**HEALTH AND SANITATION**

***Situational Analysis***

Sanitation is the hygienic means of promoting health through prevention of human contact with the hazards of wastes as well as the treatment and proper disposal of sewage or wastewater. Hazards can be either physical, microbiological, biological or chemical agents of disease.

The World Health Organization (WHO) states that sanitation refers to the provision of facilities and services for the safe disposal of human and animal wastes. Inadequate sanitation is a major cause of disease. Improving sanitation is known to have a significant beneficial impact on health both in households and across communities.

***Health Resources***

**Health Facilities and Services**

There are two RHU’s in Mangaldan, the Rural Health Unit I is located in Poblacion and RHU II is located in Bantayan. Rural Health Unit I is manned by one (1) physician, two (2) nurses, eleven (11) midwives, one (1) dentist, one (1) dental aide and one (1) sanitary inspector one (1) medical technologist and one (1) ambulance driver two (2) ambulance aide. Rural Health Unit II is manned by one (1) nurse, six (6) midwives. Rural Health Unit I covers nineteen (19) barangays, namely, Alitaya, Amansabina, Anolid, Banaoang, Bari, Buenlag, David, Embarcadero, Gueguesangen, Guesang, Guiguilonen, Guilig, Landas, Malabago, Navaluan, Nibaliw, Osiem, Poblacion, and Tebag. Eleven barangays is under the coverage of Rural Health Unit II, namely, Bantayan, Bateng, Inlambo, Lanas, Maasin, Macayug, Palua, Pogo, Salaan, Salay and Talogtog. There are 434 registered/accredited Barangay Health Workers in 2014, of which 282 from RHU I and 152 from RHU II.

The Health Centers deliver health services to the people by implementing the different health programs such as Comprehensive Maternal and Child Health Care which includes Maternal Care, Family Planning, Expanded Program on Immunization, Control of Diarrheal diseases, Dental Program, Nutrition Program; National Tuberculosis Program; National Leprosy Control Program and Multi-Drug Therapy; Environmental Health Sanitation; Control of Acute Respiratory Infection Program; Control and Prevention of Diseases and Primary Health Care., Prevention and Control of Sexually Transmitted diseases/HIV/AIDS.

The Magna Carta for Health Workers is partially implemented in the municipality. Health workers were paid their benefits mandated under the Act. To date, financial benefits given to the municipal government health workers are namely: subsistence allowance, clothing allowance, laundry allowance, salary differentials and representation and transportation allowance (RATA) and 5% of hazard pay.

**Table 27: Medical Health Facilities and Personnel, 2015**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Barangay** | **Type of**  **Medical Health Facilities** | **Capacities**  **(No. of beds)** | **Physical Condition** | **No. of Doctors** | **No. of Nurses** | **No. of Midwifes** | **No. of Sanitary**  **Inspector** | **Medtech Ambulance Driver** |
| 1. Alitaya | BHS | 0 | Needs Improvement (N.I.) | 1 | 3 | 1 | 1 | 1 - Med. Tech  1 - dentist  1 - Ambulance Driver |
| 2.Amansabina | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 3. Anolid | BHS | 0 | Good | 1 |
| 4.Banaoang | BHS | 0 | N.I. | 1 |
| 5.Bantayan | Rural Health Unit II | 0 | Good | 1 |
| 6.Bari | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 7.Bateng | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 8.Buenlag | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 9.David | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 10.Embarcadero | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 11.Gueguesangen | BHS | 0 | Good | 1 |
| 12.Guesang | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 13.Guiguilonen | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 14.Guilig | BHS | 0 | Good | 1 |
| 15.Inlambo | BHS | 0 | Good | 1 |
| 16.Lanas | BHS | 0 | Good | 1 |
| 17.Landas | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 18.Maasin | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 19.Macayug | DSWD HALL | 0 | BHS located at Brgy. Hall | 1 |
| 20.Malabago | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 21.Navaluan | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 22.Nibaliw | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 23.Osiem | BHS | 0 | N.I. | 1 |
| 24.Palua | BHS | 0 | N.I. | 1 |
| 25.Poblacion | Rural Health Unit I | 0 | Good | 1 |
| Urgent Care Clinic | 10 | Good | 1 |
| 26.Pogo | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 27.Salaan | BHS | 0 | Good | 1 |
| 28.Salay | BHS | 0 | BHS located at Brgy. Hall | 1 |
| 29.Talogtog | BHS | 0 | Good | 1 |
| 30.Tebag | BHS | 0 | Good | 1 |
| TOTAL |  | 10 |  | 1 | 3 | 16 | 1 | 1 |

*Source: Municipal Health Office*

***Note: Barangay Health Stations are manned by Rural Health Midwives. One Midwife covers***

***1-2 barangays.***

The standards in RHU Personnel Population per Republic Act (RA) No. 1082 on each category depending on the size of the local government catchment population. The Municipality of Mangaldan by year 2026 is expected to have more medical personnel as the population increases. The Municipality falls under category VIII based on the projected population CY 2016-2026 computed as follows:

