

## **BIBLIOGRAPHY**

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## **ABSTRACT**

This study documented the community-based watershed conservation practices: the case study of the maupa watershed in Ampucao, Itogon, Benguet relative to the characterization of the maupa watershed, socio-economic profile of the respondents, the activities undertaken by the community residents for the conservation of the Maupa Watershed, the intervention from the Barangay Local Government Unit for the conservation of the Maupa Watershed, and the different problems encountered by the residents in the conservation of the Maupa Watershed. It was conducted at Dalicno, Itogon, in the province of Benguet. It involved 30 respondents from Purok Demang and Midway. Data gathering was undertaken in October 2011.

The age of the respondents ranged from 16 to 80 years old. The greatest number of respondents falls under the age bracket of 16 to 20 and 56 to 60. The oldest respondent is 80 years old. All the respondents had formal education. The greatest number of respondents finished college. According to the respondents who did not finish college, they were constrained by financial problems so they preferred to seek for a job and earn.

With regards to the findings of the study, the respondents strongly believe that protecting the Maupa watershed will in turn, save their lives. As such, there are certain activities undertaken by the community residents for the conservation of the watershed.



The respondents claimed to have exerted effort in safeguarding the watershed against forest fire, illegal loggers and illegal settlers. The Barangay Captain revealed that they have been patrolling the area on a regular basis. Nevertheless, they did not deny that there are still individuals who insist on destroying if not, destroying it. Other activities include planting trees on grassland and/or barren land, and caring of wildlings or naturally-grown trees.

With regards to the problems encountered, the respondents looked at illegal loggers as the biggest threat on the conservation of the Maupa watershed. Other problems include presence of swidden farms and other agricultural production activities in the area, run-off water from the mining area which affects the watershed, natural calamities, and shortage of water supply resulting from human intervention.

Based on the findings of the study recommendations are therefore formulated for the betterment of the Maupa watershed. The community residents especially the youth should participate on set activities like tree planting, safeguarding the watershed and conduct seminars to make everyone aware on the environmental concerns and be more responsible in the conservation and preservation to have a clean, clear, healthy and sustainable watershed.

Lastly, the Barangay LGU should seek assistance from the Municipal LGU to provide enough materials for the sustainable development and equitable preservation and management of the Maupa watershed. They should work hand in hand to formulate policies that will integrate environmental thinking into the development decisions in the conservation practices of the Maupa watershed.



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## INTRODUCTION

### Rationale

Forests are vital life support system necessary to be conserved and preserved in order to maintain favorable environment for human habitation, agriculture and biodiversity. The massive loss of forest is equated to socio-economic and environmental crisis. A continuing ravage of the country's remaining forest is a common observation. Despite the government's forest conservation programs, only 5.493 million hectares of forest remain with only 0.805 million hectares in old growth condition (DENR-FBM, 1996).

Forest cover of the country and region continue to diminish. As reported by the Cordillera Green Network (2007), the forest cover has slimmed down to only 55 hectares in 1997 out of 17 million hectares reported in 1934. In the Cordillera the country's once rich forest are in various stage of degradation as cited by Tacloy(2000).

Various causes of forest destruction were noted. In the Cordillera, the launching of several projects by the government and foreign companies to exploit its natural resources destroyed the Indigenous Peoples (IPs) ancestral domains, especially the government the forest and water resources. The so-called development projects such as mining, logging, and dams of other energy projects contributed to the massive depletion of forest resources (National Workshop on IP's Human Rights, 2004).

In the Cordillera, some communities are noted for their forest conservation consciousness as evidenced well conserved forest trough indigenous knowledge and practices. Their especial respect and care to forest enable to maintain a sustainable way of life. Their forest conservation and protection practices deserved more than an



environmental plaque for despite the lack of government support, they have sustained their forest through their own initiatives.

### Statement of the Problem

Watershed is very important in a community because it is the main source of water and water is very important necessity in our life. We should protect and conserve our forest for the preservation of our watershed.

The main goal of the study is to know the present situation of the Maupa Watershed. This Watershed is one of the three watersheds that supply the residents of Barangay Ampucao. It is the main source of water at Sitio Dalicno particularly Purok Demang and Midway.

However, there is no sustainable document that can appropriately document the initiatives undertaken to conserve and protect the Maupa watershed. This study is therefore expected to source out answers to the following questions:

1. What are the characteristics of the Maupa watershed as to area, location and ownership?;
2. What are the socio-economic characteristics of the respondents?;
3. What are the activities undertaken by the community residents for the conservation of the Maupa watershed?;
4. What are the interventions from the Barangay Local Government Unit in the conservation of the Maupa watershed?;and
5. What are the problems encountered by the community residents in the conservation of the Maupa watershed?



