

EXECUTIVE SUMMARY

Forest Land Use Plan (FLUP) for Santa Cruz, Marinduque is document intended towards rational and judicious approach geared towards protecting and managing forestland and its resources for economic and social development, appropriating solutions to the existing concerns, issues, claims, and proposed development within timberlands. It was formulated in compliance with the mandate under RA 7160 (Local Government Code of 1991), wherein certain forest management functions of DENR are devolved to the Local Government Units (LGUs) and they are mandated to share with the national government the responsibility for maintaining the ecological balance within their territorial jurisdiction.

Every Local Government Unit therefore shall formulate its own Municipal Forest Land Use Plan to be implemented for the good of the community as per Executive Order No. 318 issued by the President thru DENR.

FLUP of Santa Cruz will serve as guide in the maintenance, protection, rehabilitation, utilization and development of the municipality's forest and forestlands with the active participation of the community. The proposed plan/projects are based on the result different processes involved wherein the issues and concerns were gathered through focus group discussion, interviews and utilizing the different data from various concerned agencies.

The plan covers twenty nine barangays 19 of which are coastal, one (1) island and nine (9) are upland barangays. Coastal and island barangays are planted with various species of mangrove and serve as protection against storm surge as well as the habitat of some marine and aquatic resources. These areas also serve as potential for aqua-silviculture and agro/eco-tourism destination. The remaining nine (9) barangays serves as agroforestry and ecotourism area.

The open access and protection areas must be managed accordingly to the laws of forestry that will benefit the municipality when it comes to agroforestry and ecotourism. Through this plan, the allocation of forestlands could widen the opportunities for investments through effective management of these resources in a sustainable manner.

Protection areas in Barangays Devilla, Masalukot, Makulapnit and Tambangan known as the watershed area of the municipality and at the same time part of the Marinduque Wildlife Sanctuary is not considered in the FLUP.

Production areas such as CBFM areas in Kamandugan and the fishpond areas in Angas, Balogo, Biga, Buyabod, Kasily, Masaguisi, Moarales, Tagum and Tamayo was given priority consideration in the plan in order to address food sustainability and agro-tourism.

The remaining mangroves areas will be retained but programs for continuous rehabilitation, protection and maintenance will be implemented. Eco-tourism sites within the mangrove area will be promoted in the context of preserving its aesthetic and ecological values.

Sea-water Lagoon at Barangay Polo can be utilized for fish culture and other fishing activities while Brackish-Water Lagoon at Barangay Ipil can be utilized for fish culture and recreational fishing activity.

The FLUP will be co-managed by the Municipal Government of Santa Cruz in partnership with the DENR-PENRO and other stakeholders. They will lead in the implementation of the different programs, projects and activities in the plan. The management will form a team, which will monitor and evaluate the result of the plan. The same will be updated at least once every five (5) years to ensure that the data, objectives and targets reflected on the plan will be up-to-date and relevant.

In a nutshell, the FLUP of Santa Cruz is geared towards the “IMPROVEMENT OF THE QUALITY OF LIFE OF THE PEOPLE PARTICULARLY THOSE WHO HAVE LESS IN LIFE AND BELONG TO THE LOWER STRATA OF THE SOCIETY.”

Part 1

INTRODUCTION

Forest Land use Plan formulation refers to the rational and judicious approach geared towards protecting and managing forestland and its resources for economic and social development, appropriating solutions to the existing concerns, issues, claims, and proposed development within timberlands. It is in compliance with the mandate under RA 7160 (Local Government Code of 1991), certain forest management functions of DENR are devolved to the Local Government Units (LGUs) and they are mandated to share with the national government the responsibility for maintaining the ecological balance within their territorial jurisdiction.

Executive Order No. 318 issued by the President thru DENR, states that every Local Government Unit shall formulate its own Municipal Forest Land Use Plan to be implemented for the good of the community.

Santa Cruz is part of the island province of Marinduque. The municipal government recognizes the fact that the development of the municipality without the guidance of the municipal development plan will result to an unregulated and uncontrolled development. Comprehensive Land Use Plan of Santa Cruz which covers a planning period of 10 years already considered the forest as part of the plan although it was not discussed in detailed.

Forests are among the most valuable natural resources in the Philippines. They provide a range of ecosystem services, ranging from the provision of food crops, livestock and fish to providing recreational experiences. As of 2016, Philippine Forestry Statistics, the Province of Marinduque has a total classified forestland of 22, 205 hectares, or 23.15% of the province's total land area.

The Forest Management Bureau (FMB) of the Department of Environment and Natural Resources (DENR) defines “forest” as land with an area of more than 0.5 hectare and tree crown cover (or equivalent stocking level) of more than 10 percent. The trees should be able to reach a minimum height of 5 meters at maturity in situ (original position/location). A forest consists of closed forest formations either where trees of various storeys and

undergrowth cover a high proportion of the ground or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. Young natural stands and all plantations established for forestry purposes, which have yet to reach a crown density of more than 10 percent or tree height of 5 meters are included under forest.

Table 1: Area and Location of Forestlands by Sub-Category and Primary Use

CATEGORY	LOCATION	AREA (Ha)	%
I. Upland Forests			
A. Production Forests			
1. Timber Production (Natural)	-	-	-
2. Timber Production (Plantations)	Napo, Tamayo, San isidro, Dating Bayan, Punong	174.4208	3.98%
Sub-Total		174.4208	3.98%
B. Protection Forests		1424.28	
1. NIPAS Areas (MWS)	Devilla, Masalukot, Makulapnit, Tambangan	426	9.72%
2. NON-NIPAS Areas	Banguangan, Kiñaman, Kaganhao, Kilo-Kilo, Libjo and San Antonio	998.28	22.79%
Sub-Total		1,424.28	32.51%
II. Mangrove Forest			
A. Production Forests			
1. CBFM	Kamandugan	25.06	0.57%
2. Fishponds-(Operational)	Angas, Balogo, Biga, Hupi Buyabod, Kasily, Masaguisi, Morales, Tagum & Tamayo	297.45	6.79%
3. Built-up Areas	20 Coastal Barangays	11.51	0.26%
Sub-Total		334.02	7.62%
B. Protection Forests		2,448.26	55.88%
GRANDTOTAL (Total Forest Land Area)		4,380.98	100%
		or 4,381	

Source: Community Environment and Natural Resources Officer/ Provincial Environment and Natural Resources Officer (CENRO/PENRO)

Out of the total land area of the municipality, the total public land or percentage of forests is 4,380.98 hectares or 16.18% of the municipality's land area. Total area of production forests in the upland area is 174.4208 hectares while total area for the mangrove forests is 334.02 hectares. Total land area of operational fishponds within the mangrove forests is 297.45 hectares located in several barangays.

The total area of protection forest is 2,448.26 hectares. It covers the NIPAS areas with an area of 426 hectares which is a part of the declared Marinduque Wildlife Sanctuary and at

the same time the area for DBP Agro-forest Project and the community watershed area being maintained and funded by the municipality. Protection forest in the mangrove area is 2,448.26 hectares. This covers the 75 hectares reforestation project of the Development Bank of the Philippines.

Geographical Location Extent

The Municipality of Santa Cruz, the premier town in the island-province of Marinduque, is situated in the North-eastern part of Marinduque, 13° 14' 15" North latitude and 122° 00' 00" East longitude. It is bounded on the North, by Tayabas Bay; on the South, by the Municipality of Torrijos; on the West, by the Municipality of Boac and Mogpog; and on the East, by Tayabas Bay. It is approximately 141 kilometers from Manila or 137 nautical miles. Santa Cruz is 30 kilometers from Boac, the capital town. Its coastline, which extends from Barangay Botilao on the northwest, and up to Barangay Masaguisi on the northeast, is ideal for beach resort. It has three island Barangays, namely: Polo, Maniwaya and Mongpong. There are also seven (7) islets in Botilao, four of which are inhabited, while the islet Sitio Salomague of Barangay Masaguisi with an area of 149 hectares is inhabited by more than 50 families.

Santa Cruz has fifty-five Barangays, five (5) are located in the poblacion, while the fifty (50) are in the rural areas.

Table 2: FLUP in the context of its economic, infrastructure, social and environment management

Social Sector		
Observation/Technical Findings/Issues and Concerns	Implications/Effects	Policy Option/Intervention/Possible solutions
EDUCATION		
Special Education Fund is very minimal	Programs/projects/activities are implemented to a limited extent	Strengthen the collection of real property taxes. School administrators shall support the LGU for real property tax collection
Lack of support facilities	Less knowledge on scientific and practical skills	Provision of the necessary support facilities by the LGUs, maximize utilization of SEF
Lack of courses offered in the tertiary level	More students are studying outside of the municipality	Legislative support on the offering of new courses



HEALTH		
Lack of modern facilities in the district hospital owned and managed by the Provincial Government	Tendency to transfer the patient hospital outside the LGU, thereby causing the high cost of hospitalization and risk of patients	Legislative and adequate financial support on the part of the Provincial Government
Non practice of healthy life style	Leading causes of mortality and morbidity	Promote healthy life style
Prevalence of persons with mental disorder	Public liability/ risk to peace, order & safety	Implementation of the necessary program , allocation for medicine of person with mental disorder
Congested public cemetery	Risk of burial spilling on the adjoining properties/critical area	Expansion of existing cemetery, acquisition of new or the adjoining site
IMPROPER GARBAGE DISPOSAL		
Solid Waste Management Act is not implemented	Controlled disposal facility is easily filled	Solid waste segregation, implementation of Solid Waste Management Act. Operationalization of the existing equipment in the disposal site Purchase of additional disposal site
Improper waste disposal in the rural barangays Barangays have no designated disposal site	Population at risk to infection/spread of diseases	Implementation of Solid Waste Management Act of 2003 at the barangay level
HOUSING		
Fisher folk settlements in the foreshore lands of Masaguisi, Taytay, Hupi, Mongpong, Morales, Biga and other coastal barangays	Detrimental to fishery production and ecological balance Deterioration of sea water quality Uncontrolled settlements in public land Exposure to natural calamities	Provision of relocation of settlement area
Settlements in flood and landslide prone area	Exposure to effects of natural calamities Uncontrolled settlements in public properties	Provision of relocation of settlement area
SOCIAL WELFARE		
Presence of juvenile delinquency	Threat to life and property, peace, safety and order	Responsible Parenthood program
PROTECTIVE SERVICES		
Insufficient number of PNP personnel	Slow response to trouble	Mobilization of Barangay Tanod, Bantay Dagat & Lupon

		Tagapamayapa
Insufficient number of BFP personnel (three fire trucks but 11 personnel only)	Slow response to fire incidence	Recruitment of and training of fire volunteer brigade
Prevalence of rape cases	Damage to the image of the LGU	Implementation of applicable laws Responsible parenthood seminar

AGRICULTURE: CROPS, FISHERY, LIVESTOCK AND POULTRY

Observation/ Technical Findings/Issues and concerns	Implications/Effects	Policy Option/Intervention/ Possible Solutions
Large portion of riceland is unirrigated (Only 815.00 has are irrigated, while 1,179.4610 has are not irrigated)	Low rice production	Construction of more irrigation facilities Adoption of drought resistant varieties of rice
Reluctance of the farmers to adopt new technology inspite of several training & farmers class conducted. Only few practice the technology	Low production	Training & promotion of new technology Introduction of high yielding varieties
High cost of inputs due to high cost of transportation and hauling of farm inputs	unaffordable cost of inputs low production	Adoption of plant now pay later program Adoption of organic farming
Over fishing (Municipal & Commercial) There are 60,720 hectares fishing ground, there are 609 fishing boats operating within the area	Declining fish catch	Implementation of fishery Ordinance and Republic Act 8550. Ordinance on seasonal closure on fishing
Unoperational fishpond (brackish water) of the total 408 has. of brackish water fishpond only 5% is operational	Less production	Evaluation & assessment for non-operation. Recommend necessary solution to make it operational
Congestion of obstruction on water ways The installed baklad is three times more than the carrying capacity of the area	Depriving different species of marine life to reproduce	Implementation of fishery Ordinance and Republic Act 8550 Implementation of municipal water and coastal zoning ordinance
Encroachment of fishermen from other municipality or province.	Low fish catch and income of subsistence fishermen	Delineation of municipal water boundaries Mobilization of Bantay Dagat Operation

Illegal fishing activities (Some fishermen used illegal fishing and practices)	Degradation of fishery and marine resources	Implementation of fishery Ordinance and Republic Act 8550
In- breeding of livestock (Poor quality of stocks)	Dwindling of livestock	Introduction of new breed of livestock
Siltation of irrigation dam due to erosion upstream	decrease in water carrying capacity	Regular maintenance
COMMERCE AND TRADE		
Unregistered business establishments (very few have business permits)	Low local revenue	Implementation of local Revenue Code
Trade monopoly (few investors)	High cost of prime commodities Low cost of agricultural products like copra	Invite more investors
INDUSTRY		
Insufficient supply of raw materials for arrowroot, peanut butter production	Low production	Intensify planting of arrowroot and peanut
TOURISM		
Inadequate support facilities and services	Only few tourist come inspite of several tourism destination	Invite investors to invest on tourism establishments Improvement of government support facilities (roads, electricity, water, etc.) Maintenance of peace and order in the area Coordination with other agencies for possible technical assistance to the investors
Lack of community awareness on tourism	Only few tourist come	Information dissemination & education campaign. Tourism promotion
Lack of Tourism Development Plan	Out of focus and direction on tourism development	Formulation preparation of Tourism Development Plan Coordination with the department of Tourism for possible technical assistance
Limited cultural and tourism activities throughout the year	Tourist do not stay long in the community	Establish a tour package that will last for at least three days

INFRASTRUCTURE SECTOR

TRANSPORTATION

Observation/ Technical Findings/Issues and Concerns	Implications/Effects	Policy Option/Intervention/ Possible Solutions
Poor road network especially provincial and barangay roads due to the terrain	Slow economic activity Slow delivery of basic services	Allocation of more fund for maintenance, concreting and rehabilitation of road
Absence of passenger vessel plying the route of Buyabod to Lucena	high cost of transportation, inconvenient and time consuming travel	Invitation to ship owners to ply the route of Buyabod to Lucena back and forth
Shallow passage to Buyabod Port	Hesitancy of ship owners to service the route	Dredging of the passage way
Unpassable spillway in Ipil, Pulong Parang & Tambangan during flood and rainy season	Isolation of the barangay from the neighbouring barangay especially during rainy seasons	Allocation of funds for the construction of bridges

POWER

Frequent brown-out	Damage to business & economic activity Damage to appliances Economy deterioration	Establishment of local power plant
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WATER

Poor quality of drinking water served by the municipal waterworks system	Extra cost for drinking water bought from the water refilling stations	Construction of filtration facilities
Insufficient water supply in Barangays Maniwaya & Mongpong	High cost of water purchased from the neighbouring barangay or from the mainland	Construction of deep well and improvement of the present system
Insufficient supply of water		

INFORMATION TECHNOLOGY & COMMUNICATION

Dead spot in some areas such as Aloba, Ipil, Dolores, Kamandugan, Kalangkang, San Isidro, Banogbog & Devilla	Poor communication service	Installation of more transmission towers
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ENVIRONMENT AND LAND USE

Flooding in low lying areas	Destruction of life and property	Reforestation and massive tree planting in the upland area Planting of bamboo along the river banks Planting of nipa in the selected area of the river Maintenance of the
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		environment bank protection Strict implementation of National Building Code
Soil Erosion/Landslide	Destruction of life and property	Adoption of Sloping Agricultural Land Technology
Denuded mangrove forest	Decrease marine life habitat	Mangrove reforestation Deputation of Bantay Lalao
Improper extraction of sand and gravel	Danger to community	Supervision and regulation of the extraction activity
Conversion of agricultural land into some other uses	Decrease in area of agricultural land	Implementation of zoning Ordinance and National Building Code
Siltation of river	Causes flash flood	River dredging
Marcopper idle land	No gainful economic activity No revenue of the locality Non maintenance of Marcopper Road	Total closure, no reopening of Marcopper Convert the mining site into historical tourism Turn-over of the area to the LGU Convert the other area into agro-forest to adoptable forest tree specie
Rampant cutting of trees for charcoal production as means of livelihood	Forest destruction Environmental degradation	Provide alternative source of income Implementation of related environmental laws
Possible damage of irrigation dam (Pulong Parang Dam)	Damage to life and properties in the low lying areas	Regular maintenance
Storm surge in island and low portion of the coastal barangays	Destruction of life and property	Discourage the construction of structures in the salvage zones Implementation of National Building Code

OBJECTIVES OF THE FOREST LAND USE PLAN

- To conserve forests, water, and biodiversity resources
- To increase food and fiber production;
- To direct and focus public and private investments;
- To eliminate or significantly reduce conflicts among various stakeholders
- To protect lives, settlements and public infrastructure

The output of the various activities conducted for the purpose was used as the formal and substantive elements of the Forest Land Use Plan and the main basis for the enactment of an ordinance by the Sangguniang Bayan.

Methodology and Planning Approach

The planning process is technology-based following transparent, accountable, and participatory processes involving local stakeholders.

Pre-survey phase

- Organization of FLUP Technical Working Group
- Resolution Authorizing the LCE to enter into MOA
- Barangay Consultation
- Training and dialogue
- Data gathering
- Write-shop
- Review and editing of draft
- Finalization
- Submission to SB
- Submission to DENR
- MOA for the implementation

PART 2

VISION, MISSION, GOALS AND OBJECTIVES

The LGU Sta. Cruz has the following vision, mission, goals and objectives which served as their motivating factor to strive hard and attain full development.

2.1 VISION

“Santa Cruz: The Premiere Tourist Hub of the Province where God-loving and empowered people enjoying a safe, sustainable, and disaster- resilient community with globally-competitive economy governed by competent and righteous leaders.”

The vision of the LGU Santa Cruz aims to become a sustainable and disaster-resilient municipality. It clearly wants to be self-reliant, depending only in their own resources. It also considered its own tourist spots as an asset in attaining the prominence of the municipality when it comes to eco-tourism. Thus, enhancing, conserving, safeguarding and optimizing the productivity of the forest and forestland resources of the municipality for the interest and welfare of the present and future generation will be the result.

2.2 MISSION

“The Municipal Government of Santa Cruz, Marinduque shall ensure the effective and efficient delivery of basic services to its people thru the able stewardship of its development-oriented leaders, and unqualified support and active participation of its law-abiding constituents in an environment of peace, harmony and unity.”

Their mission states their approach on how they would achieve their vision. Since they are focusing on the forestry, agricultural and fisheries sector as well as with the eco-tourism development, they clearly state that environment; primarily its forests and watersheds should be developed and conserved.

2.3 Goal and Objectives

Goal

The overall development goal of the Municipality of Sta. Cruz is to elevate the general welfare of the people by providing capable and people-oriented leadership and continuously improving the agricultural and fisheries productivity and responsibly utilizing its forest and forestland and natural resources.

Objectives

In pursuit of the overall development goal of Sta. Cruz, major programs and projects will be specifically directed in attaining the following objectives:

1. Increase productivity and promote efficient land utilization by regularly conducting awareness campaign about the forest and forestlands;
2. Proper delineation and identification of forest zones such as Protection Zone (Protected Area, Mangrove, Salvage Zone, Foreshore Area, Marinduque Wildlife Sanctuary) and Production Zone (Protected Area, Community Based Forest Management Agreement, Forest Land Grazing Management Agreement, Forest Land Use Agreement for Tourism Purposes , Rehabilitation/National Greening Program, Mining areas, Tourism areas, Grazing areas, Timber/Fuel wood/Fruit
3. Encourage economic diversity to increase employment opportunities and bring in investments in the locality;
4. Improve the environment systems and procedures in LGU offices to provide convenience and efficiency to the people and all its stakeholders;
5. Facilitate development through improved provisions for modern and landmark infrastructure and support facilities;
6. Preserve critical areas specifically on salvage zones, foreshore, and stream banks, coastal and riverside areas, landslides and flood prone areas/storm surge through efficient slope protection, solid waste and other environmental management programs and activities;
7. Strengthen capability of the local government to undertake development projects through efficient tax collection;
8. Provide livelihood programs to support small and medium enterprises and encourage better economic activities;



9. Strengthen and increase social and economic services as well as investments on infrastructures;
10. Improve local income generation and secure better economic stability;
11. Participation of POs, LGUs, stakeholders and Barangay Forest Program; and,
12. Strengthen linkages with academe and investors in research, development and extension programs.
13. To allocate the remaining open access area within the municipality according to their best uses by assigning qualified and responsible stewards/managers with established accountability.

PART 3

SCOPE AND LIMITATIONS

3.1 SCOPE

In the preparation of the Comprehensive Land Use Plan of the Municipality of Santa Cruz, forest protection and its uses were discussed partially. The main purpose of the formulation of Forest Land Use Plan is to build consensus and develop recommendations on the best uses of forest lands, including the important step of identifying open access areas and determining appropriate management and best resource managers for these open access areas. Forest areas in Barangays Makulapnit, Devilla, Masalukot and Tambangan are not included in the plan. The said forest area has a separate plan included in the Marinduque Wildlife Sanctuary. After data gathering, validation, evaluation, assessment and analysis, recommendations on the strategies for proper allocation and protection were identified.

Table 3: Area of Forest in Barangays under the Marinduque Wildlife Sanctuary

Barangay	Protected Area
Makulapnit	244.828
Devilla	201.710
Masalukot	95.608
Tambangan	95.154
Total	637.300

Series of consultations with stakeholders provided the basis for assigning forests and forest lands under different management, tenure, or allocation instruments. Maps that formed part of the Comprehensive Land and Water Use Plan were used, some of which are annexes of the plan.

Watershed approach is considered in the formulation of FLUP. The watershed is used as a planning unit because it has clear defined boundaries; it highlights upland-lowland-coastal interaction; water can be used as indicator of the impacts of land use; and among others. The Municipality of Santa Cruz utilizes watershed approach in allocating and prioritizing the open access area.

3.2 Limitations

The Socio-Economic and Physical Profile of the municipality is the primary source of data and information used in this Forest Land Use Planning these are obtained mostly from the primary and secondary sources available at the different offices, barangays and from the different National Government Agencies.

The following are identified as the limitations in the Implementation of the Municipal FLUP:

- Salvaged Zone areas (3-meters in urban areas, 20 meters in rural areas and 40 meters in timberland areas) are declared no occupancy areas yet squatters are sporadically located in these areas.
- Some tourism destinations are located in Protected Area (managed by PAMB), foreshore areas and salvaged zones.
- LGU officials and their priority programs vary. With the end their term another or new programs are implemented.

There is a need for participation of key stakeholders in order to have a sustainable forest management since care for environment is everybody's concern. Their interests are considered in maximizing benefits from the use of forest and forest lands. The intervention programs on livelihood assistance that should be given should depend on the interest, capacity and means of living of people within the covered area.

PART 4

PROCESS AND METHODOLOGY FOREST LAND USE PLANNING

In accordance to the processes and methodologies prescribed in the FLUP Training Guide developed by The Philippine Environmental Governance 2 Project, the following criteria/activities were undertaken by Municipality of Santa Cruz - DENR Technical Working Group:

4.1 FORMATION AND CAPACITATION OF TECHNICAL WORKING GROUP

- On February 6, 2018, a Letter of Intent (LOI) was prepared by the Municipality of Santa Cruz signed by Honorable Mayor Marisa Red Martinez, requesting assistance from the Department of Environment and Natural Resources – Marinduque in preparing the Forest Land Use Plan to be incorporated in their Comprehensive Land Use Plan.
- On March 20, 2018, Capacitation/Orientation on Forest Land Use Planning (FLUP) Guidelines was held at the Office of the Mayor, Bahay ng Bayan Building, Santa Cruz, Marinduque to further enhance the capacity of the Technical Working Group in preparing Municipal FLUP. The training was attended by various offices: MPDO and staff, Municipal Agriculture's Staff, Mayor's Office, PENRO staff and FLUP TWG and Barangay Captains of 29 barangays.
- On February 13, 2018 Executive Order No. 4-2018 was executed for the Creation of Technical Working Group on FLUP was issued as counterpart of the PENRO TWG.

4.2 MEMORANDUM OF AGREEMENT

On July 13, 2018 SB Resolution No. 210 s. 2018, was formulated a Resolution Authorizing Mayor Marisa Red Martinez to enter into a Memorandum of Agreement with Regional Director of DENR MIMAROPA Region. The signed MOA states that both parties are committed to work jointly on the preparation of Municipal Forest Land Use Plan for the achievement of proper and sustainable management of the municipal forest and forest resources, biodiversity conservation and management,

vulnerability assessment/climate change adaptation, disaster risk reduction and management, and reducing emissions from deforestation and forest degradation.

4.3 DATA GATHERING AND MAP COLLECTION

The following maps were gathered by the FLUP Technical Working Group from MPDO, and DENR-PENR Office:

- Location Map
- Slope Map
- Land Cover Map
- Geo-hazard Map
- Rivers and Creeks
- Soil Map
- Elevation Map
- Geological Map
- Land Use Map
- Political Boundary Map
- Road System Map
- Soil Erosion Map
- Reforestation Project Map
- Tenurial Map
- Land Classification Map
- Mining Tenement Map

4.4 Outline of the Proposed Methodology

The process comprised three main components:

- Organization and Management of the Process,
- Land Use Planning,
- Forest Land Allocation

4.4.1 Organization and Management of the Process.

The activities related to organization and management of the process includes:

- Identification of stakeholders
- Organization of working groups, defining roles and responsibilities,
- Preparation of a detailed work plan
- Training of working group members
- Organization of monitoring and evaluation team

Land Use Planning

Land use planning is carried out at three levels: Municipal, Barangay and Household (plot of allocated land). The following table shows the relationship and some characteristic aspects of the three levels:

Table 4: Different Levels of Land Use Planning

	MUNICIPAL LUP	BARANGAY LUP	PARCEL LUP
SCOPE	General	Detailed	Micro - Planning
AREA COVERED	Whole Municipal Timberland	Barangay micro-area or equivalent	Individual parcel of allocated forest land
LEVEL OF DETAIL	Reconnaissance	Detailed	Very Detailed
SOURCES OF INFORMATION	Mainly secondary; Extensive field checking	Secondary and primary information from farmers; intensive field checking	Mainly direct field observation
PARTICIPATION	Indirect and direct, Municipal and Barangay meetings	Direct and indirect, Barangay meeting, Interviews and	Direct participation of household, on site
MAPPING SCALE	1: 10, 000 for municipal	1:5,000	Sketch map 1:1,000

4.5 Municipal Comprehensive Land and Water Use Plan

Comprehensive Land and Water Use Plan (CLWUP) is the document embodying specific proposals for guiding and regulating growth and development of a municipality. It is comprehensive in the sense that it considers all sectors significant in the development process like demography, socio-economic, infrastructure and utilities, land use, areas for future development and effective local administration, within its territorial jurisdiction.

It is a master plan that provides orientations for the use of the land and water in the future, based on the present use of land and water resources, land and water capability, government regulations, people's needs and aspirations.

It is a comprehensive and concrete proposal for land and water use in the municipality. It identifies what land should be used for agriculture (various types), for forestry, for conservation, for residential areas and other uses as appropriate.

The Municipal Land and Water Use Plan of Santa Cruz is presented or package in four volumes, (1) Socio-Economic and Physical Profile (2) CLWUP (3) Zoning Ordinance and (4) Book of Maps, includes a map showing proposed land and water uses and a brief report describing the different categories and levels of uses along with recommendations for specific land and water use practices considering constraints.

Land and water use planning implies developing a common vision of how people who live in the area and depend on forest lands and resources for their livelihood, want to use the land in the future. It is required in order to ensure the sustainable use of the land and water.

Forest Land Use Planning (FLUP) is an effective basis on which decisions can be taken for forestland allocation and in order to stabilize and guide protection and production activities. It is not done in isolation. It considers all lands within the commune, including agricultural lands, and all issues related to land and resource use.

PART 5

KEY FINDINGS

5.1 MUNICIPAL PROFILE

There are no known records which show the exact date when Santa Cruz officially got its name but a clue to this still remains and that is the Catholic Church which is the oldest standing structure in the community. As shown by its marker, this church was constructed in the year 1760 but before the construction of this magnificent building, it could be safely assumed that the conversion of the natives into Christians took place at a much earlier date. Presumably, therefore, when the Spanish priests came to Santa Cruz, the place was already inhabited by a number of settlers. The main community lives in the area now called Dating Bayan, a barangay located about nine (9) kilometers northwest of the town proper. Considering the slow development of communities during the early years of Spanish colonization, it can be just conjectured that Christianization of the natives started during the last half of the sixteenth century- from 1660 to 1700.

In 1790, Santa Cruz was declared a municipality. Don Mateo Ramos was appointed as the first “**Gobernadorcillo**” (Townhead).

Santa Cruz serves as the satellite growth center complementing the needs of the Province of Marinduque, particularly on the fishery and marine resources. The Municipality of Santa Cruz is being promoted as the Seafood’s Capital of the province. The barangays of Taytay, Masaguisi, Angas, Botilao, Ipil, Kasily, Balogo, Hupi and Buyabod are considered as centers of the fishery and marine products. In terms of rice production, Santa Cruz supplements the needs of the province. The vast areas of irrigated lands are situated in Barangays Napo, Taytay, Tawiran, Tamayo, Tagum, Angas and Morales.

5.1.1 Biophysical Profile

5.1.1.1 Location and Land Area

The Municipality of Santa Cruz, the premier town in the island-province of Marinduque, is situated in the North-eastern part of Marinduque, 13° 14’ 15” North latitude

and 122°00' 00" East longitude. It is bounded on the North, by Tayabas Bay; on the South, by the Municipality of Torrijos; on the West, by the Municipality of Boac and Mogpog; and on the East, by Tayabas Bay. It is approximately 141 kilometers from Manila or 137 nautical miles. Santa Cruz is 30 kilometers from Boac, the capital town. Its coastline, which extends from Barangay Botilao on the northwest, and up to Barangay Masaguishi on the northeast, is ideal for beach resort. It has three island Barangays, namely: Polo, Maniwaya and Mongpong. There are also seven (7) islets in Botilao, four of which are inhabited, while the islet Sitio Salomague of Barangay Masaguishi with an area of 149.0 hectares is inhabited by more than 50 families.

Santa Cruz has fifty-five Barangays, five (5) are located in the poblacion, while the fifty (50) are the rural areas. Out of these barangays, twenty-nine (29) barangays are considered to be involved in the Forest Land Use Planning (FLUP) of the municipality. Their respective distances from the poblacion using Rizal Monument besides the old municipal building in the poblacion, as reference point are reflected in the Table 5.



Figure 1: Political Administrative Map of Santa Cruz, Marinduque

Table 5: Distance from Poblacion of Barangays under FLUP

BARANGAY	DISTANCE FROM POBLACION (KMS)	BARANGAY	DISTANCE FROM POBLACION (KMS)
Alobo	14	Kilo-Kilo	11
Angas	13	Kiñaman	4
Aturan	6	Libjo	3
Balogo	7	Masaguishi	13
Banguangan	5	Matalaba	5
Biga	17	Morales	12
Botilao	15	Napo	9
Buyabod	4	Polo	10
Dating Bayan	10	Punong	13
Hupi	5	San Antonio	15
Ipil	7	San Isidro	15
Kalangkang	14	Tagum	12
Kamandugan	8	Tamayo	10
Kasily	10	Tawiran	7
		Taytay	10

Source: Socio-Economic and Physical Profile, OMPDC

The Municipality of Santa Cruz has a total land area of 27,069.00 hectares or 270.69 square kilometres. As per data of the Office of the Municipal Assessor, alienable and disposal (A&D) area is 22,880.600 while timberland is 4,188.404 hectares. At Barangay Ipil, there is an area unique to Santa Cruz. It is the reclamation area of 84.018 hectares (4.7 km. causeway as per Integrated Area Management Plan, SEARCA 1998 or 0.31% of the non-urban and 0.30 of the total area. This area was added to the original of s 26,985.000 thus as of 2000 and as it is used as the base of granting Internal Revenue Allotment (IRA) share, the land area is 27,069.000 hectares.

Next is the Table 6 that presents the land areas of each barangay in the Municipality of Santa Cruz, depicting the difference between the measurements as calculated by the Municipal Assessor's Office and by Provincial Environment and Natural Resources Office (PENRO) – Marinduque.

Table 6: Land Area of the 55 Barangays in the Municipality of Santa Cruz

No.	Barangay	DENR*		MUNICIPAL**	
		Land Area (Has.)	% Share	Land Area (Has.)	% Share
Urban					
1	Bagong Silang	16.216	0.062%	17.41	0.084%
2	Banahaw	40.538	0.155%	36.74	0.178%
3	Lapu-Lapu	200.530	0.767%	189.52	0.916%
4	Maharlika	11.323	0.043%	9.53	0.046%
5	Pag-asa	14.441	0.055%	28.38	0.137%
Rural					
6	Alobo	396.820	1.518%	323.70	1.564%
7	Angas	434.809	1.663%	348.46	1.684%
8	Aturan	563.800	2.157%	612.19	2.958%
9	Baguidbirin	190.937	0.730%	186.93	0.903%
10	Baliis	260.356	0.996%	551.66	2.666%
11	Balogo	417.862	1.599%	287.91	1.391%
12	Bangcuangan	613.876	2.348%	223.06	1.078%
13	Banogbog	549.671	2.103%	504.94	2.440%
14	Biga	281.802	1.078%	155.46	0.751%
15	Botilao	470.312	1.799%	383.18	1.851%
16	Buyabod	364.306	1.394%	350.80	1.695%
17	Dating Bayan	565.510	2.163%	402.84	1.946%



18	Devilla	950.001	3.634%	708.28	3.422%
19	Dolores	823.505	3.150%	652.93	3.155%
20	Haguimit	357.022	1.366%	296.92	1.435%
21	Hupi	494.431	1.892%	505.18	2.441%
22	Ipil	719.262	2.752%	384.30	1.857%
23	Jolo	346.926	1.327%	378.40	1.828%
24	Kaganhao	979.325	3.747%	943.60	4.559%
25	Kalangkang	448.610	1.716%	316.37	1.529%
26	Kamandugan	364.052	1.393%	328.77	1.589%
27	Kasily	437.853	1.675%	425.01	2.054%
28	Kilo-Kilo	482.027	1.844%	343.70	1.661%
29	Kiñaman	361.784	1.384%	351.65	1.699%
30	Labo	748.027	2.862%	563.50	2.723%
31	Lamesa	459.451	1.758%	553.13	2.673%
32	Landy	217.994	0.834%	269.00	1.300%
33	Libjo	316.837	1.212%	330.32	1.596%
34	Lipa	281.147	1.076%	202.46	0.978%
35	Lusok	176.037	0.673%	185.16	0.895%
36	Makulapnit	1,078.532	4.126%	843.43	4.075%
37	Maniwaya	369.032	1.412%	325.98	1.575%
No.	Barangay	DENR*		MUNICIPAL**	
		Land Area (Has.)	% Share	Land Area (Has.)	% Share
38	Manlibunan	175.531	0.672%	170.29	0.823%
39	Masaguisi	1,074.601	4.111%	618.42	2.988%
40	Masalukot	928.197	3.551%	789.66	3.816%
41	Matalaba	310.688	1.189%	216.69	1.047%
42	Mongpong	369.685	1.414%	316.74	1.530%
43	Morales	326.158	1.248%	264.20	1.277%
44	Napo	612.645	2.344%	498.23	2.407%
45	Pantayin	211.339	0.809%	206.70	0.999%
46	Polo	717.758	2.746%	244.88	1.183%
47	Pulong Parang	568.080	2.173%	236.77	1.144%
48	Punong	349.821	1.338%	545.83	2.637%
49	San Antonio	1,143.998	4.377%	1,001.42	4.839%
50	San Isidro	304.510	1.165%	426.56	2.061%
51	Tagum	518.794	1.985%	245.20	1.185%
52	Tamayo	462.734	1.770%	294.34	1.422%
53	Tambangan	1,084.419	4.149%	512.01	2.474%
54	Tawiran	597.415	2.286%	192.69	0.931%
55	Taytay	577.937	2.211%	394.37	1.906%
TOTAL		26,139.27	100.000%	20,695.76	100.000%

Based on the Municipal Assessor's Office, the five (5) urban barangays is equal to 281.58 hectares, and is equivalent to 1.36 percent of the total land area of the whole municipality, while the combined land areas of the other fifty (50) rural barangays constitute

20,414.18 hectares or 98.64 percent of the land area of the whole municipality. The total land area assessed by the municipality is 20,695.76 hectares. This is different with the result of the assessment done by PENRO – Marinduque which is 26,139.27 hectares, which included the islets of Banot, Perlas, Hakupan, Salomague, Peñarroyo and nameless islet located near Barangay Botilao.

Barangay Lapu-lapu is the largest barangay in the Poblacion, while Maharlika is the smallest in terms of land area. San Antonio is the largest barangay, followed by Kaganhau, Makulapnit, and Devilla. These barangays are upland barangays. The smallest barangay is Barangay Biga, a coastal barangay, followed by barangay of Manlibunan. The fifty-five (55) barangays of Santa Cruz are classified as follows:

Table 7: Barangay Classification

Barangay	Classification	Barangay	Classification	Barangay	Classification
*Alobo	Coastal	Banahaw	Upland	Maharlika	Upland
*Angas	Coastal	Jolo	Upland	Pag-asa	Upland
*Aturan	Upland	Kaganhau	Upland	Masalukot	Upland
Baguidbirin	Upland	*Kalangkang	Coastal	*Matalaba	Coastal
Baliis	Upland	*Kamandugan	Coastal	Mongpong	Island
*Balogo	Coastal	*Kasily	Coastal	*Morales	Coastal
*Bangcuangan	Upland	Kilo-kilo	Upland	*Napo	Upland
Banogbog	Upland	Kiñaman	Upland	Pantayin	Upland
*Biga	Coastal	Labo	Upland	*Polo	Island
*Botilao	Coastal	Lamesa	Upland	Pulong Parang	Upland
*Buyabod	Coastal	Landy	Upland	*Punong	Upland
*Dating Bayan	Upland	*Libjo	Upland	*San Antonio	Upland
Devilla	Upland	Lipa	Upland	*San Isidro	Upland
Dolores	Upland	*Lusok	Upland	*Tagum	Coastal
Haguimit	Upland	Makulapnit	Upland	*Tamayo	Coastal
*Hupi	Coastal	Maniwaya	Island	Tambangan	Upland
*Ipil	Coastal	Manlibunan	Upland	*Tawiran	Coastal
Bagong Silang	Upland	*Masaguisi	Coastal	*Taytay	Coastal
				*Lapu-Lapu	Coastal

Source: Socio-Economic and Physical Profile, OMPDC

From the fifty - five (55) barangays of Municipality of Sta. Cruz, twenty - nine (29) barangays were identified with isolated forestlands. They consist of eighteen (18) coastal barangays, one (1) island and ten (10) upland areas. Shown on Table 7 below is the area of timberland on the identified barangays.

Table 8: Barangays with timberland areas covered by FLUP

BARANGAY	UPLAND (Has.)	MANGROVE (Has.)	TOTAL TIMBERLAND AREA (Has.)
Alobo	-	99.590	99.590
Angas	10.807	101.561	112.368
Aturan	72.575	-	72.575
Balogo	-	217.232	217.232
Bangcuangan	17.613	-	17.613
Biga	-	126.543	126.543
Botilao	34.579	33.515	68.094
Buyabod	-	70.762	70.762
Dating Bayan	89.3578	-	89.358
Hupi	-	136.455	136.455
Ipil	93.286	236.161	329.447
Kalangkang	-	45.292	45.293
Kamandugan	-	39.931	39.931
Kasily	-	31.079	31.079
Lapu-lapu	-	15.886	15.886
Libjo	11.411	-	11.411
Lusok	6.928	-	6.928
Masaguisi	-	401.586	401.586
Matalaba	-	80.860	80.860
Morales	-	49.804	49.804
Napo	1.522	-	1.522
Polo	-	315.217	315.217
Punong	10.099	-	10.099
San Antonio	29.695	-	29.695
San Isidro	34.366	-	34.366
Tagum	-	110.916	110.916
Tamayo	32.176	208.709	240.885
Tawiran	15.179	301.171	316.350
Taytay	-	84.577	84.577
TOTAL	459.594	2,706.845	3,166.440

Source: DENR-PENRO Marinduque

Based on the data from the Provincial Environment and Natural Resources Office - Marinduque, Barangay Masaguisi has the largest mangrove area in the Municipality of Sta. Cruz, followed by Barangay Polo and Barangay Tawiran. Meanwhile, Barangay Ipil has an upland area of 93.286 hectares, which can be identified as an open-access area.

