have administrative duties.

### **3.5 Resettlement**

The Project is located inside the premises owned by CPA 21, a private property. No individual was displaced for nor were there any indigenous peoples affected by the establishment of the Farm and the Project.

### **3.6 Others**

Employees of CPA 21 receive standard basic salary (at the minimum), 13<sup>th</sup> month pay, free on-site lodging and meals, sick and vacation leaves, health insurance, as well as SSS (social security), HDMF (housing loan) and health insurance privileges.

#### **4 ESMP REVIEW AND UPDATING**

This ESMP shall be reviewed and updated as needed to keep pace with and adapt to changes and developments related to the Project. The Farm's manager and PCO shall initiate and lead this initiative in consultation with relevant Farm personnel and Project partners.

## **5 INSTITUTIONAL ARRANGEMENTS**

### **5.1 The Proponent**

The Proponent will be responsible in all aspects of the Project, including the implementation of this ESMP. He will shoulder all costs associated with the construction and operation of the Project, internal monitoring activities, and meeting various statutory requirements. Specifically, he shall cause the accomplishment of the following:

- exercise environmental and social due diligence in implementing the Project
- incorporate sound practices in environmental, health, and safety management
- comply with relevant national and local laws and satisfy regulatory obligations
- perform diligent environmental and system monitoring
- prepare and submit on schedule accurate monitoring reports to EMB and LBP
- cooperate with the LBP and other regulatory agencies by providing assistance and correct and relevant information regarding the Project and its environmental performance for reference, review, and monitoring purposes
- promote transparency by maintaining open lines of communication with project stakeholders and giving them access to relevant information
- initiate resolution of conflicts that may arise as a result of the Project's operation
- disseminate all relevant information to stakeholders

The Proponent, in close coordination with LBP, shall implement the Project based on LBP's ESSF and on the agreed activities and timelines stipulated in the MOA and subproject agreement (SPA) between the said entities.

### **5.2 LANDBANK**

LBP shall serve as the financial and technical intermediary for the CDM Program of Activity (PoA) under which the Project of CPA 21 is being implemented. It shall provide the Proponent carbon and investment finance assistance for the installation of an anaerobic wastewater treatment facility equipped with a biodigester and methane-fueled power generator. Moreover, it shall act as the entity in charge of project validation and verification activities, and of collation of relevant information and monitoring data for the undertakings mentioned. Specifically, LANDBANK, through EPMD, shall:

- make available financing facilities to the Proponent, subject to existing lending policies of LBP
- coordinate and facilitate communications and transactions between the Proponent and World Bank or other Carbon Buyers, Designated Operational Entity (DOE), and when necessary, with other project partners
- administer the agreements (MOA, SPA) forged between LBP and the Proponent
- provide technical support and relevant trainings to farm owners and personnel in partnership with donors and other institutions
- ensure compliance of the Project and its proponent with the rules governing PoAs and with its commitments in the MOA and SPA
- ensure compliance of the Project and its proponent with relevant standards and regulations and environmental commitments by conducting on-site monitoring and evaluation and desk reviews
- provide assistance to the Proponent in complying with statutory requirements for the Project
- ensure the Project's sustainability by monitoring the long-term implementation of the safeguards specified in this ESMP and its environmental performance in general
- gather, collate, and review pertinent information and documents (including safeguard instruments, reports, and permits and clearances) concerning the Project
- participate in conflict resolution initiated by the Proponent
- prepare and submit monitoring reports to World Bank regularly
- satisfy its obligations under the Emissions Reduction Purchase Agreement (ERPA) between LBP and World Bank

LBP shall assist the Proponent in its implementation of the Project based on LBP's Safeguards Framework and on the agreed activities and timelines stipulated in the MOA and SPA.

### 5.3 **Department of Environment and Natural Resources**

The Department of Environment and Natural Resources (DENR) is the primary government institution mandated to manage and protect the Philippines' environment and natural resources. It is also the Designated National Authority (DNA) of the CDM Program in the Philippines. As DNA, its main role is to review and endorse PoAs to the United Nations Framework Convention on Climate Change (UNFCCC).

#### 5.3.1 **Environmental Management Bureau**

Through the EMB, DENR sanctions and regulates the activities of the Project by means of various legal instruments. EMB also leads (whether or not as part of an MMT) the periodic compliance and impact monitoring of the Project, including the fulfillment of commitments stated in this ESMP. Prior to construction, EMB was the agency tasked to review and evaluate the environmental soundness of the Project and authorize its establishment through the issuance of an Environmental Compliance Certificate (ECC).

### 5.4 **World Bank**

The World Bank is the main Carbon Buyer of the Project, but will also serve as an advisor to LPB in carrying out the latter's responsibilities as the coordinating and managing entity for CDM projects. The Bank will conduct regular monitoring, audits, and appraisal reviews on the Project's safeguard performance against its established policies as well as provide technical guidance to LBP and to the Proponent.

## **6 SUB-PROJECT ACCOUNTABILITY**

In line with Section 3.02 on Sub-Project Development and Operation by the Sub-Project Entity, Item (q) of the Sub-Project Purchase Agreement (SPA) signed by the Farm Management, the Sub-Project Entity (Farm Management) agrees and undertakes to:

- (q) implement and operate the Sub-Project in compliance with the World bank Operational Policies, including without limitation and as applicable, the Environmental Management Plan, Resettlement Plan, Indigenous Peoples Plan, and any other requirement resulting from the application of the World Bank Operational Policies.

Having signed the SPA, the Farm Management is accountable to comply with the commitments stated in this document.

## Appendices

# Proposed Biogas System for Piggery Wastewater Treatment Plans and Specifications

## CD - Hybrid Biogas System

By:



Technology Principal:

Energy Research and Development  
Institute – Nakornping  
Chiang Mai University, Thailand

Local Implementor:

Alterna Verde Corporation  
Saguin, City of San Fernando,  
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Business Principal:

Tetra Products and Consulting Corp.  
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REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC  
WORKS AND HIGHWAYS  
OFFICE OF THE  
BUILDING OFFICIAL  
MUNICIPALITY OF  
PINAMUNGAJAN, CEBU

BUILDING OFFICIAL

LAND USE & ZONING

LINE & GRADE

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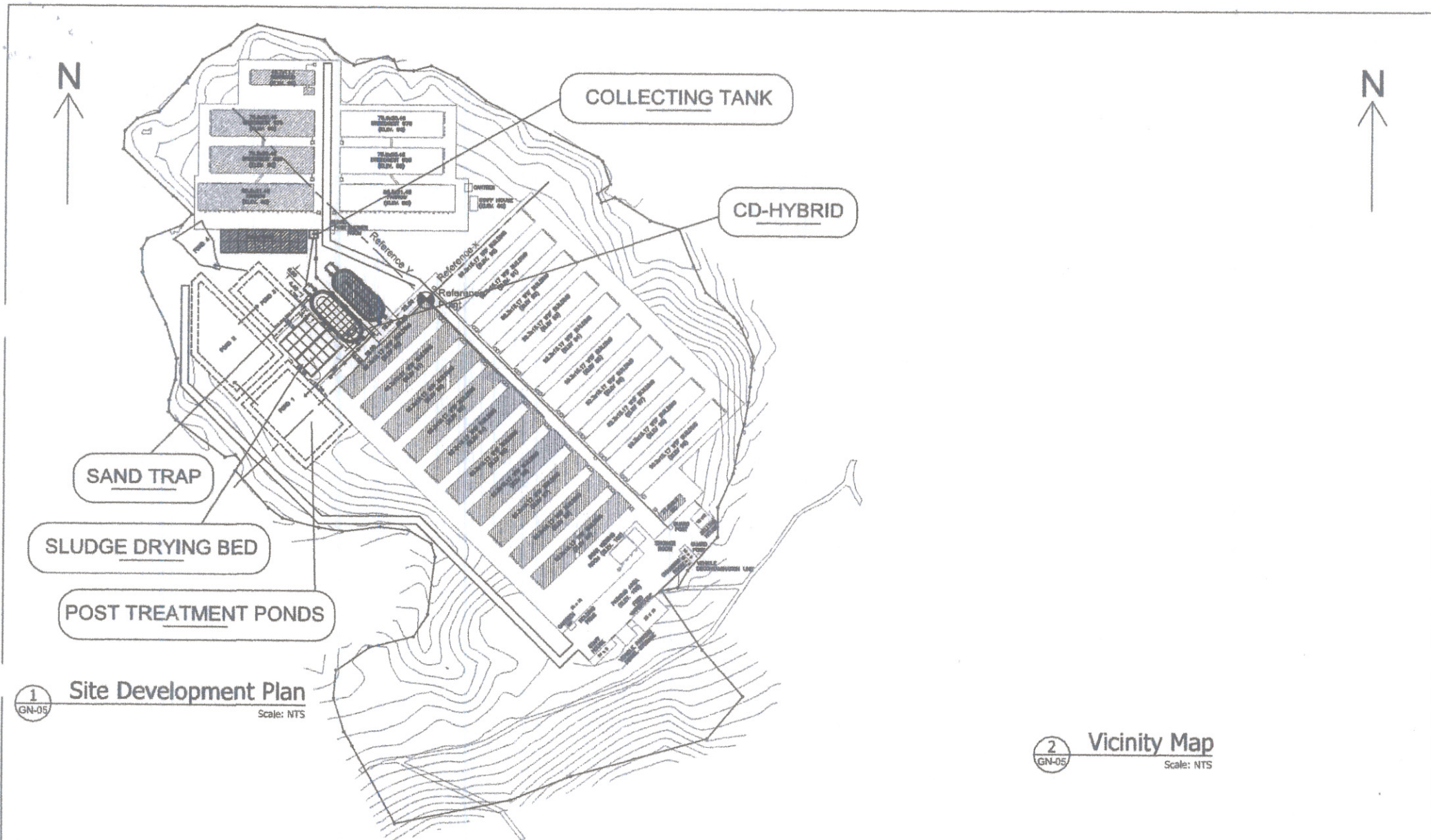
MECHANICAL