### Objectives of the Study

The study aimed to assess the efforts and/or practices undertaken by the residents of Dalicno, Ampucao, Itogon, Benguet for the conservation of the Maupa watershed. In line with this general objective, the specific objectives are to:

1. characterize the Maupa watershed as to area, location, and ownership;
2. determine the socio-economic characteristics of the respondents;
3. identify the activities undertaken by the community residents for the conservation of the Maupa watershed;
4. identify the intervention from the Barangay Local Government Unit for the conservation of the Maupa watershed; and
5. determine the different problems encountered by the community residents in the conservation of the Maupa watershed.

### Importance of the Study

Results of the study may become valuable inputs to planners to come up with comprehensive ways and means for the conservation of watersheds in the community. Furthermore, it may also give information to Local Government Units and legislators for rigorous implementation of directives and/or policies relative to watershed.

### Scope and Limitations

The study focused on the characterization of the Maupa watershed as to area, location, and ownership. Moreover, it was also attempt to determine the activities undertaken by the community residents for the conservation of Maupa watershed, the



intervention from the Barangay (Local Government Unit), and the different problems encountered by the residents in the conservation of the Maupa watershed.

On the other hand, the study was limited to the key informants like the members of the different organizations in the community and elders who are residents of Sitio Dalino particularly Purok Demang and Midway.





## REVIEW OF LITERATURE

### Characterization of the Maupa Watershed

The watershed reservation includes four perennial creeks named Maupa, Pitang 1, 2, and 3 which are adjacent to each other. These creeks lie between 16°20 latitude and 120°40 longitude. The scope of the watershed was delineated on the map and the same was found to have an approximate area of 100 hectares.

According to the observation, it shows that the watershed area is thickly covered with Benguet pine trees ranging from 20-50cms.dbh particularly at Maupa Creek. Few scattered Benguet pine trees were also observed within the vicinities of pitang 1, 2, and 3 creeks.

The creeks within the watershed area have been utilized by the Barangays Sangilo and Dalicno, Itogon, Benguet. It is indicated in the water permit the at the Maupa Creeks, Pitang 1, 2, and 3 creeks have a water production of 2.0, 0.5, 0.90 and 1.20 liters per second.

Rampant illegal cutting was observed in the watershed area. During the inspection date, the team observed three groups of timber poachers. Abandoned logging road believed to have been improved by illegal loggers was found existing in the area. This may lead illegal loggers to continue logging in the watershed area.

Patches of vegetable gardens and kaingin were likewise observed within the watershed area. Accordingly, these cultivations are covered with Tax Declarations. No communities, however, will be affected should this watershed be declared as forest reservation. (Ampucao Barangay Records, 2009).



## Watershed Management

Once the watershed has been described and the potential contamination and degradation sources determine, the next step is to compile the existing control and management practices for dealing with water quality maintenance. Such practices can be implemented by the water agency itself and by the other agencies. The degree control that a water agency has over a watershed, and ultimate water quality, depends on the extents of ownership or jurisdiction of watershed lands. The most critical case occurs when watershed land is own by the agency or private parties so that the agency has no direct jurisdiction over the watershed land. In the case of the four San Louis Obispo watershed, land owners and other agency not directly involved with water supply and distribution seemed to performed their roles and handle their responsibilities with the understanding that runoff and stream flow in these watershed eventually result in portable supply. This is accomplished by land-use policies and standard permits, regulations, or lease agreements (Reimold, 1988).

## Concept of Watershed Management

Effective management of watershed depends on comprehensive human understanding of the components of watershed and their interactions. The application of the ecological principles to watershed planning has recently become one of the most important topics of natural resources management discussion. Traditionally, interest in balanced natural resources (land and water) management has come only after human have first severely damaged a landscape. To paraphrase the world famous naturalist Aldo Leopold: Human do not seem to be able to understand a system that they did not build;



instead, they seemingly must partially destroy and rebuild the system before its use limitations are understood and appreciated (Reimold, 1988).

### Importance of Watershed

While the public attention has recently been focused on watershed as units of management entities is not new. All the effort to effectively manage watershed involved an approach in which all stakeholders can share, resources, expertise and authority.

A similar approach to achieving healthy watershed by managing both natural resources (air, water, fish, wildlife, and forest) and anthropogenic influences (impact of development and expansion of human population in these resources) merits the prevention approach. The vehicle for this approach in the United States has been promulgation of regulations (Reimold, 1988).

### The Scientific Basis for Management of Watershed

Effective planning of land use on watersheds must be based on quantitative informants on the physical resource of climate, topography, geology soils, vegetation and water resources. If watersheds are inhabited, then further information is required on the numbers and distribution of people and animals, communications, economic and subsistence landholdings and farming systems. Local history and political structures need to be understood in order to organize cooperation to improved land-used practices. The physical measurements alone are formidable enough in the rugged, forested hill country, remote from roads and towns in which most major tropical rivers arise. Even more difficult are the social and economic complexities of heavily settled upland watersheds.



Many of these produce, in spite of mild topography, a series of muddy torrents and meager, polluted dry- season flows, which are unacceptable to the population of the lowlands (Pereira, 1989).