Among the barangays covered by FLUP, Barangay Masaguishi has the biggest forest land which covers 64.94% of its barangay land area, and comprises 3.07% of the total land area of the Municipality of Santa Cruz. The mentioned forest land composes of mangroves.

5.1.1.2 Topography and Slope Coverage

Slopes with a range of 0-8 % are those areas with flat to undulating terrain conditions and have a low susceptibility to erosion. Areas with slope range of 8-18% are those areas with rolling to hilly terrain characteristics and have a moderate susceptibility to erosion. While areas with 18-30% and above slopes are those, which are mountainous and are generally located northwest and southeast of the municipality, are highly susceptible to erosion.

From the geological map of the province, it is shown that the entire island is composed of igneous rocks, copper, manganese, iron and ferro-alloy with uranium as detected minerals in the soil. Santa Cruz, like most part of the province is generally rugged and mountainous with few alluvial plains mainly along the coast. Hence, the landscape of Santa Cruz fall under four (4) classes of slope category (*Refer to Table 5.5*). Settlement areas are mostly concentrated along 0-8% topography, as well as the mangrove area which are under the category of protection forests. The mangrove forests in the Municipality of Santa Cruz usually occupy the slope of 0-8% and few parts were on the 18-30% category.

Meanwhile, the National Greening Program (NGP) established in the Barangays of San Antonio, Kilo-Kilo and Libjo are located on rolling to hilly part of the upland forest area (18%-30%). The production forest which is situated in Barangay Dating-Bayan is located on the hilly to mountainous area (30% -50%).

On Table 9, the area of the twenty - nine (29) barangays included in the Forest Land Use Plan was shown under each slope category.

Table 9: Slope Category of the 29 Barangays under FLUP of Santa Cruz

BARANGAY	SLOPE				TOTAL (Has.)
	0% - 8% Slope (Level to Undulating)	8% - 18% Slope (Undulating to Rolling)	18% - 30% Slope (Rolling to Hilly)	30% - 50% Slope (Hilly to Mountainous)	
Alobo	322.758	31.234	42.829	-	396.821
Angas	394.006	-	28.970	11.833	434.809
Aturan	23.754	259.436	218.002	62.608	563.800
Balogo	281.976	-	135.886	-	417.862
Biga	238.355	-	43.447	-	281.802
Botilao	53.342	26.005	390.965	-	470.312
Buyabod	135.094	183.066	46.145	-	364.306
Dating Bayan	-	399.091	115.007	51.412	565.510
Hupi	290.533	-	203.898	-	494.431
Ipil	522.940	112.870	72.084	11.369	719.262
Kalangang	97.855	77.171	263.065	10.518	448.610

SLOPE MAP OF THE MUNICIPALITY OF STA. CRUZ, MARINDUQUE

SCALE 1:175,000

Projection: PRS_1992 UTM, Zone 51N
Horizontal Datum: PRS 1992

Legend

Barangay Boundary

Slope

- (0 - 8% Slope) Level to Undulating
- (8% - 18% Slope) Undulating to Rolling
- (18% - 30% Slope) Rolling to Hilly
- (30% - 50% Slope) Hilly to Mountainous

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Department of Environment and Natural Resources
Provincial Environment and Natural Resources Office
Boac, Marinduque

Figure 2. SLOPE MAP OF THE MUNICIPALITY OF SANTA CRUZ

5.1.1.3 ELEVATION

The elevation of the Municipality of Santa Cruz ranges from 0 to 700 meters above sea level (masl). Almost half of the municipality lies on the 0-100 masl, contributing to the suitability of mangrove species in the area. Santa Cruz has the biggest mangrove area in the Province of Marinduque. An area of 10,117.27 hectares is attributed to 0-100 elevation, where mangrove plantations of about 365.0 hectares were established by PENRO – Marinduque under the National Greening Program (NGP). On the other hand, the elevation of 600-700 masl has an area of 10.74 hectares only, which is mostly located in Barangay San Antonio. The reforested area in the upland forest of the municipality had a total of 32.73 hectares, still under the NGP established since 2011. The maintenance and protection of the said reforested areas were turn-over to the local government unit three years after it was established.

Table 10: Elevation of the 29 Barangays covered by FLUP

BARANGAY	SOIL TEXTURE									TOTAL (Has.)
	0-100	100-200	200-300	300-400	400-500	500-600	600-700			
Alobo	392.832	3.989	-	-	-	-	-	-	-	396.821
Angas	431.653	3.157	-	-	-	-	-	-	-	434.809
Aturan	147.167	179.852	127.508	53.524	55.400	0.348	-	-	-	563.800
Balogo	396.515	21.347	-	-	-	-	-	-	-	417.862
Biga	272.085	9.717	-	-	-	-	-	-	-	281.802
Botilao	333.491	122.382	14.438	-	-	-	-	-	-	470.312
Buyabod	327.826	36.480	-	-	-	-	-	-	-	364.306
Dating Bayan	217.774	312.998	34.737	-	-	-	-	-	-	565.510
Hupi	465.858	28.248	0.325	-	-	-	-	-	-	494.431
Ipil	702.481	16.553	0.228	-	-	-	-	-	-	719.262
Kalangkang	426.883	21.727	-	-	-	-	-	-	-	448.610
Kamandugan	262.246	92.349	9.457	-	-	-	-	-	-	364.052
Kasily	314.126	123.049	0.678	-	-	-	-	-	-	437.853
Kilo-kilo	-	-	86.350	189.034	172.935	33.264	0.445	-	-	482.027
Lapu-lapu	158.4126	42.1166	-	-	-	-	-	-	-	200.5292
Libjo	33.4696	65.9472	51.0109	68.8722	68.5122	28.9508	0.0736	-	-	316.8365
Lusok	142.1938	32.8535	0.9901	-	-	-	-	-	-	176.0374
Masaguishi	1,030.2541	41.1463	3.2010	-	-	-	-	-	-	1,074.6014
Matalaba	309.3633	1.3246	-	-	-	-	-	-	-	310.6879
Morales	306.0222	20.1353	-	-	-	-	-	-	-	326.1575
Napo	605.7225	6.9227	-	-	-	-	-	-	-	612.6452
Polo	717.7582	-	-	-	-	-	-	-	-	717.7582
Punong	0.1919	114.1331	230.0155	5.4801	-	-	-	-	-	349.8206
San Antonio	-	11.5134	636.4899	280.0666	120.1932	85.5179	10.2171	-	-	1,143.9981
San Isidro	34.7218	250.4775	19.3103	-	-	-	-	-	-	304.5096
Tagum	493.6320	25.1620	-	-	-	-	-	-	-	518.7940
Tamayo	462.7343	-	-	-	-	-	-	-	-	462.7343
Tawiran	593.0934	4.3215	-	-	-	-	-	-	-	597.4149
Taytay	538.7614	39.1753	-	-	-	-	-	-	-	577.9367
TOTAL	10,117.2685	1,627.0767	1,214.7390	596.9766	417.0407	148.0807	10.7357			14,131.9179

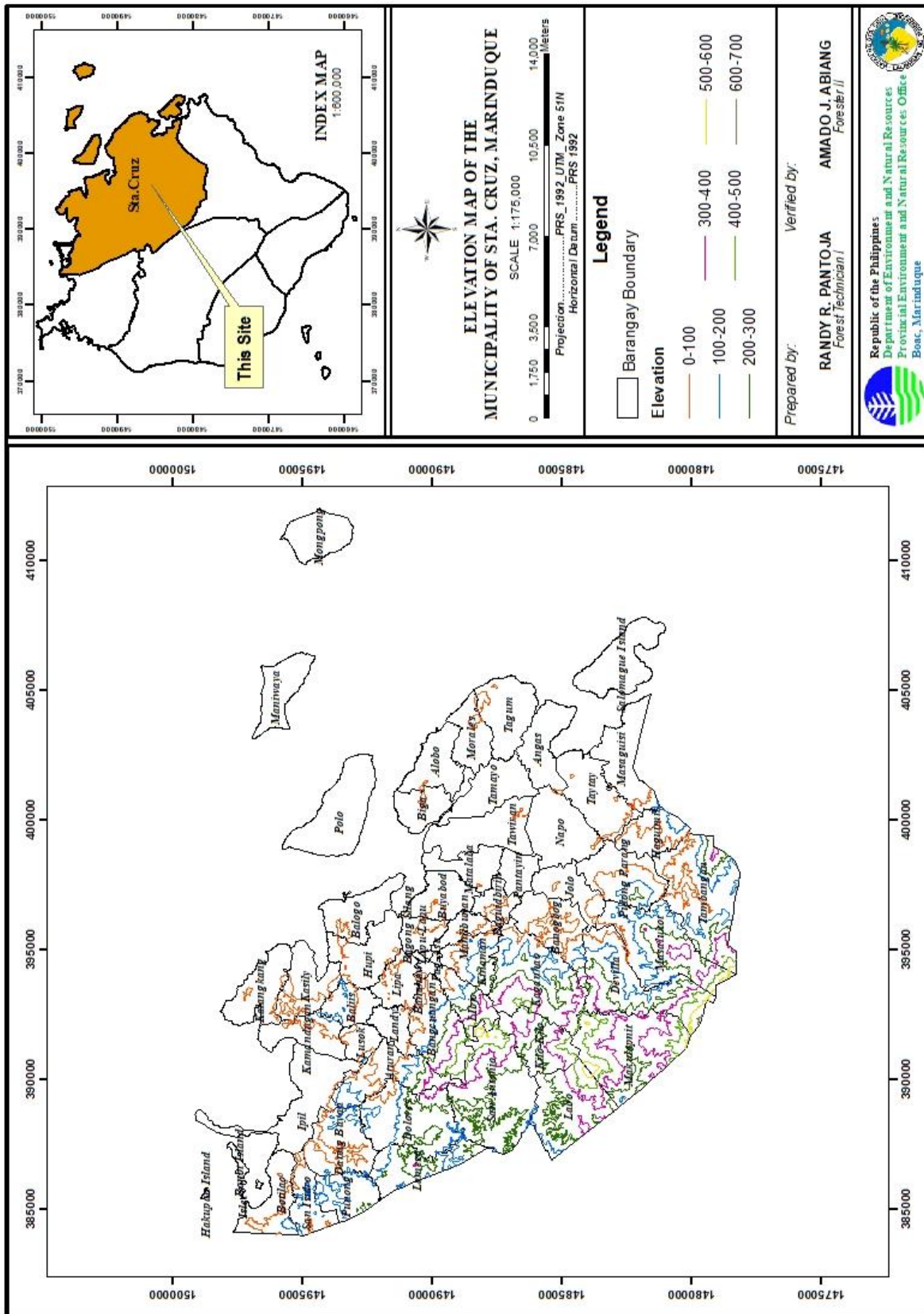


Figure 3: ELEVATION MAP OF THE MUNICIPALITY OF SANTA CRUZ

5.1.1.4 CLIMATE AND RAINFALL

The climate in the Municipality of Santa Cruz is categorized as Type IV with rainfall only at the last quarter of the year. From January to September is usually dry season.

Temperature

The average maximum temperature is 32.9 degrees Celsius experienced during the month of May, and 22 degrees Celsius experienced during December. At areas with an elevation of 400 to 700 meters above sea level, the temperature is 2-4 degrees Celsius lower than those areas near the seashore. However, due to climate change and global warming, temperature increased up to a maximum of 34.0 degrees Celsius.

Maximum humidity is 78% which usually occurs during April while the minimum humidity is 86% during August to November.

The average rainfall is 92.87 inches. A high degree of rainfall usually occurs during the months of June to December, while the least is on March. During rainy season, the barangays which are affected by floods are: Lapu-lapu, Buyabod, Hupi, Lusok, Baliis, Tawiran, Matalaba, Napo and Pulong Parang.

The mean wind velocity is 2.4 m/second, and is almost the same throughout the year, except during typhoons. From October to January, the wind direction is from North East, while from February to April is easterly and southerly during May to September.

Typhoons usually occur during the months of September to January. The last tropical cyclone Reming that passed the area was in 2006 with an average velocity of 200 km. /hr.

5.1.1.5 VEGETATIVE COVER

The Municipality of Santa Cruz has a variation of vegetative cover which ranges from mangrove forest, built-up areas, cultivated – annual crop, cultivated – perennial crop, natural barren land, natural grass land, wooded shrub land, and with patches of inland water and fishponds.

The cultivated – annual crop has the biggest area consumed in the municipality with 6,059.30 hectares, considering that the lowland and upland areas of the municipality are planted with seasonal and perennial crops which include rice, corn, vegetables, root crops (potato, cassava, gabi, ubi and arrowroot) and coconut, banana, jackfruit, mango, guyabano and other fruit trees. The area of cultivated – perennial crop is 1,864.77 hectares.

Based on the assessment of area using the ArcGIS, 2,492.54 hectares is made up of mangrove areas in Santa Cruz, of which 365.0 hectares is included in the National Greening Program of the DENR. The remaining area is of naturally-grown mangrove trees such as pagatpat, Bacauan babae/lalake, tangal, langaray, sagasa, tindok-tindok, tabigue, api-api, pototan, bungalon, pedada, lipata, saging-saging, sasa, dungon-late and dilliuariu. These can be found in the areas of Botilao, Ipil, Kalangkang, Kasily, Hupi, Balogo, Kamandugan, Lapu-lapu, Buyabod, Matalaba, Tawiran, Tamayo, Biga, Alobo, Morales, Tagum, Angas, Taytay, Masaguisi, Polo, and Mongpong. These trees are commonly used for firewood, fence, roofing, construction materials, sap poison and decoration. Due to lack of livelihood, most of the mangrove trees are illegally cut for charcoal production.

Mangroves play an important role to sustain continuous production of fishes and other marine products, aside from their ecological functions. Information campaign and mangrove rehabilitation, replanting, protection and maintenance are continuously implemented by the municipal government. Barangay Fishery and Aquatic Resource and Management Councils are strengthened and they served in Bantay Dagat Operations. While PENRO – Marinduque conducts foot patrolling on these areas to monitor and evaluate the status of the plantations established, as well as to regulate any illegal activities that may be occurring therein.

Table 11: Mangrove species found in Santa Cruz

Common Name	Local Name	Scientific Name	Common Uses
Pagatpat	Pagatpat	<i>Sonneratia alba</i>	Firewood, fencing
Bacauan babae	Bacauan	<i>Rhizophora mucronata</i>	Firewood, Tannin
Bacauan lalaki	Bacauan	<i>Rhizophora apiculata</i>	Firewood, Timber, Christmas tree
Tangal	Tangal	<i>Ceriops tagal</i>	Firewood, Timber
Langaray	Langarai	<i>Bruguiera parviflora</i>	Firewood, fencing
Sagasa	Sagasa	<i>Scyphiphora hydrophyllacea</i>	Firewood, fencing

Tindok-tindok	Tinduk	<i>Aegiceras corniculatum</i>	Firewood
Tabigue	Tabigue	<i>Xylocarpus granatum</i>	Firewood
Api-api	Pipisik	<i>Avicennia officinalis</i>	Firewood, construction material
Pototan	Pototan	<i>Bruguiera sexangula</i>	Firewood
Bungalon	Pi-api/Bungalon	<i>Avicennia officinalis</i>	Firewood, fodder
Pedada	Pedada	<i>Sonneratia caseolaris</i>	Firewood, Timber, Christmas tree
Lipata	Alipata	<i>Excoecaria agallocha</i>	Sap poison
Saging-saging	Saging-saging	<i>Aegiceras floridum</i>	Firewood, fish poison
Sasa-sasa	Nipa	<i>Nipa fruticans</i>	Roofing, wine, vinegar
Dungon late-late	Dungon	<i>Heritiera littoralis</i>	Firewood, construction materials
Diliuariu-diliuariu	Bagin tinik	<i>Acanthus ilicifolius</i>	Decoration

Source: DENR-PENRO Marinduque

About 280.91 hectares of fishponds were also established in the areas near the mangrove forests, while the built-up area is about 790.89 hectares. The wooden land with shrubs has a total of 1,931.72 hectares. On these cover, the production forest in Barangays San Isidro, Dating-Bayan and Punong can be found.

Table 12: Land Cover of the 29 Barangays

BARANGAY	LAND COVER											TOTAL (Has.)
	Inland Water	Mangrove Forest	Open Forest, Broadleaved	Other Land, Built-Up areas	Other Land, Cultivated (Annual Crop)	Other Land, Cultivated (Perennial Crop)	Other Land, Fishpond	Other Land, Natural Barren Land	Other Land, Natural Grass Land	Other Wooded Land, Strubs	Other Wooded Land, Wooded Grassland	
Alobo		126,950		31,378	238,494							396,821
Angas		95,264		45,280	223,008			19,142		52,115		434,809
Aturan				6,023	198,919	127,784				231,075		563,800
Balogo		71,949		130,504	157,366	40,480	17,564					417,862
Biga		114,561			157,953		9,289					281,802
Botilao	-	34,385	-	9,589	-	162,998	-	-	5,816	257,525	-	470,312
Bayabod	-	53,948	-	53,716	93,575	-	-	-	-	163,067	-	364,306
Dating Bayan	-	-	-	-	-	196,962	-	-	-	368,548	-	565,510
Hupi	-	23,371	-	48,367	247,095	85,196	90,403	-	-	-	-	494,431
Ipil	-	333,417	-	23,845	144,632	-	7,434	43,032	-	166,901	-	719,262
Kalangkang	-	83,199	-	-	282,078	83,333	-	-	-	-	-	448,610
Kamandugan	-	42,340	-	7,961	51,806	261,946	-	-	-	-	-	364,052
Kasily	-	15,585	-	44,963	131,358	227,695	18,253	-	-	-	-	437,853
Kilo-kilo	-	-	-	8,030	451,519	-	-	22,478	-	-	-	482,027
Lapu-lapu	-	5,469	-	33,551	36,474	-	1,833	-	-	123,202	-	200,529
Libjo	-	-	-	-	121,515	195,322	-	-	-	-	-	316,837
Lusok	-	-	-	23,147	78,822	34,381	-	-	-	39,689	-	176,037
Masaguisi	-	399,861	-	17,329	322,781	55,215	19,797	-	259,619	-	-	1,074,601
Matalaba	-	84,120	-	34,907	191,661	-	-	-	-	-	-	310,688
Morales	-	15,525	-	9,462	301,371	-	-	-	-	-	-	326,158
Napo	-	-	-	49,687	471,588	43,724	-	-	-	47,647	-	612,645
Polo	-	425,317	-	23,599	268,842	-	-	-	-	-	-	717,758
Punong	-	-	-	14,639	-	149,626	-	-	-	185,555	-	349,821
San Antonio	36,706	-	-	20,375	742,596	-	-	344,322	-	-	-	1,143,998
San Isidro	-	-	-	-	-	152,926	-	-	-	151,584	-	304,510
Tagum	-	79,574	-	29,442	388,078	-	21,701	-	-	-	-	518,794
Tamayo	-	109,106	-	54,479	231,992	-	53,235	-	-	13,924	-	462,734
Taviran	-	287,146	-	29,176	208,977	20,875	17,079	-	-	34,162	-	597,415
Tavay	-	91,659	-	41,243	316,809	26,311	5,187	-	-	96,728	-	577,937
TOTAL	36,706	2,492,544	-	790,690	6,059,305	1,864,771	280,915	409,832	265,435	1,931,720	-	14,131,918

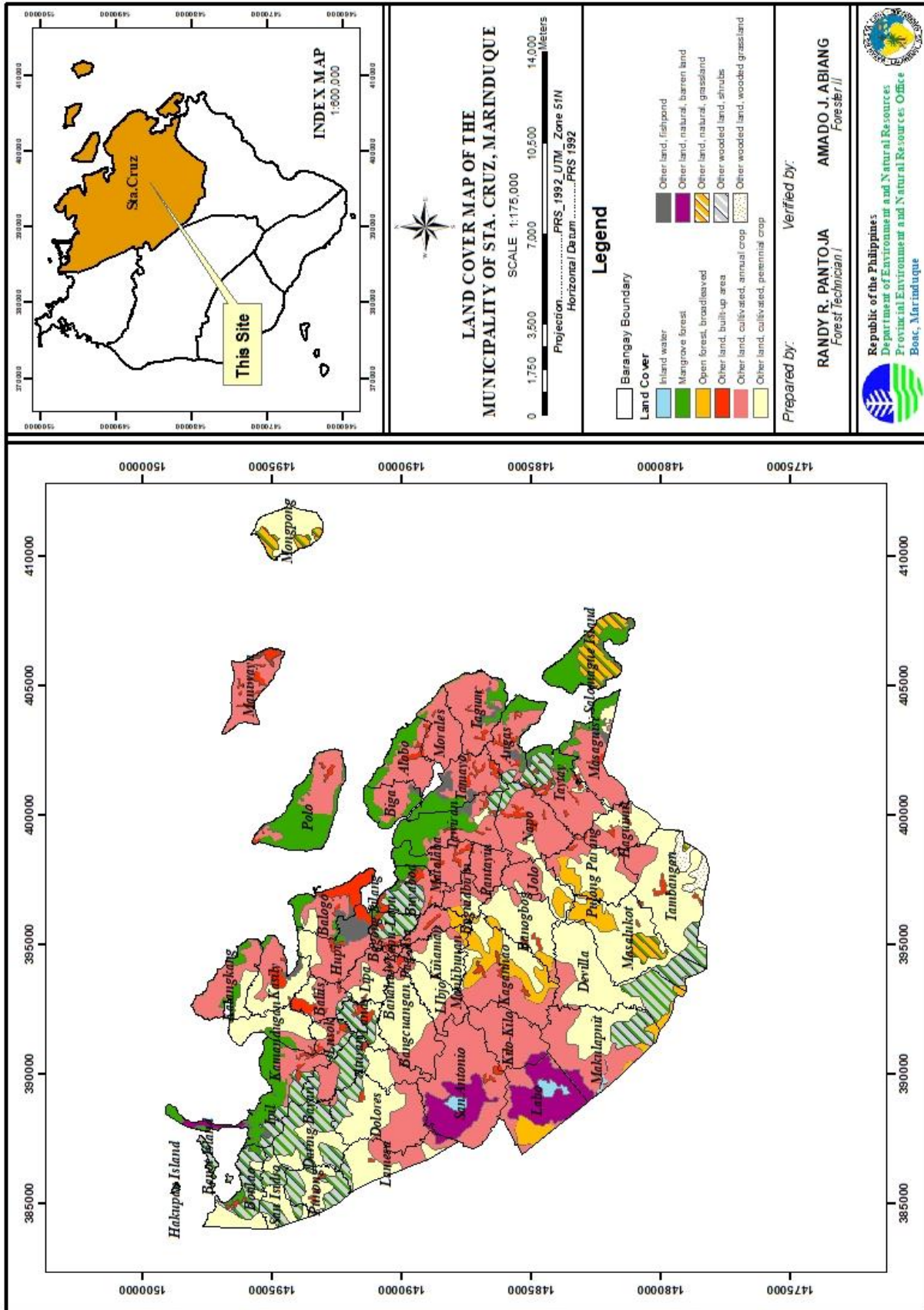


Figure 4: LANDCOVER MAP FOR THE MUNICIPALITY OF SANTA CRUZ

5.1.1.6 Soil Types

Generally, Santa Cruz soils have medium to high fertility. Main agricultural areas have high organic matters, available phosphorous and potassium, except on rocky foot slopes.

There are five (5) types of soil in the area. These are the following:

1. *Hydrosol* – covered by the brackish-water, generally found along the coastal areas of Kasily, Tagum, Tamayo, Angas and Taytay. It is also found in swamp and salt-water marshes. The relief is level, thus no erosion occurs, and is classified under erosion class 0. The aforesaid areas are ideal for mangrove plantations. The PENRO – Marinduque have already established National Greening Program Plantations in these barangays and have been maintained since the year 2015.
2. *Sandy Loam, San Manuel Series* – the most productive soil in the province. They are yellowish – brown to pale – brown sandy loam surface soil; has a depth of about 20-30 centimeters when dry; it is loose and permeable, and turn yellowish when wet. The pale – brown sub-soil has silt to sandy loam texture which reaches to a depth of 100 to 110 centimeters from the surface. It is slightly permeable and has a medium-to-coarse granular structure. The substratum varies from yellowish-brown to pale reddish – brown, fine sandy loam to fine sand. Internal drainage is fast. This soil type is dominant in the peripheries of Barangays Buyabod, Matalaba and Baguidbirin. It is highly suitable for corn, peanut, mongo, coconut, vegetables and banana and lowland rice, in limited scale.
3. *Tagum Clay Loam* – minor soils when it comes to agriculture where portions are under cultivation to coconut, upland rice, arrowroot and cassava. The depth is 0-10 centimeters with surface of grayish-brown to grayish-black clay loam. It contains numerous rustlike concretions that produce black powdery mass. It is slightly compact and slightly permeable when dry, while sticky and elastic when wet. Internal drainage is fair and can afford good root penetration. Its depth which ranges from 100-250 centimeters has a substratum of highly weathered

stones of Andesite, and grayish-white in color when crushed. At lower depths, the rock becomes unweathered. This type of soil is generally found in north-eastern portion of the municipality.

4. *Maranlig Clay* – it is identified to rolling, hilly or mountainous relief, and one of the most extensive soils in the province whose external drainage is excessive due to rolling relief. Its recognizable parent material is basalt and andesite derived from the weathering and decomposition of volcanic rocks. They are fairly deep soils with good internal drainage and granular structure that can afford good root penetration. It is found in the southern and central portion of the municipality. It is the most dominant soil type covering at least 24 barangays from Libjo and Kiñaman and portions of the Poblacion to as far as Tambangan, down south. Coconut is the dominant crop planted to this type of soil.
5. *Faraon Clay* – it is a shallow soil found in the rolling and hilly relief. Its surface soil is derived from weathering of limestone. It can be found within the vicinity of Lapu-lapu, Manlibunan and portion of the Poblacion. Its surface drainage is good while its permeability is somewhat slow. Coconut is the dominant crop in this type of soil.
6. *Bolinao Clay* – this type of soil is a dark yellowish brown on the depth of 0-13, and with moist clay fine granular structure, friable, slightly sticky and very plastic. On the depth of 13-35 centimeters, it becomes Yellowish brown and moist Clay with a characteristic of weak to moderate fine medium. On the 35-40 depth lays the limestone rocks.
7. *Banto Clay Loam* - The surface soil is reddish brown to almost red, friable, slightly compact, fine granular clay loam; sticky and plastic when wet. Depth ranges from 100 to 105cm. the substratum is reddish brown to almost red, clay with black specks band contains highly weathered concretions; sticky and plastic when wet, hard and compact when dry. Lower portion has yellowish brown mottling (*Salazar et al. 1962*). This soil series is covered by cogon, talahib, aguingay (*Rottboellia cochinchinensis*) and other trees. The cultivated

areas are grown to coconuts, upland rice, bananas, corn, root crops, and fruit trees.

8. *Balanacan Clay* - This soil series was formed from the weathering and decomposition of igneous rocks in place, such as basalts and andesite's. It is fairly well-drained soil, even excessive externally due to relief. The surface soil is brown clay, friable when dry, sticky and plastic when wet, with gravels and pebbles and has depth from 20 to 30 cm. the subsoil is dark brown clay loam mixed with concretions and gravels which become black powdery mass when crushed. The lower subsoil contains gravels and cobblestones instead of concretions, and reaches down from 70 to 110 cm from the surface. The substratum is dark yellowish brown clay mixed with highly weathered stones (Salazar et al. 1962).

9. *Dolores Clay Loam* – Based on the book *The Soils of the Philippines* (Carating et al.), this soil series were mapped in the hilly and mountainous areas of Barangay Dolores, Santa Cruz Marinduque. It is classified as only one soil type and was mapped covering 1,057.00 hectares in the province of Marinduque. The surface soil, reaching down to 25cm, is brown to grayish brown clay loam; friable when dry with medium granular structure. The subsoil, reaching down to 70cm from the surface, is reddish brown, slightly compact clay, sticky and plastic when wet; highly weathered gravels and cobblestones are found. The substratum, extending down to the control section at 150cm, is brown sticky clay, mottled by red splotches; at lower substratum are highly weathered stones and cobblestones (Salazar et al. 1962).

Soil Depth

Most of the soils are deep to a very deep due to very thick deposition of Andesite and alluvium materials and intense weathering that produce deep profiles even on relatively steep slope. Shallow soil comprises 16% of the municipality and found in Faraon Clay, rocky and miscellaneous soil types.

Soil Drainage

Areas of Santa Cruz which are plain and with low physiographic deposition are either poorly – drained to well-drained, while those at foot slopes, hills and mountains are classified as well-drained to moderately-drained due to their higher physiographic deposition.

Table 13: Soil Texture of the 29 Barangays under FLUP

BARANGAY	SOIL TYPE										TOTAL (Hs.)
	Balanacan Clay	Banto Clay Loam	Bolinao Clay	Dolores Clay Loam	Hydrosol	Marantig Clay	Parson Clay	San Manuel Sandy Loam	Taring Clay Loam	Unidentified	
Alobo	-	-	-	-	17,197	-	-	-	379,624	-	396,821
Angas	-	-	-	-	44,100	-	96,177	-	294,533	-	434,809
Aturan	-	205,447	252,731	105,622	-	-	-	-	-	-	563,800
Bologo	241,304	-	-	-	175,809	0,750	-	-	-	-	417,862
Biga	-	-	-	-	89,382	-	-	-	192,420	-	281,802
Botilao	413,087	-	-	-	-	-	-	-	-	57,225	470,312
Buyabod	-	-	-	-	42,554	-	130,527	-	191,225	-	364,306
Dating Bayan	41,266	43,411	-	436,539	-	-	-	-	44,293	-	565,510
Hupi	229,978	-	-	-	70,589	193,864	-	-	-	-	494,431
Ipil	582,771	-	-	108,253	-	-	-	-	-	28,238	719,262
Kalangkang	434,368	-	-	-	14,243	-	-	-	-	-	448,610
Kamandugan	364,052	-	-	-	-	-	-	-	-	-	364,052
Kasily	403,666	-	-	-	34,187	-	-	-	-	-	437,853
Kilo-kilo	-	-	-	-	-	482,027	-	-	-	-	482,027
Lapu-lapu	-	-	-	-	10,833	47,783	61,115	-	80,799	-	200,529
Libjo	-	48,424	-	-	-	268,413	-	-	-	-	316,837
Lusok	85,852	-	-	90,186	-	-	-	-	-	-	176,037
Masaguisi	-	-	-	-	208,118	174,631	153,257	-	-	538,595	1,074,601
Matalaba	-	-	-	-	52,552	-	50,863	-	207,273	-	310,688
Morales	-	-	-	-	-	-	-	-	326,158	-	326,158
Napo	-	-	241,051	-	-	312,990	58,604	-	-	-	612,645
Polo	-	-	-	-	188,645	-	-	529,113	-	-	717,758
Punong	-	133,910	-	-	-	-	-	-	215,910	-	349,821
San Antonio	-	677,842	-	-	-	466,156	-	-	-	-	1,143,998
San Isidro	82,655	-	-	-	-	-	-	-	221,855	-	304,510
Tagum	-	-	-	-	142,587	-	-	-	376,207	-	518,794
Tanayo	-	-	100,379	-	156,622	-	-	-	205,733	-	462,734
Tawiran	-	-	360,810	-	104,275	-	120,800	-	11,530	-	597,415
Taytay	-	-	-	-	-	350,273	227,664	-	-	-	577,937
TOTAL	2,878,997	1,109,034	954,972	740,599	1,351,691	2,296,887	899,007	529,113	2,747,560	-	14,131,918



5.1.1.7 Landslide

Almost all of the barangays have mountainous portion that is why large portion of the municipality are prone to landslides. National highways from Barangays Aturan to Lamesa are the most affected. Roads going the upland portion of Santa Cruz such as Barangays Bangcuangan, Libjo, Kiñaman and Kaganhao for western portion, Barangays Taytay, Haguimit, Tambangan, Banogbog and Devilla in the eastern portion, Barangays Kasily, Kalangkang on the northern, and Barangays Punong, San Isidro and Botilao in northwest portion of the municipality are affected by landslides during heavy and continuous rains usually on the months of September to December.

Part of Barangays Tambangan, Masalukot, Kaganhao, Devilla, Haguimit, Banogbog, San Antonio, Kilo-Kilo, Labo, Makulapnit, Libjo, Bangcuangan, Baliis, Balogo, Banahaw, Botilao, San Isidro, Hupi, Lamesa, Dating Bayan, Dolores, Kasily, Kamandugan, Kalangkang, Tagum, Morales, Aturan, Pulong Parang, Kiñaman, Lipa, and Lapu-lapu are susceptible to landslides. A landslide usually occurs during heavy rains on the months of November to December.

5.1.1.8 Geo-Hazard

The geo-hazard analysis is the combination of flood and landslide susceptibility of the municipality. In this area of assessment, the status of the barangays within the municipality was categorized into different levels, as shown in Table 14.

In the tabulation, 5.40 hectares of Barangay Balogo may be highly affected both flood and landslide and Barangay Masaguisi comes second. While most of Barangay Polo has the highest risk of being flooded but low possibility of landslide, considering its low elevation. Though Barangay San Antonio has the highest elevation in the barangays included in FLUP, it has susceptibility.

Table 14: Geo-Hazard of Barangays under FLUP

BARANGAY	GEOHAZARD											TOTAL (Has.)
	Flooding High & Landslide High	Flooding High & Landslide Low	Flooding High & Landslide Moderate	Flooding Low & Landslide High	Flooding Low & Landslide Low	Flooding Moderate & Landslide High	Flooding Moderate & Landslide Low	Flooding Moderate & Landslide Moderate	No Flooding & Landslide High	No Flooding & Landslide Low	No Flooding & Landslide Moderate	
Alobo	-	81.744	20.565	-	-	-	129.303	21.280	-	97.790	46.139	396.821
Angas	-	205.977	-	-	-	-	125.444	-	-	72.650	30.739	434.809
Aturan	0.073	5.565	7.913	-	-	5.567	9.430	26.506	159.636	67.460	281.651	563.800
Balogo	5.403	203.304	3.378	4.275	-	18.968	102.116	17.430	21.643	11.413	17.080	417.862
Biga	-	133.960	24.603	-	-	-	52.066	20.391	-	16.424	34.358	281.802
Botliao	3.998	75.094	9.556	-	-	6.305	43.383	1.102	72.601	109.226	149.049	470.312
Buyabod	-	93.891	-	-	-	-	83.876	-	5.570	145.369	35.600	364.306
Dating Bayan	-	-	-	-	-	-	-	-	57.858	250.203	257.448	565.510
Hupi	3.200	65.269	4.796	14.948	16.959	26.293	72.394	34.092	61.242	89.434	39.899	494.431
Ipil	-	372.374	-	0.011	33.600	3.420	77.805	-	46.160	185.894	-	719.262
Kalangang	-	68.154	36.950	-	-	-	47.658	20.530	17.125	98.093	160.101	448.610
Kamandugan	-	41.125	9.458	1.452	1.187	7.907	3.775	10.628	81.487	35.297	171.737	364.052
Kasily	2.835	42.712	24.657	-	-	9.314	46.616	0.804	83.159	121.060	106.697	437.853
Kilo-kilo	-	-	-	-	-	3.643	2.180	-	105.109	106.163	264.933	482.027
Lapu-lapu	0.225	19.547	0.017	-	0.661	7.956	31.485	0.484	59.580	48.237	32.337	200.529
Libjo	-	0.999	-	-	-	-	-	-	123.435	21.142	171.261	316.837
Lusok	-	-	-	8.126	1.693	15.899	54.338	-	54.460	12.433	10.444	176.037
Masaguisi	-	484.355	9.198	10.196	92.852	-	220.427	9.820	-	176.209	71.545	1,074.601
Matalaba	-	131.144	-	-	-	-	34.289	-	-	145.255	-	310.688
Morales	-	51.980	0.108	-	10.182	0.052	84.907	14.693	17.542	113.014	33.680	326.158
Napo	-	19.617	-	21.394	121.505	-	117.916	16.670	-	274.656	40.887	612.645
Polo	-	542.144	-	-	-	-	175.614	-	-	-	-	717.758
Punong	-	-	-	-	-	-	-	-	33.822	248.196	67.803	349.821
San Antonio	-	21.627	2.003	-	-	0.525	4.179	-	92.393	558.223	465.047	1,143.998
San Isidro	-	0.188	2.647	-	-	-	-	-	10.850	159.361	131.463	304.510
Tagum	2.817	204.753	1.780	-	-	2.208	120.719	31.925	26.780	85.268	42.545	518.794
Tanayo	-	189.859	-	-	30.927	-	121.330	-	-	103.518	17.101	462.734
Tawiran	-	344.064	-	0.016	-	-	140.687	7.931	-	62.031	42.687	597.415
Taytay	-	111.376	3.169	2.841	7.594	-	114.110	18.015	-	297.802	22.930	577.937
TOTAL	18.551	3,510.820	160.796	71.836	380.411	110.801	2,016.044	252.300	1,130.451	3,711.819	2,745.161	14,131.918

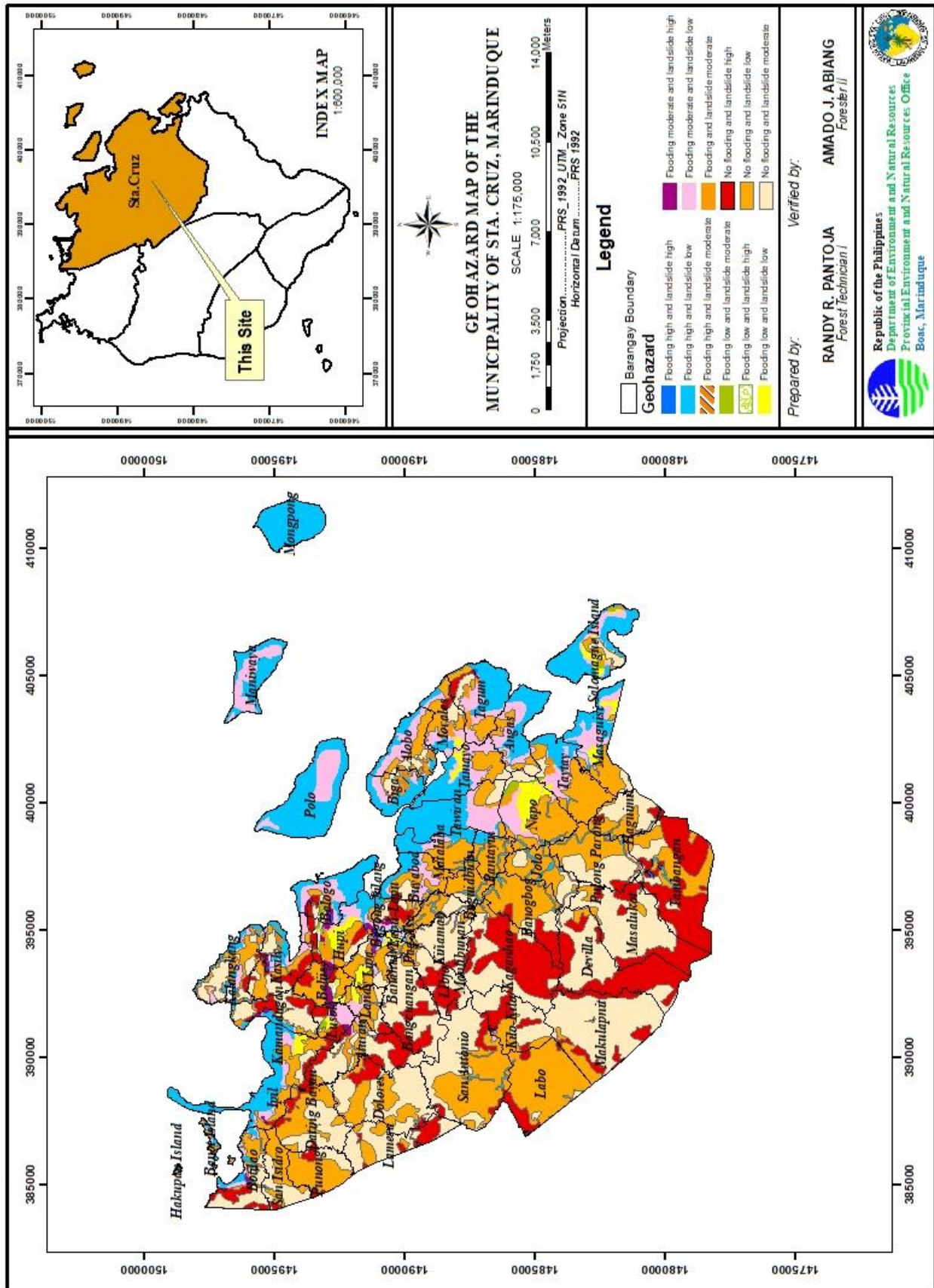


FIGURE 6. GEOHAZARD MAP FOR THE MUNICIPALITY OF SANTA CRUZ

5.1.2 SOCIO-ECONOMIC AND CULTURAL PROFILE

5.1.2.1 Political Subdivisions

Santa Cruz is the biggest municipality in the province of Marinduque. There are 55 barangays, five of which are located at Poblacion, while 50 are rural barangays.