SANITARY

FIRE DEPARTMENT

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Energy Research and Development Institute-  
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Local Implementer:  
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Valid Until: March 2018

Place Issued: Taguig City

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Sheet Contents: Site Development Plan; Vicinity Map

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| 1   | 9/11/2015 | Location of CT, and the first CD to be constructed |

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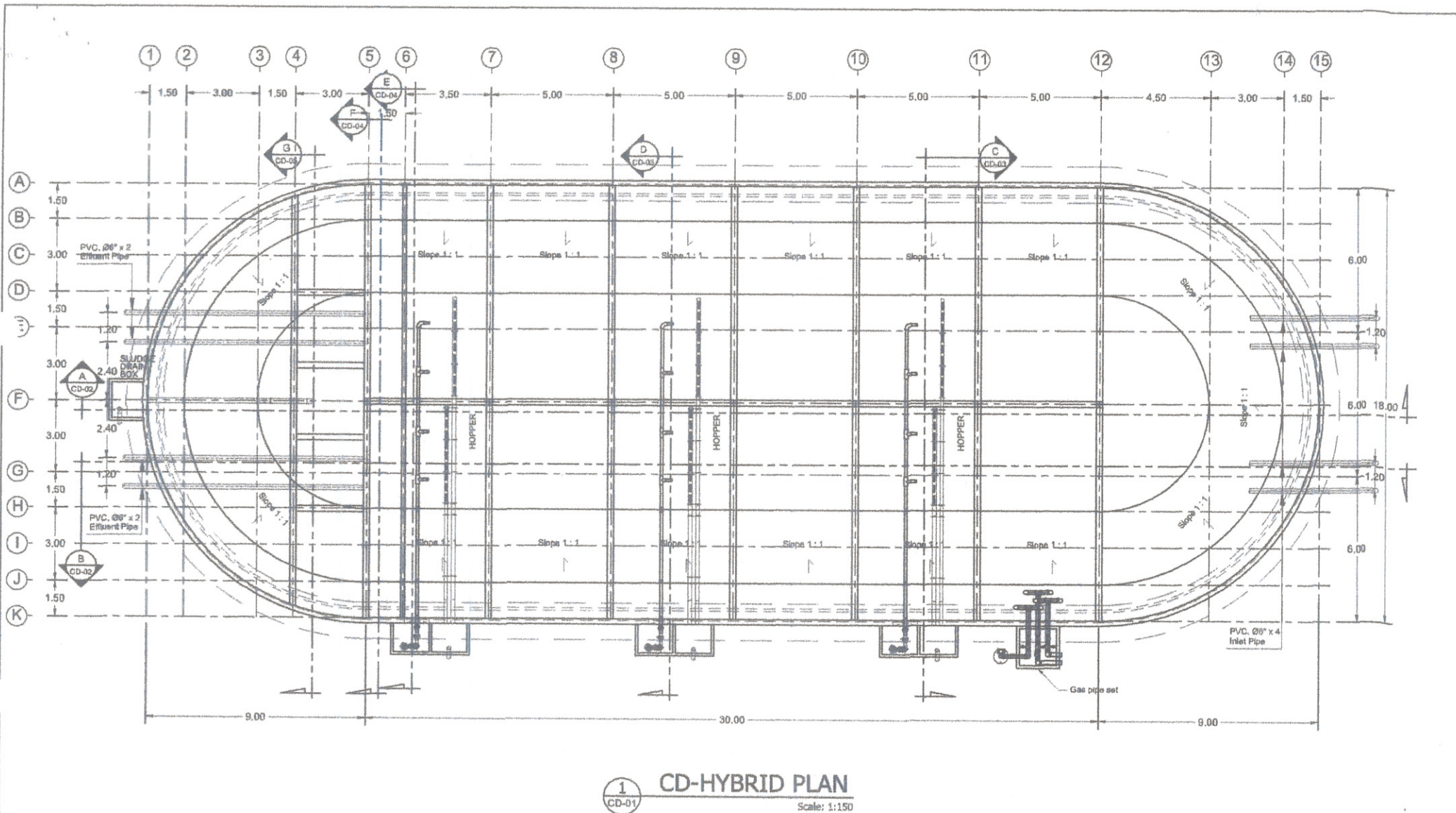
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TH Environmental Engineer: Alongkorn Siripat TH Mechanical Engineer: Sarawoot Amarndara

**JAYKIE HOMER P. HERNANDEZ**  
Professional Agricultural Engineer

PRC Reg. No.: 6818

PTR No.: 2485044

PRC Reg. No.:

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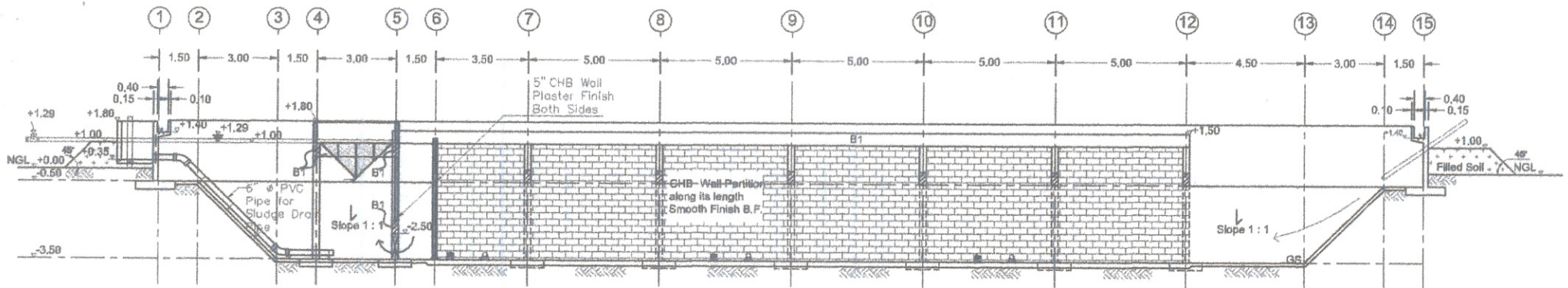
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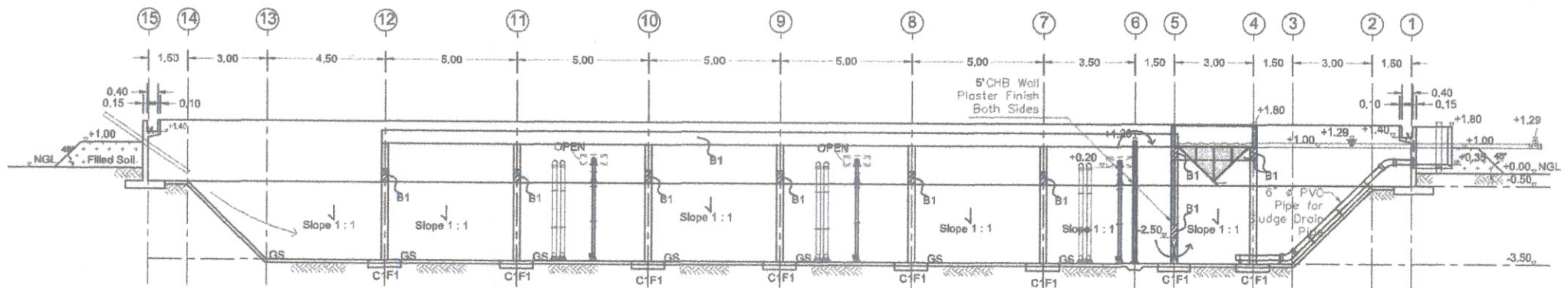
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1 SECTION A-A  
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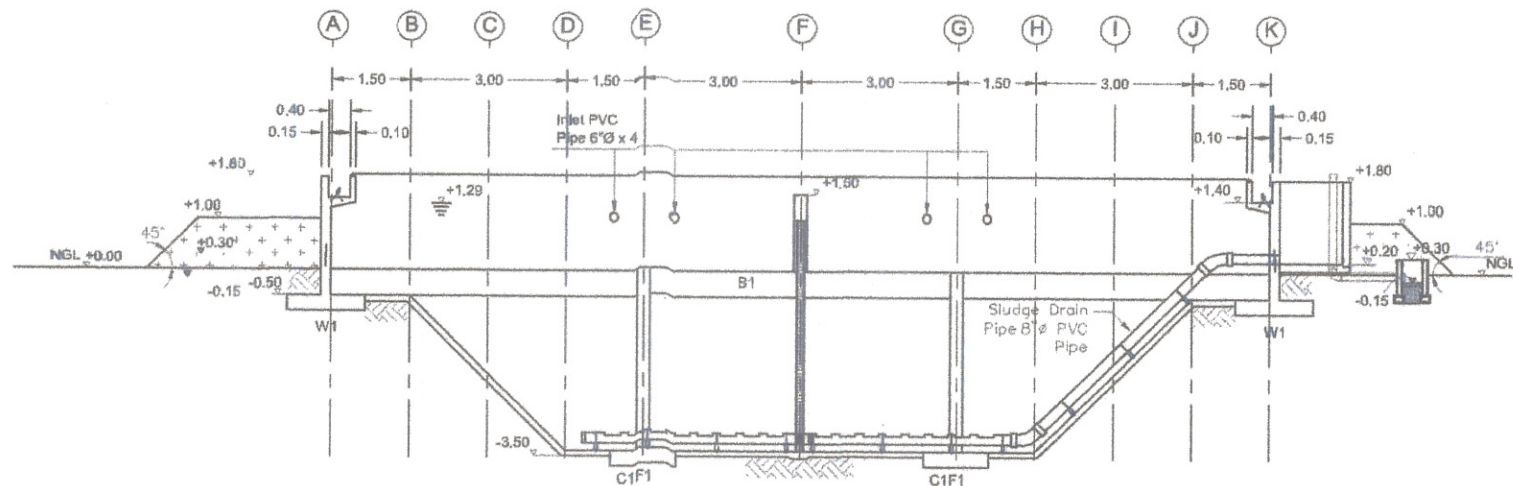
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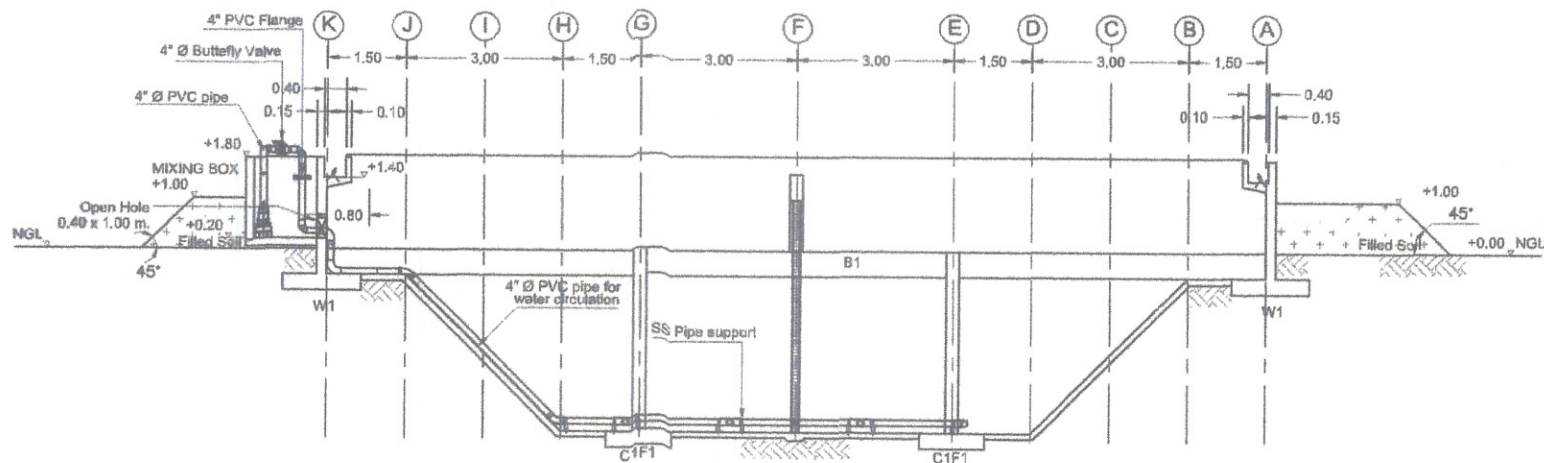
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1  
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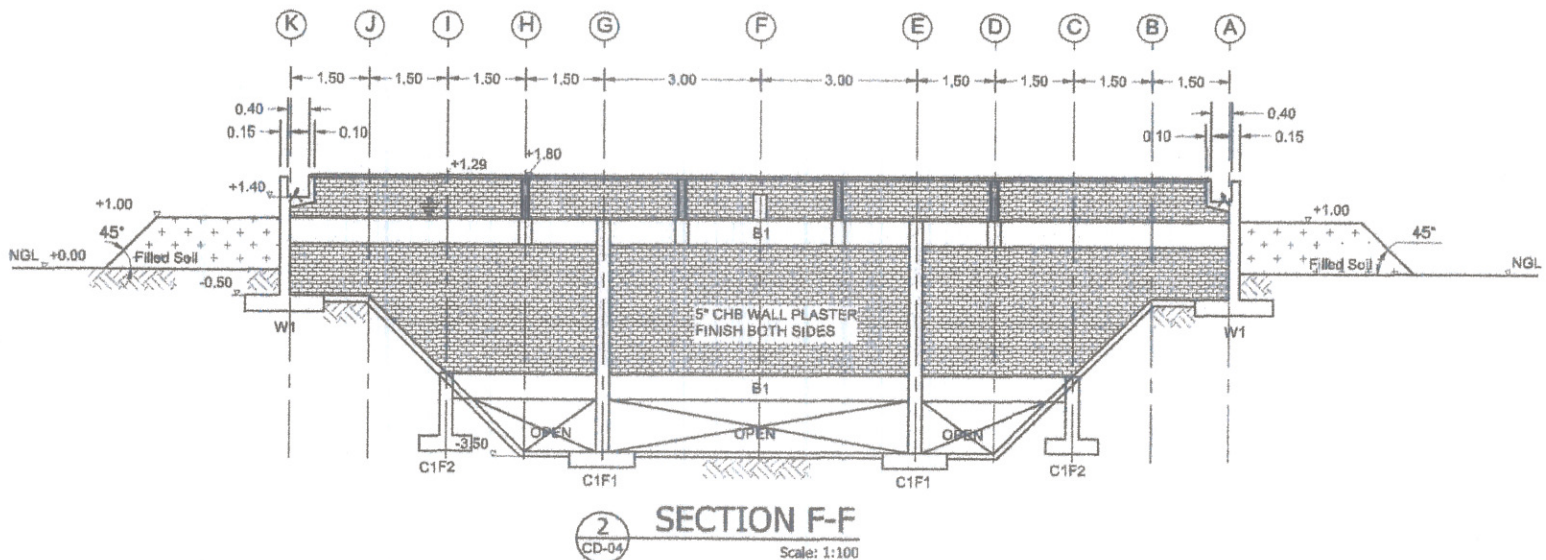
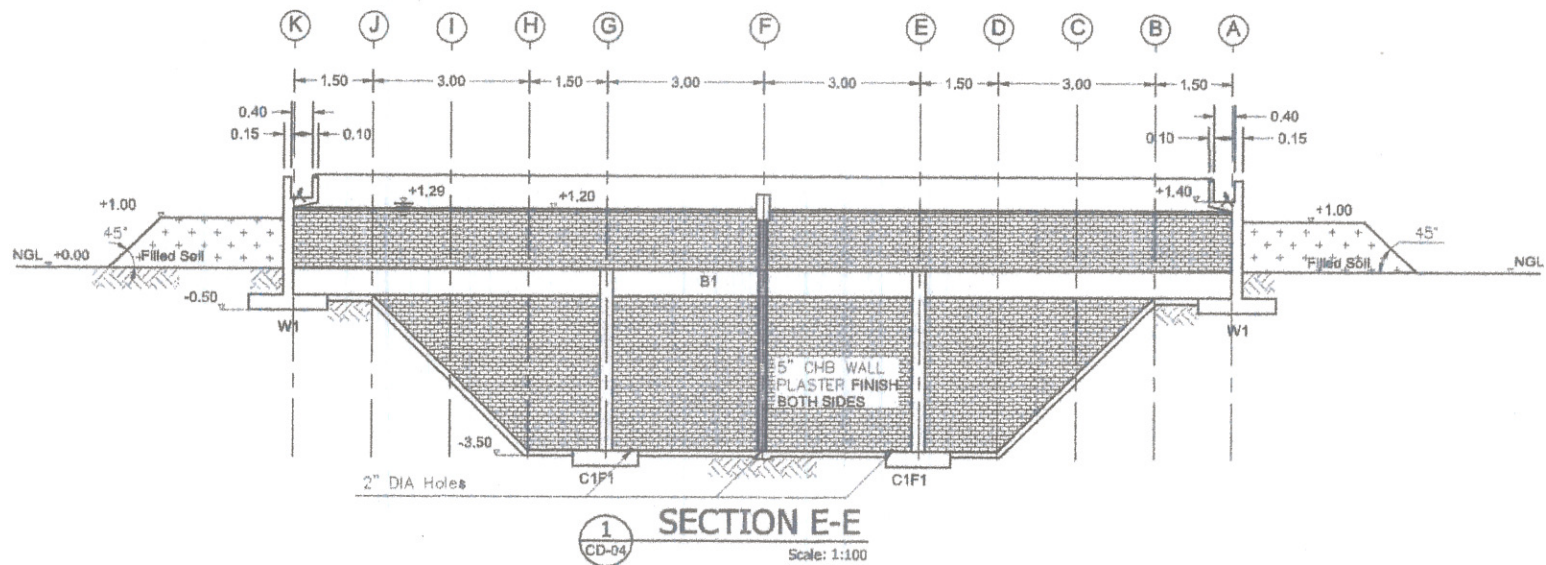
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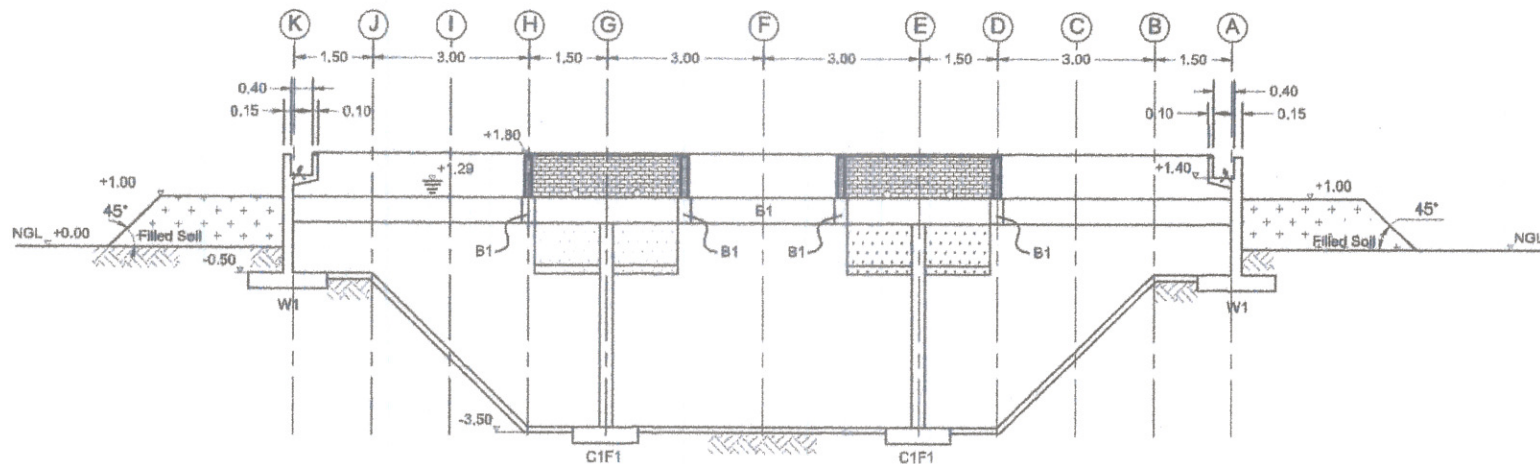
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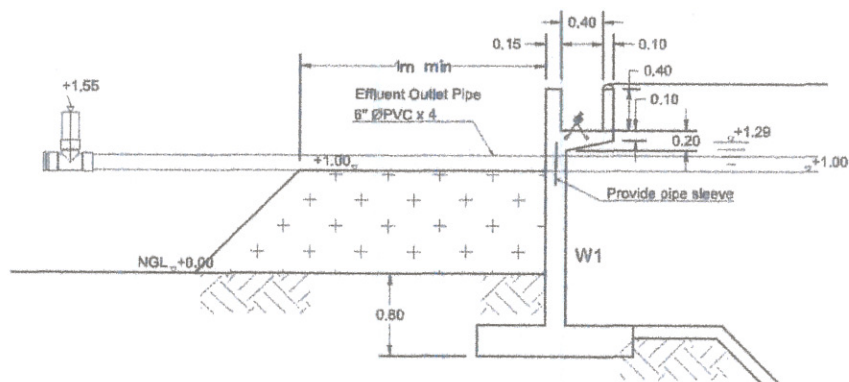
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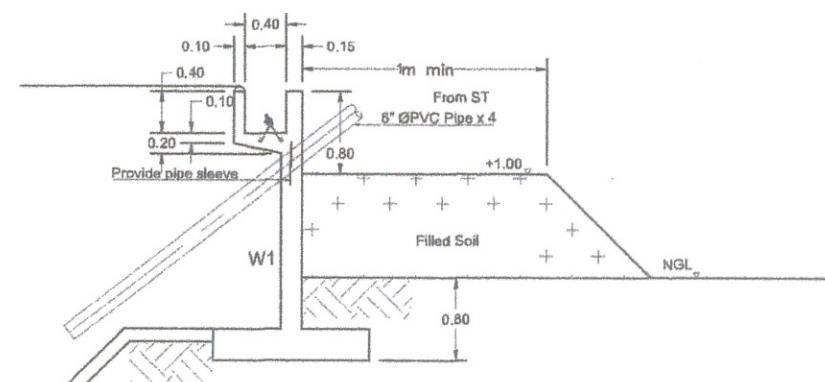
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2 DETAILS OF OUTLET PIPE  
CD-05 Scale: 1:50