### Forest Conservation

Integrated Social Forestry (ISF) refers to the national program launched under Letter of Institution (LOI) 1260 in 1982 designed to maximized land productivity and enhanced ecological stability and to improve the socio-economic condition of forest occupants and communities actually and directly occupying and or cultivating public forest land as December 31 1981(DENR-CAR undated). The program is based on the principle of land stewardship, which enjoins the complementary objectives of environment protection, poverty alleviation and social justice (DOA 04-91) and envisioned to democratize the used of public lands and promote a more equitable distribution of forest bounty through stewardship principle.

DENR Administration order 04-91, entitled “Revised Regulations Governing the ISF Program” provides for the rights of the participants to used forest land they occupy for a period of 25 years renewable for another 25 years. The size of the land to be granted will not be more than 5 hectares for individuals or family participants and depends on the nature of site, history of the group in the area and their potential to promote productive and protective activities within the area to be stewarded by the community or group participants.

The participants incentives stipulated under the said reversed regulation include free use of the land allocated to them; provision of technical, legal financial, marketing, credit and other needed assistance: freedom to seek assistance from the government



agencies and non-government and private organizations; subsequent grant of the land allocated to them to their next- of- kin through stewardship agreement; and just compensation for permanent improvements introduced, including trees planted, when for some reason, the government opts not to allocate the land for stewardship to participants concerned (Antolin, 1999).

### Problems Encountered

Considered as a very serious threat are commercial loggings and kaingin or slash-and-burn farming system to give way to commercial gardening. As demand for livelihood increases, the depletion of forest resources become fast paced.

The most critical aspects of upper watershed management which directly affect the lives and property of downstream users are the effects on floods, on water supplies and on sediments transport. These are much confusion the more popular writing on these matters, which is best, explained at the outset. With very rare exceptions, such as the failure of major engineering structures, floods are not cause by human activities by exceptional atmospheric events.

Small groups of the forest dwelling subsistence farmers have survived in tropical forest since prehistorically times by slash-and-burn method of shifting cultivation. These practice consume d the accumulated fertility of soil an d vegetation but affected small proportion of the upper watershed that in the humid tropics the damage to soil and water resources was minimal. In more recent times, the numbers of shifting cultivators have grown; an FOA study estimated the total to be of the order of 250 million people in 1974. (Pereira, 1989).



### Logging of Natural Forest

Forests are the major source of foreign exchange earnings for at least 15 developing countries. Their timber exports total U.S \$8 billion a year. Although forest cover should be attained on steep slopes, particularly when high in the watersheds of important rivers, this does not mean that the forest should not yield timber or fuel wood. These essentials for watershed management are that the harvesting must be planned and controlled to minimize damage and that the forest must be protected from invasion along the tracks and over the bridges built by the timber extractors. As the cities grow the illicit firewood contractor with large trucks and rapidly assembled labor gangs is a major threat to the survival of the forest opened up by selective logging.

The after effect of commercial logging varies with topography. On mild slopes, the damage done by commercial logging is short-lived if the forest is protected because loggers remove about only 10 percent of the trees. The rest of the trees lost are removed for fuel or destroyed by forest fires. Rapid vegetative growth restores soil protection. On steep slopes, however, when the logging is completed, drainage must be diverted from the track to prevent the development of gullies (Reimold, 1988).



## **METHODOLOGY**

### Locale and Time of the Study

This study was conducted at Dalicno, Itogon, Benguet. Dalicno is composed of six puroks namely: Demang, Dontog, Tipong, Daycong, Midway, Manganese and Tangke. Dalicno is more or less 17 kilometers south of Baguio City and can be reached by an hour ride through the Baguio-Balatoc road. The place is mountainous and has one watershed, the Maupa watershed. The watershed has an approximate area of 100 hectares. Figure 1 shows the map of Ampucao, Itogon.

On the other hand, actual site visits and data gathering were undertaken in October 2011.