I. Poblacion Barangays	
1. Bagong Silang	
2. Banahaw	
3. Lapu-Lapu	
4. Maharlika	
5. Pag-asa	
II. Rural Barangays	
1. Alobo	26. Lamesa
2. Angas	27. Landy
3. Aturan	28. Libjo
4. Baguidbirin	29. Lipa
5. Baliis	30. Lusok
6. Balogo	31. Makulapnit
7. Bangcuangan	32. Maniwaya
8. Banogbog	33. Manlibunan
9. Biga	34. Masaguisi
10. Botilao	35. Masalukot
11. Buyabod	36. Matalaba
12. Dating Bayan	37. Mongpong
13. Devilla	38. Morales
14. Dolores	39. Napo
15. Haguimit	40. Pantayin
16. Hupi	41. Polo
17. Ipil	42. Pulong Parang
18. Jolo	43. Punong
19. Kaganhao	44. San Antonio
20. Kalangkang	45. San Isidro
21. Kamandugan	46. Tagum

22. Kasily	47. Tamayo
23. Kilo-Kilo	48. Tambangan
24. Kiñaman	49. Tawiran
25.Labo	50. Taytay

5.1.2.2 DEMOGRAPHY

The earliest census of population conducted by the National Statistics Office in 1903 showed that the Municipality of Santa Cruz is the most populated municipality among the six (6) towns of the Province of Marinduque. It remained so until 1995 except in 1918 when it ranked second to the Municipality of Boac.

In 1903- 1918 the population of Santa Cruz grew at an average growth rate of 0.13 percent. This was increased to 1.85 percent in 1918-1939. Subsequent growth rates recorded were 1.25 percent in 1939 -1948; 1.49 percent in 1948 -1960; 2.34 percent in 1960-1970; 3.59 percent in 1970-1975; 1.02 percent in 1975- 1980 and 1.49 percent in 1980-1995. In 2000, the population was 60,055 with an annual growth rate of 1.05, a little bit lower as compared to the previous rate. In 2007, the population was 61,322 with a minimal growth rate of .29%.

According to the Population Census (POPCEN) conducted by the Philippine Statistics Authority (PSA), the population of Marinduque was 234,521 persons, as of August 1, 2015. This figure was higher by 6,693 persons over the population of 227,828 persons in 2010. The recent population counts for the province translated to an annual population growth rate (APGR) of 0.55 percent for the period 2010 to 2015, higher than the 0.47 percent annual PGR registered for the period 2000 to 2010.

The evaluation of the population is necessary to determine how much of the resources of the municipality will be expended, including of the forest resources. Among the six municipalities in Marinduque, still Santa Cruz was the most populated, with population comprising 24 percent of the provincial total population. Moreover, on the analysis done by PSA, two barangays of the municipality is included in the Top 5 fastest growing barangays in the province. They are Barangay Baguidbirin with an APGR of 5.10 and Barangay Tamayo with an APGR of 4.06. The historical growth of the population in the municipality is presented in Table 12.

Table 15: Historical Growth in the Municipality of Santa Cruz

Year	Population	Increase or Decrease	Growth Rate
March 2, 1903	16,350		
December 31, 1918	16,681	331	0.13
January 1, 1939	24,537	7,856	1.85
October 11, 1948	27,430	2,893	1.25
February 15, 1960	32,765	5,335	1.49
May 6, 1970	41,300	8,535	2.34
May 1, 1975	49,247	7,974	3.59
May 1, 1980	51,846	2,572	1.02
May 1, 1990	52,926	1,080	0.21
September 1, 1995	56,991	4,065	1.49
May 1, 2000	60,055	3,064	1.05
August 1, 2007	61,322	1,267	0.29
May 01, 2010	55,673	-5,649	-0.03
August 01, 2015	56,408	7,353	0.95

Source: MPDC 2015

Table 16: Population Growth per Barangay

Province, Municipality and Barangay	Total Population As of 2015	Total Population As of 2010	APGR
SANTA CRUZ	56,408	55,673	0.25
Alobo	1,087	1,150	-1.07
Angas	1,169	958	3.86
Aturan	1,196	1,143	0.87
Bagong Silang Pob. (2nd Zone)	1,057	1,053	0.07
Baguidbirin	187	144	5.1
Baliis	724	754	-0.77
Balogo	1,114	1,084	0.52
Banahaw Pob. (3rd Zone)	2,211	2,106	0.93
Bangcuangan	662	754	-2.45
Banogbog	454	468	-0.58
Biga	336	380	-2.32
Botilao	1,100	1,150	-0.84
Buyabod	2,719	2,748	-0.2
Dating Bayan	419	405	0.65
Devilla	633	589	1.38
Dolores	1,535	1,510	0.31
Haguimit	514	498	0.6

Province, Municipality and Barangay	Total Population As of 2015	Total Population As of 2010	APGR
Hupi	1,619	1,643	-0.28
Ipil	2,106	2,005	0.94
Jolo	256	278	-1.56
Kaganhao	632	652	-0.59
Kalangrang	478	505	-1.04
Kamandugan	643	701	-1.63
Kasily	1,045	1,066	-0.38
Kilo-Kilo	906	994	-1.75
Kiñaman	384	364	1.02
Labo	531	577	-1.57
Lamesa	937	920	0.35
Landy	1,564	1,487	0.97
Lapu-Lapu Pob. (5th Zone)	3,221	3,035	1.14
Libjo	293	269	1.64
Lipa	1,416	1,377	0.53
Lusok	917	838	1.73
Maharlika Pob. (1st Zone)	608	629	-0.64
Makulapnit	457	506	-1.92
Maniwaya	1,482	1,512	-0.38
Manlibunan	889	835	1.2
Masaguisi	1,411	1,427	-0.21
Masalukot	693	671	0.62
Matalaba	1,523	1,483	0.51
Mongpong	1,353	1,322	0.44
Morales	773	722	1.31
Napo	1,727	1,724	0.03
Pag-Asa Pob. (4th Zone)	1,654	1,648	0.07
Pantayin	427	436	-0.4
Polo	946	915	0.64
Pulong Parang	760	751	0.23
Punong	643	689	-1.31
San Antonio	853	963	-2.28
San Isidro	453	395	2.64
Tagum	1,177	1,147	0.49
Tamayo	806	654	4.06
Tambangan	865	948	-1.73
Tawiran	1,420	1,336	1.17
Taytay	1,423	1,355	0.94

Source: Census 2010, 2015

On the population table shown, Barangay Lapu-Lapu has the highest number of population in the Municipality of Santa Cruz with 3,221 counts as of 2015. On the other hand, Barangay Baguidbirin has the lowest number of residents. It must be taken on account that Barangay Lapu-

Lapu is included in the areas to be considered in planning, as one of the barangays with a forested area. The high population residing in the area may affect the protection of the mangrove forest and without proper planning; it may lead to destruction of the existing forestland therein.

The population density declared by the Philippine Statistics Authority as of 2015 has a density of 208 per square kilometre of its land area. However, based on the data provided by DENR – Marinduque, the density of population in the forested barangays covered by FLUP resulted to 2.37 person per hectare or 237 persons per square kilometre. Barangay Polo, with the biggest forestland area of 717.76 hectares has a population density of 1.32 only per its total land hectare. While the most dense barangay under FLUP is Barangay Lapu-Lapu which has 16 persons per hectare or 160 per square kilometre of its land area. Barangay Dating-Bayan which has a total of 565.51 hectares of forestland, including the production forest, has a density of 0.74 persons per hectare, making it the most sparsely barangay under FLUP.

Table 17: Population Density by Barangay under FLUP

BARANGAY	LAND AREA (based on ArcGIS)	Population (based on POPCEN 2015)	Population Density
Alobo	396.82	1,087	2.74
Angas	434.81	1,169	2.69
Aturan	563.80	1,196	2.12
Balogo	417.86	1,114	2.67
Biga	281.80	336	1.19
Botilao	470.31	1,100	2.34
Buyabod	364.31	2,719	7.46
Dating Bayan	565.51	419	0.74
Hupi	494.43	1,619	3.27
Ipil	719.26	2,106	2.93
Kalangkang	448.61	478	1.07
Kamandugan	364.05	643	1.77
Kasily	437.85	1,045	2.39
Kilo-kilo	482.03	906	1.88
Lapu-lapu	200.53	3,221	16.06
Libjo	316.84	293	0.92
Lusok	176.04	917	5.21
Masaguisi	1,074.60	1,411	1.31
Matalaba	310.69	1,523	4.90
Morales	326.16	773	2.37
Napo	612.65	1,727	2.82
Polo	717.76	946	1.32
Punong	349.82	643	1.84
San Antonio	1,144.00	853	0.75
San Isidro	304.51	453	1.49
Tagum	518.79	1,177	2.27
Tamayo	462.73	806	1.74
Tawiran	597.41	1,420	2.38
Taytay	577.94	1,423	2.46
TOTAL	14,131.92	33,523	2.37

Source: ArcGIS, POPCEN 2015

Labor Force Population by Sex and Employment Status

A total of 16, 276 are in the labor force, of which 15,314 or 94.09% are employed, while 962 or 5.91% are unemployed. The remaining 33,772 or 67.47% are those 14 years old and below and the 65 and above who are not in the labor force.

Such figure implies that more than half of the total population of working age are either employed or unemployed since they are those students and old dependents who are members of the working age but are not working and/or not looking for job. This is consistent with the number of school going population and number of old dependents or senior citizens 65 years old and above.

Table 18: Distribution of Household Population by Sex and Employment Status

Total	Population 15 yrs. old and over	In the Labor Force				Not in the Labor Force	%
		Employed	%	Unemployed	%		
Municipal	16,276	15,314	94.09%	962	5.91 %	33,772	67.4 7%
Male	10,319	9,655	93.57%	664	6.43 %	13,948	57.4 8%
Female	5,975	5,655	95%	298	5%	19,806	76.8 2%

Source: Source: CBMS 2014 StatSim and Crosstabs data

5.1.3 Livelihood Sources

The vast agricultural lands and the rich soil of the Municipality make agriculture as one of the principal means of livelihood of its residents. The municipal total agricultural land area is 17,663.8161 hectares or 63.98 % of the total land area of the Municipality which is 27,069.0 hectares.

As per records, there are more or less 18,661 farmers in major and minor agricultural occupations/groups, all of which are in the rural areas.

Crops

The total agricultural area devoted to crops is 13,448.251 hectares equivalent to 76.13% of the total agricultural area. From the total agricultural land area, a considerable portion is devoted to coconut plantation with a total land area of 10,776.89 hectares equivalent to 80.14% with the estimated production of 3,395 metric tons per year.

Irrigated land has a total area of 815.35 hectares is planted with rice twice a year, with a total production of 7,315.7 metric tons for the whole year. With the average cost of P14.50 kilo of palay the value of production is P106, 077,650.00. Non-irrigated rice land is planted at least three times in 2 years while upland rice farm for only once a year. Irrigated rice land produces more than twice compared to non-irrigated.

Bananas are planted as intercrop to coconut, while corn are mostly planted along the river banks, however, the three island barangays produces more corn. Copra as by-product of coconut is sold outside the province at P17 per kilo, while bananas are sold at P40/kilo and corn at P11/kilo.

Livestock and poultry that are raised in the locality sustain the demands of the population of Santa Cruz. Most of the farmers raise these animals in backyard scale only; however, most of the large cattle are sold outside of the province. Native piglets (litsonin) mostly known as organic pigs are sold outside of the province.

Fishery

Fishing still remains an important industry in the municipality. It has 22 coastal barangays whose total coastal fishing ground is 60,502.0 hectares. The peak season for fishing is from January to May while the lean months are from June to December. Subsistence fishermen use the traditional hook and line, floating nets, gill nets, fish traps, fish corral, while taksay are used by commercial fishermen.

The municipal water of Santa Cruz along Tayabas Bay is a rich fishing ground. The place is teemed with various species of fish that even deep sea fishing operators from other provinces or municipalities are tempted to come and fish.

For inland fishing, extensive areas of fishponds are utilized for culturing sugpo, bangus, tilapia, siganids and crabs. Oysters, clams, talaba, punaw, manakla and tambilok are also abundant.

On the other hand, there is a total of 380.912 hectares of brackish water fishpond operated by 43 fishpond operators with average production of 1.5 metric tons per hectare per year. However, 34.9 hectares of which is undeveloped.

Mariculture Park Project at Barangay Angas is an intervention from DA-BFAR, DOST and DOLE Region 4B in close collaboration with the municipality of Santa Cruz, local FARMCs,

fisher folks, communities and other stakeholders. In support of the project, the Sangguniang Bayan passed an Ordinance No. 34-S. 2008 otherwise known as “Municipal Ordinance Establishing the Mariculture Zone (MCZ) within the Municipal waters of Santa Cruz, Marinduque and Creating the Santa Cruz Mariculture Executive Management Council (SCMEMC) and appropriating funds thereof.”

Establishment of Marine Protected Area within the jurisdiction of Barangays Kalangkang and Kasily was supported by Municipal Ordinance no. 45 S. 2008 “An Ordinance Declaring the Establishment and Management of a Marine Protected Area (MPA) and Imposing Regulatory Measures and Penalties Therein at Barangays Kalangkang and Kasily, Santa Cruz, Marinduque. It prioritizes and promotes marine biodiversity enhancement and conservation in order to ensure viable fisheries with the increase of fishery resources and diversity.

Santa Cruz Marine Protected Area has a total area of approximately 194,903 hectares with core zone of 55,128 has (10.0 has. reef flat/bare at low tide), buffer of 139.775 has. It covers 5.172 hectares of mangroves, 67.103 hectares of sea grasses and 67.50 hectares of coral patches.

Shown below is the table which displays the area per land use of the barangays covered by FLUP. Using the ArcGIS, the land use for agriculture with annual crops has the biggest area of 5,929.40 hectares, followed by the mangrove forest area of 2,711.71 hectares.

Table 19: Land Use of the Twenty nine Barangays

BARANGAY	LAND USE							
	Agricultural (Annual Crops)	Agricultural (Perennial Crops)	Aquaculture	Barren Land	Built-up areas	Forested Area	Mangrove Area	Pasture area
Alobo	217.099	-	5.386	-	20.022	-	154.314	-
Angas	236.740	-	14.735	-	53.810	52.348	77.177	-
Aturan	166.216	138.023	-	-	1.614	257.947	-	-
Balogo	160.270	53.138	16.480	-	134.698	-	53.276	-
Biga	132.359	-	1.219	-	-	-	148.225	-
Botilao	-	178.386	-	-	9.528	245.605	30.977	5.816
Buyabod	68.093	-	-	-	69.262	176.694	50.257	-
Dating Bayan	-	196.962	-	-	-	368.548	-	-
Hupi	233.335	90.763	83.955	-	44.826	-	41.552	-
Ipil	118.983	-	7.386	54.178	16.051	117.761	404.903	-
Kalangkang	299.663	48.852	-	-	-	-	100.095	-
Kamandugan	56.503	230.713	-	-	6.313	-	70.523	-
Kasily	119.354	243.525	19.587	-	37.527	-	17.859	-
Kilo-kilo	447.398	-	-	20.726	13.904	-	-	-
Lapu-lapu	50.117	-	9.353	-	36.161	99.232	5.667	-
Libjo	115.291	201.546	-	-	-	-	-	-
Lusok	87.065	46.203	-	-	22.517	20.254	-	-
Masaguisi	307.684	55.075	15.910	-	17.768	-	427.984	250.182
Matalaba	181.139	-	-	-	33.879	-	95.670	-
Morales	284.080	-	-	-	20.566	-	21.511	-
Napo	467.457	43.046	-	-	49.686	52.456	-	-
Polo	269.042	-	-	-	25.231	-	423.485	-
Punong	-	168.980	-	-	14.548	166.293	-	-
San Antonio	733.443	-	36.482	362.181	11.892	-	-	-
San Isidro	-	145.757	-	-	-	158.753	-	-
Tagum	406.228	-	21.568	-	30.739	-	60.260	-
Tamayo	220.011	-	52.848	-	43.706	8.687	137.482	-
Tawiran	199.721	19.310	13.433	-	27.860	22.116	314.975	-
Taytay	332.216	15.425	6.738	-	40.627	107.407	75.524	-
TOTAL	5,909.505	1,875.703	305.080	437.085	782.733	1,854.099	2,711.716	255.998
								14,131.918

Source: DENR-PENRO Marinduque

Somehow, improper knowledge on farming had also affected the area forest land. The recorded forested area based on the land use of Santa Cruz leaves only 1,854.10 hectares, considering that it is only on the uplands. There is a private pasture area of 255.10 hectares 250.10 of which is at Salomague Island of Barangay Masaguisi.

Commerce and Trade

Commerce and trade are two of the livelihood activities in the municipality. Several commercial establishments, including sari-sari store in the urban and rural areas can be found.

Five barangays in the poblacion which serve as the commercial center are designated as the urban development zone whose use is allowable for commercial or residential or combination thereof. Santa Cruz Public Market with nine (9) separate buildings with individual stalls is located at Barangay Manlibunan, an adjacent barangay outside the poblacion.

Barangays Napo, Landy. Buyabod, Kilo-kilo and Matalaba have more commercial establishments compared to other rural barangays due to the presence of secondary and tertiary schools.

SOCIAL CONDITION

Education

As far as education is concerned, there are only four barangays without public elementary school. These are Barangays Baguidbirin, which has the least number of populations, Maharlika, Bagong Silang and Pag-asa, all in the poblacion proper. The latter two however, has private and catholic elementary and high school respectively.

There are 52 public elementary schools, 5 private elementary schools, six private kindergarten schools, 52 public kindergarten schools, 5 private high schools, 17 public national high schools, 4 tertiary schools (2 of which offers vocational courses only). There are nine (9) public and two (2) private schools offering senior high schools.

The municipality is divided into three (3) districts: the East, North and South Districts. Each district is headed by a District Supervisor.

There are four schools offering tertiary education in the municipality, the Marinduque State College, Malindig Institute, Santa Cruz Institute and Buyabod School Arts and Trade.

Health and Nutrition

Health service is one of the basic services devolved to the municipality. It utilizes the primary health care approach with the vision of “A healthy Community of Santa Cruz”. The mission is: The municipality shall provide quality health care through adequate, affordable and accessible health care services.

Medical health facilities that cater the health services needed by the populace are the Santa Cruz District Hospital, a secondary hospital operated by the Provincial Government. It has 25-bed capacity but operating as 45-bed capacity. It is headed by the Chief of the Hospital.

There are two Rural Health Units headed by the Municipal Health Officer. Rural Health Unit I Type equation here.is at Barangay Pag-asa, while RHU II is at Barangay Napo. Both are PhilHealth accredited and offer the MCH Program, EPI, Family Planning, National TB Program, Cancer control program, Sexually transmitted disease program, CVD program, control diarrheal disease, nutrition program, environmental sanitation, pre-marriage counselling and dental services. Animal Bite Center and Social Hygiene Clinic are available in RHU I main health center.

Cemetery

There are five cemeteries within the municipality; the most crowded is the municipal cemetery at Barangay Manlibunan. Most of the tombs are three layers already with no space for road or pathways. The new municipal cemetery is situated in the opposite side. has designated area for mausoleum type, single niche and the apartment type which will serve as the fence of the area. The Municipal government has an on -going negotiation for the purchase of additional lot which is adjacent to the old cemetery. All of the cemeteries are located in accordance with the Sanitation Code of the Philippines (PD 856).

Table 20: Existing Cemeteries

Name of Cemetery	Barangay	Type of Ownership	Area
Santa Cruz Municipal Cemetery	Manlibunan	LGU owned	1.8171 has
Santa Cruz Municipal Cemetery	Lapu-lapu	LGU owned	1.5303 has
Santa Cruz Catholic Cemetery	Lipa	Church owned	0.9792 has
Santa Cruz Catholic Cemetery	Manlibunan	Church owned	2.8111 has
Santa Cruz Catholic Cemetery	Napo	Church owned	1.3768 has

Source: Socio-Economic and Physical Profile, OMPDC

Sanitary Toilets

Table 21: Number of Households by Type of Toilet Facilities

Type of Toilet Facilities	Number of Household
Water-sealed flush to sewerage/septic tank-own	11,078
Water-sealed flush to sewerage/septic tank-shared	533
Water-sealed flush to sewerage/other depository-own	414
Water-sealed flush to sewerage/ other depository -shared	67
Close Pit	116
Open Pit	27
None	882
Others	5
TOTAL	13,122

Source: CBMS 2014, Office of the MPDC

Out of the 13,122 households, 12,092 or 92.15% have sanitary toilets while 1,030 or 7.85% have no sanitary toilet.

Solid Waste Management Service

The Municipality of Santa Cruz has an existing controlled disposal facility located at Sitio 6, Barangay Lapu-lapu, one of the five barangays in the poblacion. It has an area of 2,343 square meters, part of the approximate three (3) hectares lot of the new municipal cemetery. Solid wastes management service is carried out under the Office of the Municipal Engineer.

Last 2017, the Local Government of Santa Cruz through the effort of Mayor Marisa Red Martinez, developed the disposal site. Machines intended for biodegradable and non-biodegradable waste were purchased in order to minimize the garbage to be dumped in the disposal area.

Intensified campaign on solid waste management was continuously carried out to implement the proper solid waste segregation. The “NO SEGREGATION, NO COLLECTION POLICY” is implemented. Two dump truck intended for biodegradable and non-biodegradable waste are used every day to collect the segregated waste on scheduled time and day per barangays in the poblacion.

Despite of the efforts of the municipal government to manage and practice proper solid waste management, there is a need for the acquisition of the neighbouring lot for additional site. Garbage fees are collected from business establishments within the poblacion area.

Solid wastes in the rural barangays are either dumped the backyards. Solid Waste Management Act is not fully implemented in the municipality.

Social Welfare

Social welfare services in the municipality is rendered and extended through the Office of the Municipal Social Welfare headed by a Social Welfare Officer III. Among the programs that are currently undertaken are the following: Early Child Care Services, Aid to Individual in Crisis Situation, Emergency Assistance, Livelihood Assistance, Management of Crisis Intervention Center, Referral System, Women's welfare program, Solo Parent program, child and youth welfare, emergency assistance, disaster risk reduction and management and program for persons with disability and elderly.

In coordination with the DSWD, same office is involved in the implementation of national programs such as: Pantawid Pilipino, Supplementary Feeding, and Financial assistance to subsistence farmers and fishermen (Food for work).

Housing

Most of the houses in Santa Cruz are made of strong materials built as single house with one household living in one unit with at least five occupants. The damage brought by Typhoon Nina last December 2016 brought great difference in the conditions of most houses in the locality. It can be said that generally, most of the houses made of light materials before the typhoon were improved with the fund coming from DSWD under Emergency Shelter Assistance Program.

Thru primary interviews during CBMS Survey last 2014, it can be noted that there are few cases of doubled-up household. Extended family wherein either the parents or the married children living with them are the household heads is common. There are no cases of family living in the parks, cemetery or homeless families.

Table 22: Informal Settlements Areas

Barangay		Total number of households	Informal Settlement	
			<i>Total Number</i>	<i>Proportion</i>
1	Alobo	268	6	2.24
2	Angas	228	5	2.19
3	Aturan	271	3	1.11
4	Balogo	257	31	12.06
5	Biga	88	1	1.14
6	Botilao	261	0	0
7	Buyabod	584	5	0.86
8	Dating Bayan	105	1	0.95
9	Hupi	332	4	1.2
10	Ipil	495	12	2.42
11	Kalangkang	95	0	0
12	Kamandugan	190	12	6.32
13	Kasily	231	3	1.3
14	Kilo-kilo	241	2	0.83
15	Lapu-lapu Pob.	708	13	1.84
16	Libjo	68	0	0
17	Lusok	223	7	3.14
18	Masaguisi	315	10	3.17
19	Masalukot	131	7	5.34
20	Matalaba	304	8	2.63
21	Morales	179	6	3.35
22	Polo	252	14	5.56
23	Punong	180	2	1.11
24	San Antonio	244	2	0.82
25	San Isidro	112	2	1.79
26	Tagum	277	7	2.53
27	Tamayo	167	0	0
28	Tawiran	353	1	0.28
29	Taytay	321	3	0.93

Source: CBMS Census 2013 - 2037

There are 256 identified squatters in the municipality. Some of them are in the mangrove area or salvage zone and occupied the area for more than three years. Most of these houses are affected by high tide.

Table 23: Inventory of Residential Subdivisions

Name of Subdivision	Classification	Barangay	Area (has.)	No. of lots/ Units
Villa Jovita's Executive Village	Open Market	Manlibunan	4,1890	220 lots
Seafront Executive Village	Open Market	Buyabod	3,3943	115 lots
TOTAL			7.5833	335 lots

Source: Office of the MPDC

There are two residential subdivisions in barangays adjacent to the poblacion. In Villa Jovita Executive Village several commercial and residential buildings are now constructed and occupied, while no construction of building is made in Seafront Executive Village.

Table 24: Resettlement Areas

Barangay	Land Ownership	No. of Families	No. of Housing Units	Area
Lapu-lapu	Barangay	30	30	0.5000
Taytay	Municipal	30	30	1.5167
Alobo	Municipal	3	3	1.0000
Matalaba	Private	15	15	0.4828
Haguimit	Municipal	3	2	0.5000

Source: Office of the MPDC

There are five (5) resettlement areas in the municipality. In barangay Lapu-lapu there are 30 families, the lot was purchased by the barangay while the housing units were funded out of the DSWD under the Core Housing Project. The area is susceptible to landslide.

In Barangay Taytay, the lot was purchased and developed by the Municipal Government. Housing units were funded by Gawad Kalinga with the counterpart fund from the municipality and from the beneficiaries. There are still available lots for the construction of additional units of houses.

A lot for housing project in Barangay Alobo was purchased by the municipal government intended for Gawad Kalinga Housing Project. As of now there are only 3 housing units. The 15

units of houses constructed in Barangay Matalaba were funded out of the Core Shelter Program of the DSWD. In Barangay Haguimit, two (2) housing units were constructed after Typhoon Nina.

Sports and Recreation

Sports are one kind of recreation involving physical capability while recreation is the relaxation of the body or mind during leisure hours.

Almost all the barangays have their own multi-purpose pavement utilized as basketball court. In most of the sitios there are also half basketball courts. They are all functional although some needs improvement. Basketball competition or tournament is most common before the celebration of barangay fiesta. During summer softball or baseball completions are held in barangays Napo, Tawiran, and Kaganhao.

In the poblacion proper, there is town plaza utilized for different sports and cultural activities. Just opposite is the municipal gymnasium and about 20 meters away is the Multi-purpose hall that can also be utilized for different sports and cultural activities.

With the organization of the Sangguniang Kabataan as Chairman of the Committee on Sports, most of the barangays utilize portion of their 10% SK fund for their sports activities.

Schools have their large playground for students, especially the central school of the three districts. Sports development program is implemented by Department of Education thru area, district and municipal meet. Said program is mostly funded thru the Special Education Fund.

Due to the limited sports facilities, provincial meet is seldom held in the municipality. A sports complex with an area of 4.4 hectares at Barangay Baliis was initially developed.

Protective Services

Public safety, protection of lives and properties, enforcement of laws and maintenance of peace and order within the territorial jurisdiction of Santa Cruz is the responsibility of local PNP, BFD and BJMP now under the operational supervision of the Municipal Mayor.

Santa Cruz is considered as one of the most progressive and peaceful town in the entire province of Marinduque. The entire province has been declared as “NPA Free” by the Philippine Army in the previous year, the LGU however with the help of the PNP spearhead its relentless campaign against criminality, terrorism and threats to internal security. The Municipal Peace and

Order Council together with the Municipal Risk Reduction and Management Council together with the presence of Philippine Army headquarters contribute much in the maintenance of peace and order in the entire municipality. Equivalent councils and Lupon Tagapamayapa are also present in the 55 barangays. With campaign against illegal, the municipality have several programs and activities that will address illegal drugs and gambling.

The 22 coastal barangays have their respective Barangay Fisheries and Aquatic Resource and Management Council who are of great help to the PNP in the conduct of Bantay-Dagat operations. For the upland barangays particularly in the watershed area, there are 4 forest wardens deputized by DENR after attending the required trainings.

INFRASTRUCTURE AND UTILITIES

Mobility and Transportation

Land Transportation

Public conveyances are available in the municipality, thus, there is not much problem regarding transportation. The main mode of land transportation is jeepney, which has the highest number of registration in the municipality. Barangays are served either by jeepneys or tricycles, which have regular trips daily.

Tricycles are the most available means of transportation within the poblacion proper and barangays that are more or less five kilometres away from the poblacion. These tricycles utilize the national road. FX and Garage-Terminal Service (GTS) vans are the common means of transportation going back and forth to Balanacan Port in Mogpog of passengers going outside the province.

There are also several units of jeepneys with route going to Boac and Torrijos with trips scheduled every 40 minutes. Travel time from poblacion to Boac/Torrijos is more or less one hour. There are also regular trips in the rural barangays of the municipality. Far-flung barangays have travel time of more or less one hour with scheduled at least every hour, others have two trips per day, and others have only one trip per day. JAC Liner bus has regular trip leaving Manila every evening and arriving in the municipality early morning the following day, and leave for Manila in the afternoon at the same day.

Water Transportation

As of now there is no passenger boat for transportation to and from Lucena City (Quezon). There is a need to go to Balanacan pier thru FX or GTS van for more or less, one hour, and three hours by boat, while from Lucena to Manila, is more or less three hours. Numerous cargo vessels transport construction materials from Lucena to Buyabod Pier in Barangay Buyabod.

Pump boats are the common means of transportation to-and-from the three (3) island barangays. Travel time to Polo, Maniwaya and Mongpong is more or less 30, 40, and 60 minutes, respectively. With the development of tourism destinations in Maniwaya and Mongpong, there are 22 registered motorized banca used in tourism purpose.

For neighbouring towns of Catanaunan, General Luna, Mulanay and San Narciso in the Province of Quezon, travel time is, more or less two hours. There is regular daily trip to or from the island-barangays and neighbouring towns of Quezon Province.

Table 25: Inventory of Sea Transport and Service Routes

Modes	Facilities	Capacity	Location/Route	Frequency of Service/Trips
Sea Transport	Motorized Banca	20	Maniwaya-Buyabod, vice versa	Daily
		20	Mongpong-Buyabod, vice versa	Daily
		20	Polo-Buyabod, vice versa	Daily
		20	General Luna-Buyabod, vice versa	Daily
		20	Buyabod-Catanaunan, vice versa	Daily

Source: OMPDC, Primary survey

Port Network

The pier at Barangay Buyabod is the only national port managed and operated by the Philippine Ports Authority (PPA) in the municipality. It is the berthing place for both passenger and cargo boats. On account of the several coastal barangays in the municipality, there also exist 13 ports where small pump- boats and fishing boats moor. There is also one private port owned by the Marcopper Mining Corporation. However, the same is not functional since the closure of the company.

Table 26: Existing Location of Ports by Classification

Classification	Location	Remarks
National	Buyabod	Good
Municipal	Lapu-lapu	No longer operational (silted area)
Barangay	Botilao	Good
	Mongpong	Good
	Maniwaya	Good
	Biga	Good (Wharf)
Classification	Location	Remarks
Barangay	Polo	Good
	Tagum	Good (Wharf)
	Taytay	Wharf (Needs improvement)
	Masaguisi	Wharf
	Ipil	Good
	Tamayo	Wharf (Needs improvement)
	Balogo	Needs improvement
	Alobo	Good
Private(Marcopper)	Balogo	Not operational (Needs rehabilitation)

Source: OMPDC Primary survey 2018

Table 27: Road Network

Roads System by Classification	Total Length (km)	Concrete		Asphalt		Gravel		Earth	
		Km	C	km	C	km	C	Km	C
National	24.400	24.200	Good	.200	Good	-	-	-	-
Provincial	56.091	20.780	Good	-	-	35.311	Fair/poor	-	-
Municipal	11.417	11.080	Good/Fair	-	-	0.337	Fair	-	-
Barangay	126.012	60.911	Good/Fair	0.589	Good/fair	58.925	Poor	5.91	Poor
Private Road	39.122	-	-	-	-	39.122	Poor	-	-

Source: Office of the Municipal Engineering

C-Physical Condition (Good-Acceptable/Serviceable, Poor-Needs Improvement, Critical - For Priority Action)

Road network in the Municipality of Santa Cruz is adequate to serve the town proper and the rural barangays, as well. The total road network is 260.237 kilometres. Roads within the poblacion are concrete, however, most need repair.

The national road is 100% concrete, while Marcopper Road (categorized as private) is gravelled. Since the closure of Marcopper, said road was not maintained and has caused accessibility problems to the 12 barangays traversed by the said road especially during rainy season.

Improvement and maintenance of barangay roads are undertaken by the respective barangays but are mostly funded by the municipal government. Concreting is done in the critical sections particularly in the portions that are easily damaged.

Most of the provincial roads leading to the interior barangays particularly in the mountainous barangays are now under concreting or improvement. There are instances wherein the municipal government allocate funds for the same for the benefit and interest of the barangay residents concerned.

There are 9 bridges crossing the various rivers in the municipality. All of them are concrete and in good condition. There are 11 concrete footbridges in several barangays within the municipality. All of them are in good condition. These footbridges are equally important in the accessibility of the area.

Spillways are ancillary road facilities in several barangays. These spillways are not passable in times of flood, thus transportation service is unavailable and areas become isolated.

Water Supply

The Municipal Waterworks System serves thirteen (13) barangays of the municipality. The system caters more than 3,000 metered service connections and is increasing by an average of 100 new applicants annually. Majority of which are residential connections and the rest are commercial and institutional connections.

The entire waterworks system is sourced from seven (7) different spring water impounding reservoir with individual spring box. From there, water is conveyed by means of an aqueduct or pipelines ranging from 100 and 150 mm diameter which are a combination of cast iron (C.I.), galvanized iron (G.I.) and polyvinyl chloride (PVC) pipes. Gravitational force transmits water from spring box down to the water storage tanks that serve as the distribution centres. Each distribution tank employs drip-type chlorination system to disinfect water prior to distribution to consumers.

As per 2014 CBMS data, there are 3,243 household 3,723 households and 6,578 household served by Level III, Level II, and Level I respectively.

In the present time, the entire municipality is suffering from drought. There is a pronounced scarcity of water supply for potable and domestic use.

Power

The whole province of Marinduque is catered or served by MARELCO an electric cooperative powered by NAPOCOR. The power supply is sufficient to energize the whole province. NAPOCOR have two (2) land based power plants at Bantad, Boac and Cagpo, Torrijos and one (1) power barge at Balanacan, Mogpog. However the entire province experience frequent brownouts. The 55 barangays of Santa Cruz have electricity or energized. Solar lighting systems are also present in some residential houses and even along the streets. Most of the commercial establishments use generators during power interruptions.

Communication Services

Santa Cruz has access to better communication. The presence of cell sites and internet providers makes the municipality connected to other parts of the world. There are internet providers within the poblacion and one radio station. There are several cell sites of Smart, Sun Cellular and Globe within the municipality; however, there are areas that could hardly have communication signals. Government and privately owned handheld radio communication are available and can be used in times of disasters.

Postal Services

The Philippine Postal Corporation (Philpost)-managed postal service station located at Barangay Pag-asa, is manned and operated by 4 personnel and is headed by a Postmaster. Private courier services such as the Luzon Brokerage Corporation (LBC) and (JRS) also operate in the municipality.

Presence of Other Media Facilities

Cable Services are provided by GR CATV Cable Services, Gsat, Cignal and Sky Direct at almost all throughout the municipality. A radio station with a frequency of 104.5 named RADYO NATIN – Sta. Cruz is also used by the residents and neighbouring towns as a way to make announcements. Santa Cruzin are also lovers of radio-TV soap operas thereby, a home is not complete without a radio. It is a good source of entertainment, information, news update and weather report.

Institutional profile

The stakeholders involved in the Forest Land Use Planning (FLUP) for the Municipality of Santa Cruz are generally the barangays which has a forestland within their jurisdiction. The

Technical Working Group, both from DENR – Marinduque and LGU Santa Cruz, conducted series of Focus Group Discussions (FGD) with the officials of the twenty – nine barangays covered by the planning. Their involvement in the meaningful discussion will enable them to understand the purpose of planning as well as their roles and responsibilities in formulation and implementation of the plan.

Interaction with the stakeholders is necessary in FLUP to ensure that they know the effects of their actions on the environment. Every activity does greatly affect the condition of the forestlands. Through FGDs, the TWG will know what activities are usually practiced, who are usually doing such and how forest products are used or utilized. These are important factors to be considered in making a good, realistic and attainable plan for the protection of the forest and forestland.

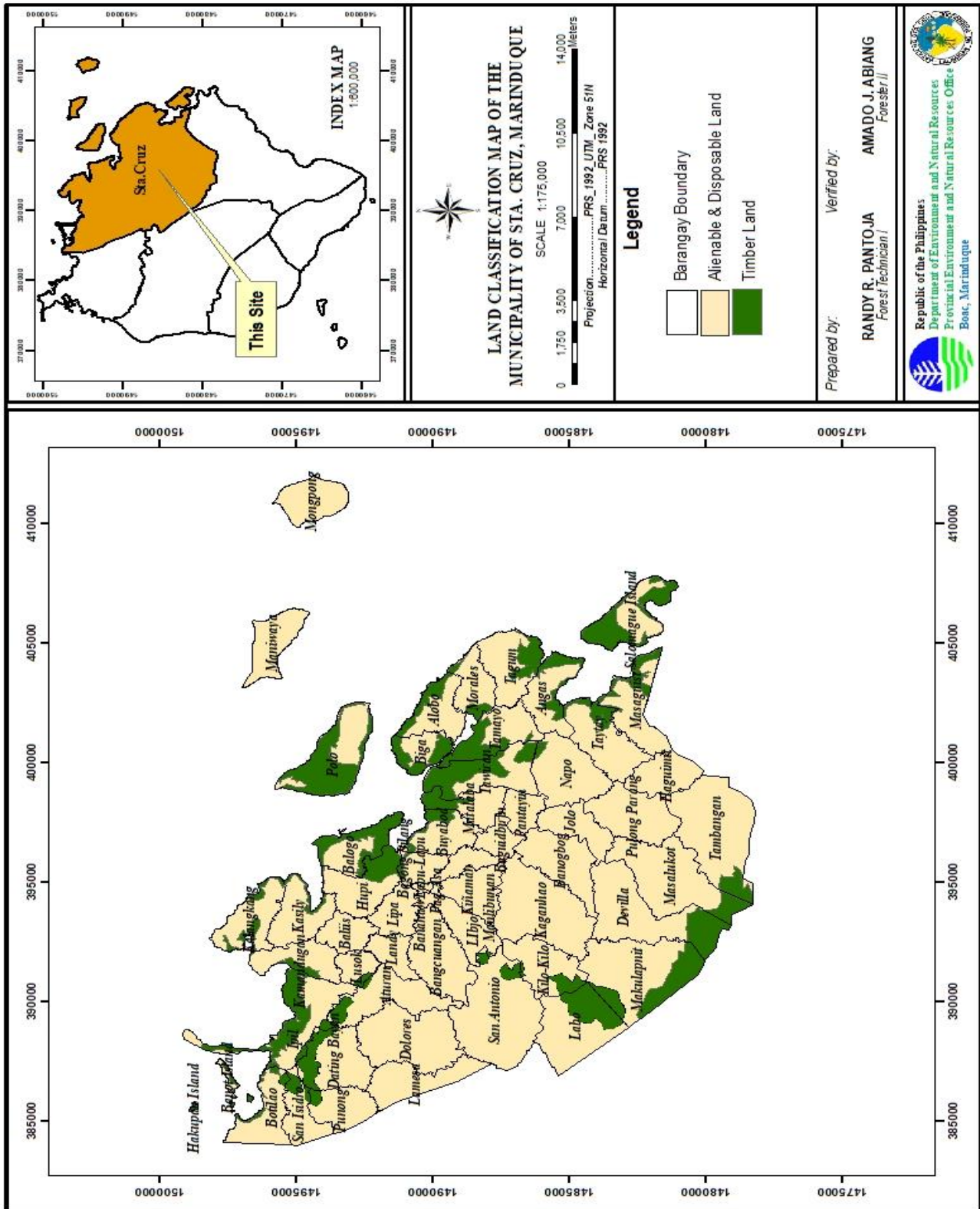
The Municipality of Santa Cruz has no recorded Indigenous People (IP). A Community-Based Forest Management at Barangay Kamandugan was awarded to people's organization, Kamandugan Small Fishermen Association (KASFA) with an area of 25.156 hectares.