3 DETAILS OF INLET PIPE  
CD-05 Scale: 1:50

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Sheet Contents: SECTION G-G; DETAILS OF OUTLET PIPE;  
DETAILS OF INLET PIPE

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P-02

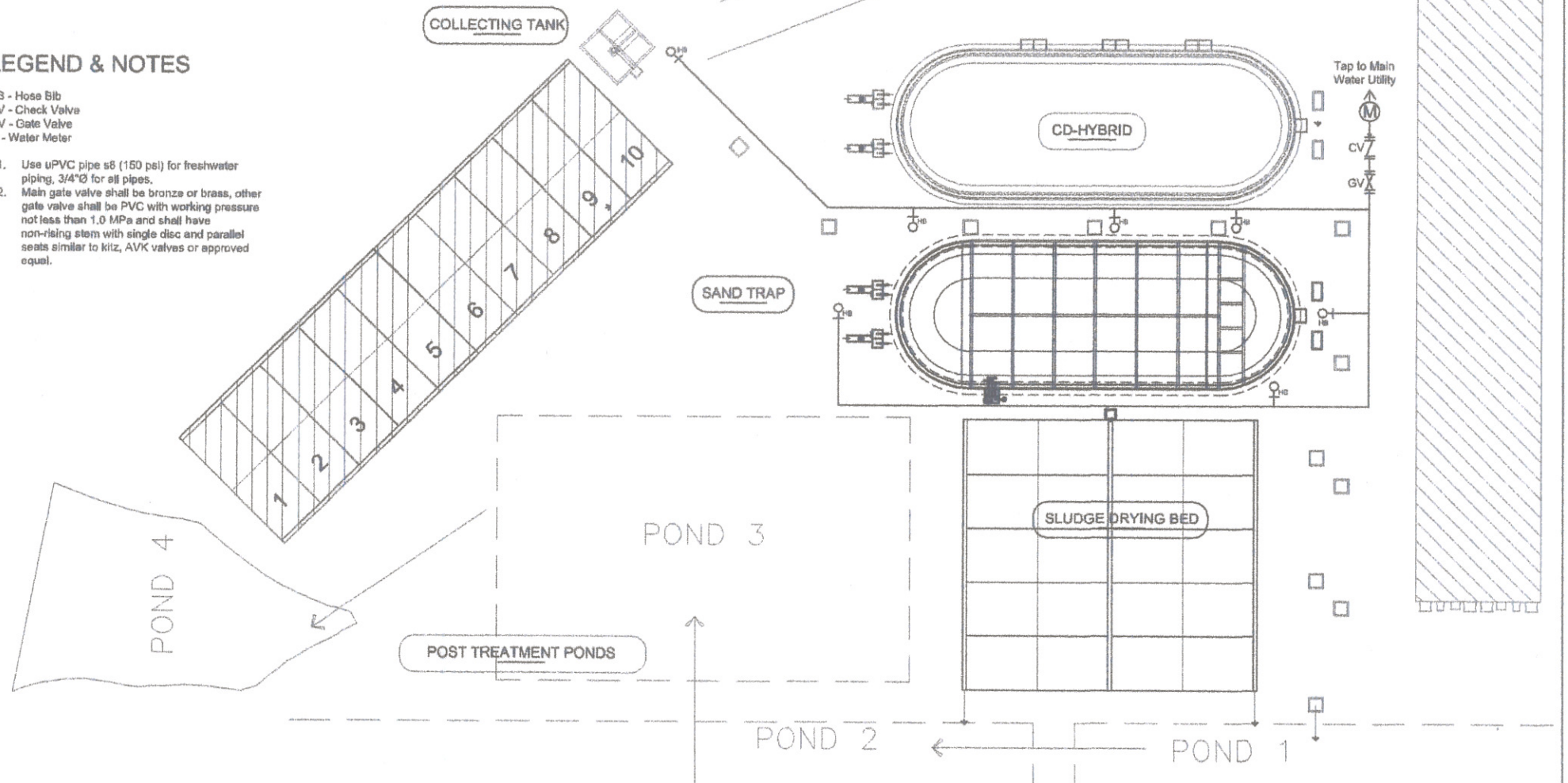
# Freshwater piping layout plan

Scale: NTS

## LEGEND & NOTES

HB - Hose Bib  
CV - Check Valve  
GV - Gate Valve  
M - Water Meter

1. Use uPVC pipe s6 (150 psi) for freshwater piping, 3/4"Ø for all pipes.
2. Main gate valve shall be bronze or brass, other gate valve shall be PVC with working pressure not less than 1.0 MPa and shall have non-rising stem with single disc and parallel seats similar to Kitz, AVK valves or approved equal.



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Sheet Contents: Freshwater piping layout plan