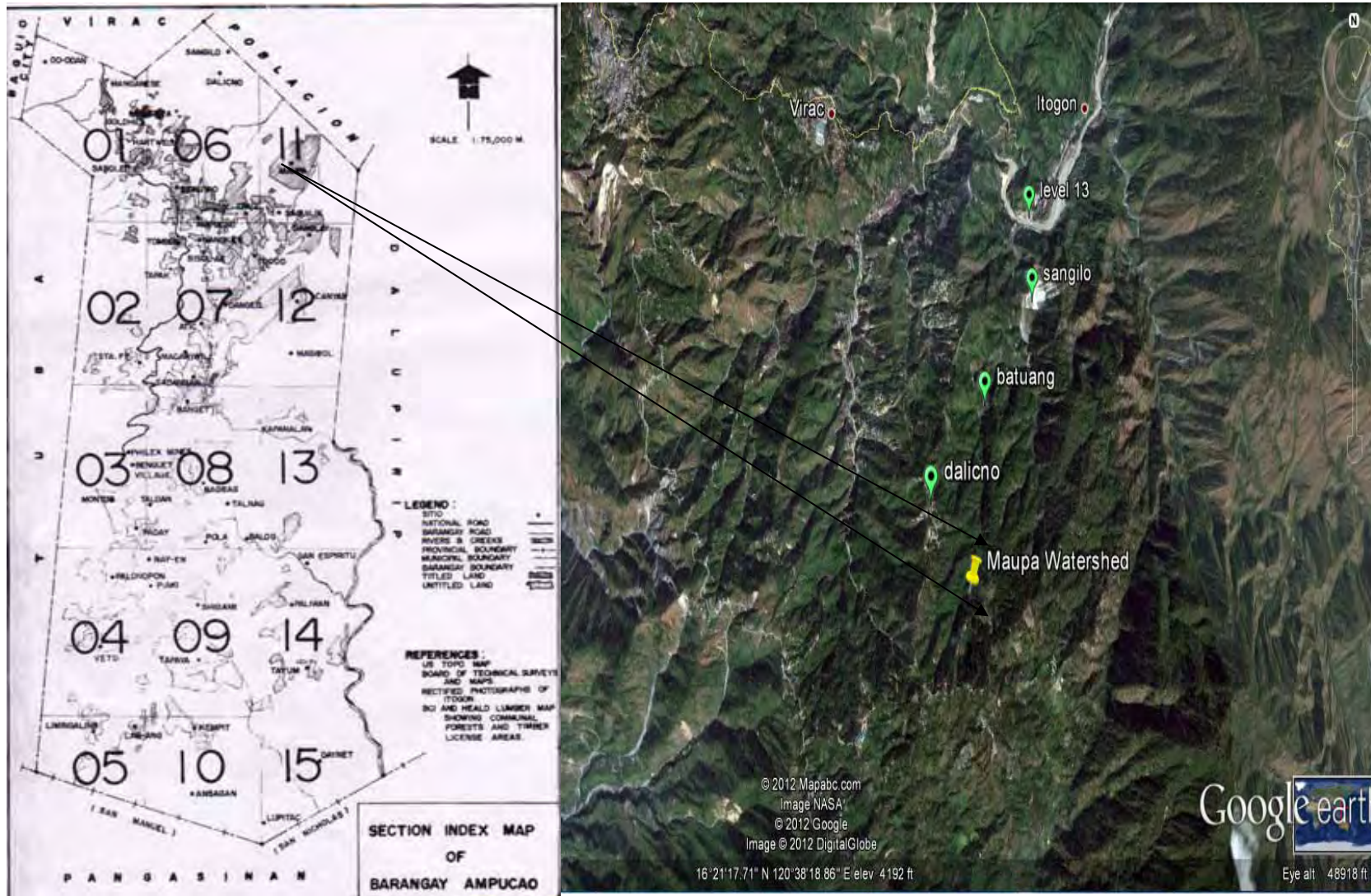
### Respondents of the Study

The respondents of the study were from different organizations in the community like: Women's Organization, Dalicno Youth Organization, Elders. Members of the Barangay Local Government Unit were also included. A total of 30 respondents were considered.

### Data Collection Instrument

A questionnaire was used to gather the necessary information regarding the characterization of the Maupa Watershed, socio-economic characters of the respondents, the activities undertaken by the residents for the conservation of the watershed, interventions from both municipal and barangay local government units, and problems encountered by the residents in the conservation of the watershed. Interviews and actual observation was also undertaken to verify answers on the questionnaire.