CONDITIONS OF FORESTS AND FOREST LANDS ASSETS

Santa Cruz has the biggest land area among the six municipalities of the Province of Marinduque. As the Philippine Statistics Authority (PSA) has declared, Santa Cruz has an area of 270.77 square kilometres. Based on the data of PENRO – Marinduque, Santa Cruz has a total land area of 261.39 square kilometres and the share of forest land is 34.76 square kilometres only. Most of this forestland is made up of mangrove trees, agro-forestry in the production area and naturally-grown trees in the protection area.

Table 28: Land Classification of the 29 Barangays

BARANGAY	LAND AREA (Has.)	FOREST AREA (Has.)	ALIENABLE & DISPOSABLE	% SHARE
Alobo	396.821	106.398	290.423	26.81%
Angas	434.809	118.156	316.653	27.17%
Aturan	563.800	60.423	503.377	10.72%
Balogo	417.862	223.209	194.653	53.42%
Biga	281.802	145.871	135.932	51.76%
Botilao	470.312	74.657	395.655	15.87%
Buyabod	364.306	72.150	292.155	19.80%
Dating Bayan	565.510	130.720	434.789	23.12%
Hupi	494.431	145.013	349.418	29.33%
Ipil	719.262	331.278	387.984	46.06%
Kalangkang	448.610	83.244	365.366	18.56%
Kamandugan	364.052	41.234	322.819	11.33%
Kasily	437.853	36.728	401.125	8.39%
Kilo-kilo	482.027	7.265	474.762	1.51%
Lapu-lapu	200.529	18.001	182.528	8.98%
Libjo	316.837	2.563	314.274	0.81%
Lusok	176.037	17.436	158.602	9.90%
Masaguisi	1,074.601	417.629	656.973	38.86%
Matalaba	310.688	88.159	222.529	28.38%
Morales	326.158	52.054	274.103	15.96%
Napo	612.645	19.085	593.560	3.12%
Polo	717.758	431.050	286.708	60.06%
Punong	349.821	24.988	324.833	7.14%
San Antonio	1,143.998	50.885	1,093.113	4.45%
San Isidro	304.510	46.155	258.354	15.16%
Tagum	518.794	130.786	388.008	25.21%
Tamayo	462.734	195.756	266.978	42.30%
Tawiran	597.415	316.232	281.183	52.93%
Taytay	577.937	88.811	489.126	15.37%
TOTAL	14,131.918	3,475.936	10,655.982	24.60%



Forest lands

Santa Cruz has twenty – nine (29) forested barangays, with its upland and mangrove areas. The upland area has a total of 459.97 hectares while mangrove area is equal to 3,015.96 hectares. There are barangays where either mangroves or upland forest exist while some barangays both mangrove and upland forest are present, example of which is Barangay Tawiran where mangrove forest has an area of 268.01 hectares while upland forest is 48.22 hectares. Barangay Polo has the biggest mangrove area in the municipality with a total area of 431.05 hectares. Barangay Dating-Bayan has an upland forest of 130.72 hectares, part of which is production forest.

Table 29: Barangays with timberland areas.

BARANGAY	UPLAND (Has.)	MANGROVE (Has.)	TOTAL AREA (Has.)
Alobo	-	106.398	106.398
Angas	-	118.156	118.156
Aturan	60.423	-	60.423
Balogo	-	223.209	223.209
Biga	-	145.871	145.871
Botilao	13.643	61.014	74.657
Buyabod	-	72.150	72.150
Dating Bayan	130.720	-	130.720
Hupi	-	145.013	145.013
Ipil	32.774	298.504	331.278
Kalangkang	-	83.244	83.244
Kamandugan	-	41.234	41.234
Kasily	-	36.728	36.728
Kilo-kilo	7.265	-	7.265
Lapu-lapu	-	18.001	18.001
Libjo	2.563	-	2.563
Lusok	17.436	-	17.436
Masaguisi	-	417.629	417.629
Matalaba	-	88.159	88.159
Morales	-	52.054	52.054
Napo	19.085	-	19.085
Polo	-	431.050	431.050
Punong	24.988	-	24.988
San Antonio	50.885	-	50.885
San Isidro	46.155	-	46.155
Tagum	-	130.786	130.786
Tamayo	5.823	189.933	195.756
Tawiran	48.217	268.014	316.232
Taytay	-	88.811	88.811
TOTAL	459.978	3,015.958	3,475.936

SOURCE: DENR-FENRO Marikinaque

Natural Forests

Santa Cruz has about 4,262.54 hectares of forestland, of which 786.61 hectares are under the jurisdiction of Protected Area Management Board (PAMB), and 3,475.93 hectares is an isolated forestland which can be categorized into protection and production forest. Production forest is often found in the patches of plantations, brush lands and cultivated lands.

The Protection Forests

The protection forest is characterized either by high elevation (1,000 masl and above) or steep slopes (50% and above), or is found within stream bank protection areas, within virgin, mossy, wilderness or sub-marginal forest, or critical/community watershed. Also, by virtue of the Presidential Proclamation 2152, certain parcels of land in Marinduque are declared as mangrove swamps forest reserves by reason of their ecological, scientific, educational and recreational values. Thereby, pursuant to this proclamation and by virtue of Republic Act 711, mangrove are set aside as protection forests for conservation and protection purposes. Cutting of these is strictly prohibited". It also includes all areas that are determined to possess high value for biodiversity conservation such areas with endemism and areas with high species richness and diversity.

The protection forest of Santa Cruz is mostly enclosed of mangrove areas in the coastal areas of the municipality. Santa Cruz has the biggest mangrove area in the whole province, making it safe from storm surges and greater production of marine – cultured produce. The mangrove also protects the soil erosion from the coast, thus damage on the coral reefs and sea grasses under the nearby sea water bodies is minimized or reduced.

Another part of the protection forest can be found under the jurisdiction of the Protected Area Management Board (PAMB), or specifically part of the Marinduque Wildlife Sanctuary (MWS).

The Production Forests

The production forests include areas that are found suitable for timber harvesting and agro-forestry based on topography and existing vegetation and wildlife among other factors. Forestland zone consist of areas that are not vulnerable to the disruptive activities associated with timber harvesting and other intensive uses like upland cultivation, agro-forestry and tree plantation development. This includes areas with slope less than 50% and areas located at elevation lower than 1,000 masl.

There are seven (7) parcels of production forest in Santa Cruz; the biggest is located inside the private property of Marcopper Mining Corporation. This is an isolated forestland which cannot be maintained or protected by the government nor can be accessed by the public for any possible use. The production forest in Barangays of Dating-Bayan, Punong and San Isidro are mostly agro-forestry plantation under Certificate of Stewardship Contract (CSC).

Plantations

National Greening Program (NGP) plantations were also established in various sites in the municipality since the year 2011. There is a total 409.02 hectares of NGP plantations in Santa Cruz, 56.31 hectares of which was established in the upland areas covering the barangays of San Isidro, Punong, Napo, Kilo-Kilo (extending to San Antonio), Libjo, Masalukot, Dating – Bayan, Makulapnit, Tambangan, and Devilla. The last three barangays are under the jurisdiction of the PAMB. Meanwhile, the remaining 352.71 hectares are all mangroves covering barangays of Tawiran, Biga, Balogo, Alobo, Angas, Buyabod, Masaguisi, Ipil, Kalangkang, Masaguisi, Tagum, Taytay, Kasily and Hupi. The biggest mangrove plantation under NGP is found on Barangay Biga with a total of 65.58 hectares. It was once recommended as the best plantation in the country, however, no certification was released.

Table 30: National Greening Program

LOCATION	PLANTATIONS		YEAR PLANTED
	RESPONSIBLE ORGANIZATION	AREA	
San Isidro	LGU San Isidro	8.660	2011
Malabon	LGU Malabon	9.000	2011
Kilo-kilo	LGU Kilo-kilo	10.040	2011
Devilla	LGU Devilla	3.050	2011
Libjo	LGU Libjo	5.030	2011
Makulapnit	LGU Makulapnit	2.120	2011
Masalukot	LGU Masalukot	3.060	2011
Tambangan	LGU Tambangan	2.670	2011
Tawiran	LGU Tawiran	10.760	2012
Dating Bayan and Punong	Samahan ng Maliliit na Mangingisda sa Dating Bayan at Punong	8.800	2013
Dating Bayan and Punong	Samahan ng Maliliit na Mangingisda sa Dating Bayan at Punong	3.880	2013
Tawiran	LGU Tawiran	43.380	2013
Biga	Samahan ng mga Mangingisda ng Barangay Biga	2.320	2013
Balogo	LGU Balogo	14.930	2013

LOCATION	PLANTATIONS		YEAR PLANTED
	RESPONSIBLE ORGANIZATION	AREA	
Biga	Samahan ng mga Mangingisda ng Barangay Biga	30.390	2013
Biga	Samahan ng mga Mangingisda ng Barangay Biga	27.630	2013
Alobo	Samahan ng mga Mangingisda ng Barangay Biga	6.500	2015
Angas	LGU Angas	20.170	2015
Biga	Samahan ng mga Mangingisda ng Barangay Biga	3.010	2015
Biga	Samahan ng mga Mangingisda ng Barangay Biga	2.230	2015
Buyabod	LGU Buyabod	10.480	2015
Buyabod	LGU Buyabod	1.010	2015
Masaguisi	LGU Masaguisi	4.220	2015
Ipil	Samahang Walang Katapusang Nagtataguyod sa mga Mangingisda ng Ipil	7.500	2015
Ipil	Samahang Walang Katapusang Nagtataguyod sa mga Mangingisda ng Ipil	7.710	2015
Ipil	Samahang Walang Katapusang Nagtataguyod sa mga Mangingisda ng Ipil	15.200	2015
Ipil	Samahang Walang Katapusang Nagtataguyod sa mga Mangingisda ng Ipil	21.210	2015
Kalangkang	LGU Kalangkang	7.020	2015
Kalangkang	LGU Kalangkang	5.040	2015
Masaguisi	LGU Masaguisi	1.900	2015
Tagum	LGU Tagum	4.490	2015
Tagum	LGU Tagum	3.340	2015
Taytay	LGU Taytay	20.920	2015
Taytay	LGU Taytay	5.060	2015
Ipil	Samahang Walang Katapusang Nagtataguyod sa mga Mangingisda ng Ipil	3.910	2015
Kasily	LGU Kasily	40.020	2015
Alobo	Samahan ng mga Mangingisda ng Barangay Biga	5.000	2015
Hupi	LGU Hupi	15.160	2015
Balogo	LGU Balogo	2.450	2015
Balogo	LGU Balogo	9.750	2015
TOTAL		409.020	

Source: DENR-PENRO Marinduque

Grasslands and brush lands

Santa Cruz has very few zones where grasslands and brush lands exist. Grassland has a total area of 614.09 hectares however, not all of these areas can be included in the planning. Only the 259.62 hectares which is located in the island of Salomague in Barangay Masaguisi can be considered, and the 5.82 hectares on the islets of Barangay Botilao.

Cultivated lands

Considering the barangays under FLUP, the Municipality of Santa Cruz has a total area of 7,924.08 hectares of cultivated land, 6,059.30 hectares and 1,864.77 hectares is devoted to annual and perennial crops respectively.

Water bodies and water production areas

The municipality has different kinds of water bodies, from natural reservoir, water dams, and rivers to creeks. There are four (4) major bodies identified in Santa Cruz, namely: (1) Makulapnit Reservoir, (2) Tawiran River; (3) Bol River, and the (4) Pulong-Parang Water Dam.

Due to the topography of the municipality which is generally hilly and mountainous, several springs and rivers from the upper part flow smoothly to the lowland areas. So far, the biggest river is the Tambangan – Tawiran River, followed by the Basilio River in the poblacion.

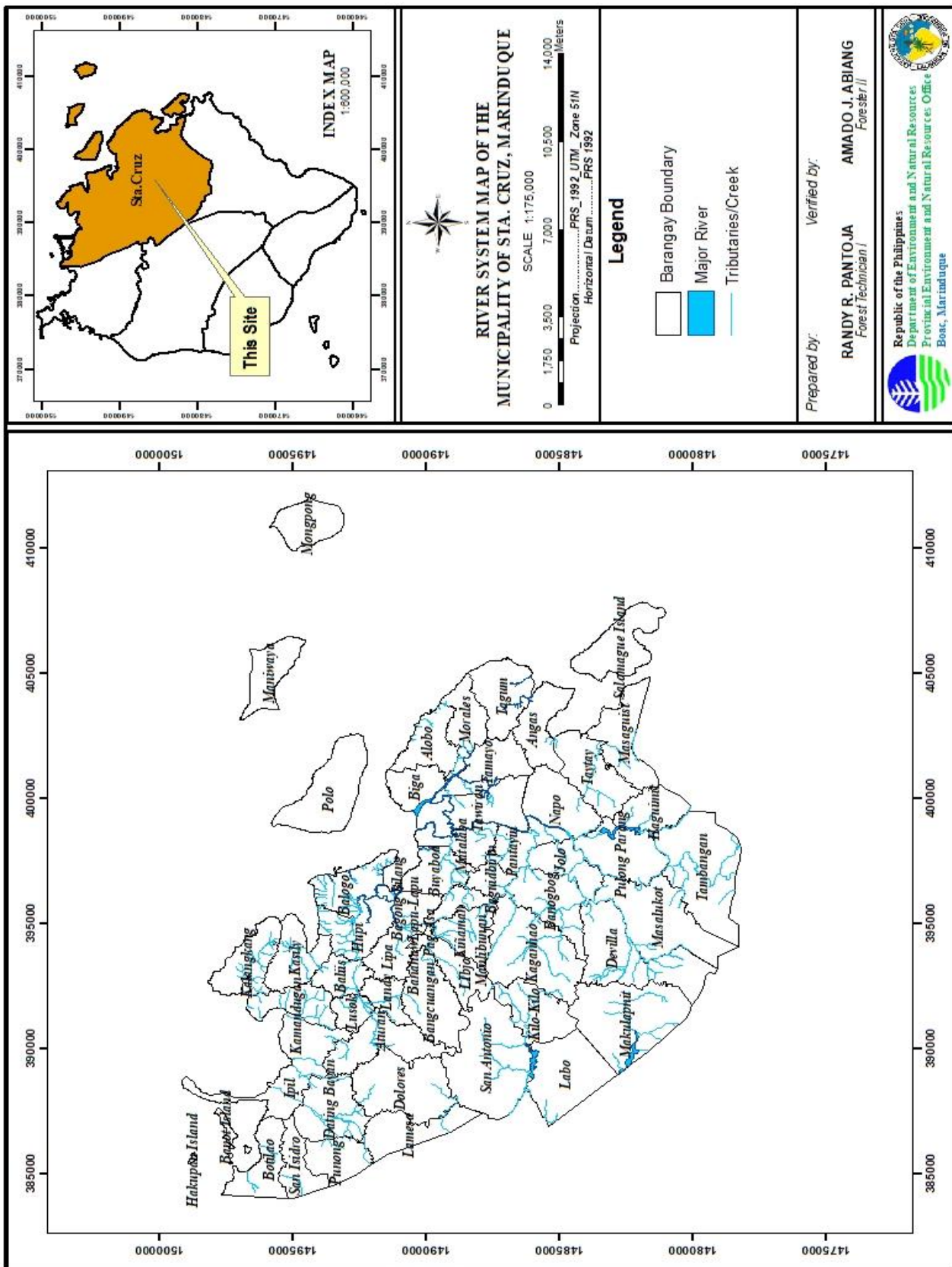


FIGURE 8 MAP SHOWING THE WATERWAYS IN THE MUNICIPALITY OF SANTA CRUZ

Biodiversity resources

The Municipality of Santa Cruz boasts its rich marine produce with various species of fishes, clams, shrimps, crabs and cultured aquatic resources. These various species are shown in the table below:

Shells	Shrimps	Crabs	Other Life Forms
Sikad-sikad	Manakla	Katang	Sea urchin
Dangkalan	Hipon	Bigoy	Star fish
Bigatan	Sugpo	Kasag	Sea horse
Balakwit	Balaw	Payapay	Katmon-katmon
Sahang		Kuray	Sea Cucumber
Manlit		Alalasan	Sea weeds
Punaw, Taaplang		Buyaso	Kibot
Tabahong		An-it	Crown of thorns
Talaba, Parus		Alimpayawan	Sponge
Sil-it, Barong			Algae
Bagumon			Tambilok
Suso, sihi			

Source: Integrated Coastal Resource Management (ICRM) Plan of Santa Cruz 2007

Common Fish Species Found in Santa Cruz

Family Name	English Name	Local/Common Name
NEMIPTERIDAE	Threadfin breams, monacle breams	Bisugo, Tingin, Aryabaw
SERRANIDAE	Groupers	Lapu-lapu, Banahan, Baryaka, Balyaot, Sigapo, Senyorita, Pool
PRIACANTHIDAE	Bullseye, Big eye	Mulaga
MULLIDAE	Goat fishes	Yanggutan, Salmonites
CARANGIDAE	Threadfishes, Scads, Jacks, Trevallies, Bludgers, Black Pomfret, African pompano, Queen fishes	Salmin, Mabilog, Mansa, Kalapato, Kabayo, Galunggong, Burot-burot, Malaguno, Matang baka, Buraw, Talakitok
SYNODOTIDAE	Lizard fish	Butiki
BELONIDAE	Needle fish	Haba
HEMERAMPHIDAE	Half beaks	Bugiw, Hamalit, Patlay
EXOCOETIDAE	Flying fish	Iliw, Barungoy
TRICHIURIDAE	Hairtail	Balila, Espada, Liwit-liwit
MUGILIDAE	Mulletts	Banak, Aligas, Agwas
SCOMBRIDAE	Tunas, Mackerels, Seerfishes	Tambakol, Tulingan, Guliasan, Lumahan, Tanigue
DASYATIDAE	String rays	Pagi
CARCHARHINIDAE	Sharks	Pating
ENGRAULIDAE	Anchovy	Bulinao, Dilis, Pilipitin
LEIOGNATHIDAE	Pony fish	Sapsap, Malaway
SIGANIDAE	Siganids, Rabbit fish	Samaral, Tilis
SPHYRAENIDAE	Barracudas	Barakuda, Rumpi, Hosohos, Tigsak
LUTJANIDAE	Snappers, Jobfish, Pinjalos, Fusiliers	Dilawan, Pulahan, Pargo, Likatis, Habing taal, Dalagang bukid, Burgis
PLOTOSIDAE	Striped eel catfish	Patuna
MENIDAE	Moon fish	Hiwas
CLUPEIDAE	Sardinellas	Tapulok, Amarilis, Tamban
HOLOCENTRIDAE	Squirrel fish, Soldier fish	Siga
PLATYCEPHALIDAE	Flat head fish	Lubalob
TERAPONIDAE	Terapons, Tiger fish	Bagaong, Bakuli
GERREIDAE	Silver biddies	Manabon

HAEMULIDAE	Sweet lips, Hot lips, Grunts	Alatan
SPARIDAE	Sea bream	Arubalay
LETHRINIDAE	Large eye bream, Emperor bream	Kanuping, Lugsu
KYPHOSIDAE	Sea chubs	Pampano
EPHIPPIDAE	Sickle fish, Spade fish, Bat fish	Kitang, Bayang
LABRIDAE	Wrasses	Mameng, Dulasan
SCARIDAE	Parrot fish	Bun-ak
ACANTHURIDAE	Surgeon fish	Labahita, Mongit, Pakol
BOTHIDAE/SOLEIDAE	Flounders, Soles	Tampal puki
BALISTIDAE	Trigger fish	Pakoy, Buriri
MONOCANTHIDAE	Leather jackets	Pigit
APOGONIDAE	Cardinal fish	Gangat
GOBIDAE	Goby	Tughod, Biya, Kalibugan
	Milk fish	Bangus, Sabalo
	Manta ray	Salanga
	Blue marlins	Malasugi
	Tilapia	Tilapia
	Striped eel, catfish	Patuna
	Spiny-eyed cardinal fish	Gangat

Source: Integrated Coastal Resource Management (ICRM) Plan of Santa Cruz 2007

Establishment of Marine Protected Area (MPA) within the jurisdiction of Barangays Kalangkang and Kasily was supported by Municipal Ordinance no. 45 S. 2008 “An Ordinance Declaring the Establishment and Management of a Marine Protected Area (MPA) and Imposing Regulatory Measures and Penalties therein at Barangays Kalangkang and Kasily, Santa Cruz, Mairnduque. It prioritizes and promotes marine biodiversity enhancement and conservation in order to ensure viable fisheries with the increase of fishery resources and diversity.

Santa Cruz Marine Protected Area has a total area of approximately 194,903 hectares with core zone of 55,128 has (10.0 has. reef flat/bare at low tide), buffer of 139.775 has. It covers 5.172 hectares of mangroves, 67.103 hectares of sea grasses and 67.50 hectares of coral patches. It is within the administrative jurisdiction of Barangays Kalangkang and Kasily about 12 kilometers at the northeastern coast of the Municipality of Santa Cruz.

Nature-based tourism assets

The Municipality of Santa Cruz is blessed with several natural and man-made beautiful and picturesque sceneries/ spots ideal for tourism development and promotion. Along with the white beaches are sparkling waters ideal for scuba and skin diving, snorkelling and hook-and-line, and spear fishing expedition. These beautiful attractions offer awesome and thrilling experiences for those who love to explore the same.

There are several tourism establishments within the municipality. There are several investors for resorts in Barangay Maniwaya after the area has been identified and promoted as potential for tourism. Some of the nature-based tourism areas can be found in the barangays covered in FLUP.

List of Tourists Destinations	Available Means of Transportation	Within the forestland	
		YES	NO
Palo Maria Beach, Maniwaya	Land and water		✓
Bagumbungan Cave, San Isidro	Land		✓
Bathala Cave, Ipil	Land		✓
Busay Falls, Pag-asa	Land		✓
White Beaches, Mongpong	Land and water		✓
Aroma Beach, Polo	Land and water		✓
Alowa Beach, Maniwaya	Land and water		✓
Kawa-kawa Falls, Bangcuangan	Land		✓
Maligaya Beach, Morales	Land		✓
Dapdap Beach, Tagum	Land		✓
Hakupan Island Beach, Botilao	Land and water	✓	
Kalangkang Beach, Kalangkang	Land		✓
Bagakawa Falls, Tambangan	Land		✓
Altar Falls, Devilla	Land		✓
Marcopper Mine Site, Labo/ San Antonio	Land		✓
Tambangan Dam, Pulong Parang	Land		✓
Old Roman Catholic Church, Poblacion	Land		✓
Baluarte Tower, Lapu-lapu	Land		✓
Sikatuna Resort and Hotel, Tawiran	Land		✓
Residencia de Palo Maria Beach Resort & Hotel, Maniwaya	Land and water		✓
Casa Marino Accommodation, Mongpong	Land and water		✓

Among the potential tourism sites indicated in the table above, Hakupan Island beach found in Barangay. Botilao is within the mangrove areas of the said barangay. The application of the tenurial instrument for this site per Section 20 of Presidential Decree No. 705 is currently under process.

Table 31: Existing Agro-Ecotourism Establishment and Tourist Attraction

Location	Attractions
Kalangkang	Kalangkang Beach
Masaguisi	Sampitan Beach & Salomague Beach
Tawiran	Sikatuna Resort and Hotel
Biga	Crab Culture in mangrove area
Angas	Lapu-Lapu Production, with floating cottage
Buyabod	Siganids Production in cage
San Isidro	Bagumbungan Cave
Ipil	Bathala Cave, Calancan cause way, Lagoon, Farm & Resort
Polo	Aroma Beach, Lagoon
Morales	Maligaya Beach,
Tagum	Dapdap Beach
Tamayo	Provincial Training on Agricultural Development Center
Botilao	Hakupan Island Beach,

Source: DENR-PENRO Marinduque

The above agro-ecotourism establishment and tourism attraction can be found in the areas within the FLUP which are accessible all year-round. White beaches in the island-barangays and coastal barangays can be accessed thru regular or contracted boat service.

Santa Cruz has several caves with wonderful stalactites, stalagmites and other natural rock formations. Thousands of bats producing “guano” inhabit these caves in Bathala and Bagumbungan Cave, where splashing waterfalls and stone formations like rice terraces with cascading waters can be found. Together with other endemic living creatures like shrimps, blue worms and snakes. Bathala cave is known for its enchanted pythons. The conservation, protection and management of Bagumbungan Cave in San Isidro is governed by RA 9072 National Caves and Cave Resources Management and Protection Act and its Implementing Rules and Regulations under DAO 2003-29.

Aside from the above agro - ecotourism establishments there are also several tourism destinations such as water falls, white beaches, dams, resorts and open pit mine site.

The old Roman Catholic Church which was built in 1760 A.D is the center of worship of the Catholic populace, while Baluarte Watch Tower made out of stone, lime and bricks in Lapu-Lapu which served as a sentinel post and also a fortress against pirates during the latter part of 17th century, can also be considered as an ideal attraction, and at the same time, serves as one of the landmarks of the municipality.

There is no travel agency operating in the municipality. Transport services (vans, motorboats, tricycles) are available for hire. The Public Information and Assistance Unit, Office of the Mayor serves as the coordinating office when it comes to tourism and cultural activities.

There are several tourism support facilities and services that are available in the municipality, especially in the poblacion proper.

Key Stakeholders

The key stakeholders in the Municipality of Santa Cruz includes the officials of the barangays covered, the local residents, the tenure instrument holders, people's organizations and environmental associations/groups who are responsible in maintaining and protecting forest land in the areas covered.

Santa Cruz, a municipality having the biggest land area in the province, is also the most populated. While it is keeping its pace in the fast development, its population is also growing steadily, therefore resulting to more consuming stakeholders.

Fortunately, the municipality has a vast area of forest, especially of mangrove areas where its marine resources comes from. The rich aquatic resources depend heavily on the status of the mangroves. That is why it is important that the localities residing near these areas are capacitated to protect and maintain the forestland.

Since the municipality has both forestland in upland and in coastal areas, people benefit from both marine resources and crops that helps the stakeholders sustain their daily living. During the conduct of IEC and FGDs attended by major stakeholders, the importance of the existing forest and forest lands was emphasized, as well as the risk that they may be encountered if the forest will be continually denuded due to human activities. It was also explained in the

discussions the rationale why the local government units and stakeholders should be involved in the forestland use planning and how their actions will greatly affect the implementation.

The environmental groups and associations who will help in protecting the existing forestlands within the municipality, to wit:

1. Samahang Walang Katapusang Nagtataguyod sa mga Maliliit na Mngingisda ng Ipil (SAMSI)
2. Samahan ng Maliliit na Mangingisda ng Biga
3. Taytay Sea Masters' Association
4. Taytay Farmers' Association
5. Samahan ng Mandaragat ng Ibaba ng Tawiran Association
6. Tawiran Farmers' Association
7. Bisig at Lakas ng Mangingisda- Matalaba
8. Matalaba Biyayang Dagat
9. Banacan Association – Alobo
10. Samahan ng mga Mangingisda sa Barangay Morales
11. Morales Farmers' Association
12. Samahan ng Maliliit na Mangingisda ng Tamayo
13. Tamayo Farmers' Association
14. Kapisanan ng Mangingisda ng Barangay Angas
15. Angas Farmers' Association
16. Samahan ng Magbabaklad ng Barangay Buyabod
17. Samahan ng Mangingisda ng Barangay Buyabod
18. Samahan ng mga Mangingisda ng Barangay Polo
19. Kalipunan ng mga Samahang Nagsusulong ng Likas Kayang Pag-unlad – Punong
20. Hupi Farmers' Association
21. Samahan ng Maliliit na Mangingisda ng Barangay Hupi
22. Samahan ng Mangingisda ng Balogo
23. Samahan ng Maliliit na Mangingisda ng Barangay Kalangkang
24. Samahan ng Maliliit na Mangingisda ng Barangay Botilao
25. Samahan ng mga Magtutuyo ng Isda ng Kamandugan
26. Samahang Nagkakaisa Laban sa Kahirapan ng Barangay Ipil (SANALAKABI)
27. Aturan Farmers Association

28. MACEC
29. Green Brigade
30. San Isidro – Punong Cave Guide Association
31. Kamandugan Small Fishermen Organization
32. PAMB
33. DENR

There is an agreement between DENR and the municipal government unit to take the lead in protecting forest since they are the ones who implement the law and issues permits. However, it is also the responsibility of the community to protect, manage and preserve their natural resources, because they have direct interaction with the subject area in their everyday lives.

The Focus Group Discussions (FGDs) were conducted through the initiative of the PENRO- Marinduque Staff headed by Forester Emeterio M. Recto, Community Development Officer II Aleth C. Bundoc and supported by Municipal Mayor Marissa Red-Martinez, MPDO Agustina Palomares and their staff. Some of the FGDs were conducted in selected barangays for cluster meetings, while general meetings were done on the Municipal Hall of Santa Cruz.

Through the FGDs, problems and conflicts were discussed among the barangays involved, thus leading to deliberations that enhanced the participants' understanding about the proposed Forest Land Use Plan. It also measured the degree of acceptability of the plan.

Institutional Assessment

The compositions of the Technical Working Group (TWG) of the Forest Land Use Plan are the following:

- MPDO as the Chairman is responsible to convene the FLUP Team regarding planning activities; over-all coordination, management and monitoring of all planning activities; accomplishing the requirements, documents and other matters; consolidates all data/information from the different Barangays and sectors; and, determine problems in the implementation of FLUP and initiate/recommends measures and actions to resolve such problems.

- PENRO as the Co-chairman secure copies of maps as surveyed; verify the area of municipality, monitors the results of each FGDs
- SB Member/Chairman on Committee on Environment passes resolutions re: FLUP preparation and FLUP implementation with appropriation.
- All Barangay Captains is responsible in the conduct of Information Education Campaign; create Technical Working Group (TWG); assist in data gathering; resolve Barangay boundary conflicts; allocate funds for preparation of FLUP; invite foreign and local investors; and, actively participate in the preparation and implementation of FLUP
- Municipal Agrarian Reform Office (MARO) provides data needed in the preparation of the FLUP and actively participate in the preparation & implementation of FLUP.
- Municipal Engineer Office provide database on infrastructure projects and actively participate in the preparation & implementation of FLUP relative to infra map.
- Municipal Fishery & Aquatic Resource Management Council (MFARMC) provide database in the preparation of the FLUP and actively participate in the preparation & implementation of FLUP
- Philippine National Police (PNP) / Philippine Army (PA) actively participate in the preparation & implementation of FLUP relative to enforcement plan.

Summary of Key Issues, Conflicts, Problems, Needs, Investment / Socio-Economic Opportunities

The Trans boundary issues on which the project focuses are:

1. Regulation of agricultural activity within and adjacent to timberlands
2. Reforestation and afforestation
3. Strict enforcement of environmental laws
4. Biodiversity Conservation
5. Management of cross-border livestock movements and plant and animal diseases
6. Land use change and impacts on resources (including policy)

The project participants and partners are located at different levels: local, national, regional and national.

The forestland of Santa Cruz provides many benefits to the stakeholders of the municipality. One is the protection of water sources, mainly of Makulapnit Water Reservoir, which supplies water to almost half of the municipality, as well as to the neighbouring barangays of the Municipality of Torrijos. Though the reservoir is under the jurisdiction of the Protected Area Management Board (PAMB), its water runs down to the barangays covered by FLUP and it serves as main source of water supply for the residents. The protection of the rivers and creeks which distribute waters to the stakeholders must be protected and monitored in order to ensure the sustainability of the water source.

The forestland which is located in the vicinity of the area of the Marcopper Mining Corporation will remain uncontrolled by the government, hence cannot be included in the plan. It is the only isolated forestland which will maintain its natural state since it was abandoned by the corporation.

Meanwhile, the mangrove areas which harbors some wild faunas are close to human habitats, therefore poses danger of annihilation. Moreover, mangrove areas are open for illegal cutting, mostly used for fire woods and used as construction materials for building houses. These illegal activities are known to local officials, however there is lack of enforcement of laws and regulation due to lack of political will, human consideration, and poor foresight of the consequences of their actions. Thus, they are considering that the protection and law enforcement are the responsibility of the municipal government and the DENR.

As also mentioned in the limitations, there are illegal settlers in the salvaged zone areas that were declared no occupancy. This poses danger and destruction to natural resources found therein and nearby. As they are sporadically located in these areas, they might also encounter perils themselves during natural disasters.

Summary of Key Issues/ Concerns and Recommended Strategies

Barangay	Strength	Weaknesses	Opportunities	Threats	Strategy
1. Alobo	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat & resources - Fish aggregating device - Gawad Kalinga project 	<ul style="list-style-type: none"> - Idle agricultural land - Lack of water for agricultural production - Inactive Peoples Organization - Timber poaching - Illegal fishing - Illegal settlers - Awareness on Solid waste & environmental management - non-segregation of solid waste - burning and improper disposal of solid waste - non-implementation of RA 9003 	<ul style="list-style-type: none"> - Livelihood & Ecotourism projects 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project, Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Monitoring and patrolling
2. Angas	<ul style="list-style-type: none"> - Mangrove forest - Marine habitat & resources - Fish pond - Fish aggregating device - Irrigated rice land - Mariculture Park, Seaweeds (<i>Caulerpa</i>) 	<ul style="list-style-type: none"> - Inactive Peoples Organization - Illegal fishing - Timber poaching - Illegal settler - Unregulated harvest of seaweeds - Lack of Awareness on Solid waste & 	<ul style="list-style-type: none"> - Livelihood & Ecotourism projects - Aqua-silviculture - Rice harvest 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay

	production	environmental management			<p>Gubat</p> <ul style="list-style-type: none"> - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
3. Aturan	<ul style="list-style-type: none"> - Upland Forest - Irrigated rice land - Small water impounding facility - Large coconut area 	<ul style="list-style-type: none"> - Slash and Burn - Insufficient water for irrigation system - Timber poaching - Senile coconut trees - Lack of Awareness on Solid waste & environmental management 	<ul style="list-style-type: none"> - Rice harvest - Coconut by products 	<ul style="list-style-type: none"> - Prone to landslide - Depleting water source for irrigation - Reduced coconut harvest 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
4. Balogo	<ul style="list-style-type: none"> - Mangrove, Marine habitat & resources - Fish pond - Fish aggregating device - Port 	<ul style="list-style-type: none"> - Illegal settlers - Timber poaching - Poor road network - Illegal fishing - Lack of Awareness on Solid waste & environmental management 	<ul style="list-style-type: none"> - Livelihood - Aqua-silviculture - Fish pond operation 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine habitat - Decrease fish catch - Depleting marine resources - Spill of engine oil 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement, Creation of Bantay Gubat, Empowerment of People's



					<p>Organization</p> <ul style="list-style-type: none"> - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
5. Biga	<ul style="list-style-type: none"> - Beach, Mangrove - Marine habitat & resources - Fish pond - Fish aggregating device - Barangay wharf 	<ul style="list-style-type: none"> - Timber poaching - Lack of Awareness on Solid waste & environmental management 	<ul style="list-style-type: none"> - Livelihood - Ecotourism - Aqua-silviculture 	<ul style="list-style-type: none"> - Prone to Storm Surge and flood - Destruction of marine habitat - Decrease fish catch - Depleting of marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Law enforcement, Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
6. Botilao	<ul style="list-style-type: none"> - Beach - Mangrove - Marine 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Solid waste 	<ul style="list-style-type: none"> - Livelihood - Ecotourism 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental



	<ul style="list-style-type: none"> habitat/resources - Fish cage - Fish aggregating device - Uninhabited timber island - Fish sanctuary - Seaweeds (Lato) production - Active People's Organization 	<ul style="list-style-type: none"> - Presence of heavy metals - Illegal fishing - Claimants of Hakupan Island - Lack of Awareness on Solid waste/ environmental management 		<ul style="list-style-type: none"> marine Habitat - Decrease fish catch - Depleting of marine resources 	<ul style="list-style-type: none"> concern - Mangrove rehabilitation project - Strict law enforcement, Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
7. Buyabod	<ul style="list-style-type: none"> - Mangrove - Active port - Marine habitat/resources - Fish landing area - Ecotourism site, Fish cage - Rice area - Fish pond - Oyster culture project - Community Fish Landing Center 	<ul style="list-style-type: none"> - Timber poaching - Illegal cutting of mangroves for charcoal making - Illegal settler - Solid waste - construction of fish corals blocking the passage ways of bancas - Lack of irrigation facility - Unorganized docking system for tourism and passenger boat - Lack of Awareness on 	<ul style="list-style-type: none"> - Livelihood - Ecotourism 	<ul style="list-style-type: none"> - Prone to Storm Surge and floods - Destruction of marine Habitat - Decrease fish catch - Depleting of marine resources - Siltation - Spill of engine oil 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement, Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and

		Solid waste/ environmental management			ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
8. Dating Bayan	<ul style="list-style-type: none"> - Upland Forest - Integrated Social Forestry - Large coconut area - Ramp pump 	<ul style="list-style-type: none"> - Timber poaching - presence of monkey - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood - NGP 	<ul style="list-style-type: none"> - Prone to landslide - Reduced agricultural harvest caused by monkeys 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
9. Hupi	<ul style="list-style-type: none"> - Mangrove - Marine habitat/resources - Fish pond - Fish aggregating device - Irrigated rice land - Quick lime 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Lack of Road Maintenance (Provincial and Marcopper road) - effect of high tide on roads - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood - Aqua-silviculture - NGP 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat, Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants



					<ul style="list-style-type: none"> - Evaluation of fishpond - Monitoring and patrolling
10. Ipil	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat/resources - Brackish Water-Lagoon - Cave, Guano - Migratory Birds - Tikiw grass that can be made to bag - Fish aggregating device 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Solid waste - Presence of heavy metals uncooperative land owner - Illegal construction of cottages in Calancan causeway - Un-assessed cave - Lack of Awareness on Solid waste/environmental management 	<ul style="list-style-type: none"> - Livelihood - Ecotourism 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources - Unregulated extraction of guano - Unregulated use of cave 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
11. Kalangkang	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat/resources - Marine Protected Area - Fish aggregating device 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Presence of heavy metals - Poor road network - Lack of Awareness on Solid waste/environmental 	<ul style="list-style-type: none"> - Livelihood - Ecotourism 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement



		management			<ul style="list-style-type: none"> - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Monitoring and patrolling
12. Kamandugan	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat/resources - Strong fisherman association - Large area for vegetable production 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Poor road network - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood - Aqua-silviculture 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Monitoring and patrolling
13. Kasily	<ul style="list-style-type: none"> - Mangrove - Marine 	<ul style="list-style-type: none"> - Timber poaching, - Illegal settler, Un- 	- Livelihood	- Prone to Storm Surge	- IEC on solid waste and other



	<ul style="list-style-type: none"> habitat/resources - Fishpond - Fish aggregating device - Marine Protected Area - Clay for pot making 	<ul style="list-style-type: none"> utilized fish pond - Lack of Awareness on Solid waste/ environmental management 		<ul style="list-style-type: none"> - Destruction of marine Habitat - Decrease fish catch - Depleting marine Resources 	<ul style="list-style-type: none"> environmental concern - Mangrove rehabilitation project <ul style="list-style-type: none"> – Strict law enforcement - Creation of Bantay Gubat, -Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest Occupants <ul style="list-style-type: none"> - Evaluation of Fishpond - Monitoring and patrolling
14. Kilo-Kilo	<ul style="list-style-type: none"> - Upland Forest - Irrigated rice land - Large coconut land - Irrigation System - Farmer engaged in Tilapia culture - Mining site - Market 	<ul style="list-style-type: none"> - Timber poaching - Illegal grazing - Forest fire - Poor road network (Marcopper road) - Restricted Marcopper Area - Idle lands - unsettled road right of way - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Historical tourism - Tilapia farming 	<ul style="list-style-type: none"> - Prone to landslide due to rain and slope - Dilapidated buildings and equipment of Marcopper 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling



15. Lapu-Lapu	<ul style="list-style-type: none"> - Mangrove - Marine habitat/resources - Fishing Port - Fish pond - Oyster culture 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Silted water ways - polluted river - No tenurial agreement of beneficiaries of residential lot for DENR - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Ecotourism - Birds watching in mangrove areas - Bangus culture in fish cage opportunities 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting of marine Resources - Outbreak of waterborne diseases (diarrhea) 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
16. Libjo	<ul style="list-style-type: none"> - Upland Forest - water catchment - Watershed - Irrigated rice area 	<ul style="list-style-type: none"> - Timber poaching - Illegal grazing - Forest fire - Poor road network (Marcopper road) - Communication signal problem - Unsettled road right of way - Lack of Awareness on Solid waste/ environmental 	<ul style="list-style-type: none"> - Ecotourism - Livelihood - Trekking - Camping - View deck 	<ul style="list-style-type: none"> - Prone to landslide - Forest fire, - Shortage in water supply 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling



		management			
17. Lusok	<ul style="list-style-type: none"> - Upland Forest - Rain fed rice land 	<ul style="list-style-type: none"> - charcoal making - Timber poaching - lack of water source - Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood programs 	<ul style="list-style-type: none"> - Prone to landslide 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
18. Masaguisi	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat and Resources - Fish aggregating device - wharf - Commercial fishing vessels - Fish aggregating device - Crab fattening - Fish processing with smoke house - Private pasture land - Rainfed rice area 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Illegal fishing - Presence of monkeys - Lack of potable water source in Salamague Island - tax declaration territorial issues with Torrijos - Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood - Ecotourism - Large idle land for agricultural production 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources - Isolated household transportation problem from Salomague Island to mainland - Spill of engine oil 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement, - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
19. Matalaba	<ul style="list-style-type: none"> - Beach - Mangrove 	<ul style="list-style-type: none"> - Timber poaching - Illegal settlers 	<ul style="list-style-type: none"> - Ecotourism - Firefly 	<ul style="list-style-type: none"> - Prone to flooding - Destruction of 	<ul style="list-style-type: none"> - IEC on solid waste and other



	<ul style="list-style-type: none"> - Marine habitat/resources - Retreat House - Marinduque State College - presence of Nipa species 	<ul style="list-style-type: none"> - Illegal fishing - Silted water ways - Illegal cutting of mangroves for charcoal making - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - watching area/place - Thriving economic activity 	<ul style="list-style-type: none"> - marine Habitat - Decrease fish catch - Depleting of marine resources - Increase in generation of solid waste - Soil erosion (Riverbank) 	<ul style="list-style-type: none"> - environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program, Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
20. Morales	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat/resources - Fish aggregating device - Irrigated rice land 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Rain dependent rice land - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood & Ecotourism programs 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of

					livelihood and ecotourism program - Inventory of forest occupants - Monitoring and patrolling
21. Napo	- Upland Forest - Integrated Social Forestry (ISF) Area - Irrigation system	- Illegal cutting of mangroves for charcoal making - Timber poaching - Lack of monitoring of activities in ISF areas - Lack of Awareness on Solid waste/ environmental management	- Sufficient supply of rice - Ecotourism - Rock climbing - Livelihood	- Prone to landslide and rockslide - Prone to bush fire	- IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
22. Polo	- Beach - Mangrove - Marine habitat/resources - Lagoon - Fish aggregating device - Nipa for roofing material	- Timber poaching - Illegal settler - Lack of Awareness on Solid waste/ environmental management	- Livelihood & Ecotourism project	- Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources	- IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement, Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants



					- Monitoring and patrolling
23. Punong	<ul style="list-style-type: none"> - Upland Forest - Coconut area - Integrated Social Forestry (ISF) Areas - Bagumbungan Caves - Association of trained cave tour guide 	<ul style="list-style-type: none"> - Timber poaching - Presence of wild monkeys - Solid waste rolling down into the cave during rainy season - Senile coconut trees - Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood - Ecotourism programs (Bagumbungan Cave exit) 	<ul style="list-style-type: none"> - Prone to landslide - Unregulated carrying capacity of the cave during peak season - Increase in generation of solid waste - Possible destruction of cave resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
24. San Antonio	<ul style="list-style-type: none"> - Upland Forest - Irrigated rice land - Large coconut land - Irrigation System - Farmer interested in Tilapia culture - Mining site - Market 	<ul style="list-style-type: none"> - Timber poaching - Illegal grazing - Forest fire - Poor road network (Marcopper road) - Restricted Marcopper Area - Idle lands - San Antonio Pit - Idle Marcopper properties (golf course airstrip) - Unsettled road right of way - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Historical tourism, - Tilapia farming - Livelihood - Potential Export Processing Zone Area (EPZA) 	<ul style="list-style-type: none"> - Prone to landslide due to rain and slope - Dilapidated buildings and equipment of Marcopper - Destruction of pit that may cause massive flood in the neighboring municipality 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
25. San Isidro	<ul style="list-style-type: none"> - Upland Forest - Integrated Social Forestry (ISF) Area 	<ul style="list-style-type: none"> - Presence of monkeys - Illegal cutting of trees - Possible loss of 	<ul style="list-style-type: none"> - Livelihood & Ecotourism projects 	<ul style="list-style-type: none"> - Prone to landslide - Climate change - Unregulated 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental



	<ul style="list-style-type: none"> - Caves, Class II cave - coconut area - Presence of edible birds nest - Association of trained cave tour guide 	<ul style="list-style-type: none"> - endangered species - Senile coconut trees - Lack of Awareness on Solid waste/ environmental management 	(entrance for Bagumbungan Cave)	<ul style="list-style-type: none"> - carrying capacity of the cave during peak season - Increase in generation of solid waste - Possible destruction of cave resources - High risk of life in extraction of birds nest 	<ul style="list-style-type: none"> - concern - Reforestation - Inventory of forest occupants - Monitoring and patrolling
26. Tamayo	<ul style="list-style-type: none"> - Mangrove - Marine habitat/resources - Fishpond - Fish aggregating device - Irrigated Rice Land - Provincial Tourism & Agricultural Development Center - Municipal Nursery & Slaughterhouse - Nipa for roofing material 	<ul style="list-style-type: none"> - Timber poaching - Illegal Settler - Boundary dispute - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Sufficient supply of rice - Livelihood & Ecotourism - Rock climbing - Birds & Fire fly watching in mangrove areas 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine Resources - Flood 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling



27. Tagum	<ul style="list-style-type: none"> - Beach - Mangrove - Marine habitat/resources - Fish pond - Fish aggregating device - Irrigated rice land 	<ul style="list-style-type: none"> - Timber poaching - Illegal Settler - Lack of Awareness on Solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood & Ecotourism projects - Sufficient supply of rice 	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine Resources 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling
28. Tawiran	<ul style="list-style-type: none"> - Mangrove Forest - Marine habitat/resources - River - Irrigated rice land - Nipa for roofing material Irrigation Facility - Sand and gravel for construction material - freshwater ecosystem and resources 	<ul style="list-style-type: none"> - Timber poaching - Illegal Settler - Boundary dispute - Low lying barangay - Water catch basin - Lack of awareness on solid waste/ environmental management 	<ul style="list-style-type: none"> - Livelihood & ecotourism projects - Birds & Fire fly watching in mangrove areas - Sufficient supply of rice - Utilization of riverbank salvage zone for agricultural 	<ul style="list-style-type: none"> - Prone to flooding - Destruction of marine Habitat - Decrease fish catch - Depleting marine Resources - Unmanage extraction of sand and gravel - Soil erosion (Riverbank) 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement, Creation of Bantay Gubat - Empowerment of People's



			projects (cash crops)		<p>Organization</p> <ul style="list-style-type: none"> - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Monitoring and patrolling
29. Taytay	<ul style="list-style-type: none"> - Mangrove Area - Marine habitat/resources - Fish aggregating device - Presence of Gawad-kalinga Project - Irrigated and non-irrigated rice land area - Wharf 	<ul style="list-style-type: none"> - Timber poaching - Illegal settler - Fishpond - Lack of Awareness on Solid waste/environmental management 	- Livelihood & Ecotourism projects	<ul style="list-style-type: none"> - Prone to Storm Surge - Destruction of marine Habitat - Decrease fish catch - Depleting marine resources - Spill of engine oil 	<ul style="list-style-type: none"> - IEC on solid waste and other environmental concern - Mangrove rehabilitation project - Strict law enforcement - Creation of Bantay Gubat - Empowerment of People's Organization - Implementation of livelihood and ecotourism program - Inventory of forest occupants - Evaluation of fishpond - Monitoring and patrolling

PART 6

RECOMMENDED STRATEGIES

6.1 General Strategies

The Municipality of Santa Cruz believes that sustainable use, management and protection of the municipality's forest resources require the participation and co-operation of local residents, particularly those living on adjacent and within the forestland.

Promotion of community awareness and participation in forestry leads to better understanding and respect for the environmental laws, rules and regulations. There should be improved partnership among various stakeholders such as DENR, LGUs, CSOs/NGOs and the communities involved. The planned forest land use will lead to better community values in support to forest conservation that leads to legal and sustainable economic benefits to communities.

The LGU and DENR will collaborate with other government agencies, donors and other agencies that will promote and implement related projects to promote sustainable community-driven rural development. In undertaking this initiative, the DENR will address one of the goals of the forestry sector, which is to increase the economic contribution of forests.

Community Activities

In order to provide livelihood or immediate earnings for local communities, new initiatives and technical approaches shall be undertaken by both the LGUs and DENR. Among the activities to be considered so that local forest management will be more attractive to communities:

- Ecotourism, agro tourism and nature tourism;
- Recreational park conservation;
- Agroforestry;
- Furniture and Handicrafts making;
- Nurseries for forest and fruit trees including endemic species;
- Aqua-silvi production

- Bamboo production;

In suitable sites on timberland that have been identified in Local Forest Management Plans, individuals and groups will be approached to lease parcels for use in accordance with the conditions prescribed in the DENR Rules and Regulation. In certain situations and where feasible, co-management arrangements or memorandums of understanding will replace standard lease agreements.

INFORMATION, EDUCATION AND COMMUNICATION CAMPAIGN

Public awareness through information, education and communication campaign must be given priority in order to build popular and political support for the forestry sector and to properly implement the Forest Land Use Plan. Wide publication and communication is important to the communities particularly those living or having their livelihood near the forest area so that they will be aware of soil conservation, proper and sustainable agricultural production practices. Eco-tourism shall be made known in order to promote tourism industry in an ecological friendly and sustainable environment.

In information, education and communication campaign at the municipal and barangay level, protection of forest cover and conservation of forest resources shall be emphasized.

Environmental education campaigns are implemented through the formal education system (part of school curriculum). Many NGOs are active in environmental education programs like Marinduque Council for Environmental Concerns (MACEC), however, there is a specific forestry program.

Various stakeholders such as LGUs, DENR, Dep-Ed, NGOs should work together to build a strong environmental awareness regardless of age, sex and status in life because everybody is a steward of the environment. This will include specific attention on the importance of conservation of forest.

Guiding Principles

The public awareness strategy will be wedged in reliable, updated and relevant information on the state or condition of the forest, its value to society and the cost/benefit of alternative actions. Consequently, the forest-related messages/information being developed and delivered to the various target groups need to be positive and should give emphasis on the economic value of trees for timber and fuel wood, particularly to rural people. The forest also has to be perceived as an integral part

in achieving better quality of life at all levels. It is also considered as source of basic needs of men such as water, foods, medicine, shelter and clothing. Forest also serves as habitation or part of the ecosystem.

With a limited budget to support the municipal campaign on forest protection and conservation, collaboration is important in order to avoid overlapping and duplication of programs, projects and activities implemented by different stakeholders. Private sector resources will also be sought to sponsor environmental activities that relate to forestry. In particular, companies that benefit directly and indirectly from the existence of our forests, such as those in the tourism industry, will be targeted to implement related activities. Sponsored activities could be in the form of radio and television programs (acknowledging the sponsor) on the value and upkeep of forests, as well as posters, road and forest boundary signs, etc.

FORESTRY

The LGU and the DENR shall promote conservation and sustainable production and utilization of forest resources with active support and participation of an environment friendly community. The new direction of forest research shall focus on the provision of data, information and guidelines for:

- Efficient forest management practices;
- Sustainable management plans;
- Conservation strategies;
- Reforestation planning and development; and
- Agroforestry, social/participatory forestry initiatives.

FOREST PROTECTION

Forest Inventory Program

The DENR has embarked on a management inventory of areas scheduled for detailed forest management planning. Urgency for forest protection is dependent on the presence and severity of a number of threats:

- degradation of water supply or water quality;
- degradation or loss of soil;
- loss of biological diversity;
- non-sustainable harvesting (over-cutting) of timber or fuel wood;
- illegal removal of timber or fuel wood;

- legal cultivation on unsuitable sites;
- illegal cultivation of soil for agriculture purpose;
- damage resulting from illegal or excessive grazing by livestock;
- fire/slash and burn;
- despoiling of recreational and scenic values; and
- Other non-forest uses of the land.

Rehabilitation of Mangrove Forest and Watershed Areas

The destruction of forests caused by human activities such as kaingin making, charcoal making, poaching of timber and illegal grazing are the common practices which cause destruction of forest. Such activities are currently the most significant agents of deforestation in the province. Much of the damage to forests occurs along the mangrove areas from Barangays Buyabod to Biga.

Two strategies are proposed for the said problems:

1. Continuous adoption or additional watershed area
2. Rehabilitation of denuded forest (watersheds and mangrove areas)

INVESTMENT AND INCENTIVES

Government budget allocations are always inadequate to fund the sustainable management and conservation practices on forest lands and watersheds. If the sector is to achieve the goals identified in the Forest Land Use Plan, substantially increased funds will be required. Success also depends on sustainability in funding levels as well as the political will of the administrators and implementers.

Most of the land with the great potential for forestry development is privately owned; hence, the private sector must be encouraged to engage in forestry/plantation development.

Supported Activities and Beneficiaries

The Fund would be used to support activities and projects identified requiring external funding. Eligible activities include, but are not limited to the following:

- protection of forest reserves, including maintenance of boundaries, trails and fire breaks;

- forest conservation on private lands (grants, leasing, easements, and/or acquisition);
- reforestation and agro-forestry on suitable private and public lands;
- expansion and operation of the nursery system to support private sectors
- restoration and protection of the remaining mangrove areas; and
- Local forest-based community projects.

Funds will be disbursed to agencies and individuals implementing the above activities, namely:

- Community Based Forestry Management Area (CBFMA) in Barangay Kamandugan, Dating Bayan, Napo, Punong and San Isidro (per DENR Administrative Order No. 96-29, Article IX, Section 1)
- Educational institutions;
- Lessees and owners of private lands; and
- Contractors

ROLE OF THE PRIVATE SECTOR

Given the right incentives, the private sector has a greater capacity to meet national reforestation requirements than any Government agency. The availability and general productivity of private land offers grander potential for reforestation. More lands become peripheral or idle for agricultural use as most of the farmers are on the old age and belong to the senior citizens. As of now younger generation do not want to engage in agriculture because they are more interested in struggling with global competition, information technology and other activities that requires less physical sweats and instant income. Given this situation cultivation of idle lands, growing trees can be implemented by landless or marginalized farmers thru joint ventures and with the intervention of the government agencies.

Other Proposed Projects

Relative to the preparation of the Forest Land Use Plan, the LGU had the existing and incoming development programs with relation to forest conservation and protection:

1. Community-Based Forest Management (CBFM) in Barangays Dating bayan, Napo, Punong and San Isidro.
2. Enhanced National Greening Programs (eNGP) of DENR

3. Cacao/Coffee Production
4. Bamboo Production
5. Establishment of Agro-forestry project
6. Rehabilitation of Watershed areas

ORGANIZATIONAL STRUCTURE AND OPERATIONS IN SUPPORT TO FLUP IMPLEMENTATION

Every LGU shall design and implement its own organizational structure and staffing pattern taking into consideration its service requirements and financial capability subject to the minimum standards and guidelines prescribed by the Civil Service Commission (CSC) stated under Section 76 of the Local Government Code of 1991.

Creation of MENRO

The position of MENRO is crucial and very important, especially with the various environmental challenges that need to be addressed in every barangay of the municipality.

The municipal government cannot address the impact of climate change if there is no office and staff tasked for the purpose. The MENRO can enforce environmental laws within the municipality and can compile relevant information on violations and problems that would become the bases of their actions. The MENRO could regularly inspect the establishments, which are identified as contributors of pollution and environmental degradation within the municipality.

FUNCTIONAL STATEMENT of MENRO

1. Formulate measures for the approval of the Sangguniang Bayan and provide technical assistance and support to the Municipal Mayor in carrying out measures to ensure the delivery of basic services and provision of adequate facilities relative to environment and natural resources services as provided for under Sec. 17 or RA 7160.
2. Develop plans and upon approval thereof by the Mayor, implement the same particularly

those, which have to do with environment and natural resources programs and projects.

3. Be in the frontline of the delivery of services concerning the environment and natural resources particularly in the renewal and rehabilitation of the environment during and in the aftermath of man-made and natural calamities and disasters.
4. Recommend to the Sangguniang Bayan and advise the Mayor on all other matters relative to the protection, conservation, maximum utilization, application of appropriate and other matters related to environment and natural resources.
5. In addition to the foregoing duties and functions, the Municipal Environment and Natural Resources Officer shall:
 - a. Establish, maintain, protect and preserve communal forests, watersheds, tree parks, mangroves, greenbelts, similar projects, and commercial forest, like industrial tree farms and agro-forestry projects.
 - b. Provide extension services to beneficiaries of forest development projects and technical financial and infrastructure assistance
 - c. Manage and maintain seed banks and produce seedlings for forest and tree parks.
 - d. Provide extension services to beneficiaries of forest development projects and render assistance for natural resources-related conservation and utilization activities consistent with ecological balance.
 - e. Coordinate with government agencies and non-governmental organizations in the implementation of measures to prevent and control land, air and water pollution with the assistance of the DENR.
 - f. Implement for the Ecological Solid Waste Management and other environmental ordinances of the municipality.
6. Exercise such other powers and perform such other duties and functions as may be prescribed by law or ordinance.

Considering the present condition of the Municipal Government when it comes to Personal Services limitation, creation of MENRO position is not possible. There are a limited number of plantilla positions that can be designated as MENRO aside from the fact

that the position is highly technical wherein duties and responsibilities are very broad.

For the purpose of the implementation, monitoring and evaluation of FLUP the recommended strategy is to designate a focal person to handle and be in charge of the same. Such focal person may come from the Municipal Agriculture Office.

Creation of a Municipal Inter-agency Task Force

Creation of a Municipal Inter-agency Task Force on the Enforcement of Environmental Rules, Laws and Regulations in the Municipality of Santa Cruz is great importance.

Powers and Functions of the Task Force:

- Conduct intelligence and counterintelligence operations to detect and identify violators of environmental laws.
- Cause or direct the immediate arrest, investigation and speedy prosecution of violators.
- Refer the case at hand, as the Task Force may deem proper and necessary, in the interest of efficient and expeditious, dispensation of criminal justice, to appropriate government agencies, law enforcement agencies or prosecution office, for investigation or prosecution, as the case may be.
- Monitor the progress of on-going investigation and prosecution of cases taken cognizance of by the Task Force.
- Conduct other environmental law enforcement operations as the Municipal Mayor may direct.

MONITORING AND EVALUATION OF FLUP IMPLEMENTATION

The Municipality of Santa Cruz will create the Environment Management Committee of the Municipal Development Council to be represented by concern sectors such as; CSO's, Women's Sector, Farmers and Fisher folks, and Punong Barangay covered by FLUP and Government agencies such as DENR, LGU, DA, PNP and DILG. The member of the team will responsible for the monitoring of the progress of the implementation of the FLUP and the activities of the tenure holder over their tenured area. The committee will also be responsible for the preparation of annual work and financial plan.

Monitoring and Evaluation of Plan

The M &E plan for the implementation of FLUP has been developed by the LGU-DENR Technical Working Groups during collaborative and participatory work sessions. The M & E plan includes two components addressing the target indicators in the project logical - frame:

M & E of Project Performance

Monitoring focuses on the management and supervision of project activities, seeking to improve efficiency and overall effectiveness of project implementation. It is a continuous process to collect information on actual implementation of project activities both by DENR and the LGU including the barangay concerned. Such activities shall be compared to those scheduled in the annual work plans, including the delivery of quality outputs in a timely manner. This shall be means to identify problems and constraints (technical, human resource, and financial) in order to make clear recommendations for corrective actions at the same time identify lessons learned and best practices for scaling up or levelling up. Performance evaluation will assess the project's success in achieving its objectives. The project will be monitored closely by the Environmental Management Committee through semi-annual reports, quarterly implementation reviews, technical reports, environmental patrolling and regular field visits as required enhancing success.

M & E of project impact

Evaluation of the project's success in achieving its outcomes will be monitored continuously throughout the FLUP implementation. Monitoring and evaluation of the impact of the project being implemented is essential to ensure that the plans are being carried out effectively and efficiently. The M & E will be a jointly conducted by the FLUP Technical Working Group (TWG) from Municipality of Santa Cruz and PENRO – Marinduque. The group should closely monitor what are the effects of the plan implementation and how it greatly affects the stakeholders and the natural resources involved.

PROJECT OVERVIEW

The FLUP long term environmental and development goal is to support the adoption of integrated land resources management in order to generate local, regional and national environmental and socio-economic benefits including: restoration of degraded lands, climate change mitigation and adaptation, biodiversity conservation eco-tourism, agri-tourism; improved health, water, agricultural production, coastal resource management, disaster risk reduction and thereby, protection of ridge to reef towards attainment sustainable food security and better quality of life for the people of Santa Cruz.

Allowable and Non-Allowable Activities in Protection and Production Forest

Zones	Allowable Activities	Non-Allowable Activities
Protection Forest (Most of the area are Mangrove areas)	a. Community watersheds b. Assisted natural regeneration	a. No mining b. No cutting/timber harvesting c. No introduction of new development or projects without proper coordination with the concerned agencies.
Production Forest	a. Agroforestry b. Tree plantation c. Harvesting of planted trees d. Ecotourism e. Grazing f. Communal forest	a. No entry of new migrants

ACTION PLAN AND BUDGET (5 YEARS)

Table 1: Gantt chart showing the key strategic implementation activities, expected output for year 1 -5

ACTIVITIES/STRATEGIES	Expected output	2019	2020	2021	2022	2023
1. Creation of Technical Working Group on the Implementation of FLUP	TWG on FLUP created					
2. Designation of Agricultural Technologist who will be in charge of the implementation of FLUP (focal person)	FLUP focal person designated					
3. Conduct IEC of the						

concerned community on the importance of the FLUP in sustainable forest management	IEC conducted in 29 barangays					
4. Enactment of ordinance institutionalizing the co-management of areas in coordination with focal person on FLUP Implementation	Approved resolution for adoption and MOA for implementation					
5. Ground delineation of the proposed protection and production forest	Assessment report, Maps, Barangay. Resolutions, DENR-LGU validation survey					
6. Delineation survey and inventory of forest occupants in Barangay Lapu-Lapu	Validation of occupancy rights					
7. Conduct of inventory and survey of existing cultivation & development within the open access areas	List of forest occupants and development inventoried					
8. Survey and Issuance of tenural instrument such as: CBFMA in cultivated areas in upland and developed areas in mangrove forest, FlagT and other uses.	Tenural instrument issued					
9. Rehabilitation of river banks and tributaries (planting of bamboo and other forest trees)	River banks and tributaries rehabilitated					
10. Development & reforestation of production forests.	Production forest developed and reforested					
11. Creation, training and deployment of Bantay Gubat Bantay Kalikasan	Bantay Gubat created and strengthened and deployed					
12. Capability Trainings/ seminars for PO's.	1 training every year					
13. Enrichment planting/ reforestation within the proposed protection forests	National Greening Program maintained					



ACTIVITIES/PARTICULARS	BUDGETARY REQUIREMENTS (Php)					TOATAL (Php)	SOURCE OF PUNDS		
	2019	2020	2021	2022	2023		LGU	DENR	NGA's
1. Creation of Technical Working Group on the Implementation of FLUP	-	-	-	-	-	-	✓	✓	-
2. Designation of Agricultural Technologist who will be in charge of the implementation of FLUP (focal person)	-	-	-	-	-	-	✓	-	-
3. Conduct IEC of the concerned community on the importance of the FLUP in sustainable forest management	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	500,000.00	✓	-	-
4. Ground delineation of the proposed protection and production forest	-	100,000.00	-	-	-	100,000.00	✓	-	-
5. Delineation survey and inventory of	-	20,000.00	20,000.00	-	-	40,000.00	✓	-	-



forest occupants in Barangay Lapu-Lapu									
6. Conduct of inventory and survey of existing cultivation & development within the open access areas	50,000.00	50,000.00	-	-	-	100,000.00	✓	-	-
7. Survey and Issuance of tenural instrument such as: CBFMA in cultivated areas in upland and developed areas in mangrove forest, FlagT and other uses.	-	50,000.00	-	-	-	50,000.00	✓	-	-
8. Rehabilitation of river banks and tributaries (planting of bamboo and other forest trees)	-	-	50,000.00	50,000.00	50,000.00	150,000.00	✓	-	-
9. Development & reforestation of production forests.		100,000.00	100,000.00	100,000.00	100,000.00	400,000.00	✓	-	-
10. Creation, training and deployment of Bantay Gubat	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	250,000.00	✓	-	-
11. Capability Trainings & seminars for PO's.	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	250,000.00	✓	-	-
12. Enrichment planting & reforestation within the proposed protection forests	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	250,000.00	✓	-	-
Sub-Total:	300,000.00	570,000.00	420,000.00	400,000.00	400,000.00	2,090,000.00			



ACTIVITIES/PARTICULARS	BUDGETARY REQUIREMENTS (Php)					TOATAL	SOURCE OF PUNDS		
	2019	2020	2021	2022	2023	(Php)	LGU	DENR	NGA's
Purchase of Equipment/Vehicles									
13. GPS (4)	50,000.00	50,000.00	-	-	-	100,000.00	✓	-	-
14. Laptop (2)	50,000.00	50,000.00	-	-	-	100,000.00	✓	-	-
15. Printer (2)	35,000.00	35,000.00	-	-	-	70,000.00	✓	-	-
16. Drone (1)	120,000.00	-	-	-	-	120,000.00	✓	-	-
17. Water proof camera (1)	50,000.00	-	-	-	-	50,000.00	✓	-	-
Sub-Total	305,000.00	135,000.00	-	-	-	440,000.00			
Maintenance and Other Operating Expenses									
18. Supplies and materials, Travelling and training expenses, communication and oil and fuel	-	20,000.00	20,000.00	20,000.00	20,000.00	80,000.00	✓	-	-
Sub Total	-	20,000.00	20,000.00	20,000.00	20,000.00	80,000.00			
GRAND TOTAL	605,000.00	725,000.00	440,000.00	420,000.00	420,000.00	2,610,000.00			

ANNEX A

Letter of Intent



Republic of the Philippines
MUNICIPALITY OF STA. CRUZ
Province of Marinduque

Office of the Mayor



January 30, 2018

IMELDA M. DIAZ
OIC-PENR OFFICER
PENRO
Santol, Boac, Marinduque

Madame,

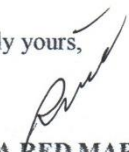
Greetings from the Municipality of Santa Cruz.

In an effort to properly manage forested lands, and to ensure that our forests and their resources would be utilized in a sustainable manner, we are sending our Letter of Intent (LOI) to signify the Municipality of Santa Cruz's intention of cooperating with the Department of Environmental and Natural Resources' program to undertake the Forest Land Use Planning or FLUP, as an integral part of the Comprehensive Land and Water Use Planning (CLWUP). We understand that the purpose of the program is to determine the optimum use of natural resources to support local growth most especially to determine further which part of the forest is for protection and which part of the same should be devoted to production.

In the preparation of the Forest Land Use Plan may we request your good office to render us your most valuable technical assistance.

Thank you and please accept our best regards.

Very truly yours,


MARISA RED MARTINEZ
Municipal Mayor

ANNEX B

TECHNICAL WORKING GROUP OF FOREST LAND USE PLANNING OF LGU STA. CRUZ

FOREST LAND USE PLANNING (FLUP)
STA. CRUZ, MARINDUQUE
MEMBERS OF TECHNICAL WORKING GROUP (TWG)

Chairperson	:	Agustina F. Palomares	-	MPDC
Co-Chairperson	:	Engr. Cynthia U. Lozano	-	PENRO
	:	Forester Emeterio M. Recto	-	PENRO

Members:

1. Aleth C. Bundoc	-	CDO II - PENRO
2. Forester Amado J. Abiang	-	Forester II – PENRO
3. Engr. Rustico R. Constantino	-	Municipal Engineer
4. Engr. Roberto Z. Ricohermoso	-	Municipal Assessor
5. Hon. Krenessa P. Constantino	-	SB Chairperson on Environment Protection
6. Christian Pastorfide	-	MENRO/MPDO Staff
7. Wilvir L. Imperio	-	MDRRMO
8. Corazon R. Pelaez	-	FT I - PENRO
9. Randy R. Pantoja	-	FT I - PENRO
10. Ricky L. Pereda	-	FT I – PENRO
11. Matthew S. Labrador	-	Support Staff - PENRO
12. Mayann D. Pizarra	-	Agricultural Technologist
13. Gerelyn M. Abanilla	-	Social Welfare Assistant
14. Junmuel P. Regio	-	Administrative Aide III/MPDO Staff
15. Manny Preito	-	Agricultural Technologist
16. Marvin Melecia	-	Municipal Staff
17. Joseph Estrella	-	Municipal Staff
18. Segundo P. Quezada	-	Statistician I
19. Maribeth R. Mendoza	-	Statistician Aide/MPDO Staff
20. Benedicto V. Apolonio	-	Administrative asst. II
21. Micah de Guzman	-	Executive Assistant of the Mayor
22. Miriam T. Laceda	-	Zoning Inspector/MPDO Staff
23. Laura Reynoso	-	Data Encoder
24. Christma Par	-	JO LGU Sta. Cruz
25. Jayson Giron	-	JO LGU Sta. Cruz
26. Venancio Pardilla	-	Brgy. Captain, Alobo
27. Paterno V. Rosas	-	Brgy. Captain, Angas

ANNEX C

SANGGUNIANG BAYAN RESOLUTION FOR FOREST LAND USE PLANNING



Republic of the Philippines
MUNICIPALITY OF SANTA CRUZ
Marinduque

Office of the Sangguniang Bayan

EXCERPT FROM THE MINUTES OF THE SANGGUNIANG BAYAN REGULAR SESSION HELD AT THE BAHAY NG BAYAN SESSION HALL OF SANTA CRUZ PROVINCE OF MARINDUQUE ON JULY 13, 2018.

PRESENT:

Hon. Joam Merano-Morales	Councilor/Temporary Presiding officer
Hon. Sancho N. dela Rosa	Councilor;
Hon. Krenessa P. Constantino	Councilor;
Hon. Alejandro C. Palamos	Councilor;
Hon. Danilo R. Red	Councilor;
Hon. Macario G. Perilla	Councilor;
Hon. Leonora F. Caraan	Councilor;
Hon. Edgardo R. Rejano	Councilor;
Hon. Dolan Kerby G. Murillo	Councilor/PPSK

ABSENT:

Hon. Geraldine M. del Rosario	Vice Mayor
Hon. Felix Q. Dy	Councilor/ABC President

RESOLUTION NO. 210 S. 2018

RESOLUTION AUTHORIZING HON. MARISA RED MARTINEZ, MUNICIPAL MAYOR, MUNICIPALITY OF SANTA CRUZ, MARINDUQUE TO ENTER INTO MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, REGION IV-B REPRESENTED BY MS. IMELDA M. DIAZ, OIC-PENRO TO UNDERTAKE FOREST LAND USE PLANNING AS AN INTEGRAL COMPONENT OF THE EXISTING COMPREHENSIVE LAND USE PLAN.

WHEREAS, the Municipality of Santa Cruz, Marinduque has vast land area with thick and growing trees which should be protected and preserved;

WHEREAS, these forest land plantations could be utilized and occupied by the DENR for its proposed development plan beneficial to the community;

WHEREAS, the municipality of Santa Cruz thru the initiative, willingness and leadership of Hon. Marisa Red Martinez, Municipal Mayor, will allow the use of land and eventually will allow the DENR to undertake forest land use planning as an integral component of the existing Comprehensive Land Use Plan (CLUP).

NOW THEREFORE, on motion of Hon. Macario G. Perilla and duly seconded by Hon. Leonora F. Caraan, the Sangguniang Bayan in session assembled.

RESOLVED AS IT IS HEREBY RESOLVED, to authorize HON. MARISA RED MARTINEZ, MUNICIPAL MAYOR, MUNICIPALITY OF SANTA CRUZ, MARINDUQUE TO ENTER INTO MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, REGION IV-B, PENRO MARINDUQUE TO UNDERTAKE FOREST LAND USE PLANNING AS AN INTEGRAL COMPONENT OF THE EXISTING COMPREHENSIVE LAND USE PLAN.

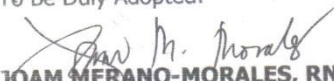
RESOLVED FINALLY, that copies of this resolution be sent to Hon. Marisa Red Martinez, Municipal Mayor, DENR Region IV-B PENRO Marinduque and to all concerned for their information.

ADOPTED: July 13, 2018.

I HEREBY CERTIFY to the correctness of the foregoing resolution.


ROSARIO DG. RECALDE
SB/Secretary

Attested & Certified
To Be Duly Adopted:


JOAM MERANO-MORALES, RN, MBA
Councilor/Temporary Presiding Officer

ANNEX D

MEMORANDUM OF AGREEMENT FOR THE PREPARATION OF FLUP

MEMORANDUM OF AGREEMENT

This Agreement made and entered into by and between;

The DENR, Region IV-B, PENRO of Marinduque herein represented by the OIC-Regional Executive Director, NATIVIDAD Y. BERNARDINO, Provincial Environment and Natural Resources Officer, Ms. IMELDA M. DIAZ, OIC-PENRO, herein collectively referred to as "DENR",

-and-

The Municipality of Santa Cruz, a Local Government Unit established and existing under the laws of the Republic of the Philippines with Office address at Barangay Pag-asa, Santa Cruz, Marinduque, duly represented by the Mayor, Hon. MARISA RED MARTINEZ, as authorized by the Sangguniang Bayan of Santa Cruz, Marinduque, herein referred to as the Municipal Government;

WITNESSETH THAT;

WHEREAS, the MUNICIPALITY has a total coastline of about 103.632 kilometers, a total of 33,523 population distributed in 29 Barangays, and a total timberland area or public forests and forestland of about 4,380.98 hectares (including areas of mangroves);

WHEREAS, DENR-DILG JMC 1998-01 provides that the DENR and the concerned Local Government Unit (LGU) shall jointly undertake forestland use planning, the output of which shall become an integral part of the concerned LGU's comprehensive land use plan;

WHEREAS, the MUNICIPALITY recognizes the value of managing its forests and forestlands, that are not covered by any form of tenure, government proclamations, or reservations or forestlands that are not covered by any form of tenure, government proclamations but without effective on-site management to contribute to the over-all sustainable development of the MUNICIPALITY;

WHEREAS, THE PARTIES agreed to jointly undertake the preparation of the Municipality's Forest Land Use Plan (FLUP) from data collection, validation, situational analysis, strategy formulation, adoption and approval. The said FLUP shall be integrated with the Comprehensive Land and Water Use Plan (CLWUP);

WHEREAS, the PARTIES agreed to jointly undertake the preparation of the Municipality's FLUP within the context of sustainable forest management biodiversity management;

WHEREAS, the processes and procedures to be undertaken in the implementation of this Memorandum of Agreement shall be guided by the principles and practices of transparency, accountability, and participatory decision-making;

WHEREAS, the PARTIES are committed to jointly support, contribute to and participate in the activities to be conducted pursuant to this Memorandum of Agreement;

NOW, THEREFORE, for and in consideration of the foregoing premises and by way of formalizing and confirming their commitments, the Parties hereby agree as follows;

MEMORANDUM OF AGREEMENT FOR THE PREPARATION OF FLUP

I. SUBJECT MATTER/OBJECTIVE

The **PARTIES** agree that this Memorandum of Agreement shall have for its overriding objective the forest and forest resources management in the municipality through improved governance consisted with the principles and practices of transparency, accountability and participatory decision-making.

In particular, the Parties shall undertake joint and/or common activities in formulating the FLUP including but not limited to the following phases/areas;

1. Data Gathering (Bio-Physical, Socio-Economic and Government/Institutional Data), Mapping and Validation;
2. Situational Analysis/Environmental, Assessments, including Identification of Non-Recommendations, including Prioritization of Sub-Watershed if applicable; Building Consensus on Strategies and Recommendations; and Drafting and Writing of Draft FLUP;
3. Formulation of Vision, Mission, Goals and Management Strategies and Recommendations, including Prioritization of Sub-Watershed if applicable; Building Consensus on Strategies and recommendations; and Drafting and Writing of Draft FLUP;
4. Multi-Sectoral Review and Endorsement of the Municipal Development Council, Adoption of the FLUP via Enactment of an Ordinance, Approval/Affirmation by the DENR Regional Executive Office; and
5. Post-FLUP Formulation with respect to Incorporation in CLWUP, joint FLUP Implementation, Monitoring and Updating at five (5)-Year Interval.

II. OBLIGATIONS OF THE PARTIES

A. General Obligations

1. The **PARTIES** shall collaborate and combine their human, technical, material and financial resources to implement this Memorandum of Agreement and such FLUPs and programs resulting from the said implementations;
2. The **PARTIES** hereby agree to meet periodically to apprise each other of the progress of the implementation of this Memorandum of Agreement discuss and resolve outstanding issues and concerns, and share lessons learned;
3. The **PARTIES** agree that the processes and activities of the Forest Land Use Planning shall be (a) ecosystem-based or within the context of a larger watershed; (b) governance-oriented; (c) science-based; (d) focused on environment and the natural resources and its multiple benefits; (e) people-oriented and participatory; (f) decision-and action-oriented; and collaborative;
4. The **PARTIES** shall formulate the Forest Land Use Plan from date of this Agreement;

MEMORANDUM OF AGREEMENT FOR THE PREPARATION OF FLUP

B. OBLIGATIONS OF THE MUNICIPALITY

1. Issue an Executive Order creating a multi-sectoral group that will undertake Forest Land Use Planning in collaboration with the DENR;
2. Provide necessary extension services, personnel, other logistical support and counter-part funds for the activities to be conducted pursuant to this Memorandum of Agreement;
3. Coordinate and collaborate with the DENR throughout all phases/areas of the planning process;
4. Facilitate the integration of the FLUP in the Municipal Development Plan and the CLWUP;
5. Ensure the sustained implementation of the FLUP by the Municipal Development Council and its endorsement to the Sangguniang Bayan;
6. Facilitate the review and approval of the FLUP by the Municipal Development Council and its endorsement to the Sangguniang Bayan;
7. Legitimize the FLUP and integrating it with the CLWUP through the enactment of an appropriate ordinance;
8. Participate in the conduct of training, capacity-building that may be jointly organized with or independently organized by the DENR and/or the municipality;
9. Provide the DENR progress and status reports and any special report activities undertaken pursuant to this Memorandum of Agreement.

C. OBLIGATION OF THE DENR

1. Issue Special Order/s assigning and designating FLUP Coordinators/Focal Persons from the Region, PENRO and CENRO Marinduque to assist, supervise, monitor, and prepare reports on the preparation, approval, and implementation of the FLUP;
2. Provide the necessary extension services, personnel, and other logistical support for its account for the activities to be conducted pursuant to this Memorandum of Agreement;
3. Provide technical assistance in the forest land use planning processes;
4. Provide financial and logistical support for the conduct of the various activities of the Forest Land Use Planning process;
5. Provide necessary and available data and maps to be utilized in the preparation and identification of areas for the FLUP processes;
6. Provide assistance in the conduct of selected ground validation, mapping and planning;
7. Assist in organizing local communities for data gathering, validation and consensus building on strategies and recommendations;
8. Provide the municipality timely information on relevant policies and

MEMORANDUM OF AGREEMENT FOR THE PREPARATION OF FLUP

development issues in connection with the activities to be conducted pursuant to this Memorandum of Agreement;

9. Provide assistance in the implementation of the FLUP and its integration with the CLWUP;

10. Link the municipality with other relevant and on going FLUP efforts in the Province and nearby Province;

11. Together with the municipality periodically monitor and assess activities being conducted pursuant to this Memorandum of Agreement.

III. INSTITUTIONAL MECHANISM TO PLAN, IMPLEMENT AND MONITOR THE ACTIVITIES UNDER THIS MEMORANDUM OF AGREEMENT

1. The PARTIES agree that regular meetings will be conducted to determine the progress of activities under this Memorandum of Agreement and such plans and programs as may be agreed upon by the PARTIES;

2. Such meetings shall be presided by the Mayor, or his duly authorized permanent representative, the Sangguniang Bayan Chair for Environment shall be invited to said meetings.