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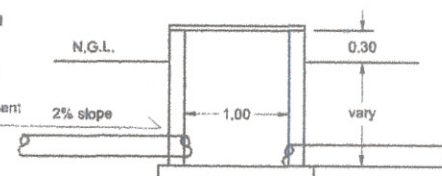
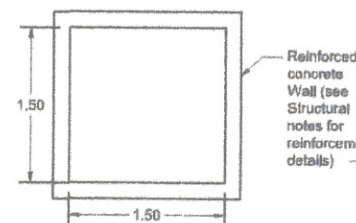
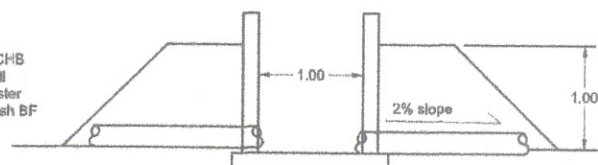
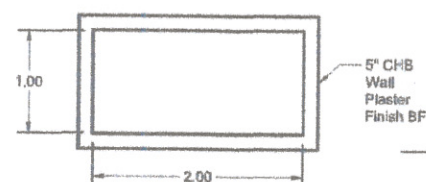
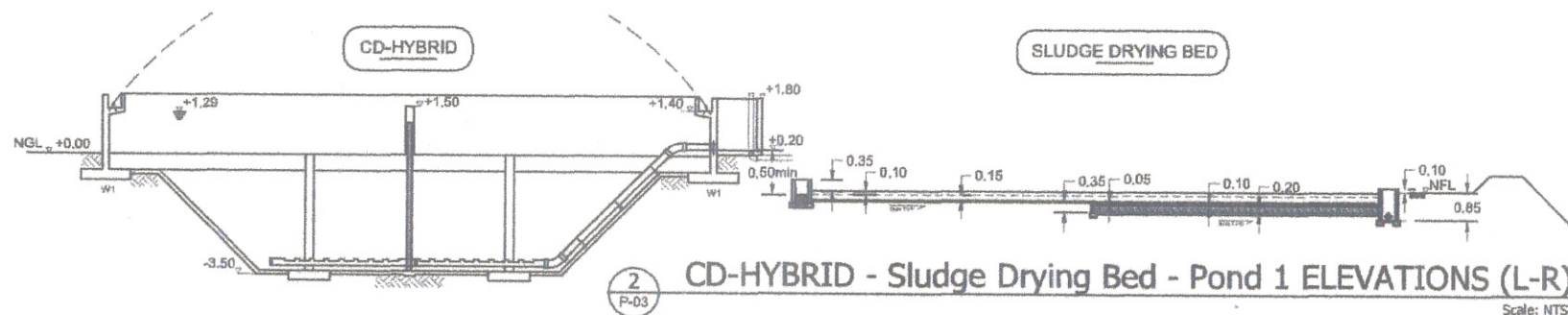
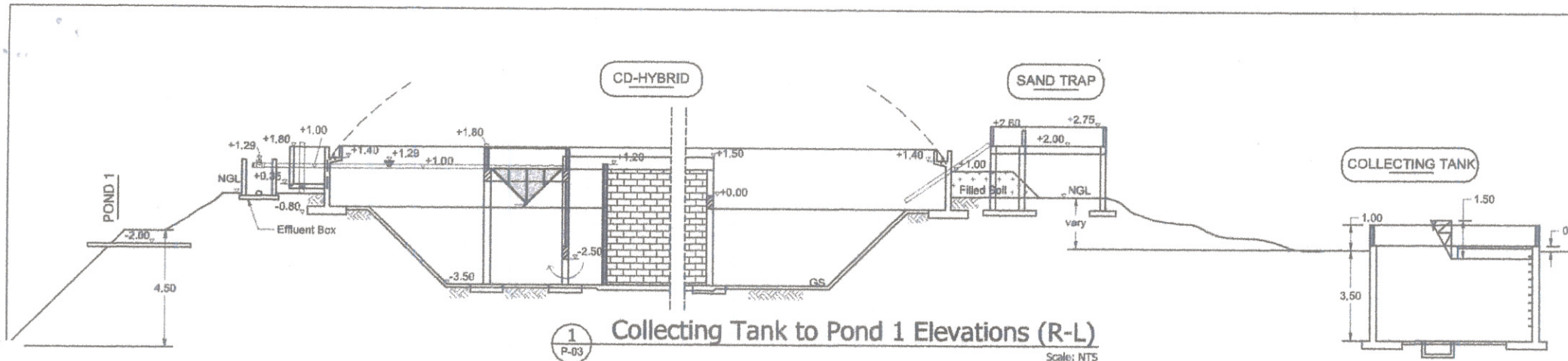
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Master Plumber / Sanitary Engineer





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TH Electrical Engineer: Krie Ukkit-Anurak

TH Environmental Engineer: Alongkorn Siripat

TH Mechanical Engineer: Sarawoot Amornara

Master Plumber / Sanitary Engineer

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(R-L); CD-HYBRID - Sludge Drying Bed  
- Pond 1 ELEVATIONS (L-R); EB Plan;  
EB Elevation; CB Plan; CB Elevation

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P-03

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Total Pages:

## Appendix B. Health and Safety Risks Management Plan of CPA 21

| Hazard                                   | Possible Harm   | Source / Cause  | Prevention / Minimization   | Person/s Responsible                          |
|--|---|---|---|---|
| <b>physical</b>                          |   |   |   |   |
| Noise                                    | discomfort, hearing damage  | pig squeals   | <ul style="list-style-type: none"> <li>- pigs consistently feed to prevent stress</li> <li>- tunnel ventilated pig houses confine noise</li> <li>- PPEs (ear protection)</li> </ul>   | Farm Personnel                                |
|  |   | running machineries and vehicles  | <ul style="list-style-type: none"> <li>- install noise-control devices, when applicable</li> <li>- regular equipment inspection and maintenance</li> <li>- limit noise-generating activities during day time</li> <li>- rotating work schedule</li> <li>- signage and warnings</li> <li>- PPEs (ear protection)</li> </ul>                          | Farm Manager<br>Engineering<br>Farm Personnel |
| vibration                                | discomfort, ergonomic and nerve injuries, fatigue                           | running machineries   | <ul style="list-style-type: none"> <li>- install shock absorber</li> <li>- ensure all loose equipment are securely placed</li> <li>- regular equipment inspection and maintenance</li> <li>- signage and warnings</li> <li>- rotating work schedule</li> </ul>  | Farm Manager<br>Engineering<br>Farm Personnel |
| electricity                              | shock, electrocution, burns   | faulty machineries and power lines  | <ul style="list-style-type: none"> <li>- get services of a licensed electrician</li> <li>- consult equipment manual</li> <li>- regular equipment inspection and maintenance</li> </ul>  | Farm Manager<br>Engineering<br>Farm Personnel |
|  |   | improper use (or servicing) of electrical equipment   | <ul style="list-style-type: none"> <li>- restrict access to equipment</li> <li>- signage and warnings</li> <li>- train staff (consult equipment manual)</li> <li>- ensure electricians are provided with proper PPEs for working with electrical equipment (insulated gloves, boots, etc.)</li> </ul>   |   |
| heat                                     | burns   | running machineries (hot surfaces, vapors, liquids)   | <ul style="list-style-type: none"> <li>- use insulation where possible</li> <li>- install machine guards</li> <li>- signage and warnings</li> <li>- ensure workers wear proper PPE such as long sleeved shirts.</li> </ul>  | Farm Manager<br>Engineering<br>Farm Personnel |
|  | discomfort, heat exhaustion, heat stroke                                    | adverse hot weather<br>working in enclosed spaces with limited ventilation                                      | <ul style="list-style-type: none"> <li>- adequate hydration and rest breaks</li> </ul>  | Farm Manager<br>Farm Personnel                |
| dust                                     | irritation, respiratory distress / diseases                                 | Feeds, ambient dust   | <ul style="list-style-type: none"> <li>- Tunnel ventilated pig houses</li> <li>- calm work pacing to avoid exciting the pigs</li> <li>- thorough cleaning of indoor spaces</li> <li>- PPEs (mask)</li> </ul>  | Farm Personnel                                |
| poor lighting                            | eye strain, can't see hazards   | unlit / inadequately lit areas  | <ul style="list-style-type: none"> <li>- install light sources</li> <li>- carry portable light sources</li> </ul>   | Farm Manager<br>Engineering                   |
| <b>chemical</b>                          |   |   |   |   |
| harmful gases, dust, vapors (inhalation) | discomfort (odor), asphyxiation, poisoning, respiratory distress / diseases | degrading organic wastes  | <ul style="list-style-type: none"> <li>- measures for odor control (see Table 5)</li> <li>- signage and warning</li> <li>- train staff (handling hazardous substances and wastes and working in confined spaces; review MSDS / product information sheets)</li> <li>- PPEs (mask)</li> <li>- ensure first aid kits are readily available</li> </ul> | Farm Manager<br>Engineering<br>PCO            |
|  |   | hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.) |   |   |
|  |   | fuel burning (machineries, vehicles)  | <ul style="list-style-type: none"> <li>- air pollution control device</li> <li>- regular equipment inspection and maintenance</li> </ul>  | Farm Manager<br>Engineering<br>PCO            |

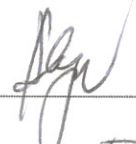
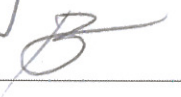