**Table 28: Projected Medical Personnel**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Projected Population** | **Personnel** | | | |
| **Doctor** | **Nurse** | **Midwife** | **RSI** |
| 2015 | 106,331 | 2 | 4 | 4 | 3 |
| 2016 | 107,883 | 2 | 4 | 4 | 3 |
| 2017 | 109,459 | 2 | 4 | 4 | 3 |
| 2018 | 111,057 | 2 | 4 | 4 | 3 |
| 2019 | 112,678 | 2 | 4 | 4 | 3 |
| 2020 | 114,323 | 2 | 4 | 4 | 3 |
| 2021 | 115,992 | 2 | 4 | 4 | 3 |
| 2022 | 117,686 | 2 | 4 | 4 | 3 |
| 2023 | 119,404 | 2 | 4 | 4 | 3 |
| 2024 | 121,147 | 2 | 4 | 4 | 3 |
| 2025 | 122,916 | 2 | 4 | 4 | 3 |
| 2026 | 124,771 | 2 | 4 | 4 | 3 |

*Source: MPT Computation*

***General Health Situation***

**Ten Leading Causes of Morbidity**

Morbidity is a departure from a state of physical or psychological well-being, resulting from disease, illness, injury or sickness, especially where the affected individual is aware of his or her condition. According to the World Health organization (WHO), morbidity could be measures in terms of 1) number of persons who were ill 2) illnesses these persons experienced and 3) the duration of these illnesses.

In the Municipality of Mangaldan, Acute Respiratory Infection consistently topped the ranking in the list of causes of morbidity. However, the prevalence rate is declining. Communicable and non-communicable diseases continue to be the leading causes of morbidity. These infections are inevitable since bacteria, viruses, and/or germs are everywhere. People need to be more cautious and strictly practice cough manners, proper personal hygiene, environmental sanitation, hygienic food preparation and drinking boiled water to help prevent the spread of disease. Other leading causes of morbidity are pneumonia & musculoskeletal disease. These illnesses often occur among men and women age 35 years old and up since these illnesses are often times hereditary and lifestyle related. Fourteen thousand nine hundred eighty five (14,985) individuals were diagnosed with these diseases in the year 2014.

Increase health awareness among the people is one of the priorities of the LGU. This is to enhance the good health of the people to prevent illnesses. The regularity of on-site visit of medical practitioners and assigned doctors and medical staff not only in the urban area but also in the rural area makes it possible to lower the morbidity rate of the municipality. Having appropriate medical staffing is a significant consideration in some cases of illnesses.

**Table 29: Ten Leading Causes of Morbidity, 2014**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cases** | | **RHU I** | **RHU II** | **TOTAL NO.** | **Rate** |
| 1 | Acute Respiratory Infection | 4,683 | 2,298 | 6,981 | 65.42 |
| 2 | Hypertension | 2,825 | 369 | 3,194 | 29.93 |
| 3 | Skin Diseases | 945 | 270 | 1,215 | 11.39 |
| 4 | Musculo-Skeletal Disorder | 575 | 196 | 771 | 7.2 |
| 5 | Diarrheal Diseases | 554 | 192 | 746 | 7 |
| 6 | Ears, Eyes, Nose And Throat D/O | 495 | 13 | 508 | 4.76 |
| 7 | Renal Diseases | 459 | 40 | 499 | 4.66 |
| 8 | Accident And Injuries | 46 | 185 | 415 | 3.9 |
| 9 | Diabetes Mellitus | 323 | 11 | 334 | 3.1 |
| 10 | Systematic Viral Infection | 149 | 173 | 322 | 3.02 |
|  | **TOTAL CASES SEEN** | **11,054** | **3,747** | **14,985** |  |

*Source: Municipal Health Office*

**Ten Leading Causes of Mortality**

For the past years, the number one leading cause of mortality is hypertension (Table 30). Majority of the leading causes of mortality are non-communicable diseases. This can be attributed to the following factors: physical inactivity, smoking, unhealthy diet and obesity. The lifestyle of the people has a great impact on health. Because of the high cost of medicine and hospitalization for these diseases, control and prevention of complication is hardly achieved due to financial constraint of the patients.

**Table 30: Ten Leading Causes of Mortality, 2014**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cases** | | **RHU I** | **RHU II** | **Total No.** | **Rate** |
| 1 | Hypertension | 79 | 37 | 116 | 62.03 |
| 2 | Atherosclerosis | 56 | 28 | 84 | 44.9 |
| 3 | Cancer | 37 | 18 | 55 | 29.4 |
| 4 | Diabetes Mellitus | 36 | 12 | 48 | 25.4 |
| 5 | Community Acquired Pneumonia | 13 | 14 | 27 | 14.4 |
| 6 | Ischemic Heart Disease | 18 | 8 | 26 | 13.9 |
| 7 | Injuries And Accident | 24 | 1 | 25 | 13.37 |
| 8 | Chronic Obstructive Pulmonary Disease | 10 | 10 | 20 | 10.7 |
| 9 | Bronchial Asthma | 12 | 2 | 14 | 7.5 |
| 10 | Bleeding Peptic Ulcer Disease | 9 | 1 | 10 | 5.3 |
|  | **TOTAL CASES** | **294** | **131** | **425** |  |

*Source: Municipal Health Office*

**Family Planning**

The Municipal Population Office is manned by the Municipal Population Officer aided by (1) Computer Operator, (1) Population Program Worker, (1) Clerk (Job Order) and 65 accredited Barangay Service Point Officers.