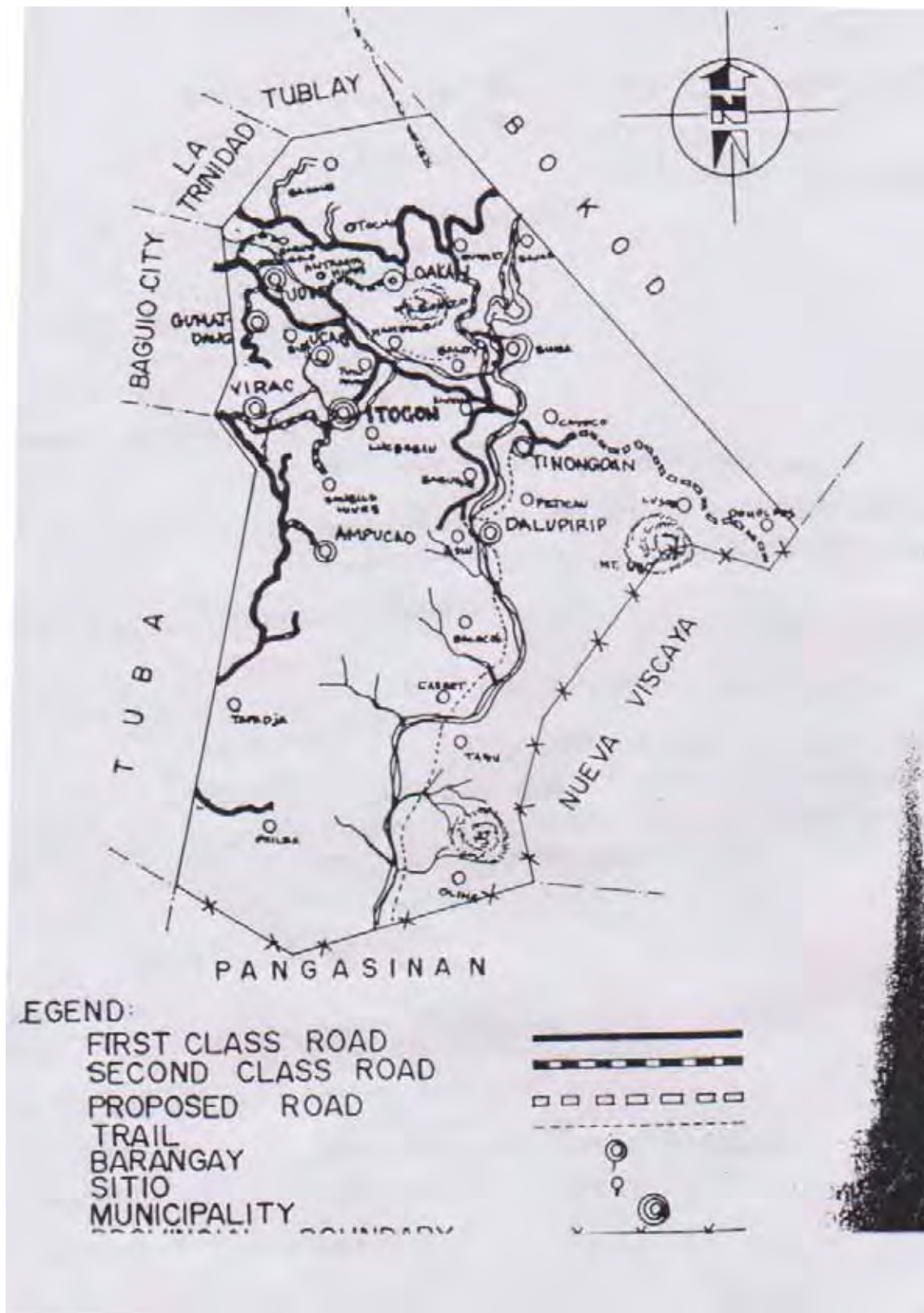




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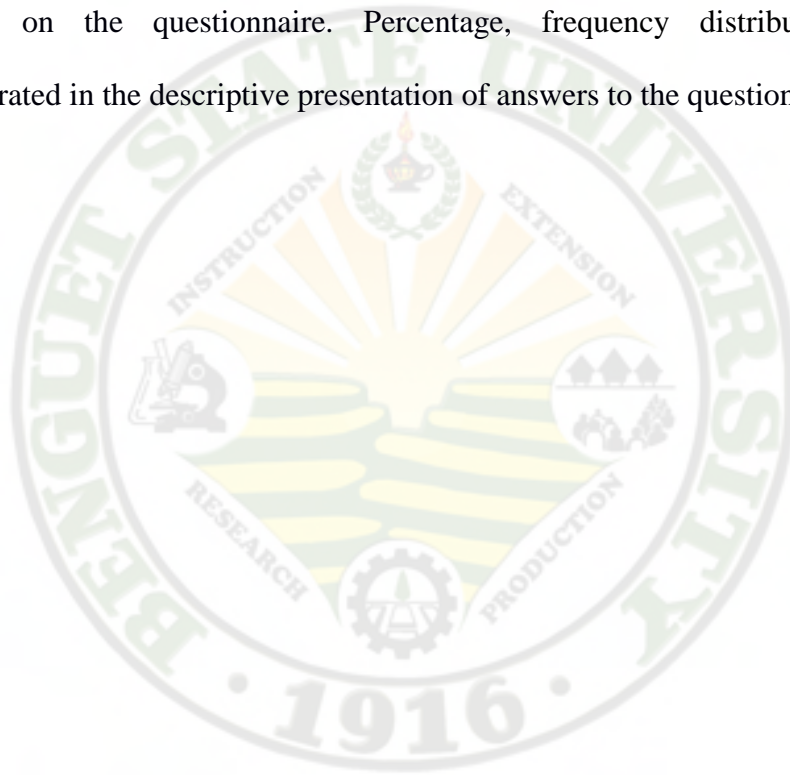


### Data Collection Procedure

The researcher personally administered questionnaires. The respondents with higher educational attainment accomplished the questionnaire themselves. On the other hand, the questionnaire served as interview guide for illiterate respondents.

### Data Analysis

Data analysis started with the review and consolidation of answers to the questions on the questionnaire. Percentage, frequency distribution and mean were integrated in the descriptive presentation of answers to the questions.



## RESULTS AND DISCUSSION

This section presents the characteristics of the Maupa watershed and profile of respondents. It also reflects the activities undertaken by the community residents for the conservation of the Maupa watershed, and the interventions from the Barangay Local Government Units. Moreover, the problems encountered by the residents on the conservation of the watershed are also included.