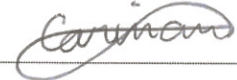
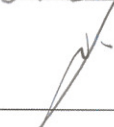
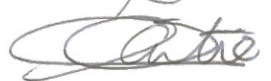
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| hazardous substances (contact, ingestion)                | irritation, burns, poisoning, skin problems        | hazardous substances (cleaning and pest control chemicals, veterinary medicines, fuels, hazardous wastes, etc.) | <ul style="list-style-type: none"><li>- proper labeling, containers, and storage</li><li>- restrict access to chemical and hazardous waste storage</li><li>- train staff (handling hazardous substances and wastes; review MSDS / product information sheets)</li><li>- only competent staff should administer veterinary medicines</li><li>- ensure first aid kits are readily available</li><li>- PPEs (gloves, eye glasses)</li></ul>  | Farm Manager<br>PCO            |
| biological   |  |   |   |                                |
| pathogens / infectious agents, toxins and other products | various infectious diseases, parasites, irritation | pathological materials / tissues  | <ul style="list-style-type: none"><li>- proper disposal of animal and veterinary wastes (see Table 5)</li><li>- quarantine measures</li><li>- good housekeeping practices (disinfection)</li><li>- practice hygienic practices (especially hand hygiene)</li><li>- workers' regular health examination</li><li>- train staff (animal handling, proper waste handling and disposal)</li><li>- PPEs (gloves, etc)</li></ul>   | Veterinarians<br>PCO           |
|  |  | sick animals  |   |                                |
|  |  | animal excretions and fluids  |   |                                |
|  |  | manure (wastewaters)  |   |                                |
|  |  | Sludge  |   |                                |
|  |  | veterinary wastes (especially sharps)   |   |                                |
|  |  | potential disease carriers (objects, people, dust)  | <ul style="list-style-type: none"><li>- proper disposal of odorous wastes (see Table 5)</li><li>- good housekeeping practices</li><li>- keep an acceptable number of cats at the farm</li><li>- pest control</li></ul>  | Farm Personnel<br>PCO          |
| insects, pests, vermin                                   |  |   |   |                                |
| ergonomic  |  |   |   |                                |
| ergonomic stress   | ergonomic injuries                                 | repetitive actions, forceful exertions, sustained awkward posture   | <ul style="list-style-type: none"><li>- use aid of appropriate equipment for lifting/moving heavy objects</li><li>- use of proper lifting techniques</li><li>- buddy system</li><li>- job rotation / adequate rest (in between tasks)</li></ul>   | Farm Manager<br>Farm Personnel |
|  |  | improper use of equipment   | <ul style="list-style-type: none"><li>- train staff (consult manuals)</li></ul>   |                                |
|  |  | use of faulty equipment   | <ul style="list-style-type: none"><li>- repair or replace equipment</li></ul>   | Farm Manager<br>Farm Personnel |
| other accidents and contingencies                        |  |   |   |                                |
| slips, trips, falls                                      | injuries, wounds, contusions                       | spills (slips)  | <ul style="list-style-type: none"><li>- proper maintenance of walkways</li><li>- daily safety briefings and regular trainings</li><li>- barricading of work areas</li><li>- PPEs</li></ul>  | Farm Manager<br>Farm Personnel |
|  |  | various objects, debris (trips)   |   |                                |
|  |  | heights, slips (falls)  |   |                                |
| entanglement   | injuries, wounds, strangulation                    | machineries   | <ul style="list-style-type: none"><li>- install machine guards</li><li>- tie back long hair</li><li>- wear long sleeve shirts</li><li>- avoid wearing loose-fitting clothes and personal accessories</li><li>- regular equipment inspection and maintenance</li></ul>   | Farm Manager<br>Farm Personnel |
| blows, punctures   | injuries, wounds, contusions                       | pig handling  | <ul style="list-style-type: none"><li>- animal restraints</li><li>- ensure enough space to maneuver</li><li>- train staff (animal handling techniques)</li><li>- wear appropriate PPE (boots, gloves etc)</li></ul>   | Farm Personnel                 |
| Sharps   | sharps injuries, wounds                            | veterinary activities, waste handling   | <ul style="list-style-type: none"><li>- ensure only trained personnel conduct veterinary activities</li><li>- PPEs (gloves, goggles)</li></ul>  | Farm Manager<br>PCO            |
| fires  | Burns  | faulty electrical systems, explosions, fugitive gases, accidental ignition                                      | <ul style="list-style-type: none"><li>- comply with requirements and regulations of fire authorities</li><li>- provide adequate and proper (multipurpose) fire protection equipment</li><li>- designate smoking areas away from digester, gas tanks, and electrical equipment and storage of combustible materials (compost, sludge, chemicals))</li><li>- regular clearing of vegetation near farm structures</li><li>- signage and warnings</li><li>- train staff (on contingency plan and proper equipment use)</li><li>- regular inspection and maintenance of electrical systems and equipment</li></ul> | Farm Manager<br>Farm Personnel |

|       |                |  |  |                                |
|-------|----------------|--|--|--------------------------------|
| blast | blast injuries | excessive pressure in biodigester, fugitive gases, contained gases in confined spaces, fires | <ul style="list-style-type: none"><li>- keep sources of heat, including machineries, at a safe distance from biogas facility</li><li>- prohibit smoking and use of cellphones around biogas system and gas storage facilities</li><li>- regular inspection and maintenance of MRF</li><li>- signage and warnings</li><li>- consider the purchase of gas monitoring equipment</li></ul> | Farm Manager<br>Farm Personnel |
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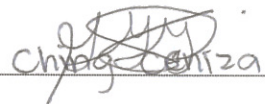
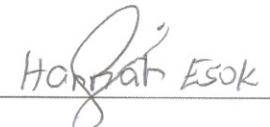
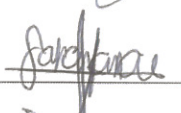
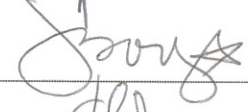
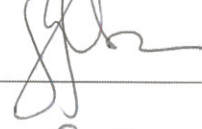
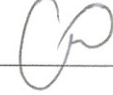
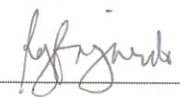
**EXCELSIOR FARMS, INC. – BIOGAS PROJECT  
CLEAN DEVELOPMENT MECHANISM (CDM)  
Methane Recovery and Combustion from Animal Waste Management System  
Stakeholders' Consultation**

February 12, 2016

| Name                     | Organization / Affiliation | Address               | Contact Numbers                | Signature   |
|--------------------------|----------------------------|-----------------------|--------------------------------|---|
| AGUSTIN LEYSON           |                            | CAG-SAC               |                                |    |
| Emmanuel Bernal Resident |                            | Davao                 |                                |    |
| Kathlyn Dizon            | Resident                   | Pinamungajan          | 09420258169                    | K dizon   |
| Apple Jane Acosta        | Resident                   | Pinamungajan          | 09330449027                    |    |
| Angelica Cariman         | Resident                   | Pinamungajan          | 09436619060                    |   |
| Ma. Jugin Baring         | Resident                   | Pinamungajan          | 09067832833<br><del>0926</del> | Al Baring...  |
| Jose C. Diaz, Jr.        | DBS                        | Malate                | 09202472607                    |  |
| Proa M. Esguerra         | LMP                        | Uban City             | 6917-422755                    | Proa M. Esguerra  |
| AMELIO SEGARRA           | LBP                        | TRINIDADALAYONOS City | 09178662056                    | Amelio Segarra  |
| Emmanuel Caritiz         | Excelior                   | Davao                 |                                |  |


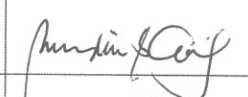

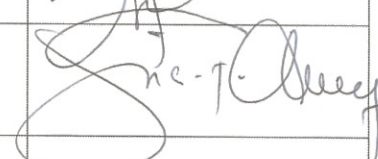
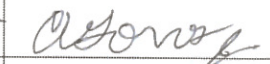
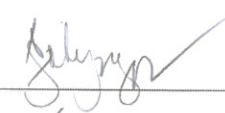
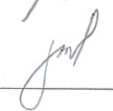
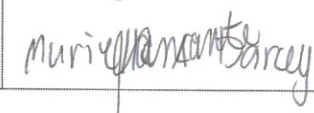
**EXCELSIOR FARMS, INC. – BIOGAS PROJECT  
CLEAN DEVELOPMENT MECHANISM (CDM)  
Methane Recovery and Combustion from Animal Waste Management System  
Stakeholders' Consultation**

February 12, 2016

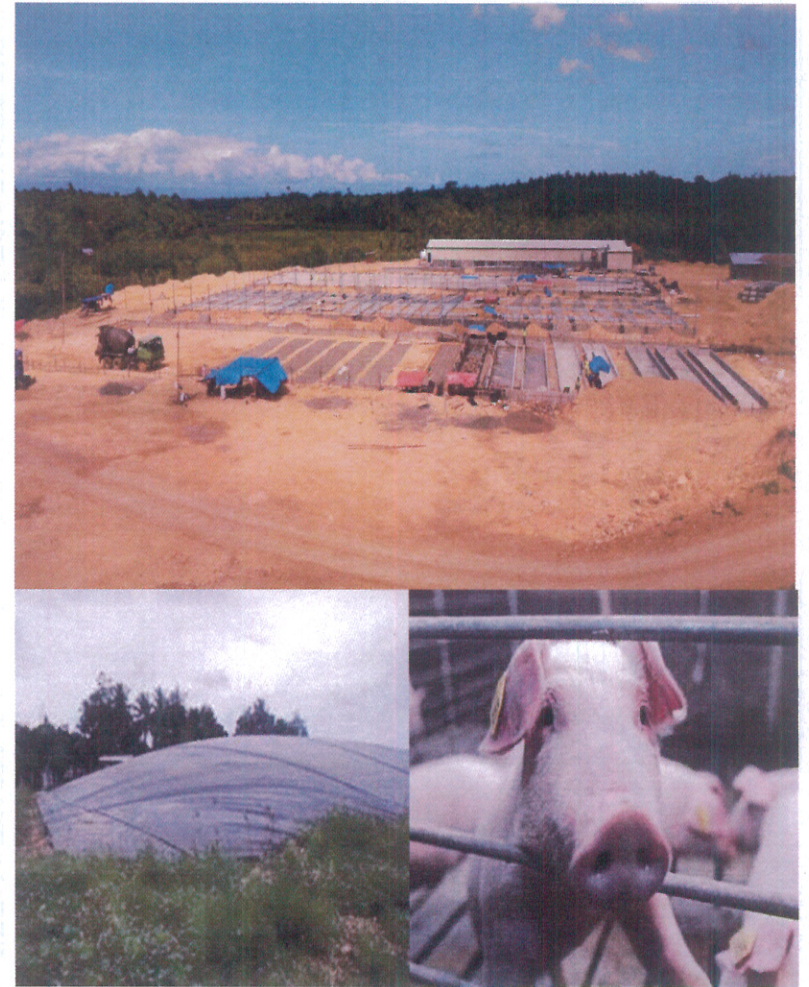
| Name                   | Organization /<br>Affiliation | Address                       | Contact Numbers | Signature   |
|------------------------|-------------------------------|-------------------------------|-----------------|---|
| Ching L. Ceniza        | Resident                      | Pinamungajan, <sup>Cebu</sup> | 09324767268     |    |
| Ella Jean L. Baricuato | Resident                      | Pinamungajan, Cebu            |                 |   |
| Hannah A. Esok         | Resident                      | Pinamungajan, Cebu            | 09183013267     |    |
| Jahara Mae P. Gabutero | Resident                      | Pinamungajan Cebu             | 09224441766     |    |
| Rebeby Henvos          | Excelsior                     | Pinamungajan, Cebu            | 09179860538     |   |
| LOWELL LABOR           | EXCELSIOR                     | PINAMUNGAJAN                  | 09178200380     |  |
| CHAD VILLANIL          | EXCELSIOR                     | PINAMUNGAJAN                  | 09267409654     |  |
| Renita Tascardo        | Excelsior                     | Pinamungajan                  |                 |  |