The Family Planning program is jointly implemented by the Municipal Health & Population Offices. They complement each other in the delivery of services. Likewise, the municipal government is compliant to EO 307 dated February 28, 1996 directing the promotion of family planning program as a priority government program.

The Contraceptive Prevalence Rate (CPR) or the total number of Family Planning Users in relation to the number of Married Women of Reproductive Age (MWRA) has slightly increased to 50.68% (2014) compared to 48.62% in 2013. This includes all methods, both artificial and natural. Pre-marriage counseling is extended to all marriage license applicants in the municipality by the Population and the Social Welfare Offices.

In July 2008, the Local Chief Executive ordered the Municipal Population Office to advocate for Natural Family Planning while the Municipal Health Office focuses their services on the artificial methods. In 2009, the municipality responded to the directive of the President thru the Department of Health and the Commission on Population to promote responsible parenting and natural family planning.

**Live birth**

Records from Mangaldan Municipal Health Office shows that there are a total number of 1,707 live birth in year 2010, in 2011 with 1,522 live birth, in 2012 there are only 1,540, in 2013 there 1,570 registered livebirth and in 2014 a total of 1,870 registered livebirth. It can be noted that in year 2014 there was suddenly decrease in the number of livebirth to 1,522 and 1,504 respectively and abruptly increased by 1,870 in year 2014.

**Table 31: Registered Live Births by Type of Birth for the last Five Years**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Type of Delivery** | **2010** | | | **2011** | | | **2012** | | | **2013** | | | **2014** | | |
| **M** | **F** | **Total** | **M** | **F** | **Total** | **M** | **F** | **Total** | **M** | **F** | **Total** | **M** | **F** | **Total** |
| Single | 841 | 844 | 1,685 | 746 | 760 | 1,506 | 791 | 744 | 1,535 | 777 | 793 | 1,567 | 645 | 553 | 1,198 |
| Twins | 14 | 7 | 21 | 8 | 7 | 15 | 3 | 2 | 5 | 0 | 2 | 2 | 1 | 5 | 6 |
| Triplets or More | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Not Stated | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **855** | **852** | **1,707** | **755** | **767** | **1,522** | **794** | **746** | **1,540** | **777** | **796** | **1,570** | **646** | **558** | **1,204** |

*Source: Municipal Health Office, Municipal Civil Registry*

**Age Specific Fertility**

The Age-Specific Fertility Rate (ASFR) is the number of live births per 1,000 women in a specific age group for specified geographic areas and for a specific point in time, usually a calendar year. It is the calculation of the number of live births to women in specified age group times the number of women in the same age group divided by 1000. The 2015 Census shows that there are 5,503 women ages 15-19; 4,784 ages 20-24; 4,242 ages 25-29; 3,842 women ages 30-34; 3,412 women ages 35-39 and 3,108 women ages 40-44 has been expected to bore a child. A total of 24,891 women were recorded aged 15-44 based on the 2015 PSA census.

The highest recorded fertility rate was in 2014 with the average of 63.85. The total average fertility rate of women ages 15-19 is 35 births per 1,000 women.

**Table 32: Age Specific Number of Women of Reproductive Age**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **HEALTH INDICATOR** | **2010** | **2011** | **2012** | **2013** | **2014** |
| No. of Married Women of Reproductive Age | 14, 207 | 14, 657 | 14,145 | 14,849 | 15,781 |
| No. of Family Planning Users  (all methods) | 5, 144 | 7, 248 | 6,907 | 7,219 | 8,007 |
| Contraceptive Prevalence Rate | 36.21 | 49.45 | 48.83 | 48.62 | 50.7 |
| No. of High Risk Women | 5, 050 | 3,082 | 3,466 | 3,560 | 3,580 |

*Source: Municipal Population Office*

**Nutritional Status**

The Municipal Health Center (MHC) has three categories of nutritional status, which has arrived at by comparing the actual weight of a child with the standard weight per age bracket. The First bracket which is the Severely Underweight include children who are suffering of major malnutrition and need to be referred to physician, nutritionist or to a pediatrician. Second Degree which is the Underweight refers to those who are of mild or moderate weight. The Third Degree of malnutrition is the Overweight.

In 2014, among the 14,568 weighed preschoolers, 152 are severely underweight, 325 are underweight, 356 are above normal and the remaining 13,731 or 94.28% are normal. Among the 15,143 school children weighed, 11,785 are normal, 1,831 are underweight, 1,036 are severely underweight, 395 are overweight and 96 obese.

The Local Government Unit of Mangaldan led by the Municipal Nutrition Committee fully implemented the ASIN LAW, RA 8172 or the Act Promoting Salt Iodization Nationwide and RA 8976**,** the Food Fortification Law Act which plays an important role on the upliftment of nutritional status. The Municipal Nutrition Council spearheaded the implementation of supplemental feeding in the barangays. Constant monitoring on salt iodization and information disseminations on Nutrition in the barangay is also done aside from inculcating on school subjects like Technology Home & Economics in the Elementary and High School. Finally, vitamin A supplements were given to 1,261 (6-11months), 10,059 (12-59months) and 633 lactating women were given Iodized capsules.