3. The mayor may also invite such other offices or persons as may be needed during regular or special meetings.

IV. AMENDMENT

This agreement may be amended, altered, modified or supplemented by written agreement of all PARTIES.

V. EFFECTIVITY

This Memorandum of Agreement (MOA) shall take effect upon signing of the parties hereto.

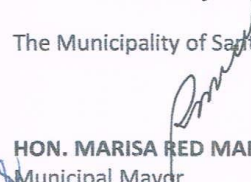
IN WITNESS THEREOF, the parties hereto affix their signatures this ____ day of _____, 2018 at _____.

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

By: **NATIVIDAD Y. BERNANDINO**
OIC Regional Executive Director
Region No. IV-B

By: **IMELDA M. DIAZ**
OIC-PENRO
Boac, Marinduque

The Municipality of Santa Cruz


HON. MARISA RED MARTINEZ
Municipal Mayor

MEMORANDUM OF AGREEMENT FOR THE PREPARATION OF FLUP

Signed in the presence of:

ACKNOWLEDGEMENT

Republic of the Philippines}
Province of Marinduque } S.S.
Municipality of _____ }

At the above stated place, on the ____ day of _____, 2018, before
me personally appeared:

COMMUNITY TAX

NAME

CERTIFICATE NO.

ISSUED ON/AT

NATIVIDAD Y. BERNANDINO

IMELDA M. DIAZ

MARISA RED MARTINEZ

15162306

1-22-2018 / STA. CRUZ, M'DUQUE

Known to be the same person who executed the foregoing instrument which they
acknowledged before me as their free and voluntarily act and deed as well as those of the
instrumentalities of the Government herein represented.

Said instrument refers to the MEMORANDUM OF AGREEMENT consisting of the
Five (5) pages, including this page wherein the acknowledgement is written, signed on the
left margin by the parties and their witnesses on each and every page and sealed with the
notary seal.

Doc. No. _____

Page No. _____

Book No. _____

Series of _____

ANNEX E

ORIENTATION/WORKSHOP FOR FOREST LAND USE PLANNING



ANNEX F

JOINT FLUP IEC FOR BARANGAY LEVEL



Joint FLUP IEC of Brgy. Kalangkang, Kasily, Balogo and Hupi held on April 26, 2018 at Brgy. Balogo, Sta. Cruz, Marinduque



Joint FLUP IEC of Brgy. Ipil, Kamandugan, Lusok and Botilao held on April 26, 2018 at Brqy. Ipil, Sta. Cruz, Marinduque



Joint FLUP IEC of Brgy. Libjo, Kilo-kilo and San Antonio held on June 6, 2018 at Brgy. Kilo-kilo, Sta. Cruz, Marinduque



FLUP IEC at Brgy. Polo held on June 14, 2018 at Brgy. Polo Island, Sta. Cruz, Marinduque



Joint FLUP IEC of Brgy. Punong, San Isidro and Dating Bayan held on May 25, 2018 at Brgy. Punong, Sta. Cruz, Marinduque



Joint FLUP IEC of Brgy. Masaguisi, Napo and Taytay held on May 24, 2018 at Brgy. Taytay, Sta. Cruz, Marinduque



Joint FLUP IEC of Brgy. Lapu-lapu, Buyabod, Matalaba and Tawiran held on April 27, 2018 at Brgy. Lapu-lapu, Sta. Cruz, Marinduque

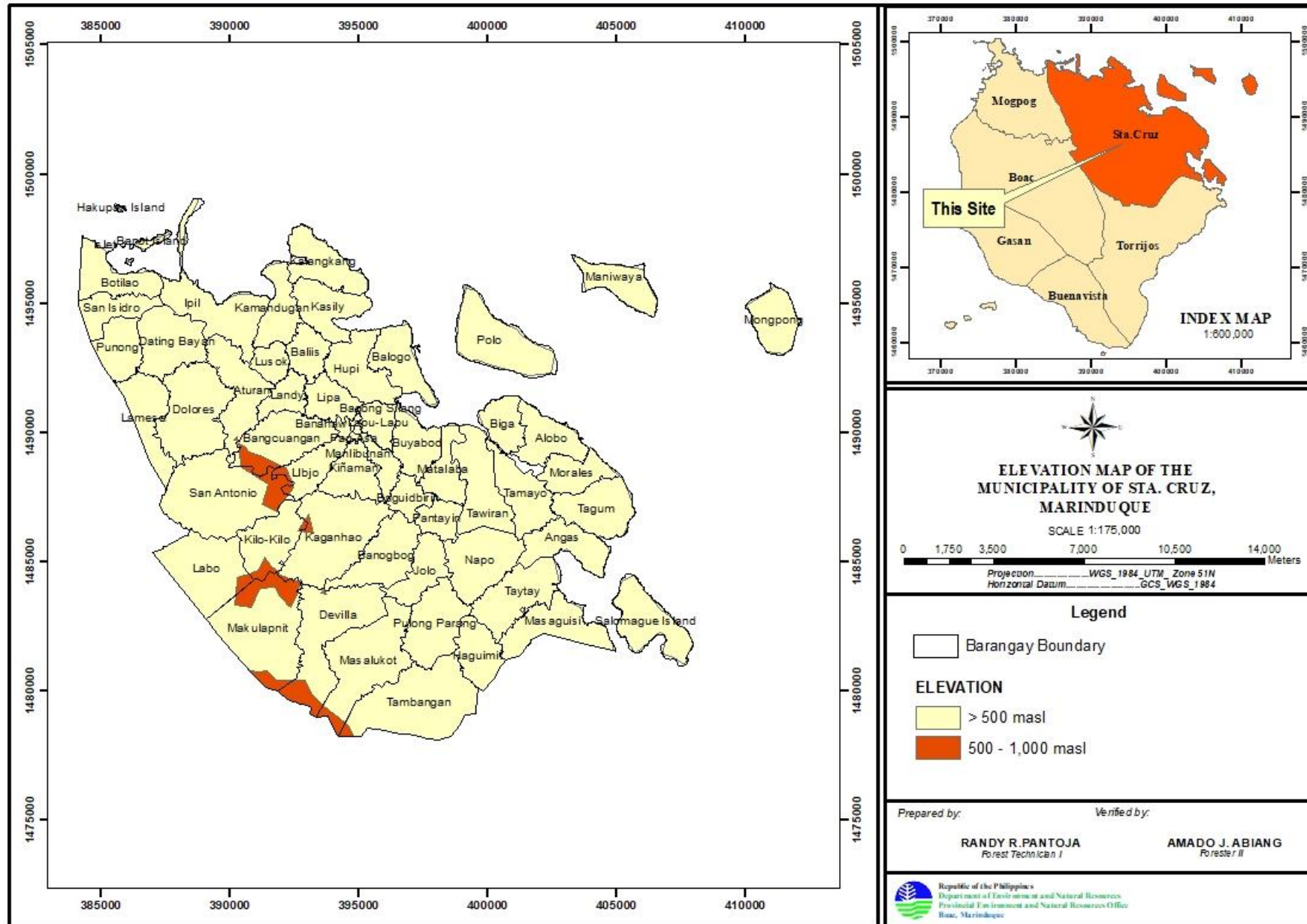


Joint FLUP IEC of Brgy. Angas, Tamayo, Tagum, Aloba and Biga held on April 27, 2018 at Brgy. Tamayo, Sta. Cruz, Marinduque

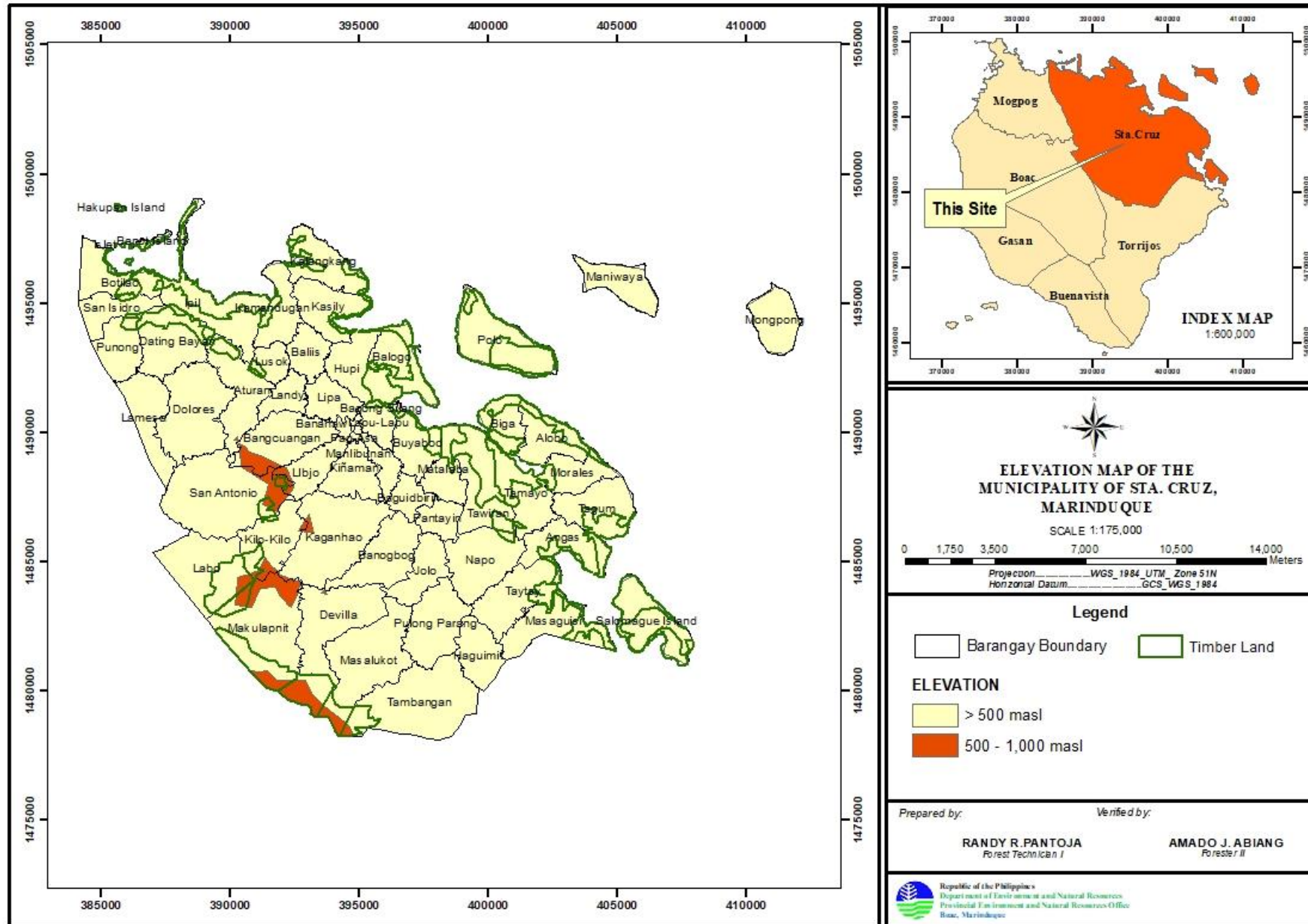
ANNEX G

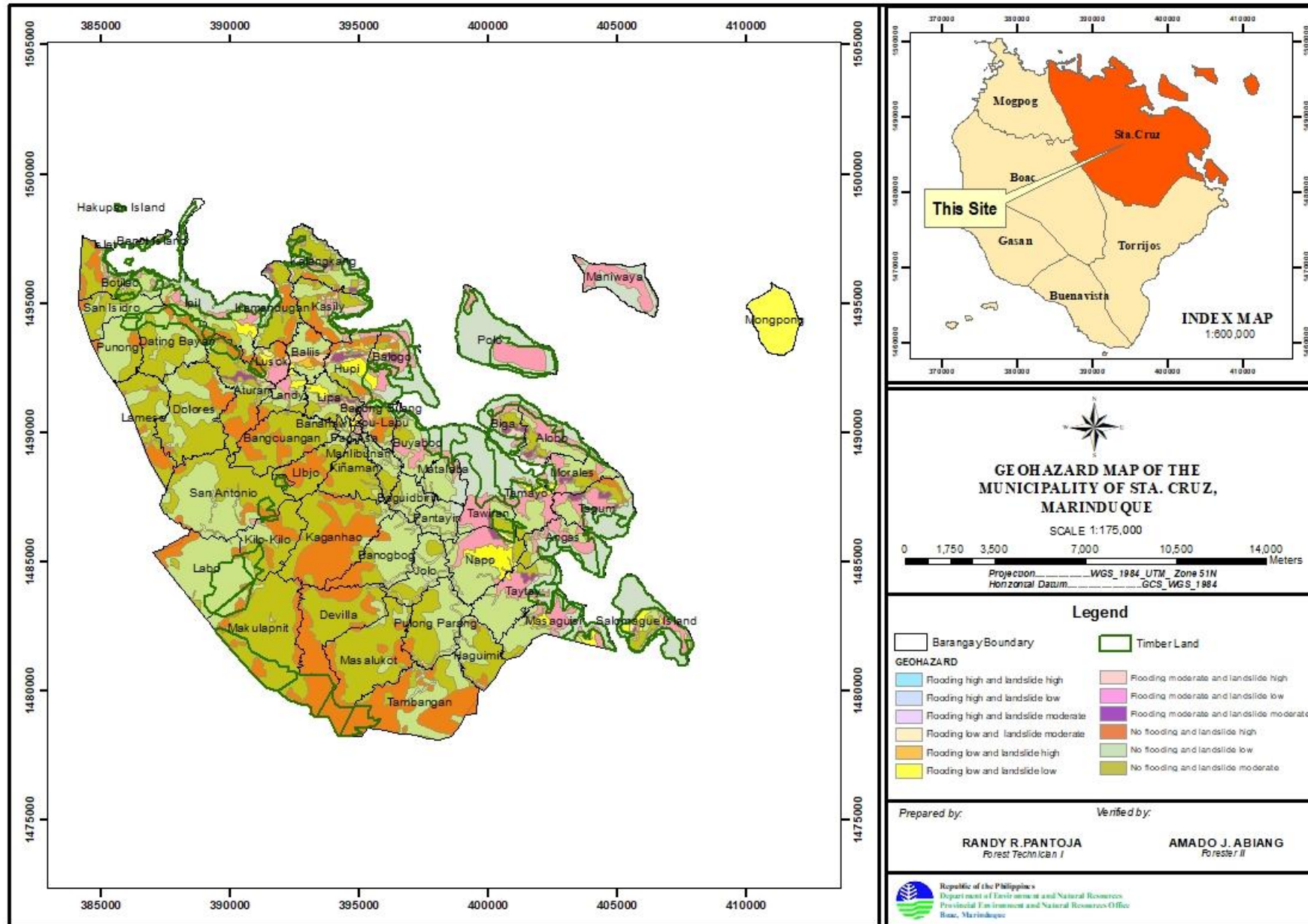
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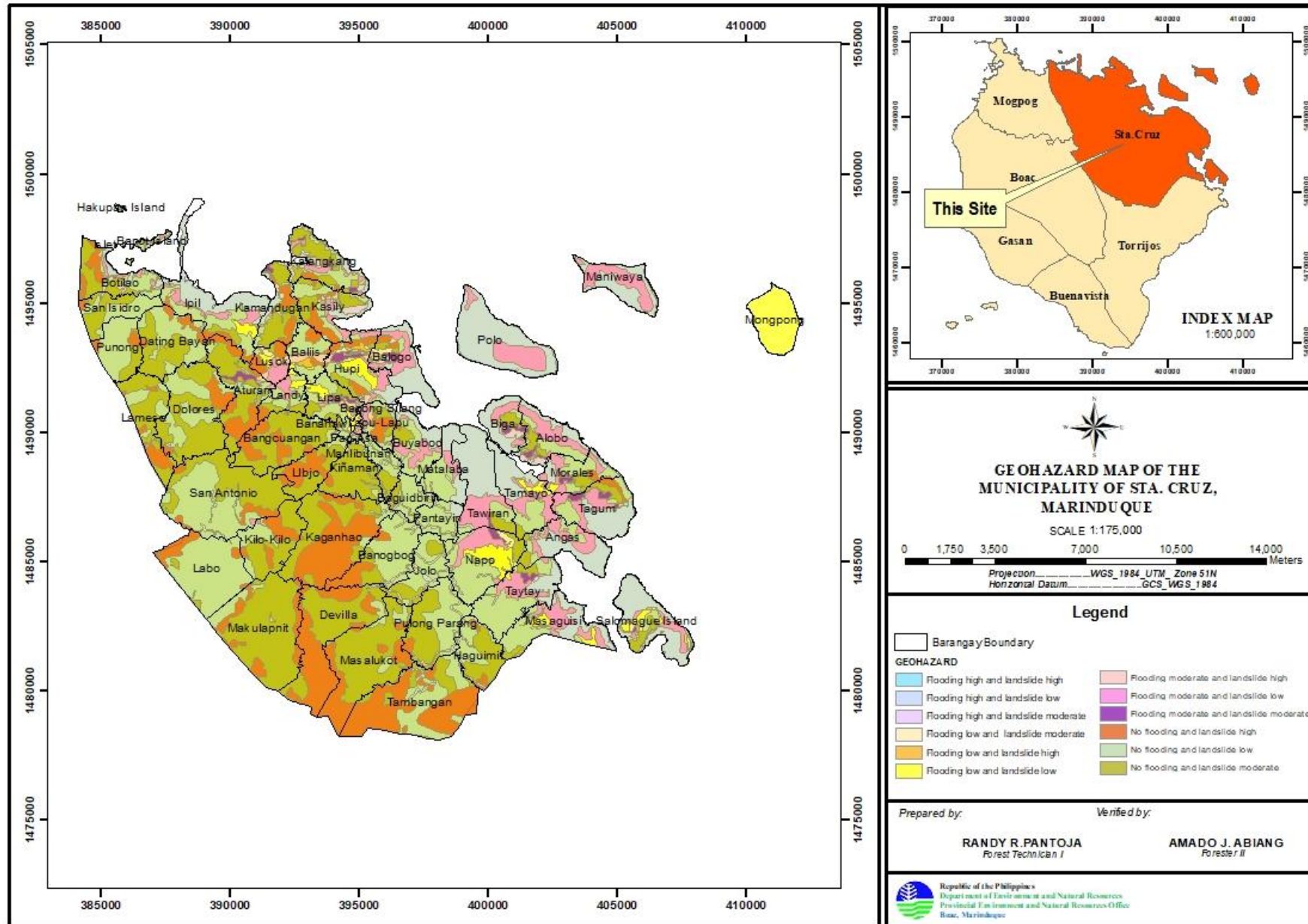
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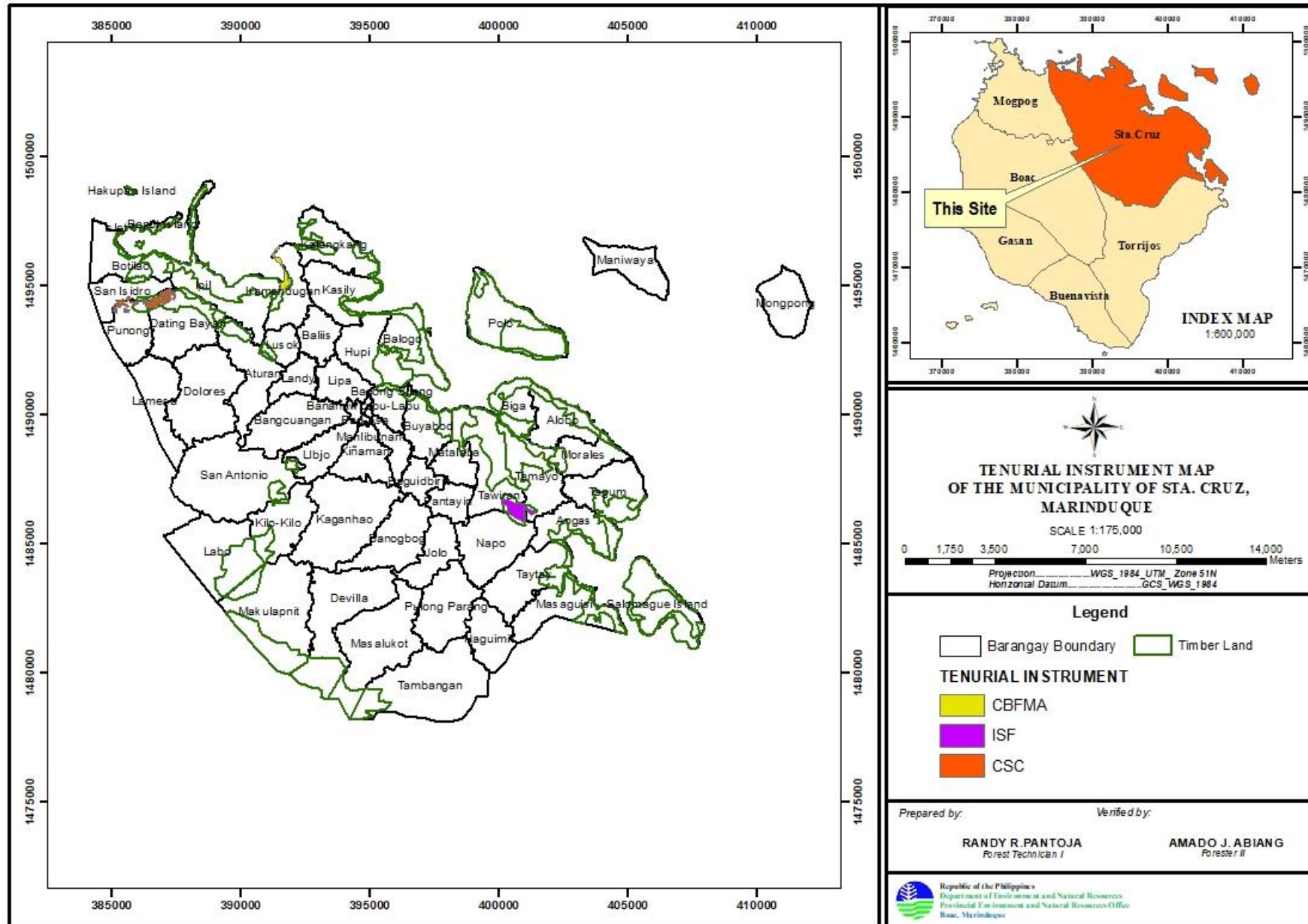


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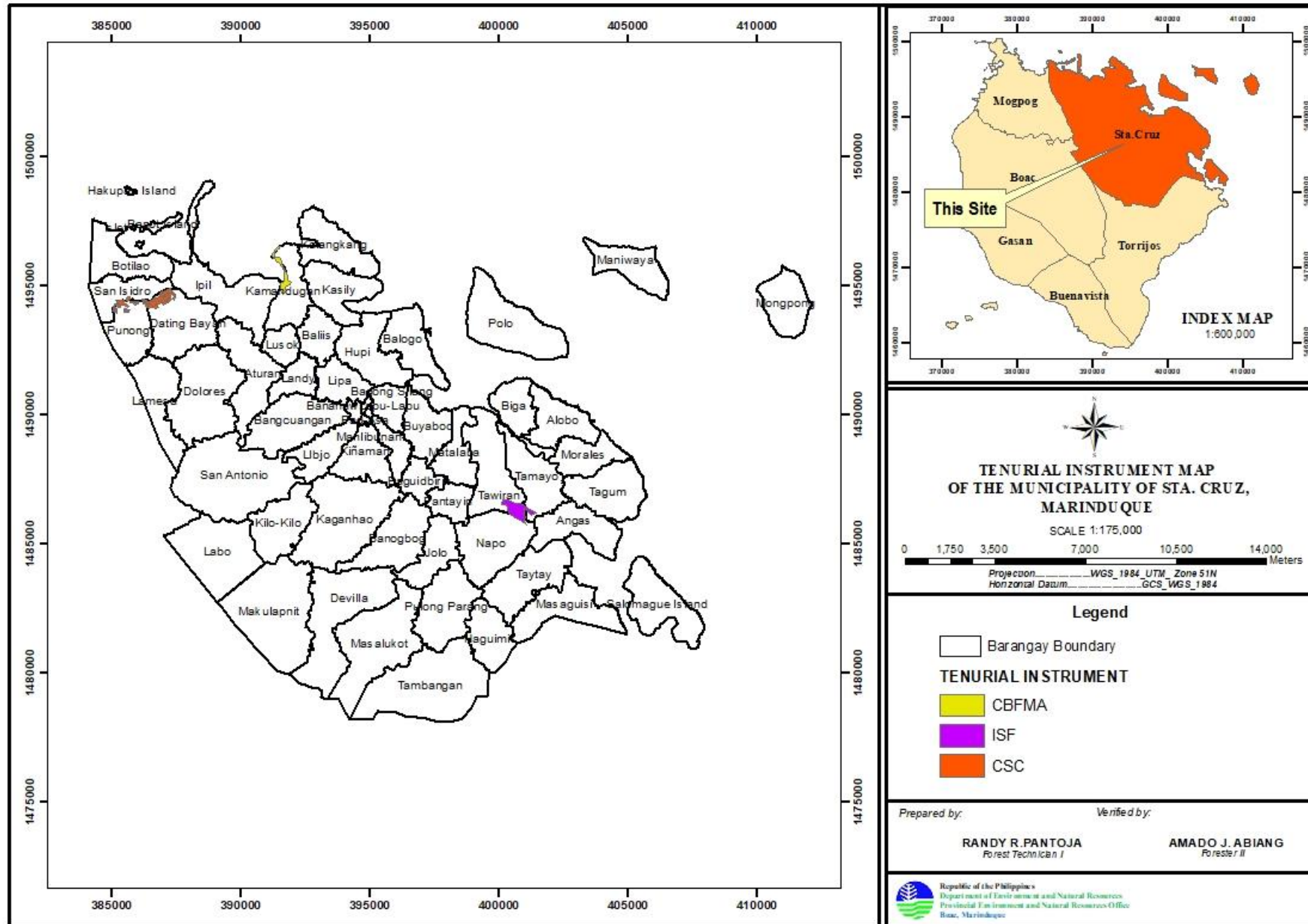


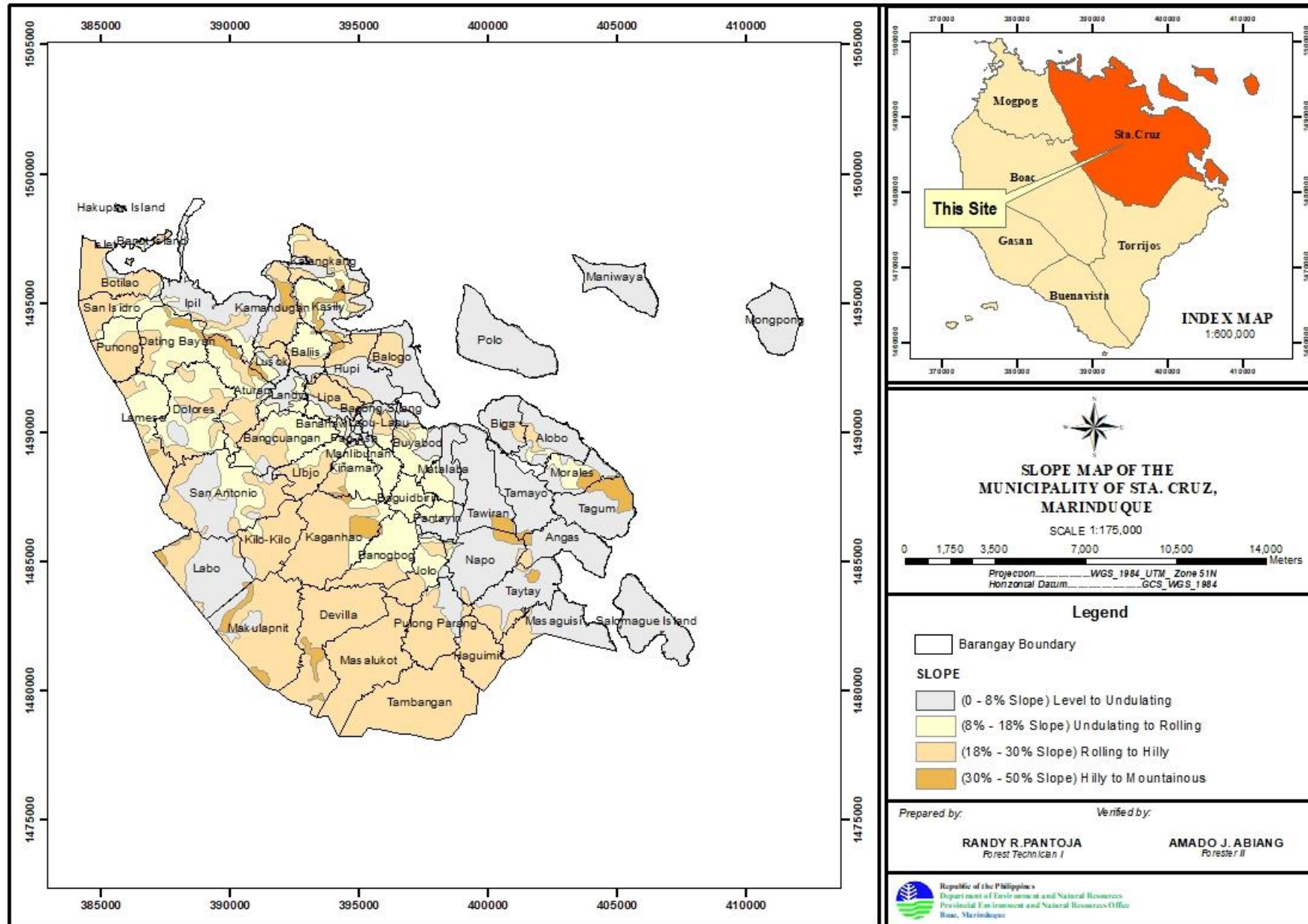


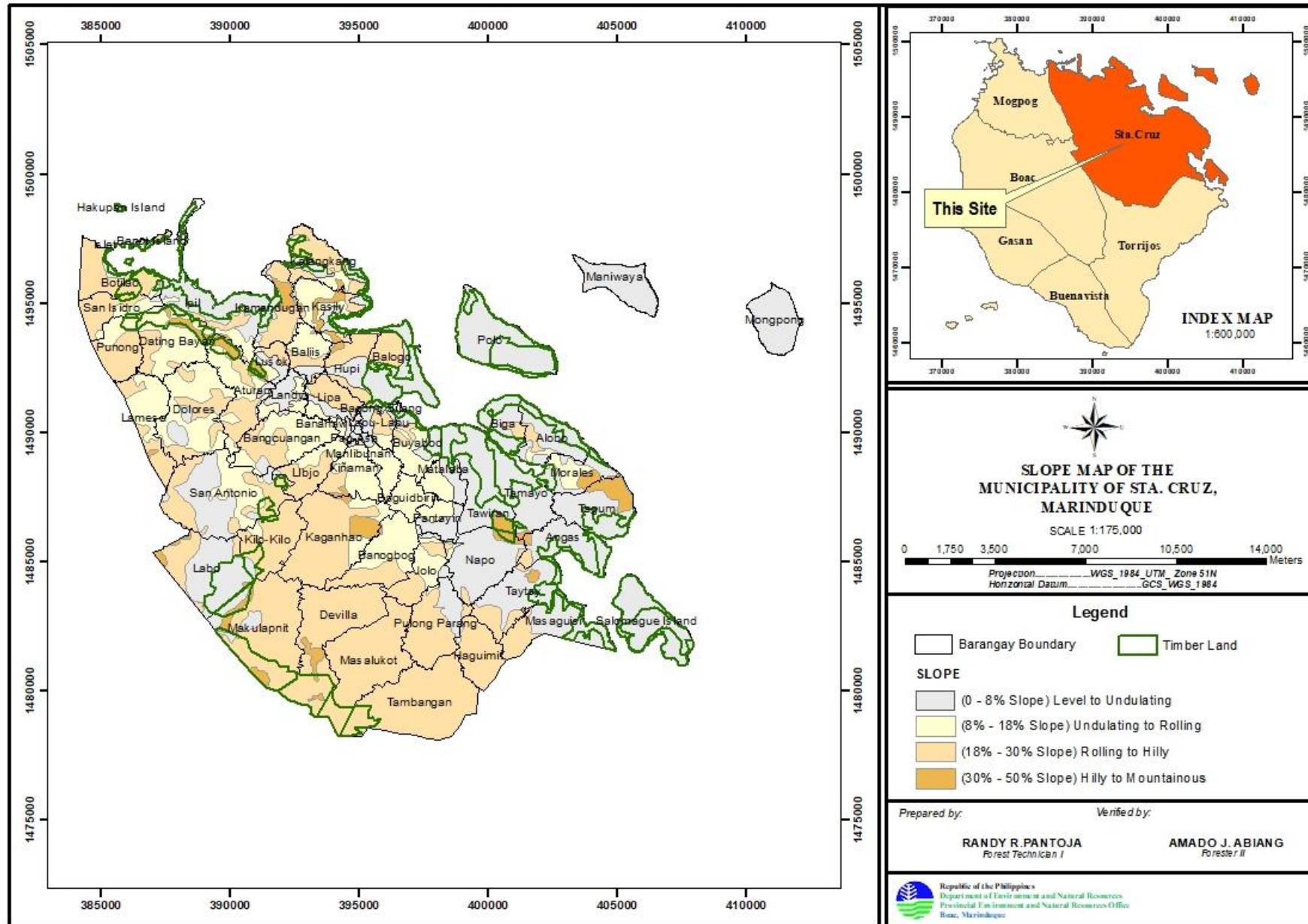


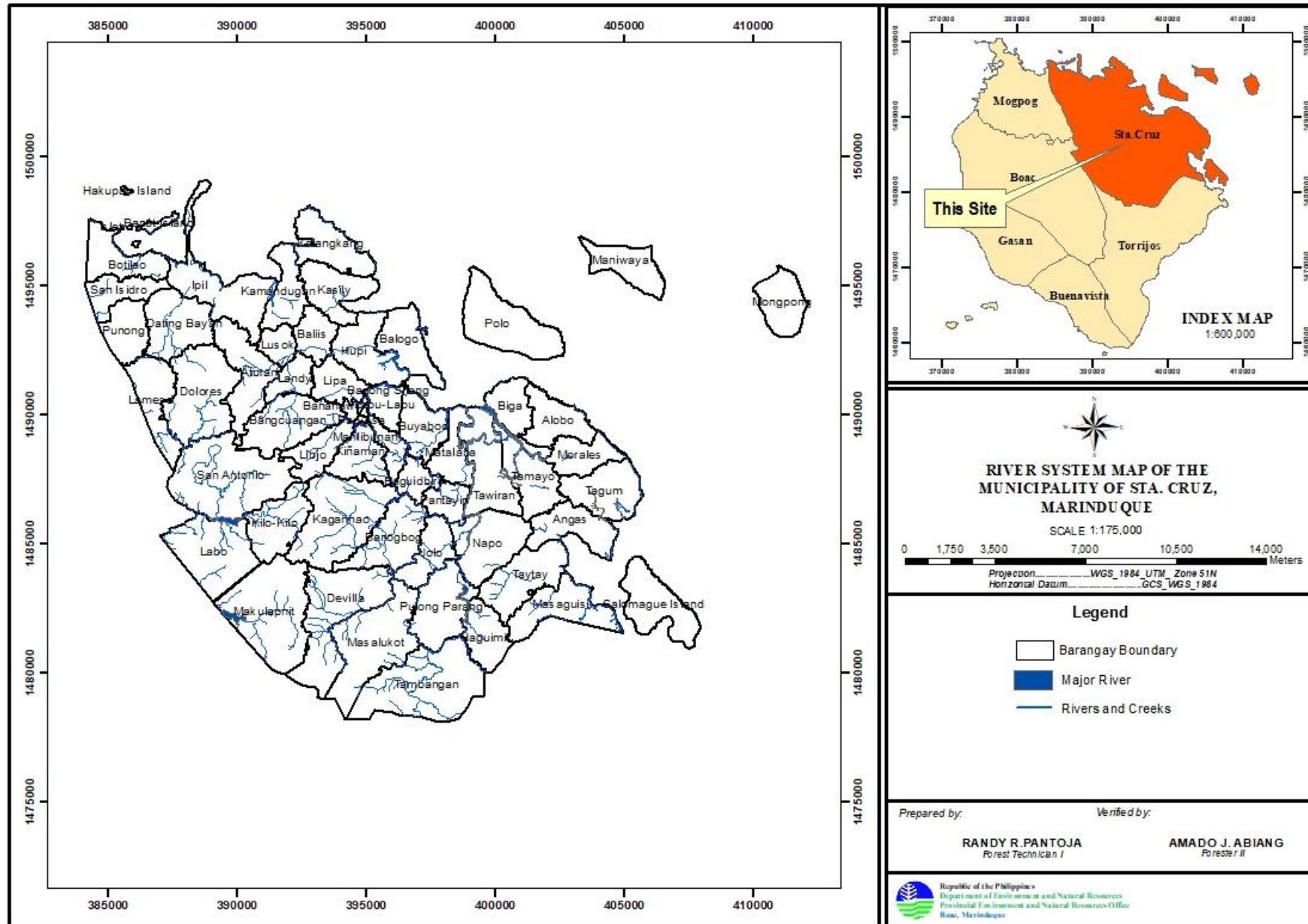


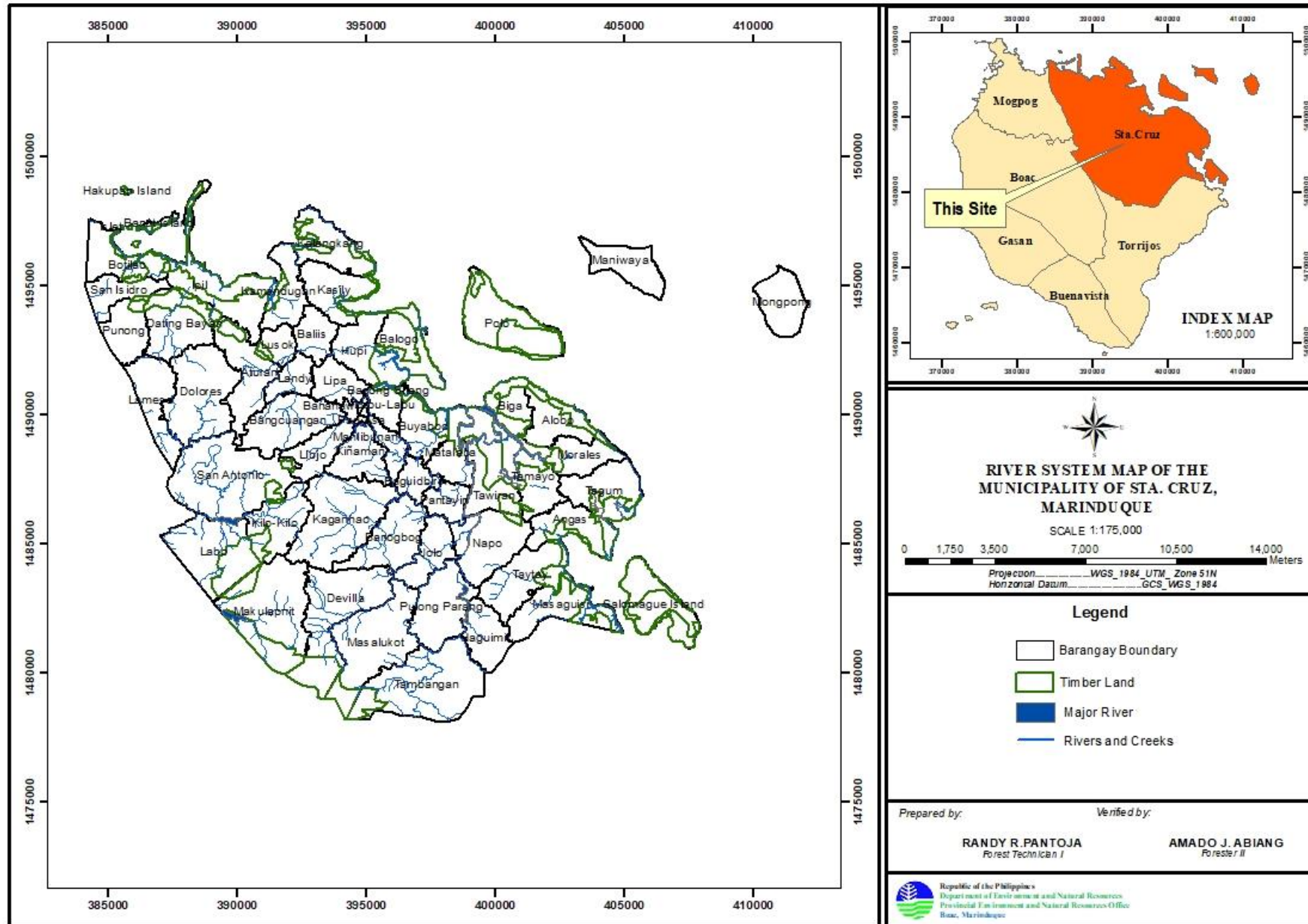
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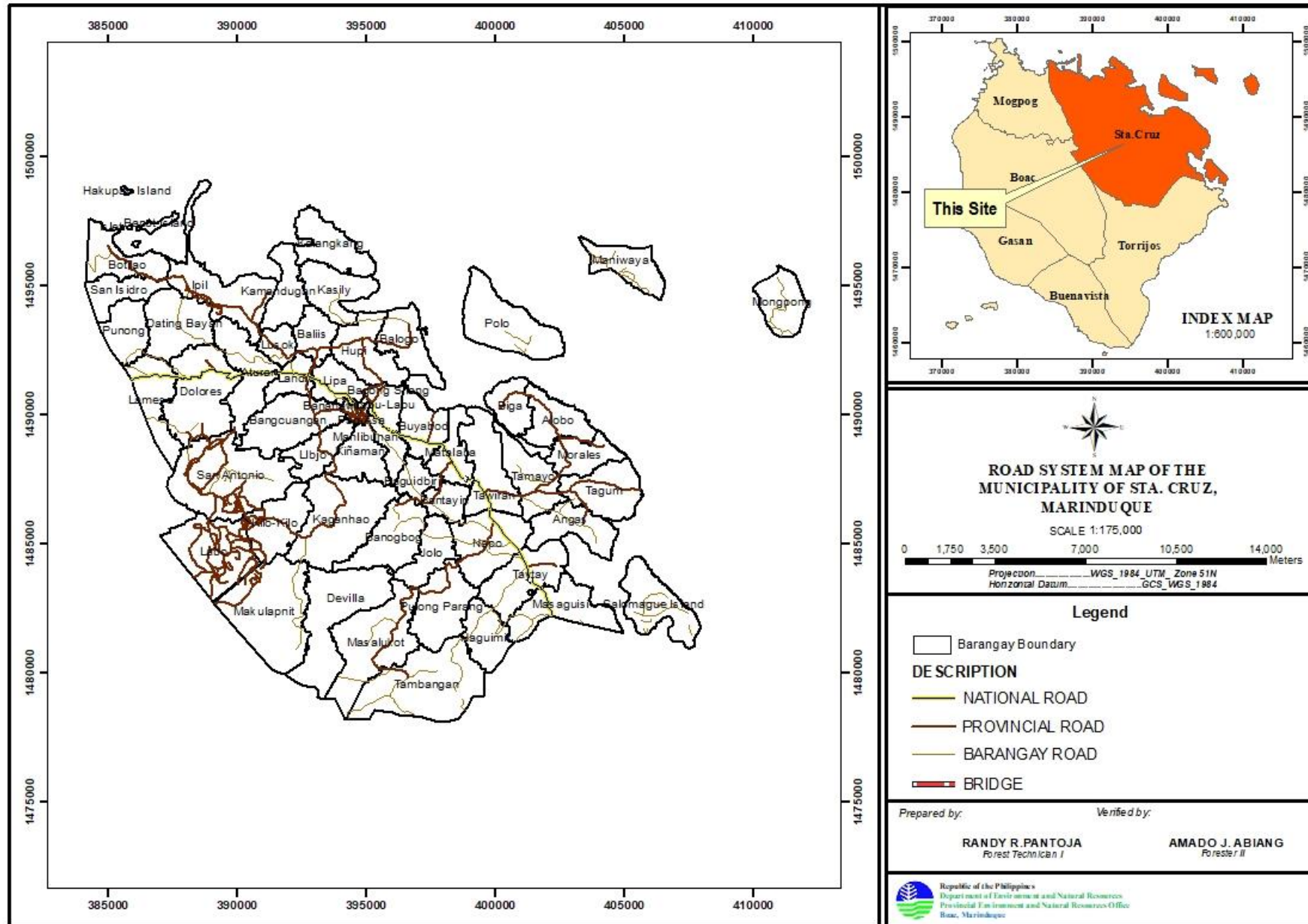