### Characteristics of the Maupa Watershed

Table 1 shows the characteristics of the Maupa watershed as to area, location and ownership. Based on Barangay Ampucao Records (2009), the watershed is located in SitioMaupa and has an estimated land area of 100 hectares. Situated on the eastern part of the Barangay, the watershed is bounded on the north by AmpucaoPoblacion, south by Sangilo, east by Cruz and west by CotcotAso. As to ownership, the watershed is classified as communal.

According to the Barangay officials, the watershed is owned by the government. However, there were individuals who have been vesting interest on the ownership of the area but they have failed to present authentic evidences.

Table 1. Characteristics of the Maupa watershed

PARAMETER	DESCRIPTION
Area	100 hectares
Location	SitioMaupa
Ownership	Communal



### Profile of the Respondents

The profile of the respondents as to the gender, civil status, age bracket, highest educational attainment, religion and occupation is shown in Table 2. As shown in the table, majority of the respondents are females and married. Of the 30 respondents, the number of males and females are almost the same. It may imply that the key informants on the Maupa watershed have equal representation as to gender.

Table 2. Profile of the respondents

PROFILE	NO. OF RESPONDENTS (N = 30)	PERCENTAGE (%)
<b>a. Gender</b>		
Female	16	53.33
Male	14	46.67
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>
<b>b. Civil Status</b>		
Married	21	70.00
Single	9	30.00
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>
<b>c. Age Bracket</b>		
16-20	6	20.00
21-25	1	3.33
26-30	1	3.33
31-35	2	6.67
36-40	2	6.67
41-45	3	10.00



Table 2.continued. . .

PROFILE	NO. OF RESPONDENTS (N = 30)	PERCENTAGE (%)
46-50	1	3.33
51-55	3	10.00
56-60	6	20.00
61-65	1	3.33
66-70	1	3.33
71-75	2	6.67
76-80	1	3.33
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>
<b>d. Highest Educational Attainment</b>		
Elementary graduate	7	23.33
High School graduate	9	30.00
College graduate	13	43.34
Vocational course graduate	1	3.33
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>
<b>e. Religion</b>		
Roman Catholic	23	76.66
Assembly of God	3	10.00
Baptist	2	6.67
United Church of Christ in the Philippines	2	6.67
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>
<b>f. Occupation</b>		
Miner	10	33.33
Housewife	8	26.67



Table 2.continued. . .

PROFILE	NO. OF RESPONDENTS (N = 30)	PERCENTAGE (%)
Student	6	20.00
Government employee	3	10.00
Self-employed	1	3.33
<b>TOTAL</b>	<b>30</b>	<b>100.00</b>

\*Multiple responses

The age of the respondents ranges from 16 to 80 years old. The greatest number of respondents falls under the age bracket of 16 to 20 and 56 to 60. The oldest respondent is 80 years old.

All the respondents had formal education. The greatest number of respondents finished college. Some were able to finish elementary or high school. One respondent claimed to have finished vocational course. According to the respondents who did not finish college, they were constrained by financial problems so they preferred to seek for a job and earn.

The table also reflects the religion of the respondents. More than 75% of the respondents are Roman Catholics. In a descending order, the religions of the other respondents are Assembly of God, Baptist, and United Church of Christ in the Philippines.

The occupation of more than 30% of the respondents proves the classification of Ampucao as a mining community. Aside from being host to the Philex Mining Corporation, the presence of small-scale miners is also evident in the community. There were six respondents who are students in different universities in Baguio City and La Trinidad.



Activities Undertaken by the Community Residents for the Conservation of the Maupa Watershed

The activities undertaken by the community residents for the conservation of the Maupa watershed are shown in Table 3. According to the respondents, the community residents strongly believe that protecting the Maupa watershed will in turn, save their lives. As such, there are certain activities undertaken by the community residents for the conservation of the watershed.

The foregoing scenario relates to the claims of Reinold (1988) that effective management of watershed depends on comprehensive human understanding of the components of watershed and their interactions. The application of the ecological principles to watershed planning has recently become one of the most important topics of natural resources management discussion. Traditionally, interest in balanced natural resources (land and water) management has come only after human have first severely damaged a landscape. To paraphrase the world famous naturalist Aldo Leopold: Human do not seem to be able to understand a system that they did not build; instead, they seemingly must partially destroy and rebuild the system before its uses and limitations are understood and appreciated.

As reflected on the table, the activities are categorized as very much undertaken, moderately undertaken, and not undertaken at all. A great majority of the respondents claimed to have exerted effort in safeguarding the watershed against forest fire, illegal loggers and illegal settlers. The Barangay Captain revealed that they have been patrolling the area on a regular basis. Nevertheless, they did not deny that there are still individuals who insist on destroying if not, destroying it.