Relative to the implementation of RA 8172 or the Act Promoting Salt Iodization Nationwide or the ASIN Law in the municipality, among the problems noted were the unavailability of the fortification in the local market.

Mangaldan is the pilot municipality for the implementation of the localization of ASIN Law regulatory function such as re-issuance of license to operate as salt manufacturers and transfer clearance. We have high utilization and adequate supply in the local market since Mangaldan has the most number of salt refineries in the province.

**Table 33: Malnourished Children for the Last three Years, 2012-2014**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Degree of Malnutrition** | **CY 2012** | | **CY 2013** | | **CY 2014** | |
| **Number of Preschool Children** | **%** | **Number of Preschool Children** | **%** | **Number of Preschool Children** | **%** |
| Estimated No. of Preschool Children | 14,982 | - | 15,060 | - | 17,289 | 100 |
| Preschool Weighted | 14,079 | 91.31% | 15,060 | - | 14,568 | 84.26 |
| Severely Underweight | 174 | 1.16% | 211 | 1.40 | 152 | 1.04 |
| Underweight | 373 | 2.49% | 436 | 2.90 | 325 | 2.23 |
| Above Normal | 190 | 1% | 369 | 2.45 | 356 | 2.44 |
| Normal | 13,340 | 89% | 13,544 | 89.93 | 13,731 | 94.28 |
| Combine Severely Underweight  and Underweight | 547 | 3.65% | 647 | 4.29 | 477 | 3.27 |

*Source: Municipal Nutrition Action Committee*

**Burial Grounds**

A cemetery or graveyard is a place where the remains of deceased people are buried or otherwise interred. This implies that the land is specifically designated as a burial ground. Funeral ceremonies are often observed in cemeteries according to their cultural practices and religious beliefs.

The Municipality of Mangaldan has five (burial grounds/cemeteries) four of these is privately owned while the Mangaldan Municipal Cemetery is public (local government). It has a total land area of 7.94 hectares.

**Table 34: Existing Cemeteries and Memorial Parks, 2014**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of Cemetery**  **Memorial Park** | **Location** | **Remarks** | **Area (sq.m.)** | **Capacity** |
| 1. Municipal Cemetery | Guilig | Public | 15,920 | 9,960 |
| 1. Catholic Cemetery | Guilig | Private | 22,316 | 11,158 |
| 1. St. John Memorial Park | Navaluan | Private | 24,413 | 6,104 |
| 1. Pyramid Memorial Park | Guilig | Private | 13,710 | 3,428 |
| 1. Pax Aeterna Memorial Park | Guilig | Private | 13,580 | 3,395 |

*Source: MPT Computation*

**Land Area Requirement**

In 2014 there are five hundred forty-six (546) registered number of deaths, hence, the computed crude death rate of the municipality is five (5) persons per 1,000 population. Using the crude death rate of the municipality of Mangaldan, the table below shows the projected number of deaths for the next ten years (2026).

**Table 35: Projected Land Area Requirement**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Projected Population** | **Projected Number of Deaths** | **Projected Area Requirement (Has)** |
| 2016 | 107,883 | 539 | 0.03 |
| 2017 | 109,459 | 547 | 0.03 |
| 2018 | 111,057 | 555 | 0.03 |
| 2019 | 112,678 | 563 | 0.03 |
| 2020 | 114,323 | 572 | 0.03 |
| 2021 | 115,992 | 580 | 0.03 |
| 2022 | 117,686 | 588 | 0.03 |
| 2023 | 119,404 | 597 | 0.03 |
| 2024 | 121,147 | 606 | 0.03 |
| 2025 | 122,916 | 615 | 0.03 |
| 2026 | 124,771 | 624 | 0.03 |

*Source: MPT Computation*

Projected Area Requirement by the end of the planning period year 2026 with 100% participation rate is 0.03 hectares for 624 projected number of deaths. While the total land area already occupied is 8.99 with a total number of occupants of 6,386. Therefore, available land area of existing cemeteries and memorial parks is 0.32 hectares, this existing land area could still supply the land demand for the projected number deaths by year 2026 and beyond.

***Solid Waste and Wastewater Facilities***

**Solid Waste Management**

Waste management has serious environmental effects making the passage of the Republic Act (RA 9003) or the Ecological Solid Waste Management Act of 2000 a landmark environmental legislation in the Philippines. The law was crafted in response to the looming garbage problems in the country. RA 9003 declares the policy of the state in adopting a systematic, comprehensive and ecological solid waste management program that ensures the protection of public health and the environment, the proper segregation, collection, transport, storage, treatment and disposal of solid waste through the formulation and adoption of best environmental practices. Moreover, it illustrates the potentials and benefits or recycling not only in addressing waste management problems but also in alleviating poverty.

**Institutional Mechanism**

The local government unit shall establish a Solid Waste Management Board as mandated under RA 9003. The board shall serve as the coordinating body and likewise develop and implement the National Solid Waste Management Framework. They are directed to prepare and formulate a ten year Local Ecological Solid Waste Management Plan with emphasis on the implementation of all feasible re-use, recycling and composting programs pursuant to Republic Act 7160 otherwise known as the Local Government Code.