**EXCELSIOR FARMS, INC. – BIOGAS PROJECT  
CLEAN DEVELOPMENT MECHANISM (CDM)  
Methane Recovery and Combustion from Animal Waste Management System  
Stakeholders' Consultation**

February 12, 2016

| Name                  | Organization /<br>Affiliation | Address            | Contact Numbers | Signature   |
|-----------------------|-------------------------------|--------------------|-----------------|---|
| Mary Jane Gempisan    | LGU - Mun. Agr. Office        | Pob. Pina. Cebu    | 09222539074     |    |
| Bernadette B. Ati     | Municipal Health Office       | Pinamungajan, Cebu | 09152496086     |    |
| Cornelita Yape        | LGU - Mun. Agric. Off.        | Tutay, Pina. Cebu  | 09092375534     |    |
| JULINERWIN ALDAS      | LGU - SB MEMBER               | MANGOTO, PINA ,    | 09473443746     |    |
| ALFONSO GONZALEZ      | J.O                           | GUMBAW - AM        | 09224951955     |   |
| Josephine Benoyan     |                               | Pinamungajan, Cebu | 09057719981     |  |
| Jiselle Mae D. Dejita | L.G.U. Mun. Engr. Dept.       | Pob.               | 09156356873     |  |
| Murielle A. Darcy     |                               | Pinamungajan, Cebu |                 |  |





**Stakeholders' Consultation**



## **PROGRAM**

Registration ..... 1:30 - 2:00 pm  
Opening Program ..... 2:00 - 2:15 pm

**LANDBANK** ..... 2:16 – 3:00 pm

*Climate Change and Clean*

*Development Mechanism .... **Jose C. Diaz, Jr.***  
*CES, EPMD*

*Carbon Finance Support Facility.. **Amelito Segarra, Jr.***  
*Program Officer, EPMD*

Snacks ..... 3:00 - 3:15 pm

*BIOGAS Project ..... Consultant/Biogas Supplier*

*Environmental Management*

*Plan & Benefits ..... Farm Manager*  
*Excelsior Farms*

**OPEN FORUM** ..... 4:00 – 5:00 pm

Closing Remarks

January 27, 2015

HON. GLENN F. BARICUATRO  
Municipal Mayor  
Poblacion, Pinamungajan, Cebu 6039

Municipality of Pinamungajan  
Pinamungajan, Cebu

**RECEIVED**  
Mayor's Office

01/29/15

11:45 AM

Dear Sir:

Warm Greetings!

The Excelsior Farms, Inc., in cooperation with the Land Bank of the Philippines, will conduct a Stakeholder Consultation for the Clean Development Mechanism (CDM) proposed Methane Recovery and Combustion System. This activity will be conducted on February 12, 2016, 1:00pm-5:00pm at 2<sup>nd</sup> Floor, Municipal Hall, Pinamungajan, Cebu.

Key points on CDM and in-depth information on the project, such as Environmental Management Plan and Sustainable Development benefits, will be presented. An open forum will be held after the presentation to allow participants to raise inquiries and clarification on the proposed CDM project.

In this regard, we would like to invite a representative from your office to participate in the consultation. Attached is the agenda of the program.

Should you need more information or confirmation of your attendance, please feel free to contact us at tel. no(s). (032) 316-3864 or 0917-620-5598.

Hope to hear your favorable reply.

Thank you.



January 27, 2016

**GINOONG JODJET L. MANGUILIMOTAN**

Punong Barangay

Barangay Sacsac, Pinamungajan, Cebu 6039

Mahal naming Punong Barangay Jodjet L. Manguilimotan:

Pagbati!

Kami po sa Excelsior Farms Inc., sa pakikipag-ugnayan at pakikipagtulungan ng Land Bank of the Philippines, ay magdaraus ng isang pampublikong konsultasyon sa mga kinauukulan o stakeholders na malapit sa aming mga proyekto upang mapag-usapan ang plano naming pagtatayo ng Biogas Project. Ito po ay magaganap sa ika 12<sup>th</sup> ng buwang Pebrero, 2016 sa ganap na ala-una ng hapon (1:00pm) sa 2<sup>nd</sup> Floor, Municipal Hall, Pinamungajan, Cebu.

Kasama po sa mga mahahalagang paksang pag-uusapan ay ang tungkol sa Clean Development Mechanism, Environmental Management Plan, at mga benepisyong maidudulot ng aming Biogas Project. Magkakaroon din po ng maiksing palitan ng mga kuro-kuro, suhestyon, paglilinaw at rekomendasyon patungkol sa nabanggit na proyekto.

Dahil po dito, kami po ay malugod na nag-aanyaya sainyo na dumalo sa mahalagang pagpupulong na ito. Kalakip sa liham na ito ay ang programa ng mga paksang pag-uusapan natin.

Maaari po kayong makipag-ugnayan sa amin sa telepono numero (032) 316-3864 o 0917-620-5598 para sa mga detalye ng nasabing konsultasyon.

Maraming Salamat po!



2-2-14

KONSEHAL T-TINUYAN LEYSON



February 9, 2016

**MR. BENITO FERNANDEZ**

Chairman, Agriculture Committee  
Municipality of Pinamungajan, Cebu 6039

Dear Sir:

Warm Greetings!

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Should you need more information or confirmation of your attendance, please feel free to contact us at tel. no(s). 032-316-3864 or 09176205598.

Hope to hear your favorable reply.

Thank you.

62-15-16  
By: *[Signature]*  
Susan Tigan



January 27, 2016

Ginoo/Ginang BERNALYN BORLADO  
Barangay Sacsac Resident  
Sacsac, Pinamungajan, Cebu 6039

MS. BORLADO:

Received:

1. Bernalyn Borlado 02-11-16
2. Rosalita Daban 02-11-16
3. Lenny Zgnano
4. Casquijo, Judith
5. Perias, Meljon
6. LIPAPATO, MARY JO
7. YLANAN, NYMPHA
8. LELIA Q. REQUINA
9. \_\_\_\_\_
10. \_\_\_\_\_

Pagbati!

Ang Excelsior Farms, Inc. po sa pakikipag-ugnayan at pakikipagtulungan ng Land Bank of the Philippines, ay magdaraus ng isang pampublikong konsultasyon sa mga kinauukulan o stakeholders na malapit sa aming proyekto upang mapag-usapan ang plano naming pagtatayo ng Biogas Project. Ito po ay gaganapin sa Pebrero 12, 2016, sa ganap na ala-una ng hapon (1:00pm) sa 2<sup>nd</sup> Floor, Municipal Hall, Pinamungajan, Cebu.

Kasama po sa mga mahahalagang paksang pag-uusapan ay ang tungkol sa Clean Development Mechanism (CDM), Environmental Management Plan, at mga benepisyong maidudulot ng aming Biogas Project. Magkakaroon din po ng maiksing palitan ng mga kuro-kuro, suhestyon, paglilinaw at rekomendasyon patungkol sa nabanggit na proyekto.

Dahil po dito, malugod naming kayong inaanyayahan na dumalo sa nasabing konsultasyon o pagtitipon. Kalakip sa liham na ito ay ang programa ng mga paksang pag-uusapan natin.

Maaari po kayong makipag-ugnayan sa amin sa telepono numero (032) 316-3864 o 0917-620-5598 para sa mga detalye ng nasabing konsultasyon.

Maraming Salamat po!



# NOTICE OF PUBLIC CONSULTATION

To All Concerned Stakeholders:

Stakeholder consultation on the Clean  
Development Mechanism (CDM)  
project/ Proposed Methane Recovery  
and Combustion System (Biogas  
Project) to be  
conducted on:

DATE : FEBRUARY 12, 2016

TIME : 1:00PM – 5:00PM

VENUE : MUNICIPAL HALL,  
PINAMUNGAJAN, CEBU

EXCELSIOR FARMS INC.  
3/F Chua - Tiam Bldg. A del Rosario St.  
Guizo Mandaue City Cebu

Received by: *[Signature]*  
2/12/16



# NOTICE OF PUBLIC CONSULTATION

To All Concerned Stakeholders:

Stakeholder consultation on the Clean  
Development Mechanism (CDM)  
project/ Proposed Methane Recovery  
and Combustion System (Biogas  
Project) to be  
conducted on:

DATE : FEBRUARY 12, 2016

TIME : 1:00PM – 5:00PM

VENUE : MUNICIPAL HALL,  
PINAMUNGAJAN, CEBU

*2-4-16*  
*Excelsior Farms Inc.*

EXCELSIOR FARMS INC.  
3/F Chua - Tiam Bldg. A del Rosario St.  
Guizo Mandaue City Cebu

January 27, 2015

**The Municipal Environmental and Natural Resources Officer**  
Municipality of Pinamungajan  
Municipal Hall, Pinamungajan, Cebu 6039

Dear Sir/Madam:

Warm Greetings!

The Excelsior Farms, Inc., in cooperation with the Land Bank of the Philippines, will conduct a Stakeholder Consultation for the Clean Development Mechanism (CDM) proposed Methane Recovery and Combustion System. This activity will be conducted on February 12, 2016, 1:00pm-5:00pm at 2<sup>nd</sup> Floor, Municipal Hall, Pinamungajan, Cebu.

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Should you need more information or confirmation of your attendance, please feel free to contact us at tel. no(s). (032) 316-3864 or 0917-620-5598.

Hope to hear your favorable reply.

Thank you.

*Received  
Pinamungajan  
1/29/2016, 12:02 P.M.*





January 27, 2015

**THE MUNICIPAL HEALTH OFFICER**  
Municipality of Pinamungajan, Cebu  
Poblacion, Pinamungajan, Cebu 6039

Dear Sir/Madam:

Warm Greetings!

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Should you need more information or confirmation of your attendance, please feel free to contact us at tel. no(s). (032) 316-3864 or 0917-620-5598.

Hope to hear your favorable reply.

Thank you.