Table 3. Activities undertaken by the community residents for the conservation of the Maupa watershed

ACTIVITY	NUMBER OF RESPONDENTS					
	VMU	%	MU	%	NU	%
Safeguarding the watershed from forest fire, illegal loggers and illegal settlers	23	76.67	6	20.00	1	3.33
Planting trees on grassland/barren land	18	60.00	12	40.00	1	3.33
Replacing dead trees and/or mulching	11	36.67	14	46.67	1	3.33
Caring of wildlings or naturally-grown trees	10	33.33	19	63.33	0	0.00

\*Multiple responses (VMU-Very Much Undertaken; MU-Moderately Undertaken, NU-Not Undertaken)

According to the Ampucao Barangay Records (2009), rampant illegal cutting was observed in the watershed area. During an inspection, the team observed three groups of timber poachers. Patches of vegetable gardens and swidden farms were likewise visible within the watershed area. Sixty percent of the respondents also claimed that planting trees on grassland and/or barren land is very much undertaken. According to the respondents, the seedlings were sourced out by the Local Government Units.

Moreover, 19 respondents stated that caring of wildlings or naturally-grown trees is moderately undertaken to conserve the Maupa watershed. At least one respondent claimed to have done nothing for the conservation of the watershed.

#### Intervention from the Barangay LGU for the Conservation of the Maupa Watershed

Table 4 shows the interventions from the Barangay Local Government Unit for the conservation of the Maupa watershed. These are categorized as to whether they are very much undertaken, moderately undertaken, or not undertaken.





Table 4. Interventions undertaken by the Barangay LGU for the conservation of the Maupa watershed

INTERVENTION	NUMBER OF RESPONDENTS					
	VMU	%	MU	%	NU	%
Barangay LGU processes documents on the ownership of the watershed	25	83.33	3	10.00	2	6.67
Barangay LGU prohibits the community residents and nearby communities relative to occupancy and/or alienation of the watershed	16	53.33	6	20.00	8	26.67
Barangay LGU sets policies and implements sanctions to violators relative to the conservation of the watershed	14	46.67	12	40.00	5	16.67
Barangay LGU donated planting materials (seedling) during the tree planting activities	5	16.67	6	20.00	19	63.33
Barangay LGU allows the community residents to have free access to fauna and flora product but not for commercial purposes	4	13.33	7	23.33	19	63.33
Barangay LGU allows the community residents have free access on the watershed for hunting wild animals and birds	3	10.00	5	16.67	22	73.33

\*Multiple responses (VMU-Very Much Undertaken; MU-Moderately Undertaken, NU-Not Undertaken)

According to a great majority of the respondents, the Barangay LGU processes the pertinent documents on the ownership of the watershed. The Barangay Captain revealed that they are doubling their efforts to maintain the watershed as community in nature. Relatively, more than 50% of the respondents claimed that the LGU is very firm in its stand of prohibiting the community residents and nearby communities to occupy or alienate the watershed.



On the other hand, more than 70% of the respondents stated that the Barangay LGU is not strict in implementing rules in prohibiting community residents from hunting wild animals and birds in the watershed. Similarly, there were 19 respondents who claimed that the Barangay LGU is not strict in regulating the access of the community residents on the watershed flora and fauna, and they are not consistent in donating planting materials (seedling)during the tree planting activities.

Problems Encountered by the  
Community Residents in the Conservation of  
the Maupa Watershed

Table 5 shows the problems encountered by the community residents relative to the conservation of the Maupa watershed. A great majority of the respondents looked at illegal loggers as the biggest threat on the conservation of the Maupa watershed. Figure 3 shows members of the community planting trees at the Maupa watershed



Figure 3. Members of the community planting trees at the Maupa watershed



Table 5. Problems encountered by community residents in the conservation of the Maupa watershed

PROBLEM	NUMBER OF RESPONDENTS					
	VS	%	MS	%	NS	%
Presence of illegal loggers in the area	20	66.67	5	16.67	5	16.67
Presence of swidden farms and other agricultural production activities in the area	12	40.00	7	23.33	11	36.67
Run-off water from the mining area affects the watershed	11	36.67	2	6.67	17	56.67
Natural Calamities affects and destroys the watershed	10	33.33	17	56.67	3	10.00
Shortage of water supply resulting from human intervention on the watershed	8	26.67	11	36.67	12	40.00

\*Multiple responses(VS-Very Much Serious; MS-Moderately Serious, NS-Not Serious)

Moreover, there were 12 respondents who cited the presence of swidden farms and other agricultural production activities in the area as a big problem. The other problems, in a descending order of gravity, are as follows: run-off water from the mining area which affects the watershed, natural calamities, and shortage of water supply resulting from human intervention.

Findings of the study relate to the claim of Pereira (1989) that considered as a very serious threat to our forests are commercial loggings and kaingin or slash-and-burn farming system to give way to commercial gardening. As demand for livelihood increases the depletion of forest resources become fast paced. The most critical aspects of upper watershed management which directly affect the lives and property of downstream users are the effects on floods, on water supplies and on sediments transport. Figure 4



shows the presence of swidden farms and other agricultural production activities at the Maupa watershed.