**Existing Waste Disposal Facilities**

The Municipality of Mangaldan owns a 1.2 hectare lot at Barangay Banaoang that is being used as Municipal Controlled Dumpsite. It is two and a half (2.5) kilometers ride from the town proper. The controlled dumpsite was established in the year 1993. It is currently accommodating 318 m3 of municipal waste per week. It is enclosed with concrete perimeter fence and had been planted with mahogany seedlings at the backside. Recently, newly acquired adjacent land was fenced with barb wire and planted with forest trees.

**Special Wastes**

In the Rural Health Unit, hazardous wastes were filled in the septic tank which is also located in the RHU Compound. Other clinics are suspected dumping their medical waste together with the regular waste of commercial establishments. Containers of chemicals such as plastic bottles are also sold with other plastic recyclables. Other non-hazardous wasted of the Rural Health Unit were also collected by the municipal dump truck.

**Table 36: Waste Generation**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | Projected Population | Waste Generation  @ .5kg/ person/ day | No. of days/year | Total Waste Generated (kg/year) | Land Area Requirement  (Has) |
| 2016 | 107,883 | 53,942 | 365 | 19,688,726 | 5.97 |
| 2017 | 109,459 | 54,729 | 365 | 19,976,182 | 6.05 |
| 2018 | 111,057 | 55,528 | 365 | 20,267,834 | 6.14 |
| 2019 | 112,678 | 56,339 | 365 | 20,563,744 | 6.23 |
| 2020 | 114,323 | 57,162 | 365 | 20,863,975 | 6.32 |
| 2021 | 115,992 | 57,946 | 365 | 21,168,589 | 6.41 |
| 2022 | 117,686 | 58,843 | 365 | 21,477,651 | 6.51 |
| 2023 | 119,404 | 59,702 | 365 | 21,791,224 | 6.60 |
| 2024 | 121,147 | 60,574 | 365 | 22,109,376 | 6.70 |
| 2025 | 122,916 | 61,458 | 365 | 22,432,173 | 6.80 |
| 2026 | 124,771 | 62,355 | 365 | 22,759,683 | 6.90 |

Using the waste density standard given by the Department of Environment and Natural Resources of 330 kilogram per cubic meter and a landfill depth of 10 meters, the land requirement for sanitary landfill computed above. However, the total land requirement needs to be increased by 50% to allow for daily cover, roads, receiving areas, fencing and other amenities. It is projected that by the end of the planning period CY 2026 is 6.90 hectares

**Processing Facilities**

The Solid Waste Management Center or Municipal Material Recovery Facility located at Barangay Guilig with a total land area of 1,548 sq. meters has continued with its composting activities using vermin worms and mechanical hammer mill or shredder. The biodegradable materials coming from the public market mixed with animal manure coming from the adjacent Municipal Slaughterhouse are being decomposed. Recycling enclosures were also constructed for plastics, metals/ tin cans, paper/ cardboards and bottles.

Recently, there are only two barangays which provided their own Material Recovery Facility (MRF) these are barangay Malabago and Anolid. Some of the barangays are still advocate a disposal and compost pit in every household especially to rural areas.

***Social and Environmental Aspects***

**Social Aspects**

With proper social marketing, the public must understand that the problem on solid waste is a public health concern. Proper waste disposal must be promoted as a habitual activity in order to prevent bulky problem on solid waste. It must be inculcated upon us citizens, that our waste is our own responsibility. Perhaps the people may address such problems and agree that the implementation of Ecological Solid Waste Management is the answer. The people must have the sense of ownership on the place, the problem, and the solution/ implementation of Ecological Solid Waste Management Program. People affected by the implementation such as the scavengers who make a living in gathering of recyclable items at the dumpsite can still be part of the project. Organized by the LGU, these scavengers can pick recyclables at specific area before final disposal at the transport area. In the process, they can also have other livelihood projects or endeavors which may or may not be directly related to solid waste management.

**Environmental Aspects**

Initially, Mangaldan is an urban area. The municipality maintains environmentally sound settlements conducive for its population and continuous economic growth. Implementation of the discussed plan strategies will contribute to preserve and protect the environment. If the implementation of the programs successfully put into action, massive open burning of solid waste shall be prevented due to small amount of solid waste residuals produce. There will be no flooding due to canals and rivers will flow freely because there are no plastics thrown anywhere. The organic fertilizer from the collected biodegradable waste will promote soil fertility and contributes a low cost and effective farming. Environmental health is also ensured by maintaining cleanliness in the community, pollution control measures and ensuring sustainability of environment. Multi- partite environmental monitoring team can also be organized and institutionalized for environmental monitoring and impact mitigation of any environmental concern that may arise.

**Figure 7: SWM Framework**

**Segregated Collection   
(through separate schedules)**

**Composting Facilities & Recycling Centers**

**Biodegradables**

**Recyclables**

**Residuals**

**THWs**

**Treatment**

**Segregation at Source**

**On-site composting**

**On-site recycling & ambulant recyclers**

**On-site disposal**

**Waste Source**

**Collection & Transport**

**Processing & Materials Recovery**

***Toilet Facilities***

When human waste is not managed well, it pollutes water, food and soil with germs that leads to illness such as diarrhea and other serious health problems. Using toilets prevent germs from getting into the environment and protects the health of the whole community.