*Received by: [Signature]  
12/27/16  
12:00 Noon*



January 27, 2016

**THE MUNICIPAL AGRICULTURAL OFFICER (MAO)**  
Municipality of Pinamungajan  
Municipal Hall, Pinamungajan, Cebu 6039

Dear Sir/Madam:

Warm Greetings!

The Excelsior Farms, Inc. in cooperation with the Land Bank of the Philippines, will conduct a Stakeholder Consultation for our proposed Biogas Project on February 12, 2016, 1:00pm-5:00pm at 2<sup>nd</sup> Floor, Municipal Hall, Pinamungajan, Cebu.

Key points on CDM and in-depth information on the project, such as Environmental Management Plan and Sustainable Development benefits, will be presented. An open forum will be held after the presentation to allow participants to raise inquiries and clarification on the proposed Biogas Project.

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Should you need more information or confirmation of your attendance, please feel free to contact us at tel. no(s). (032) 316-3864 or 0917-620-5598.

Hope to hear your favorable reply.

Thank you.



## MINUTES OF STAKEHOLDERS' CONSULTATION

### REGISTRATION OF PARTICIPANTS

1. Registration of participants was opened at 1:30PM. Actual conduct of Stakeholders' Consultation activity was started 3:00PM to allow for the arrival and attendance of as many participants as possible.
2. Thirteen (13) community members from Pinamungajan, Cebu attended the activity. These are mostly residents of various *sitios* in Barangay Sacsac, where the piggery farm of Excelsior Farms, Inc. is located.
3. Ms. Mary Jane Gempisan and Ms. Carmelita Yape represented the Municipal Agricultural office of the local government of Pinamungajan.
4. Ms. Jiselle Mae Dejito represented the Municipal Engineering Department of the local government of Pinamungajan.
5. Ms. Bernadette Atil represented the Municipal Health Office of the local government of Pinamungajan.
6. Mr. Julius Erwin Aldas, Municipal Councilor, also attended as one of the representatives of the local government of Pinamungajan.
7. Attendees from Land Bank of the Philippines included the following:
  - a.) Mr. Jaime S. Cruz – AO, LBP Cebu LC; and
  - b.) Mr. Jose C. Diaz, Jr. and Mr. Amelito L. Segarra Jr. – Program Officers, EPMD;
8. Total attendance to the activity is twenty-six (26) pax, including employees and representatives for Excelsior Farms, Inc..

### OPENING PROGRAM

9. Mr. Rebeboy Hervas of \_\_\_\_\_ who also acted as emcee for the event, opened the proceedings with a general introduction and prayer.
10. The Hon. Glenn Baricuatro, Municipal Mayor, was called on to deliver a short message for the attendees of the Stakeholders Consultation. He stated that Excelsior Farms, Inc. is investing a sizable amount of capital in putting up the piggery farm in Pinamungajan, which represents livelihood and employment opportunities for the municipality and its constituents. He reminded the audience that the forum is a way for knowing more about Excelsior Farms, Inc., and of understanding the opportunities as well as possible issues which may come with this new development in the municipality. In closing, Mayor Baricuatro thanked the farm owners and LBP for facilitating this activity that will give clear information about the biogas project and answer the issues and concerns of his constituents.

**Note:** Mayor Baricuatro left the event immediately after giving his opening message, before his attendance could be formally taken.



## **ABOUT THE CLEAN DEVELOPMENT MECHANISM (CDM) AND CARBON FINANCE SUPPORT FACILITY (CFSF)**

11. Mr. Jose Diaz, Jr. discussed topics on Climate Change and CDM; and Mr. Amelito Segarra Jr. presented Landbanks' CFSF.
12. The following were the highlights of the topics presented:
  - a.) The general overview of the CDM process to be implemented by LBP with the World Bank (WB), as regards validation to Carbon Credits, issuance of CERs (emission reduction certificates), and the corresponding trading of the certificates for these CERs at the negotiated carbon market price with WB;
  - b.) The United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, as that which gave rise to the CDM--- were mentioned to participants to explain why outside institutions (i.e. WB) and several developed countries are interested in 'purchasing' Carbon Credits or CERs from developing nations;
  - c.) Basic concepts on Climate Change and Greenhouse Gas emissions, in relation to Global Warming and its perceived effects, were also discussed;
  - d.) Carbon Credits and issuance of CERs were emphasized to require accurate and regular reporting of methane gas production data from operating biogas digesters, and validation and documentation of the reported data by designated authorities;
  - e.) LBP as a government institution not only with a mandate for countryside development, but with a clear vision for ensuring and implementing environmental compliance and environmental protection initiatives;
  - f.) LBP to provide institutional assistance as regards CDM validation processes and required documentation, and technical assistance.

The following are the highlights of his presentation:

- a.) Definition and Objectives of an EMP.
- b.) Impacts identified in the operation of a piggery farm:
  - Pig manure;
  - Foul odor;
  - Wastewater emission.
- c.) Prevention/Mitigation of Impacts: Pig Manure.
  - Implementation of 'Dry Cleaning System' in design and cleaning of pighouses at the farm;
  - Biogas digester facility as main system for handling pig manure (and wastewater) from pighouses;
  - Dried sludge from treatment of animal manure to be used as fertilizer for agronomic and horticultural crops.
- d.) Prevention/Mitigation of Impacts: Foul odor.
  - Biogas digester facility as main system for mitigation of foul odor generated wastewater from pighouses;
  - Biogas generated to be 'trapped' and directed to a combustion engine to be converted to electricity for use at farm operations.

e.) Prevention/Mitigation of Impacts: Wastewater.

- Biogas digester facility as main system for handling and treatment of wastewater from pighouses;
- Post-treatment ponds integrated in design of biogas digester facility, ensuring effective treatment of wastewater;
- Treated wastewater will be discharged back to the pighouses (for reuse);

#### OPEN FORUM/ISSUES AND CONCERNS

14. The participants were then given the chance to raise questions, issues, or concerns regarding the Biogas System project at Excelsior Farms, Inc. in Barangay Sacsac.

| Questions, Issues, or Concerns Raised  | Responses Provided  |
|--|---|
| Ms. Josephine Benoya, a resident of Barangay Sacsac, inquired if in the event of cooking food using methane gas for fuel, will there be any effect on the quality of the food being cooked (i.e. will the methane gas alter the composition of food being cooked, because methane gas is used?)? | Emmanuel Caintic, DVM, of Excelsior Farms, Inc. responded that cooking with methane gas as fuel source does not alter the quality of food being cooked. He explained that it is essentially similar to ordinary cooking, and use of methane has no altering 'chemical' effect on the composition of food being cooked.<br><br>For the record, Mr. Caintic also clarified that methane gas generated from the biogas system to be constructed at the farm will not be used as fuel source for direct cooking processes. He said that the methane gas generated will be converted to electric energy as power source for farm operations. |
| Mr. Rebeboy Hervas of Excelsior Farms, Inc. directed this question at LBP Program Officers during the discussion: What will happen in the event that Excelsior Farms, Inc. does not get included into the CDM Program?   | Mr. Amelito Segarra Jr., Program Officer of LBP, responded as thus: If, for whatever reason, Excelsior farms, Inc. does not get included into the CDM program, this will not affect the business relationship and/or ongoing transactions between the farm management and LBP, as long as Excelsior Farms, Inc. continues to comply with the requirements (environmental, legal, administrative, etc.) set by LBP related to whatever dealings or transactions between the two parties.   |

15. After the Open Forum, Mr. Jose Diaz Jr., of LBP-EPMD, enjoined the community members to help in dispelling any misinformation that may be encountered outside of the Stakeholders' Consultation activity, and help spread correct information more about the positive aspects and benefits expected from the biogas system project to be built and operated at Excelsior Farms, Inc.

16. The municipal officials and barangay community residents expressed their general agreement and support for the biogas project

#### **CLOSING REMARKS**

17. Mr. Rebeboy Hervas of Excelsior Farms, Inc. and emcee of the event, formally closed the proceedings by delivering some short closing remarks. He duly thanked participants of this activity, especially the community members of Barangay Sacsac, for taking the time and effort to attend and actively join in the discussions. The Stakeholders' Consultation activity was then formally ended at 5:00PM of the same day.

**Prepared by:**

  
**AMELITO L. SEGARRA JR.**

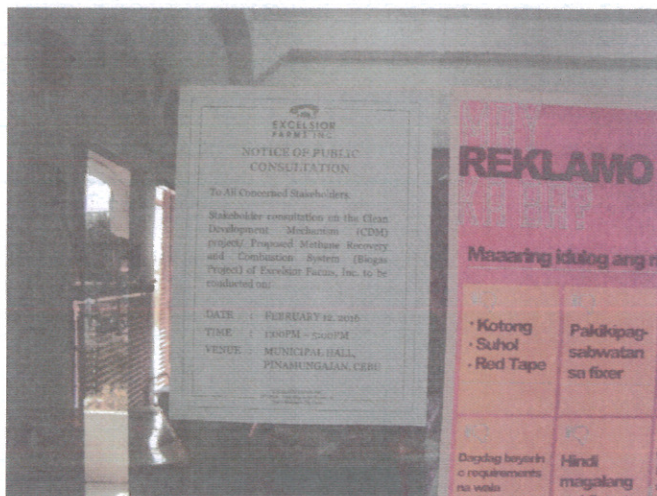
Program Officer

Environmental Program and Management Department

Land Bank of the Philippines



## Photos, NOTICE OF PUBLIC CONSULTATION



#### Appendix D. Site Evacuation Plan



#### CPA 21 Point Persons:

Farm Manager:  
Pollution Control Officer:  
Biodigester Supplier: Alterna Verde

#### Local Emergency Contact Details:

Pinamungahan Police Station: 032 468 9911  
Pinamungahan Fire Marshal: 032 468 9072, 513 2698  
Dr. Jose Ma. V. Borromeo Memorial District Hospital: 032 468 9264