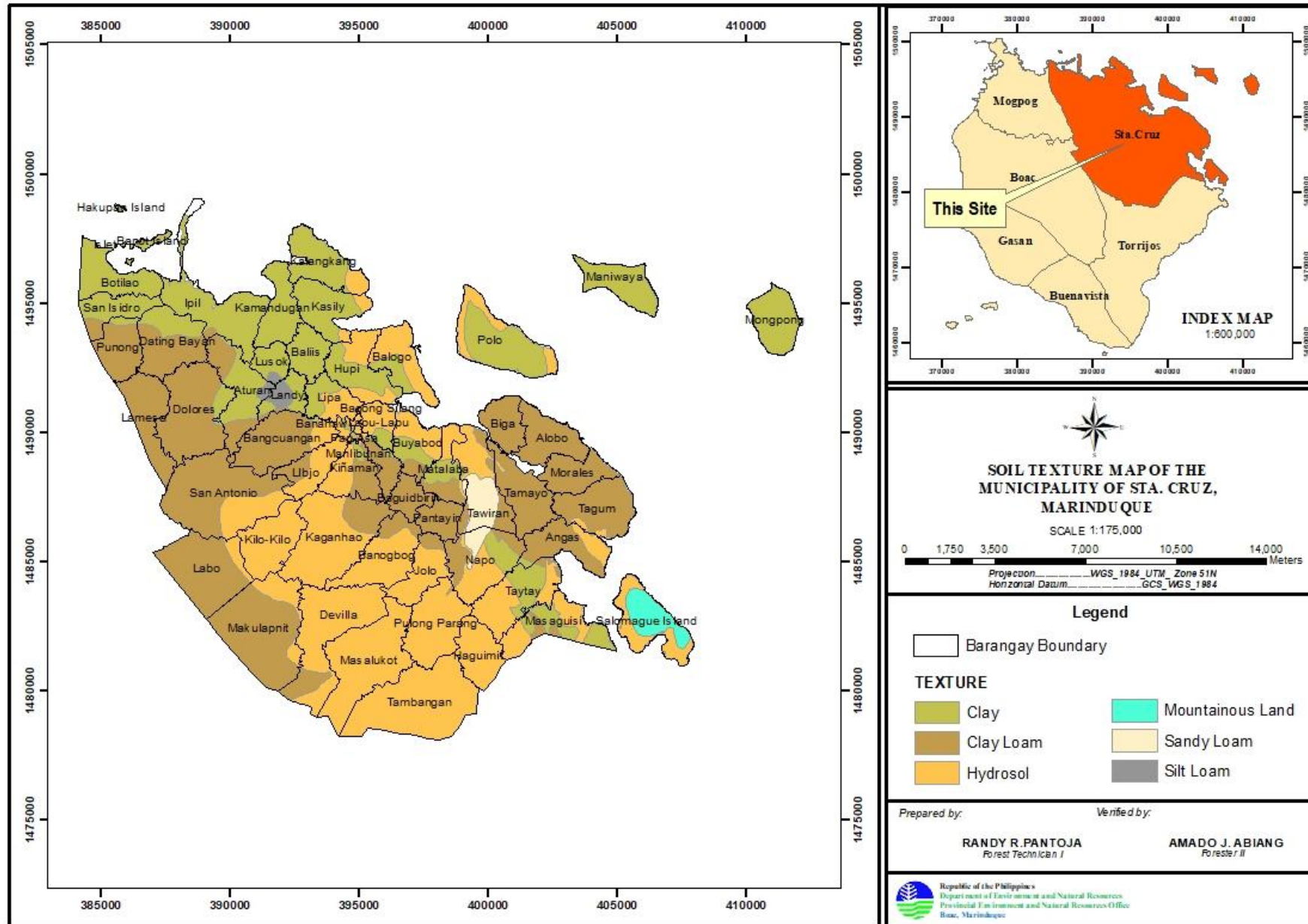


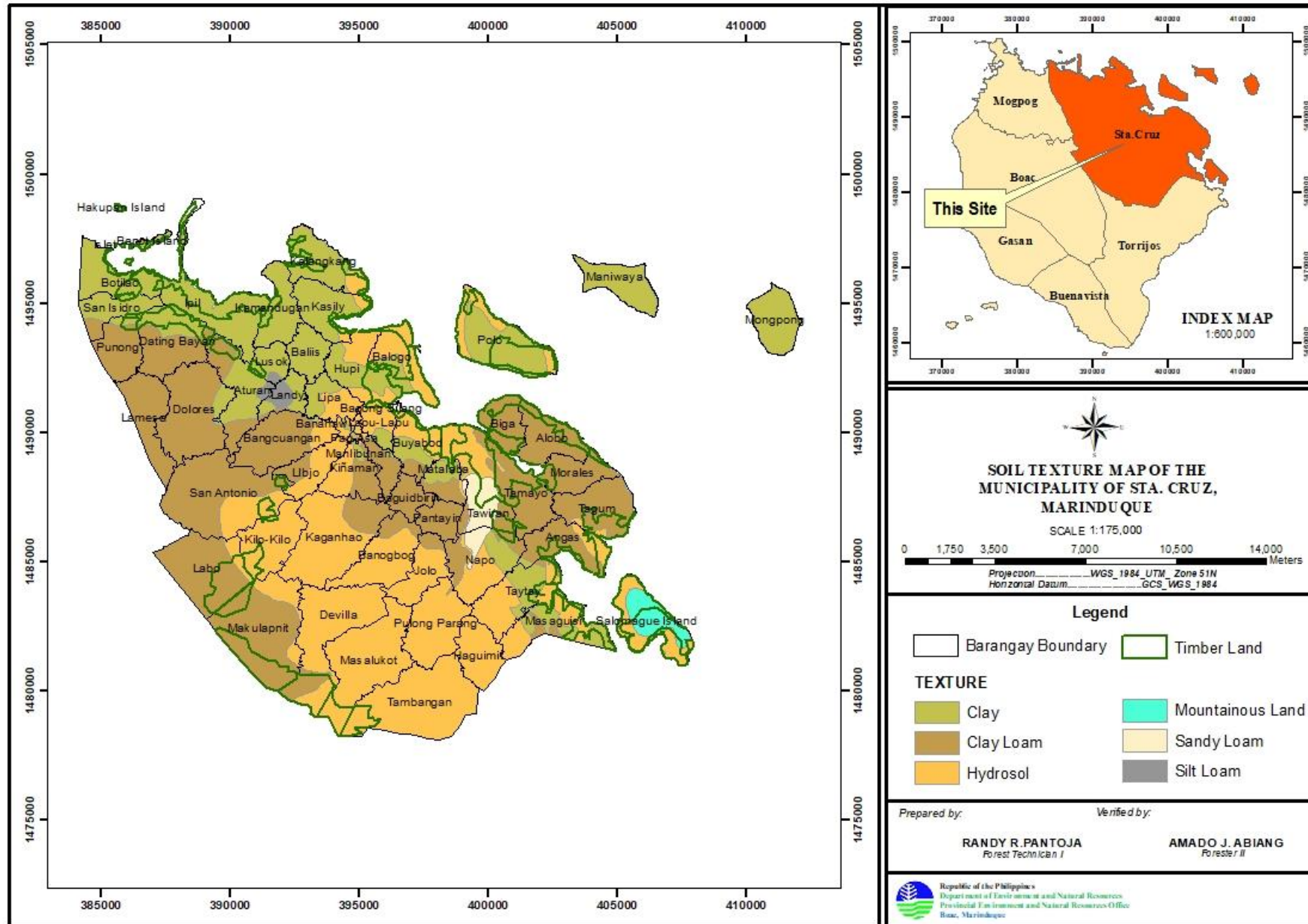


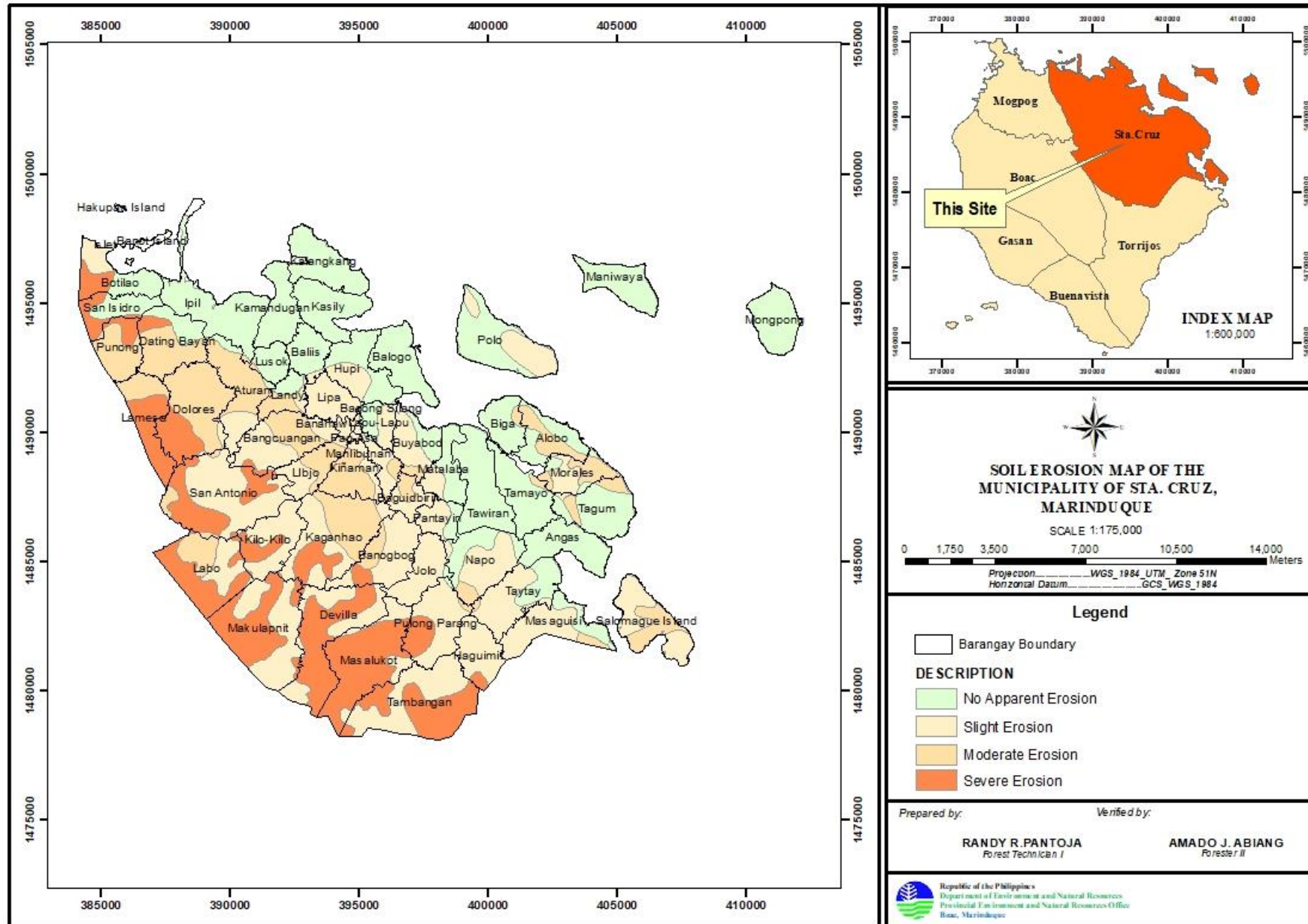


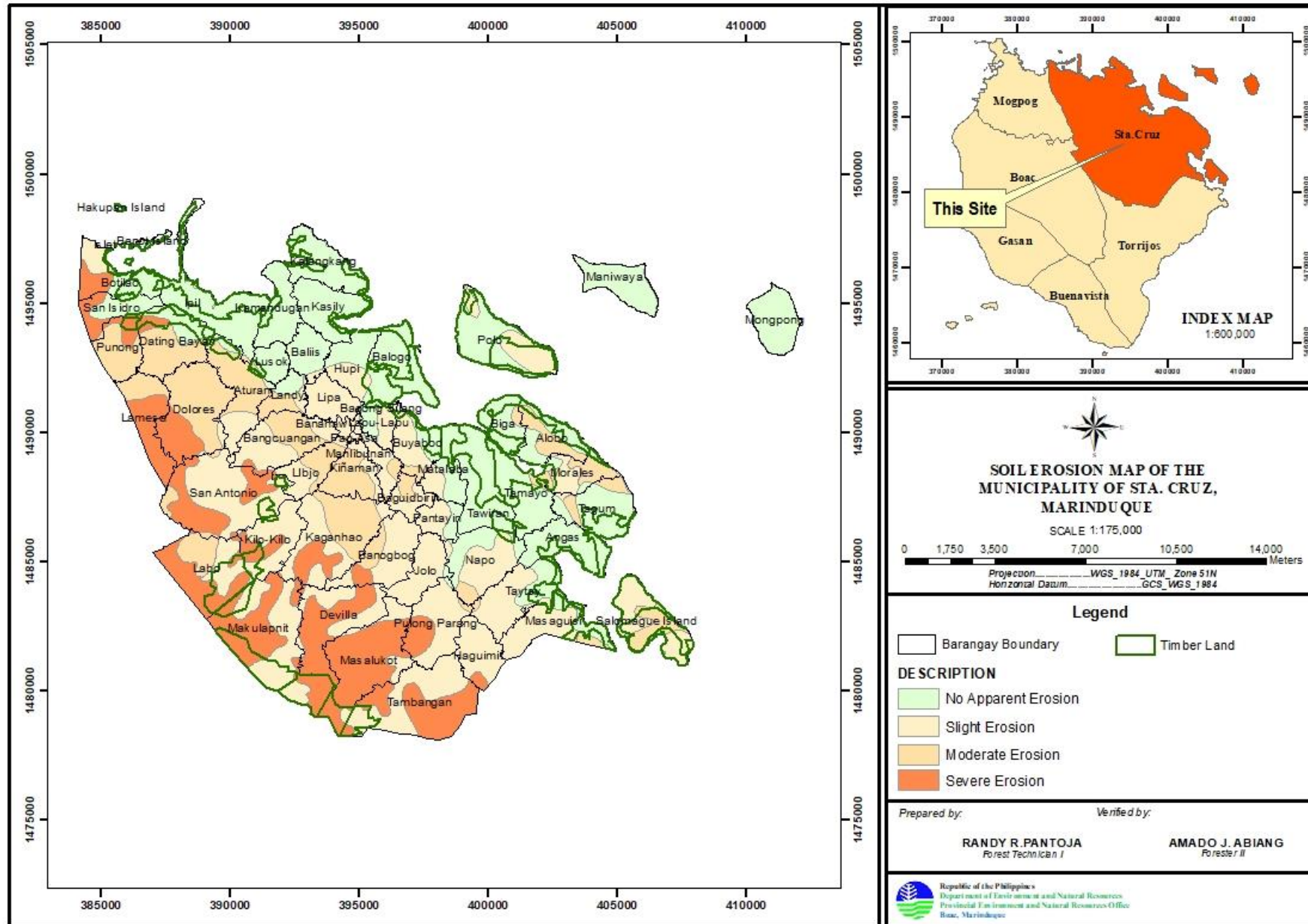
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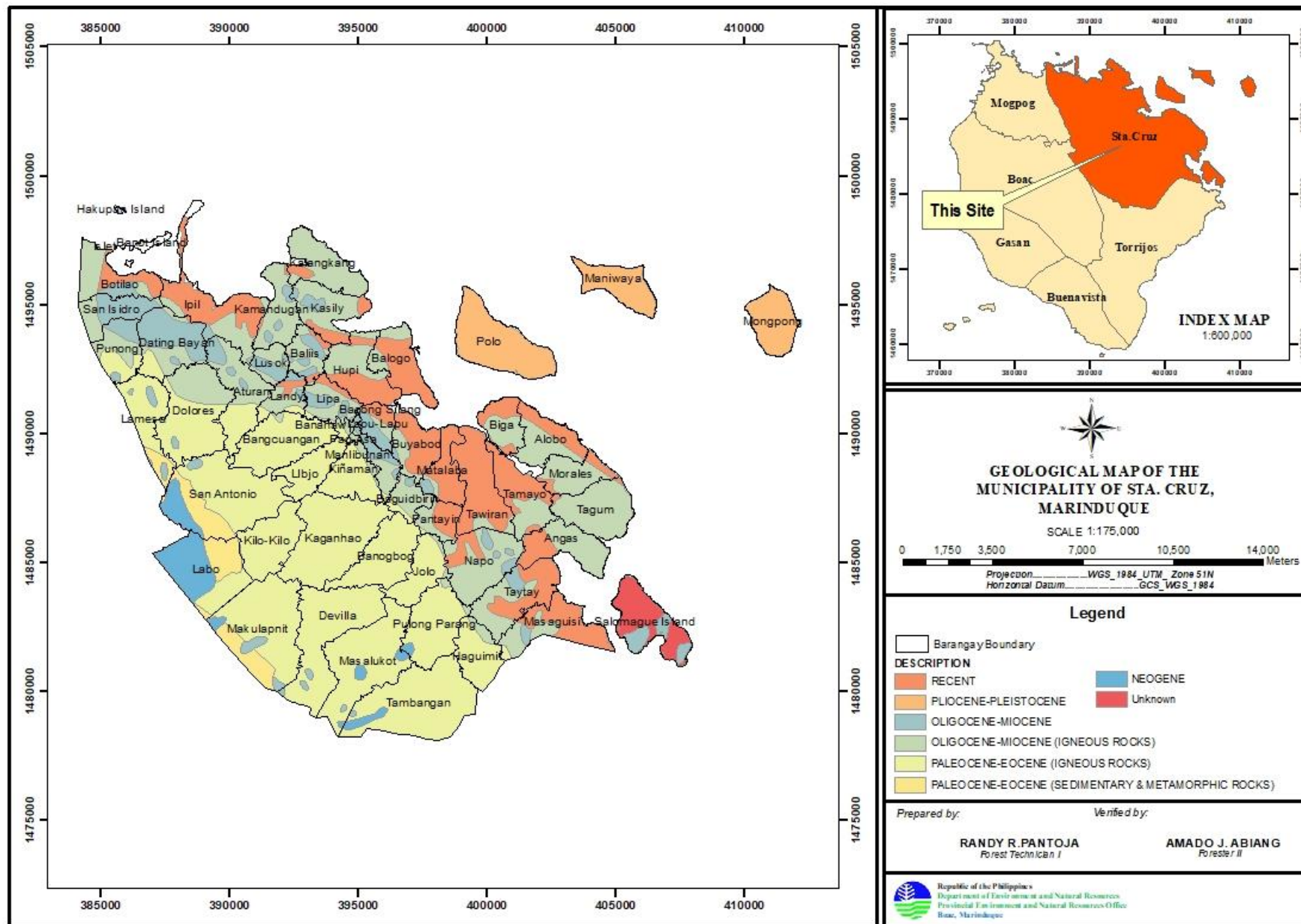