Records of the Municipal Health Office as of year 2014, toilet facilities using water sealed toilet bowls and septic tanks are about 95.57% or 16,998 households out of the 2015 number of households. A total of 283 households or 1.59% have unsanitary toilet. And a total of 504 households have no toilet composing 2.83% of the total household population.

**Table 37: Household with Sanitary Toilet facilities, 2015**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Barangay** | **Projected Population (2014)** | **Total Number of Households** | **Number of Households with Sanitary Toilet Facilities** | | | |
| **Flush** | **Water Sealed** | **Total** | **Percent (%)** |
| **MANGALDAN** | **106,706** | |  |  |  |  |
| Alitaya | 4,488 | 748 | 48 | 674 | 722 | 96.52 |
| Amansabina | 2,575 | 429 | 36 | 372 | 408 | 95.10 |
| Anolid | 7,020 | 1,170 | 88 | 1,035 | 1,123 | 95.98 |
| Banaoang | 5,349 | 892 | 44 | 825 | 869 | 97.42 |
| Bantayan | 3,677 | 613 | 96 | 488 | 584 | 95.26 |
| Bari | 6,392 | 1,065 | 75 | 884 | 1,012 | 95.02 |
| Bateng | 2,698 | 450 | 65 | 365 | 430 | 95.55 |
| Buenlag | 3,951 | 658 | 35 | 591 | 626 | 95.13 |
| David | 4,612 | 769 | 50 | 684 | 734 | 95.44 |
| Embarcadero | 2,710 | 452 | 47 | 375 | 422 | 93.36 |
| Gueguesangen | 2,708 | 451 | 49 | 391 | 440 | 97.56 |
| Guesang | 3,803 | 634 | 35 | 575 | 610 | 96.21 |
| Guiguilonen | 3,431 | 572 | 68 | 479 | 547 | 95.62 |
| Guilig | 3,359 | 560 | 38 | 500 | 538 | 96.07 |
| Inlambo | 1,617 | 270 | 58 | 470 | 528 | 95.82 |
| Lanas | 3,307 | 551 | 50 | 445 | 495 | 93.75 |
| Landas | 2,113 | 352 | 29 | 307 | 336 | 95.45 |
| Maasin | 3,166 | 411 | 52 | 343 | 395 | 96.10 |
| Macayug | 2,467 | 347 | 40 | 296 | 336 | 96.82 |
| Malabago | 5,048 | 841 | 30 | 771 | 801 | 95.24 |
| Navaluan | 3,658 | 610 | 29 | 551 | 580 | 95.08 |
| Nibaliw | 2,931 | 488 | 37 | 434 | 471 | 96.51 |
| Osiem | 3,429 | 572 | 40 | 508 | 548 | 95.80 |
| Palua | 2,084 | 347 | 40 | 296 | 336 | 96.82 |
| Poblacion | 5,386 | 898 | 360 | 520 | 880 | 97.99 |
| Pogo | 1,489 | 248 | 30 | 205 | 235 | 93.95 |
| Salaan | 2,630 | 438 | 68 | 355 | 423 | 96.57 |
| Salay | 5,349 | 892 | 69 | 780 | 849 | 95.17 |
| Talogtog | 2,485 | 414 | 45 | 359 | 404 | 97.58 |
| Tebag | 2,774 | 462 | 31 | 414 | 445 | 96.32 |
| **TOTAL** | **106,706** | **17,785** | **1,776** | **15,222** | **16,997** | **95.57** |

*Source: Municipal Health Office*

**Table 38: Household with Unsanitary Toilet Facilities, 2015**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Barangay** | **Projected Population (2014)** | **Total Number of Households** | **With Unsanitary Toilet Facilities** | | | |
| **Unsanitary**  **Toilet** | **None** | **Total** | **Percent (%)** |
| **MANGALDAN** | **106,706** | |  |  |  |  |
| Alitaya | 4,488 | 748 | 10 | 17 | 27 | 3.48 |
| Amansabina | 2,575 | 429 | 11 | 11 | 22 | 4.90 |
| Anolid | 7,020 | 1,170 | 20 | 28 | 48 | 4.02 |
| Banaoang | 5,349 | 892 | 8 | 15 | 23 | 2.58 |
| Bantayan | 3,677 | 613 | 11 | 13 | 24 | 4.74 |
| Bari | 6,392 | 1,065 | 23 | 31 | 54 | 4.98 |
| Bateng | 2,698 | 450 | 6 | 16 | 22 | 4.45 |
| Buenlag | 3,951 | 658 | 10 | 13 | 23 | 4.87 |
| David | 4,612 | 769 | 15 | 21 | 36 | 4.56 |
| Embarcadero | 2,710 | 452 | 9 | 22 | 21 | 6.64 |
| Gueguesangen | 2,708 | 451 | 8 | 22 | 20 | 2.44 |
| Guesang | 3,803 | 634 | 12 | 19 | 31 | 3.79 |
| Guiguilonen | 3,431 | 572 | 9 | 19 | 28 | 4.38 |
| Guilig | 3,359 | 560 | 10 | 13 | 23 | 3.93 |
| Inlambo | 1,617 | 270 | 9 | 17 | 26 | 4.18 |
| Lanas | 3,307 | 551 | 10 | 11 | 21 | 6.25 |
| Landas | 2,113 | 352 | 7 | 10 | 17 | 4.55 |
| Maasin | 3,166 | 411 | 8 | 12 | 20 | 3.90 |
| Macayug | 2,467 | 347 | 7 | 11 | 18 | 2.18 |
| Malabago | 5,048 | 841 | 12 | 29 | 41 | 4.76 |
| Navaluan | 3,658 | 610 | 11 | 23 | 34 | 4.92 |
| Nibaliw | 2,931 | 488 | 8 | 14 | 22 | 3.49 |
| Osiem | 3,429 | 572 | 8 | 17 | 25 | 4.20 |
| Palua | 2,084 | 347 | 7 | 11 | 18 | 3.18 |
| Poblacion | 5,386 | 898 | 0 | 19 | 19 | 2.01 |
| Pogo | 1,489 | 248 | 8 | 10 | 18 | 6.05 |
| Salaan | 2,630 | 438 | 5 | 12 | 17 | 3.43 |
| Salay | 5,349 | 892 | 10 | 15 | 25 | 3.83 |
| Talogtog | 2,485 | 414 | 4 | 9 | 13 | 2.42 |
| Tebag | 2,774 | 462 | 9 | 11 | 20 | 3.68 |
| **TOTAL** | **106,706** | **17,785** | **283** | **504** | **787** | **4.43** |

