

**DELINEATION OF CAÑAS WATERSHED IN CAVITE, PHILIPPINES USING  
GEOGRAPHIC INFORMATION SYSTEM AND REMOTE  
SENSING WITH FIELD VALIDATION**

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## ABSTRACT

**CABRAL WEENJEL P. and HERRERA JHON LAURENCE B. Delineation of Cañas Watershed in Cavite, Philippines Using Geographic Information System and Remote Sensing with Field Validation.** Undergraduate Thesis. Bachelor of Science in Environmental Science. Cavite State University, Indang, Cavite. April 2016. Adviser: For. Junser P. Magpantay.

The study was conducted to delineate Cañas River Watershed using Geographic Information System and Remote Sensing from July 2015 to February 2016. Specifically it aimed to: 1. delineate Cañas River Watershed using Digital Elevation Model and Arc tool in ArcMap 10.2.1; 2. conduct a field survey in different areas within Cañas River Watershed to validate its boundaries and river network; and, 3. describe the physical attributes of Cañas River Watershed in terms of area, geographic location, drainage system, and existing land use.

Watershed delineation was done in ArcMap 10.2.1 to determine Cañas River Watershed using the Shuttle Radar Topography Mission – Digital Elevation Model (SRTM-DEM). The same data was also used to describe its slope, aspect, elevation model, land use map and total land area. The existing land use of Cañas River Watershed was determined using a 2014 LandSat Image from the United State Geological Survey (USGS). Political boundary map was overlaid in order to identify the municipalities and barangays within the Cañas River Watershed.

A handheld GPS (Ashtec Mobile Mapper Field 10) was used to collect GPS coordinates to validate the river networks of Cañas River Watershed. GPS coordinates were collected randomly within the watershed close to the physical river networks that



are accessible. Watershed boundaries were validated by collecting GPS coordinates randomly in the road networks.

Cañas River Watershed runs from south to north before draining to Manila Bay. The headwaters of Cañas River Watershed are found in Tagaytay. The river network passes through the municipalities of Indang and Amadeo. It continues down to Trece Martirez, General Trias and Tanza. It exits in the municipality of Rosario Cavite. The watershed traversed seven municipalities/cities within the Province of Cavite. These municipalities/cities are Rosario, Tanza, General Trias, Trece Martires, Amadeo, Indang, and Tagaytay. Within these seven municipalities/cities are 95 barangays located inside Cañas River Watershed. The watershed has a total land area of 11,075 hectares with elevation ranging from 0 to 713 masl. The lowest slope of the watershed was 0-3 degrees and its calculated highest slope was 35-46 degrees. The aspect map of the Cañas River Watershed was delineated using ArcMap 10.2.1 and has a mean value of 184.61.



## TABLE OF CONTENTS

	Page
<b>BIOGRAPHICAL DATA</b> .....	iii
<b>ACKNOWLEDGMENT</b> .....	v
<b>ABSTARCT</b> .....	viii
<b>LIST OF FIGURES</b> .....	xii
<b>LIST OF APPENDIX TABLES</b> .....	xiv
<b>LIST OF APPENDIX FIGURES</b> .....	xv
<b>LIST OF APPENDICES</b> .....	xix
<b>INTRODUCTION</b> .....	1
Statement of the Problem .....	2
Objective of the Study .....	3
Significance of the Study .....	3
Time and Place of the Study .....	4
Scope and Limitation of the Study .....	4
Definition of Terms .....	5
Conceptual Framework of the Study .....	7
<b>REVIEW OF LITTERATURE</b> .....	8
<b>METHODOLOGY</b> .....	13
Materials .....	13
Methods .....	13
Area of the study .....	13



Data gathered .....	14
Boundary delineation, river network and physical characterization of Cañas River Watershed .....	14
Field validation of river network and its Watershed Boundary .....	15
Land use classification .....	15
<b>RESULTS AND DISCUSSION .....</b>	<b>16</b>
Watershed delineation using Digital Elevation Model .....	16
Watershed delineation with field validation .....	17
Geographic location of Cañas River Watershed .....	17
Drainage system of the watershed .....	17
Watershed characteristics .....	18
Land use classification .....	18
Political boundary of Cañas River Watershed .....	26
<b>SUMMARY CONCLUSION AND RECOMMENDATION .....</b>	<b>35</b>
Summary .....	35
Conclusions .....	36
Recommendation .....	36
<b>REFERENCES .....</b>	<b>38</b>