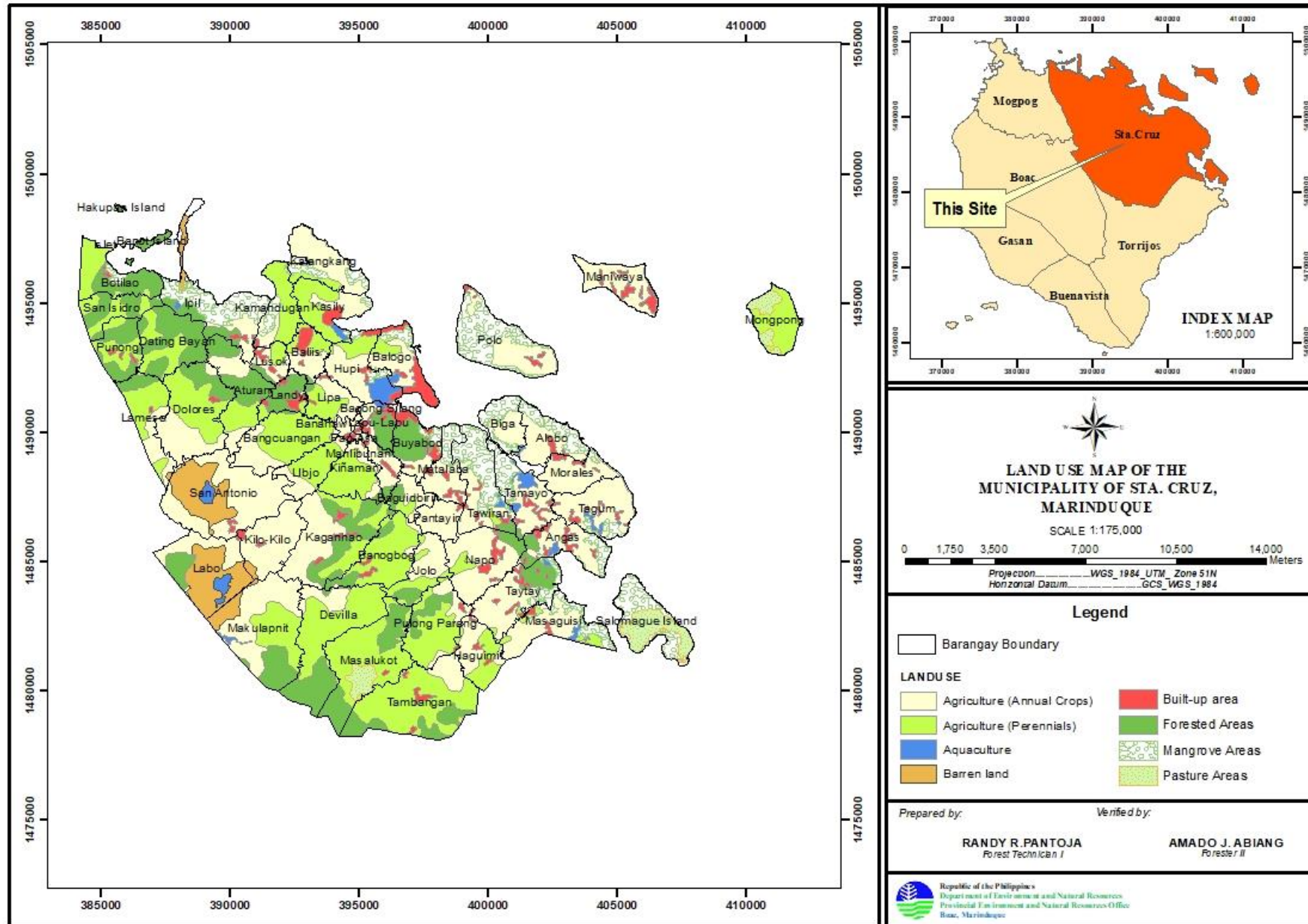


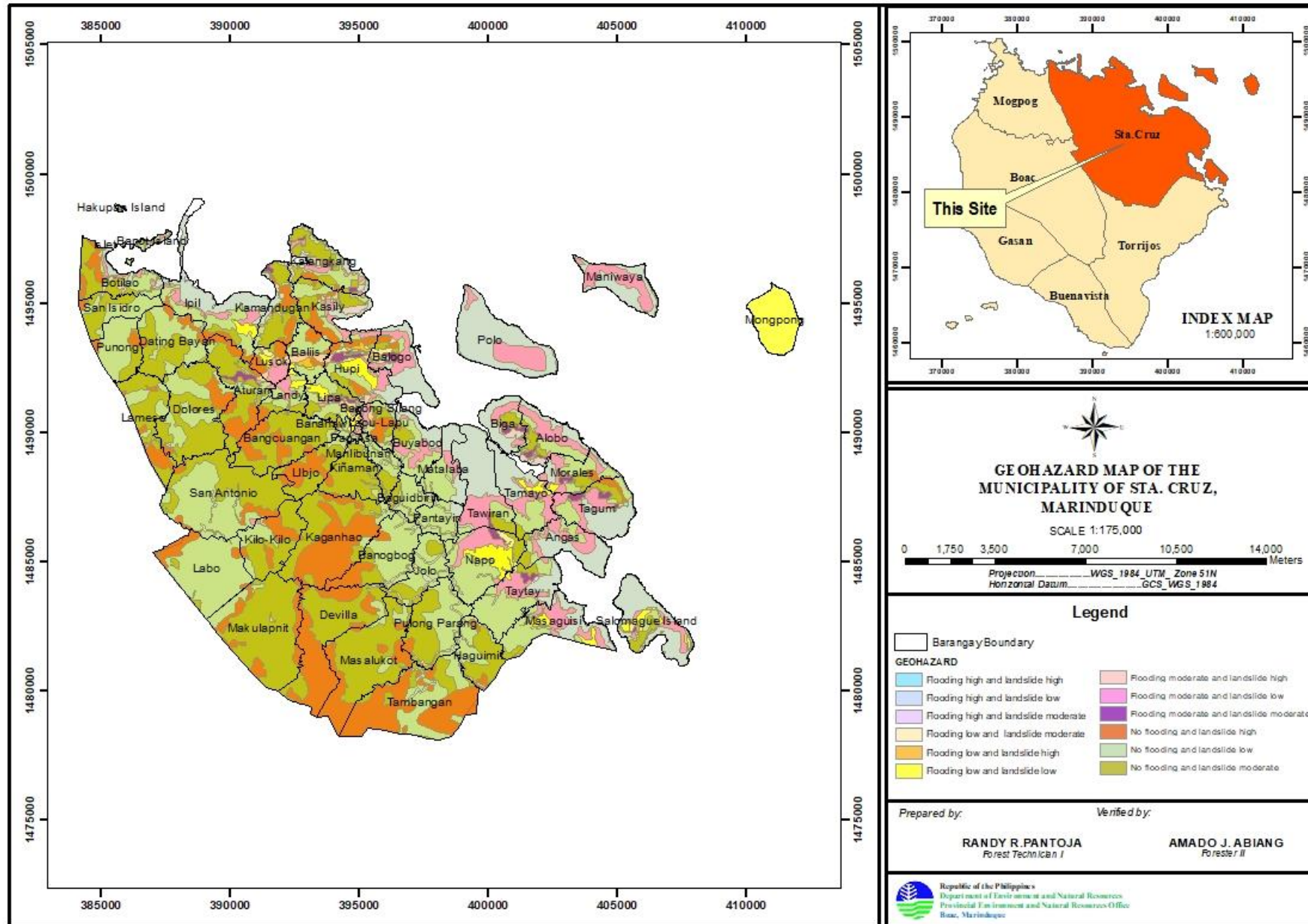




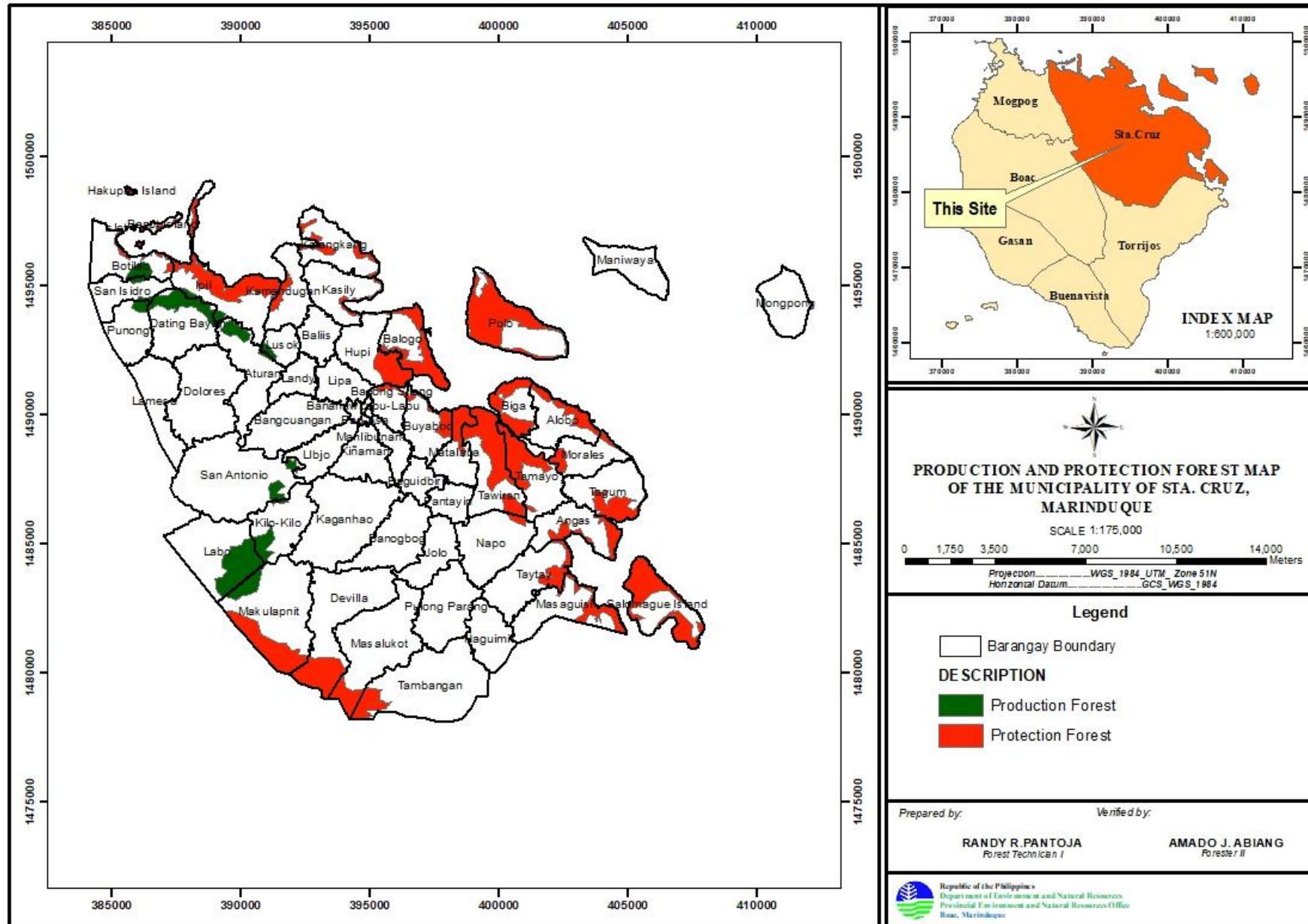


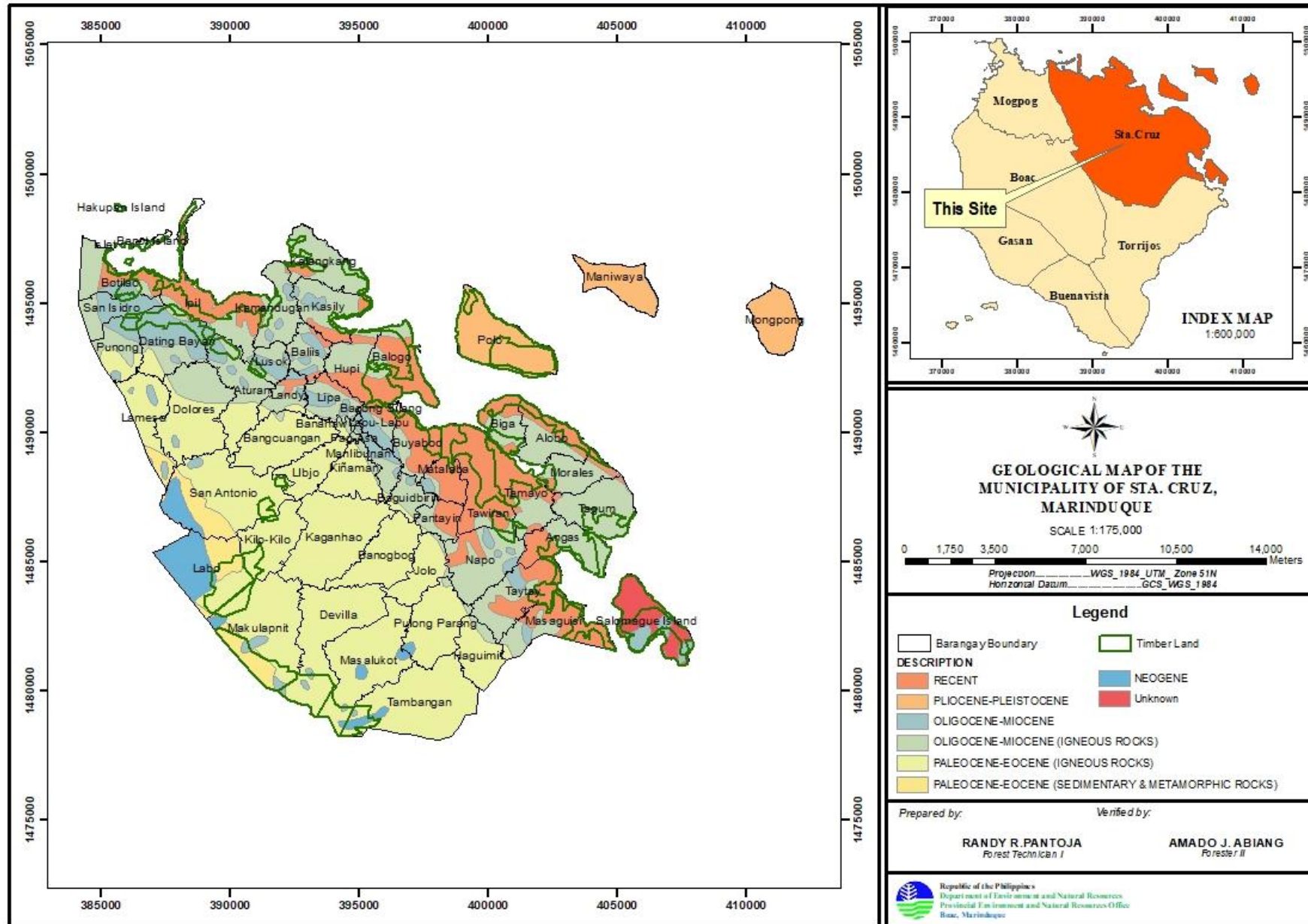


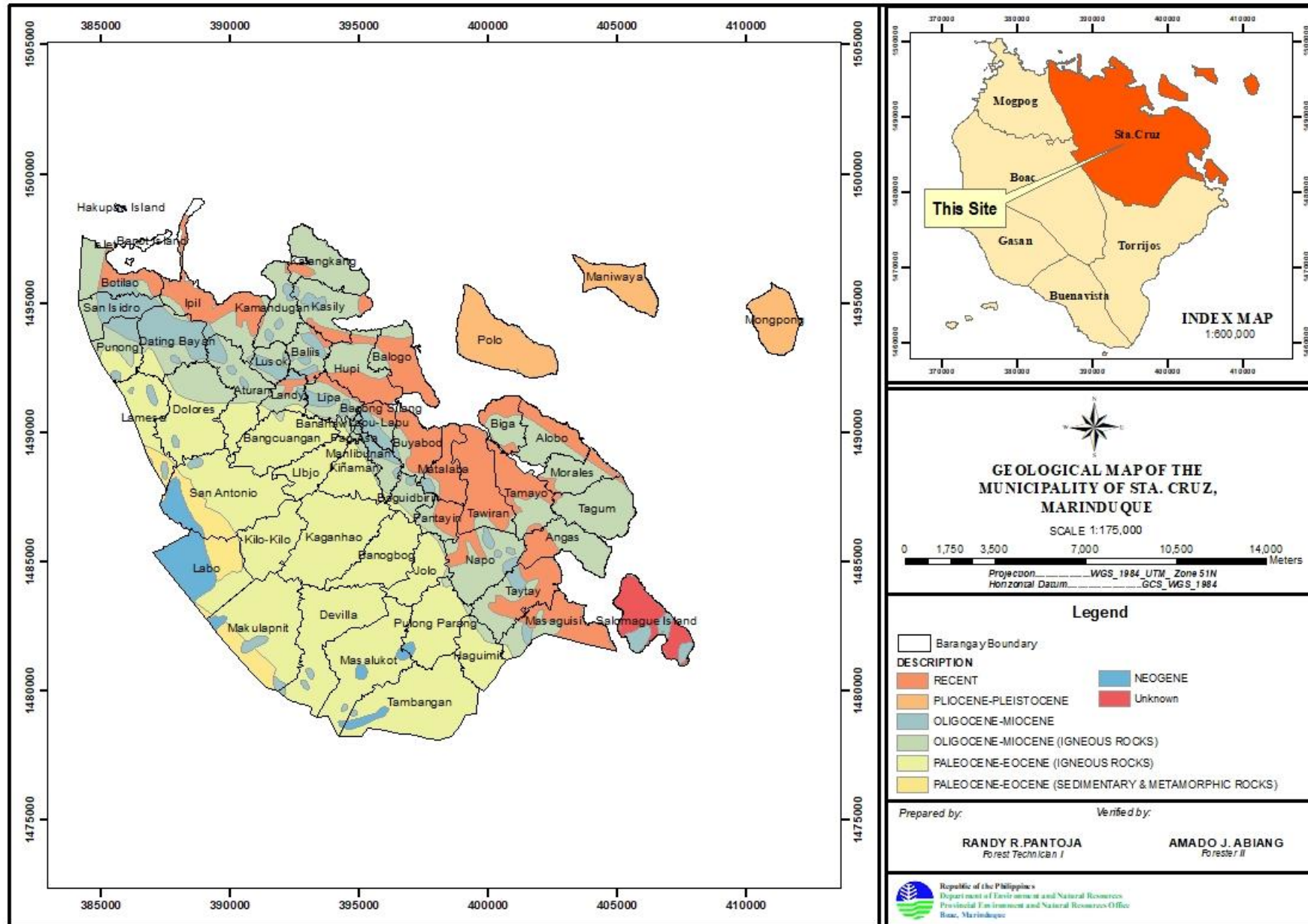


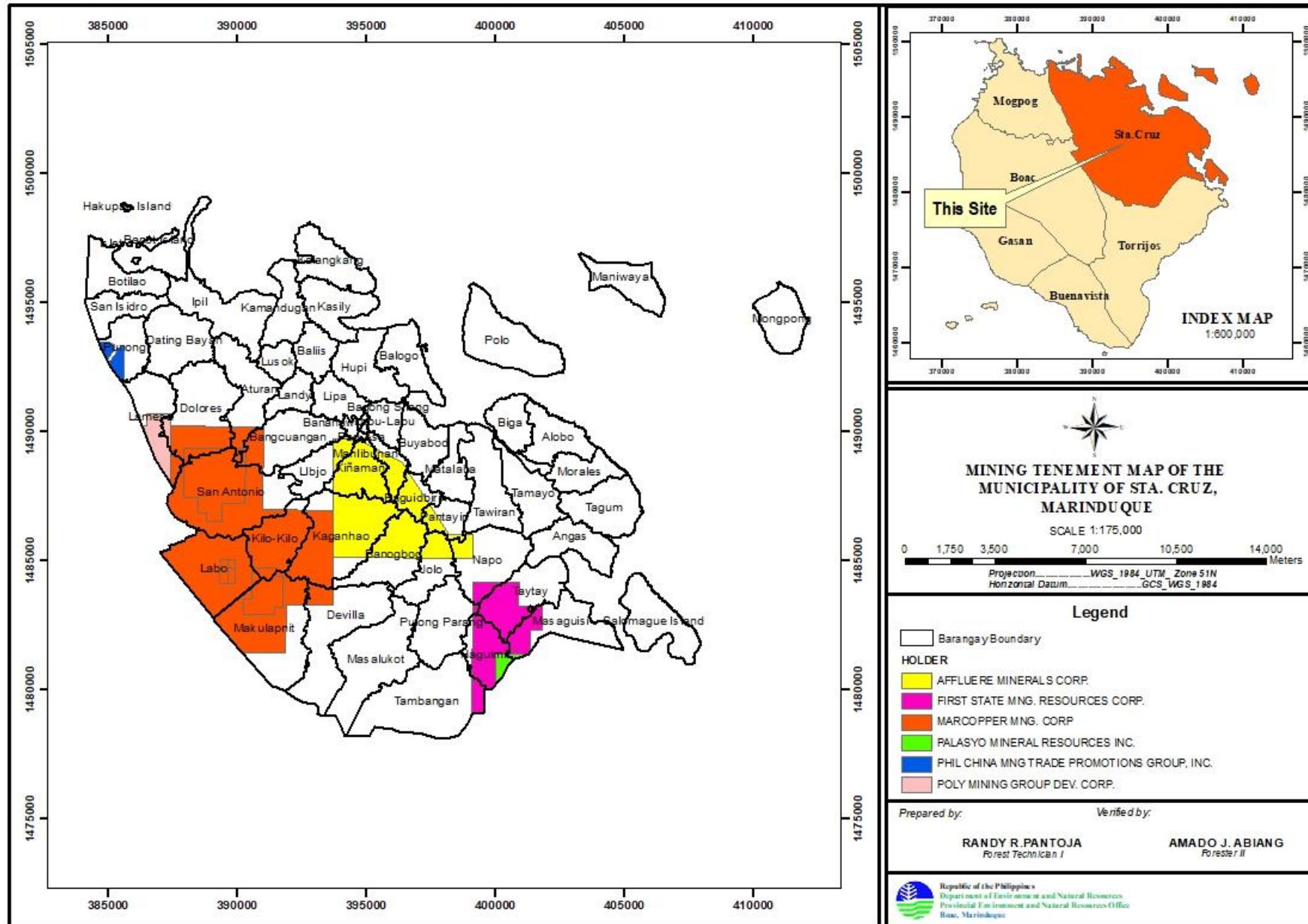


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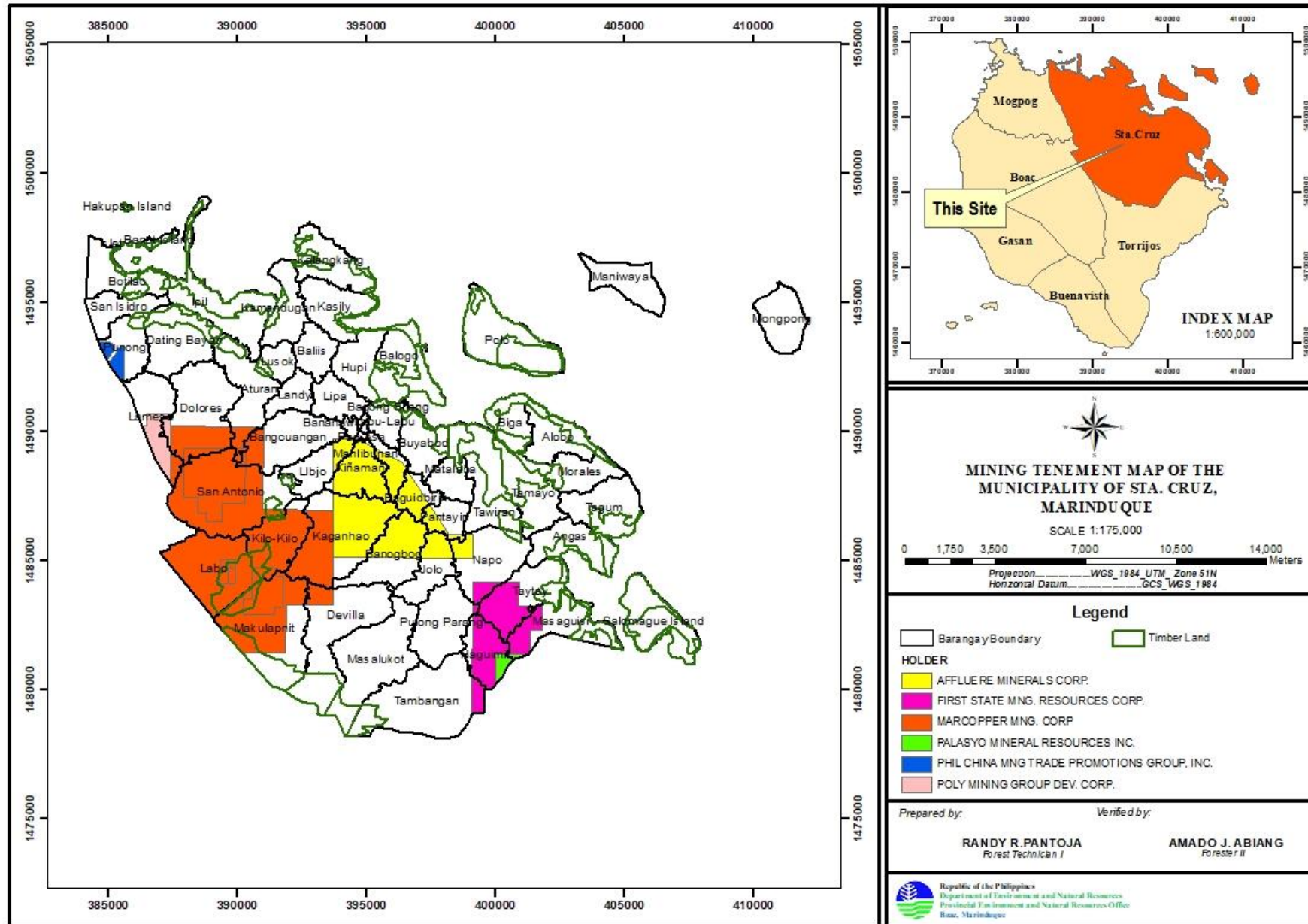




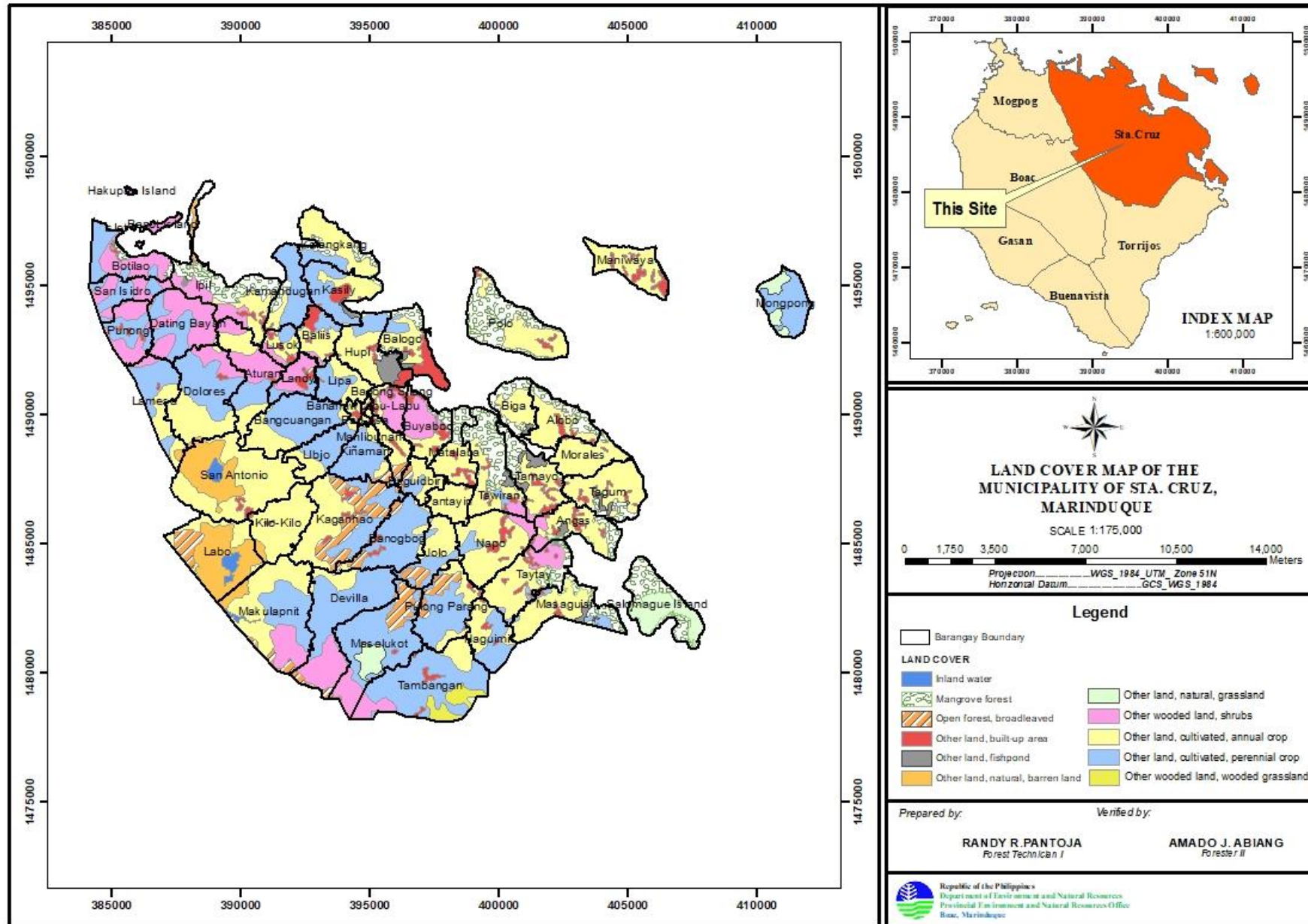




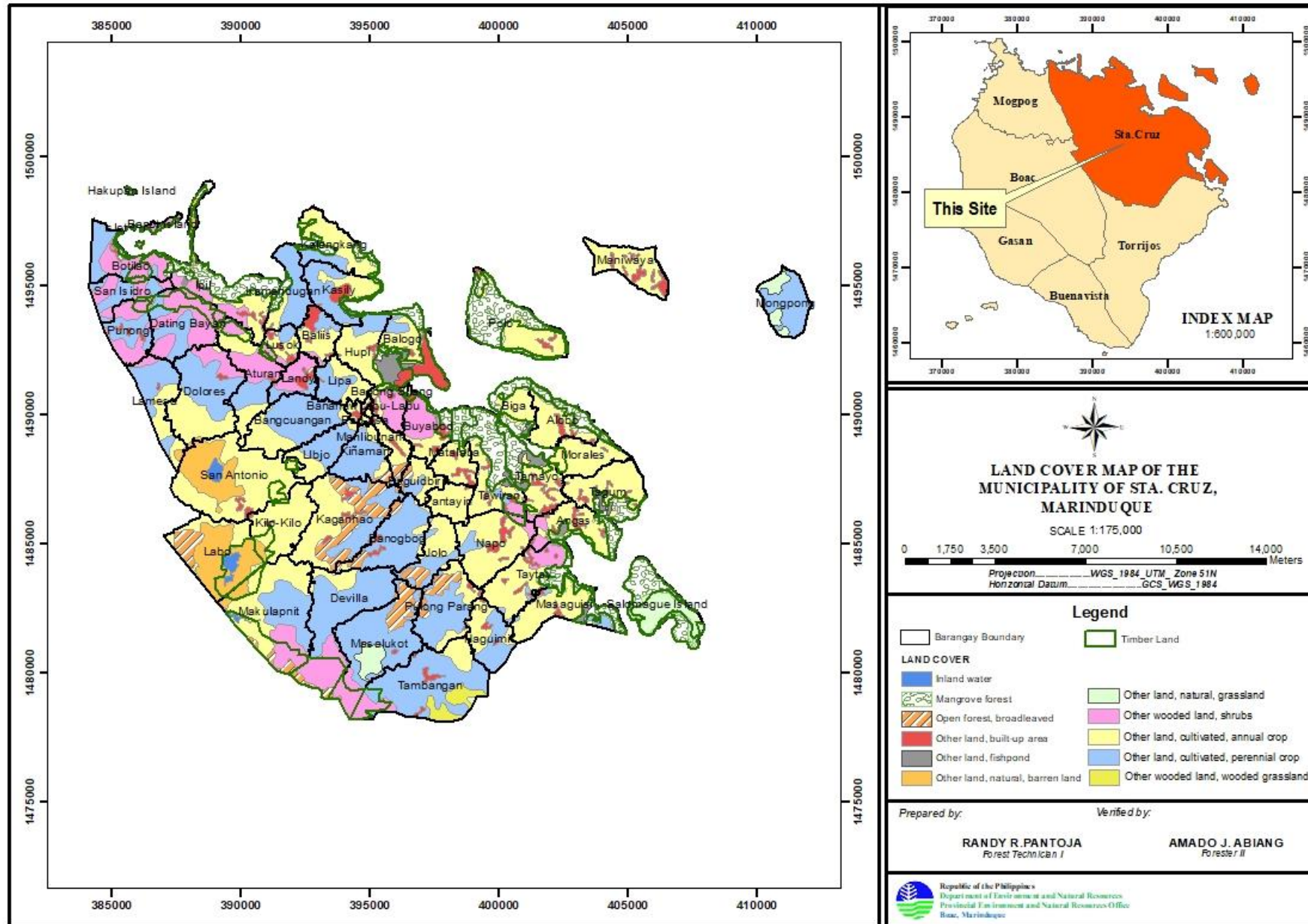
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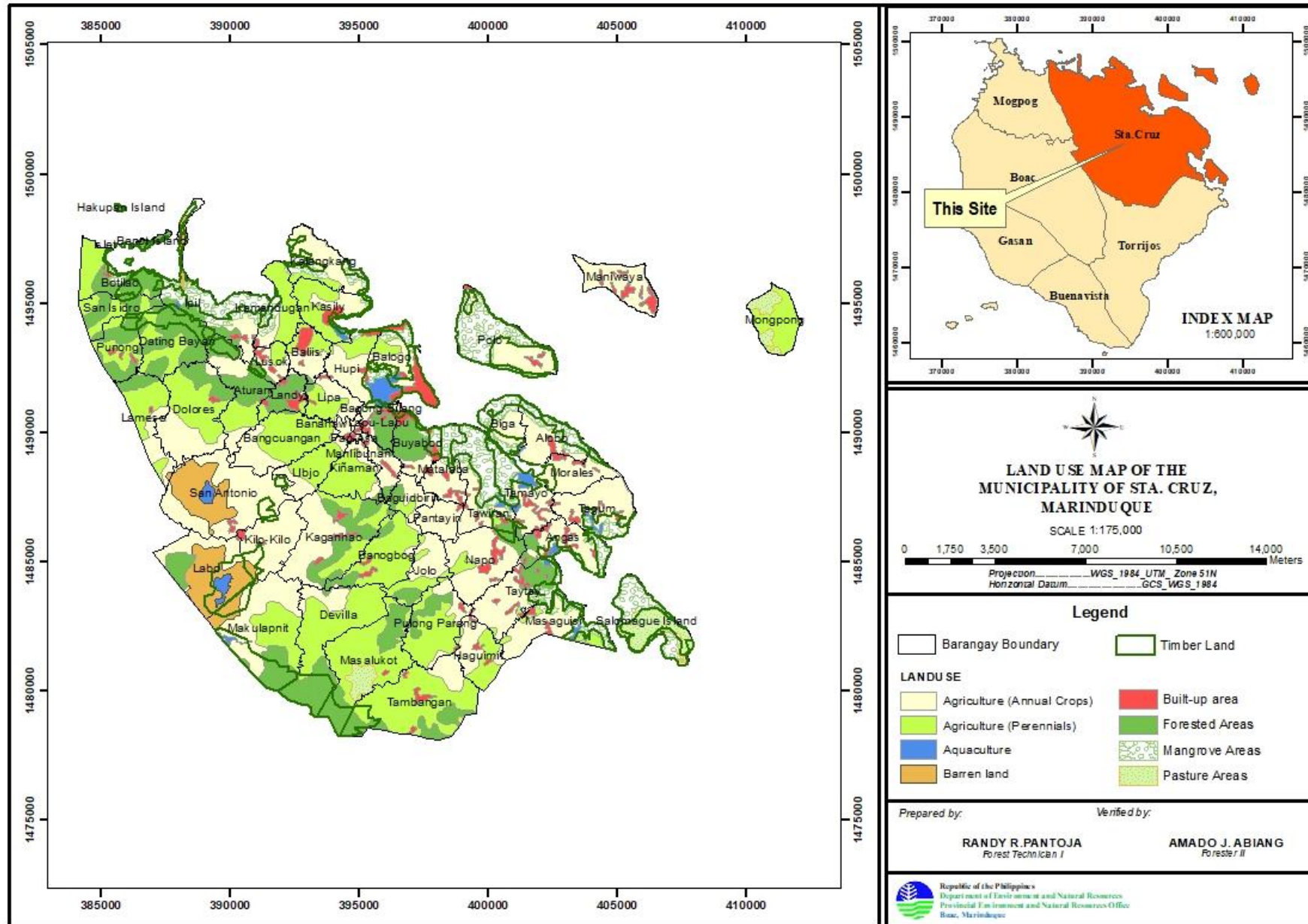
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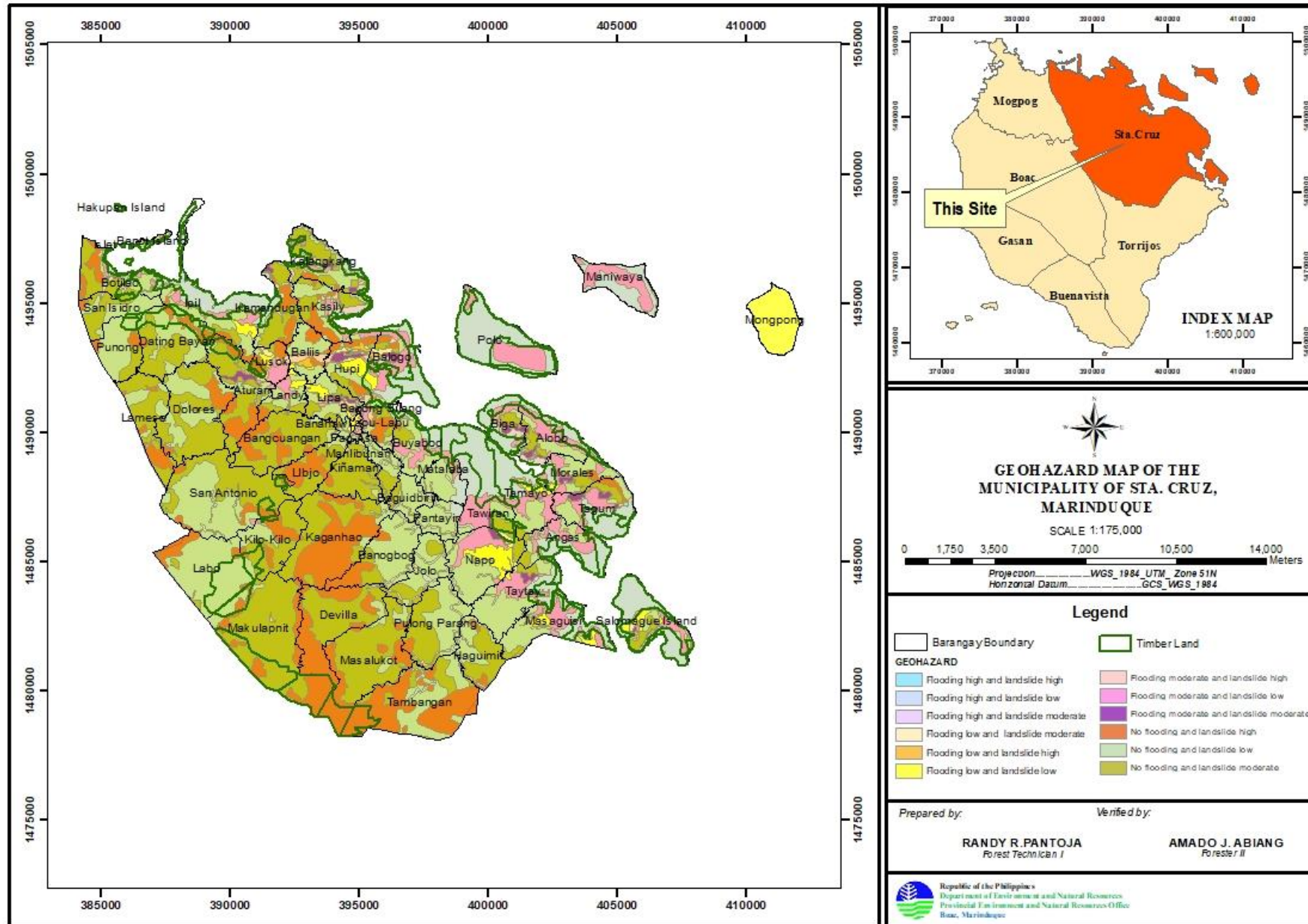


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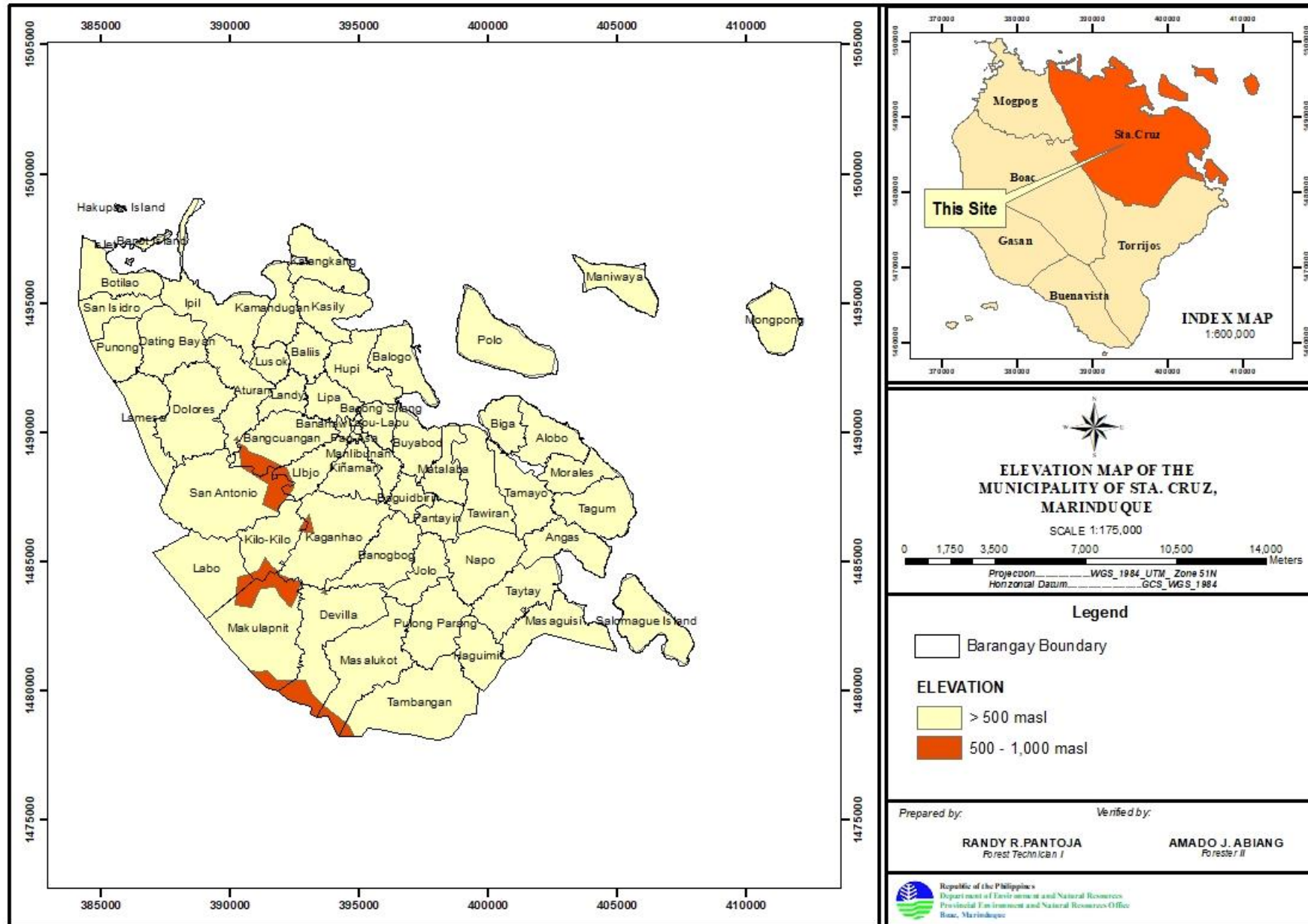


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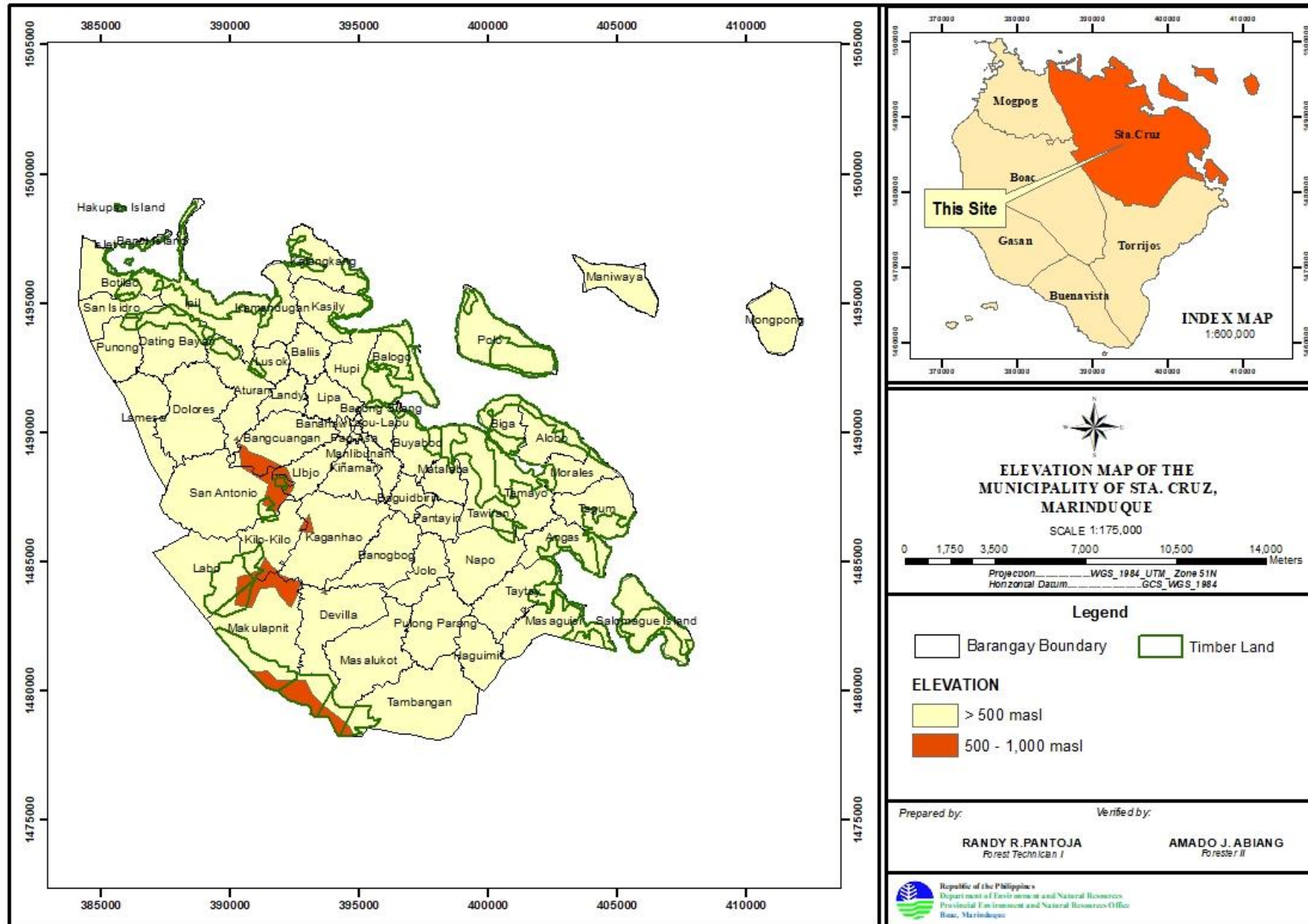




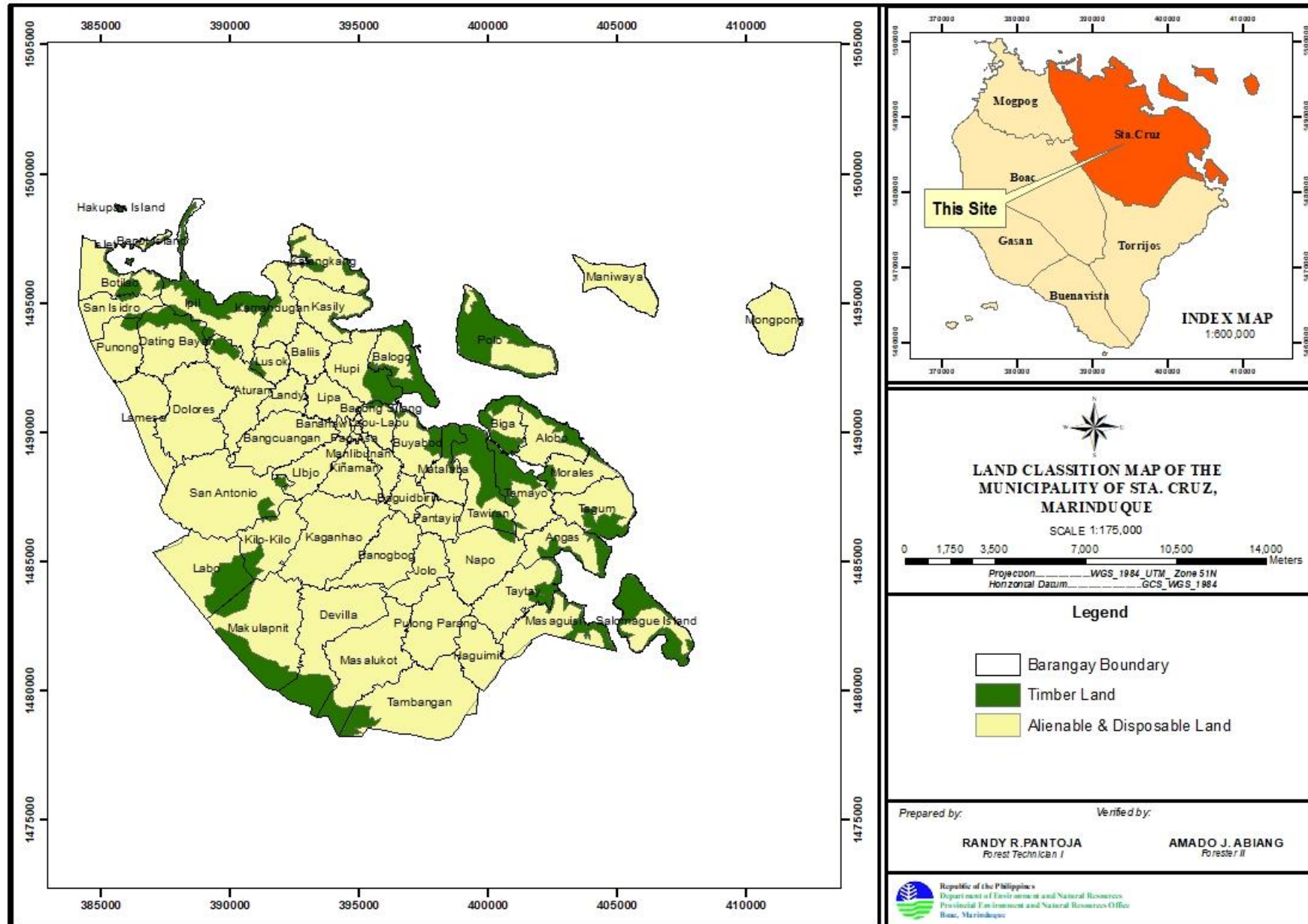
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ACRONYMS

BFAR	-	Bureau of Fisheries and Aquatic Resources
CLUP	-	Comprehensive Land Use Plan
DA	-	Department of Agriculture
DAO	-	Department Administrative Order
DAR	-	Department of Agrarian Reform
DENR	-	Department of Environment and Natural Resources
Dep-Ed	-	Department of Education
DILG	-	Department of Interior and Local Government
DSWD	-	Department of Social Welfare and Development
ESWM	-	Ecological Solid Waste Management
FLAGt	-	Forest Land Agreement for Tourism
FLUP	-	Forest Land Use Planning
FMB	-	Forest Management Bureau
GIS	-	Geographical Information System
IEC	-	Information, Education Campaign
LGU	-	Local Government Unit
MAO	-	Municipal Agriculture Office
MAsO	-	Municipal Assessors Office
MENRO	-	Municipal Environment and Natural Resources Office
MDRRMO	-	Municipal Disaster Risk Reduction Management Office
MPDO	-	Municipal Planning and Development Officer
MWS	-	Marinduque Wildlife Sanctuary
PAMB	-	Protected Area Management Board
PENRO	-	Provincial Environment and Natural Resources Office
TWG	-	Technical Working Group

DEFINITION OF TERMS

Agroforestry

- a method and system of land management involving the simultaneous cultivation of farm crops and trees; agriculture is incorporating the growing of trees: Agroforestry ensures a continuous food supply, some continuous economic return, and the avoidance of soil degradation.

Alienable and disposable lands

- refer to those lands of the public domain which have been the subject of the present system of classification and declared as not needed for forest purposes.

Biodiversity

- refers to the variety of life on Earth at all its levels, from genes to ecosystems, and can encompass the evolutionary, ecological, and cultural processes that sustain life. Biodiversity includes not only species we consider rare, threatened, or endangered but also every living thing – from humans to organisms we know little about, such as microbes, fungi, and invertebrates.

Cave

- refers to any naturally occurring void, cavity, recess or system of interconnected passages beneath the surface of the earth or within a cliff or ledge and which is large enough to permit an individual to enter, whether or not the entrance, located either on private or public land is naturally formed or man made. It shall include any natural pit, sinkhole, or other feature which is an extension of the entrance. The term also includes cave resources therein but not any dug, mine tunnel, aqueduct or other man-made excavation.

Coastline

- is the outline or contour of a coast; shoreline; the land and water lying adjacent to a shoreline.

Ecotourism

- is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low-impact and often small scale alternative to standard commercial (mass) tourism.

Endemic species

- Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

Forest

- land with an area of more than 0.5 hectare and tree crown cover of more than 10 percent. The trees should be able to reach a minimum height of 5 meters at maturity in situ. A forest consists of closed forest formations either where trees of various storeys and undergrowth cover a high proportion of the ground or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent.

Foreshore lands

- the part of the shore which is alternately covered and uncovered by the ebb and flow of the tide.

Grazing land

- refers to that portion of the public domain which has been set aside, in view of the suitability of its topography and vegetation, for the raising of livestock.

Kaingin

- is a portion of the forest land, whether occupied or not, which is subjected to shifting and/or permanent slash-and-burn cultivation having little or no provision to prevent soil erosion

Mangrove areas

- stabilize the coastline, reducing erosion from storm surges, currents, waves, and tides. The intricate root system of mangroves also makes these forests attractive to fish and other organisms seeking food and shelter from predators.

Mangrove

- is a term applied to the type of forest occurring on tidal flat along the sea coast, extending along streams where the water is brackish.

Marine resources

- are materials and attributes found in the ocean that are considered to have value. That value can be intrinsic, or monetary. They include a huge number of things: biological diversity, fish and seafood supplies, oil and gas, minerals, sand and gravel, renewable energy resources, tourism potential and unique ecosystems like coral reefs.

Protection forest

- the protection forest is characterized either by high elevation (1,000 masl and above) or steep slopes (50% and above), or within stream bank protection areas, or within the virgin, mossy, wilderness or sub-marginal forest, or critical/community watershed. They are mangrove areas being preserved and managed for non-

timber forest uses without any resource exploitation in order not to impair the purpose of forest for their ecological functions. It also includes all areas that are determined to possess high value for biodiversity conservation such areas with endemism and areas with high species richness and diversity.

Production forest

- include areas that are found suitable for timber harvesting and agro-forestry based on topography and existing vegetation and wildlife among other factors. Forestland zone consist of areas that are not vulnerable to the disruptive activities associated with timber harvesting and other intensive uses like upland cultivation, agro-forestry and tree plantation development. This includes areas with slope less than 50% and areas located at elevation lower than 1,000 masl.

Public forest

- is the mass of lands of the public domain which has not been the subject of the present system of classification for the determination of which lands are needed for forest purposes and which are not.

Reforestation

Reforestation is the natural or intentional restocking of existing forests and timberlands that have been depleted, usually through deforestation.

Stakeholders

- is either an individual, group or organization who is impacted by the outcome of a project. They have an interest in the success of the project, and can be within or outside the organization that is sponsoring the project. Stakeholders can have a positive or negative influence on the project.

Solid Waste Management

- defined as the discipline associated with control of generation, storage, collection, transport or transfer, processing and disposal of **solid waste** materials in a way that best addresses the range of public health, conservation, economics, aesthetic, engineering and other environmental considerations.

Tenurial	- instrument are used by the State to allocate public forestlands to individuals, organizations and other entities for effective and responsible sustainable management. Sustainable management, in this sense, means the priority
Upland forest	- may occur along a wide range of moisture conditions such as along upper slopes and ecotones along upland communities where it can be dominated by species tolerant of drier conditions.
Watershed areas	- is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The word watershed is sometimes used interchangeably with drainage basin or catchment.
Watershed reservation	- is a forest land reservation established to protect or improve the conditions of the water yield thereof or reduce sedimentation.
Wildlife	- traditionally refers to undomesticated animal species, but has come to include all plants, fungi, and other organisms that grow or live wild in an area without being introduced by humans. Wildlife can be found in all ecosystems.