*Source: Municipal Health Office*

***Methods of Solid Waste Disposal/Treatment***

The collection and disposal of solid waste is one of the major problems of sanitation. Solid waste handling must be analyzed in terms of sound engineering management, because volumes of material types of materials, salvage requirements and methods of disposal vary, all locations cannot operate identical collection systems.

**Table 39: Methods of Solid Waste Disposal Treatment, 2015**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Barangay** | **Projected Population (2014)** | **Total Number of Households** | **Number of Households with Satisfactory Garbage Disposal** | | | | | | | **Number of Households with Unsatisfactory Garbage Disposal** | |
| **Composting** | **Burying** | **Pick-up by Trucks** | **Open Dumping** | **Open Burying** | **HHs W/ Satisfactory Garbage Disposal** | **Percentage** | **HHs W/ Unsatisfactory Garbage Disposal** | **Percent (%)** |
| **MANGALDAN** | **106,706** | |  |  |  |  |  |  |  |  |  |
| Alitaya | 4,488 | 748 | 310 | 362 | - | 20 | 25 | 672 | 90.81 | 76 | 9.19 |
| Amansabina | 2,575 | 429 | 235 | 175 | - | 16 | 15 | 410 | 95.57 | 19 | 4.43 |
| Anolid | 7,020 | 1,170 | 210 | 138 | 765 | 22 | 23 | 1,113 | 95.12 | 57 | 4.88 |
| Banaoang | 5,349 | 892 | 113 | 128 | 603 | 26 | 24 | 844 | 94.61 | 48 | 5.39 |
| Bantayan | 3,677 | 613 | 390 | 181 | - | 16 | 22 | 571 | 93.14 | 42 | 6.86 |
| Bari | 6,392 | 1,065 | 150 | 132 | 737 | 19 | 22 | 1,019 | 95.68 | 46 | 4.32 |
| Bateng | 2,698 | 450 | 301 | 112 | - | 14 | 17 | 413 | 91.77 | 37 | 8.23 |
| Buenlag | 3,951 | 658 | 300 | 306 | - | 24 | 20 | 606 | 92.09 | 52 | 7.91 |
| David | 4,612 | 769 | 312 | 411 | - | 15 | 25 | 723 | 94.01 | 46 | 5.99 |
| Embarcadero | 2,710 | 452 | 239 | 180 | - | 16 | 15 | 419 | 92.69 | 33 | 7.31 |
| Gueguesangen | 2,708 | 451 | 230 | 200 | - | 17 | 22 | 430 | 95.12 | 21 | 4.88 |
| Guesang | 3,803 | 634 | 276 | 322 | - | 21 | 21 | 598 | 94.32 | 36 | 5.68 |
| Guiguilonen | 3,431 | 572 | 72 | 83 | 388 | 18 | 19 | 543 | 94.93 | 29 | 5.07 |
| Guilig | 3,359 | 560 | 70 | 106 | 336 | 20 | 20 | 512 | 91.42 | 48 | 8.58 |
| Inlambo | 1,617 | 270 | 162 | 96 | - | 7 | 12 | 258 | 95.55 | 12 | 4.45 |
| Lanas | 3,307 | 551 | 315 | 197 | - | 20 | 21 | 512 | 92.92 | 39 | 7.08 |
| Landas | 2,113 | 352 | 167 | 158 | - | 18 | 22 | 325 | 92.32 | 27 | 7.68 |
| Maasin | 3,166 | 528 | 266 | 218 | - | 18 | 24 | 484 | 91.66 | 44 | 8.44 |
| Macayug | 2,467 | 411 | 200 | 184 | - | 12 | 20 | 384 | 93.43 | 27 | 6.57 |
| Malabago | 5,048 | 841 | 171 | 110 | 495 | 15 | 23 | 776 | 92.27 | 65 | 7.73 |
| Navaluan | 3,658 | 610 | 285 | 291 | - | 22 | 21 | 576 | 94.42 | 34 | 5.58 |
| Nibaliw | 2,931 | 488 | 188 | 266 | - | 17 | 24 | 454 | 93.03 | 34 | 6.97 |
| Osiem | 3,429 | 572 | 270 | 278 | - | 19 | 21 | 548 | 95.80 | 24 | 4.20 |
| Palua | 2,084 | 347 | 173 | 147 | - | 11 | 18 | 327 | 92.21 | 20 | 7.79 |
| Poblacion | 5,386 | 898 | 144 | 88 | 644 | 10 | 8 | 876 | 97.55 | 22 | 2.45 |
| Pogo | 1,489 | 248 | 115 | 113 | - | 14 | 15 | 228 | 91.93 | 20 | 8.07 |
| Salaan | 2,630 | 438 | 218 | 178 | - | 21 | 23 | 396 | 90.41 | 42 | 9.59 |
| Salay | 5,349 | 892 | 495 | 315 | - | 37 | 25 | 810 | 90.80 | 82 | 9.20 |
| Talogtog | 2,485 | 414 | 181 | 210 | - | 10 | 18 | 391 | 94.44 | 23 | 5.56 |
| Tebag | 2,774 | 462 | 216 | 221 | - | 18 | 19 | 437 | 94.58 | 25 | 5.42 |
| **TOTAL** | **106,706** | **17,785** | **6,774** | **5,906** | **3,968** | **533** | **604** | **16,655** | **93.64** | **1,130** | **6.36** |

*Source: Municipal Health Office*

***Waste-disease Relationship***

Improper treatment and disposal of waste is conducive to the spread of diseases. Diseases coming from improper waste disposal are typhoid fever, leptospirosis, cholera, plague, endemic typhus and infectious hepatitis. These diseases are contracted through the ingestion of food or water that has become contaminated with infected human or animal waste, or they can be spread by insect directions whose primary hosts are pests and insects. Conditions created by improper waste disposal provide food for the hosts. The major cause of disease outbreaks is contamination of potable water distribution systems primarily via cross-connections and drain back.

***Technical Findings and Observations***

**Table 40: Health & Sanitation Matrix Analysis**

|  |  |  |
| --- | --- | --- |
| **Problems/ Issues/ Concerns** | **Recommendations** | **Policies/ Strategies** |
| 1. Health manpower ratio on population does not comply with the DOH standard requirement | Hire health personnel on contractual service | To lobby for funding for the health manpower requirement |
| 1. Inadequate budget for nutrition program | Lobby for additional budget allocation | To prepare municipal nutrition plan and include the budgetary requirements. To lobby for the approval of the Municipal Nutrition plan and its budget. |
| 1. Lack of coordination among municipal nutrition council members | Regular meeting of the Municipal Nutrition Council | To conduct regular quarterly meeting of the Municipal Council. |
| 1. Lack of training of health volunteers | Conduct training for health volunteers | To allocate funds for the capability building of health volunteers |
| 1. Inadequate budget for health | Increase budget allocation for health at the municipal and barangay level | To lobby for increase budget allocation for the health service |
| 1. Negative attitude of the people on the health programs | Intensify health education and information campaign | To develop an effective IEC material. |
| 1. Poor health seeking behavior of the people | To lobby for the passage of ordinances/ resolutions to support the different health programs like adolescent health, child injury prevention, health facility delivery. |
| 1. Ineffective information education campaign | Develop an effective IEC material/ strategy | To maximize trimedia campaign. |
| 1. Poor health facilities | Upgrade and renovate barangay health stations | To identify possible sources for the improvement/ renovation/ construction of barangay health stations. |
| 1. Uncooperative constituents in the proper waste disposal | Strict implementation of the ordinance, Intensive information education campaign | To conduct regular campaign on proper waste disposal. To lobby for the passage of barangay ordinance of waste management and ensure strict implementation. |
| 1. Significant number of households without sanitary toilets | Intensify campaign in providing sanitary toilet per households | To identify households without toilet facilities. To identify possible sources for the sponsorship of providing sanitary toilets to deserving households. Monitoring Sanitary toilet use. |

*Continuation of Table 40……*

|  |  |  |
| --- | --- | --- |
| **Problems/ Issues/ Concerns** | **Recommendations** | **Policies/ Strategies** |
| 1. Significant number of households without access to safe water sources | Intensify campaign on the importance of safe water sources, Provision of safe water sources | To identify households without safe water sources. To provide safe water source like deep well. To monitor safety of water sources. |
| 1. Poor nutrition practices of mothers | Lack of knowledge on proper nutrition, Unmindful mothers on the provision of proper nutrition to their children | To conduct mothers classes with emphasis on proper nutrition and food preparation |
| 1. Poor food handling practices of food establishments | Close monitoring and proper implementation of proper food handling practices | To conduct regular food handling classes. Monitor establishments on the proper implementation of proper food handling. |
| 1. Not so functional Local Health Board | Regular conduct of Local Health Board Meeting | Conduct regular meeting of the Local Health Board |