Figure 4. The presence of swidden farms and other agricultural production activities at the Maupa watershed



## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### Summary

This study documented the community-based watershed conservation practices: the case study of the maupa watershed in Ampucao.Itogon, Benguet relative to the characterization of the maupa watershed. socio-economic profile of the respondents, the activities undertaken by the community residents for the conservation of the Maupa Watershed, the intervention from the Barangay Local Government Unit for the conservation of the Maupa watershed, and the different problems encountered by the residents in the conservation of the Maupa watershed. It was conducted at Dalicno, Itogon, in the province of Benguet. It involved 30 respondents who were residents of purokDemang and Midway. Data gathering was undertaken in October 2011.

As to the characteristics of the Maupa watershed, it is located at SitioMaupa and has estimated land area of 100 hectares. It is classified as communal.On the profile of the respondents, majority are female and married. The greatest number of the respondents falls under the age bracket 16 to 20 and 56 to 60. The oldest respondent is 80 years old and the youngest is 16 years old.

All the respondents had formal education. The greatest number of respondents finished college. Some were able to finish elementary and high school. One respondent claimed to have finished vocational course. According to the respondents who did not finish college, they were constrained by financial problems so they preferred to seek for job and earn.On the religion of the respondents, more than 75% of the respondents are Roman Catholics. In descending order, the religions of the other respondents are Assembly of God, Baptist and United Church of Christ in the Philippines.



The occupation of more than 30% of respondents proves the classification of Ampucao as a mining community. Aside from being host of the Philex Mining Corporation, the presence of small-scale miners is also evident in the community. There were six respondents who are students in different universities in Baguio City and La Trinidad.

In the activities undertaken by the community residents for the conservation of the Maupa watershed, the community residents strongly believed that protecting the Maupa watershed will in turn save their lives.

As such, there are certain activities undertaken by the community residents for the conservation of the watershed. A great majority of the respondents claimed to have exerted effort in safeguarding the watershed against forest fire, illegal loggers and illegal settlers.

Sixty percent of the respondents also claimed that planting trees on grassland and/or barren land is very much undertaken. According to the respondents, the seedlings were sourced out by the Local Government Units.

Moreover, 19 respondents stated that caring of wildlings or naturally-grown trees is moderately undertaken to conserve the Maupa watershed. At least one respondent claimed to have done nothing for the conservation of the watershed.

The Barangay LGU processes the pertinent documents on the ownership of the watershed. The Barangay Captain revealed that they are doubling their efforts to maintain the watershed as community in nature. Relatively, more than 50% of the respondents claimed that the LGU is very firm in its stand of prohibiting the community residents and nearby communities to occupy or alienate the watershed.



On the other hand, more than 70% of the respondents stated that the Barangay LGU is not strict in implementing rules in prohibiting community residents from hunting wild animals and birds in the watershed. Similarly, there were 19 respondents who claimed that the Barangay LGU is not strict in regulating the access of the community residents on the watershed flora and fauna, and they are not consistent in donating planting materials (seedling) during the tree planting activities.

The most common problems encountered by the community residents relative to the conservation of the Maupa watershed were: illegal loggers as the biggest threat on the conservation of the Maupa watershed. Moreover, there were 12 respondents who cited the presence of swidden farms and other agricultural production activities in the area as a big problem. The other problems, in a descending order of gravity, are as follows: run-off water from the mining area which affects the watershed, natural calamities, and shortage of water supply resulting from human intervention.

### Conclusion

Based on the findings of the study, the following conclusions were drawn:

1. The respondents undertook several measures to preserve and conserve for the conservation of the Maupa watershed such as; planting trees on grassland/barren land, replacing dead trees, caring on wildling or naturally grown trees, and safe guarding the watershed.
2. The declaration of the Maupa watershed as own by the government is being enforced and implemented by the Barangay LGU incorporated by the Local Government Unit.



3. The respondents encountered several problems in the conservation of the Maupa watershed such as; the presence of illegal loggers in the area, presence of swidden farmers and other agricultural production activities in the area, run-off water from the mining area, affects the watershed, shortage of water supply resulting from human intervention on the watershed, and natural calamities affects and destroys the watershed.

### Recommendations

The following are recommended:

1. The community residents especially the youth should participate on set activities like tree planting, safeguarding the watershed and conduct seminars to make everyone aware on the environmental concerns and be more responsible in the conservation and preservation to have a clean, clear, healthy and sustainable watershed.

2. The Barangay LGU should seek assistance from the Municipal LGU to provide enough materials for the sustainable development and equitable preservation and management of the Maupa watershed. They should work hand in hand to formulate policies that will integrate environmental thinking into the development decisions in the conservation practices of the Maupa watershed.





## LITERATURE CITED

- ANTOLIN, B.1999. Community-Based forest management. Lecture notes for the review classes for the Foresters' Licensure Examination, sponsored by the Future Foresters Society and the 1999 BS Forestry graduates. BSU-college of Forestry La Trinidad, Benguet.
- BARANGAY AMPUCAO RECORDS.2009. Maupa Watershed Profile in Ampucao, Itogon, Benguet.
- CORDILLERA GREEN NETWORK, 2007. Lakon/ Saguday: An Indigenous Forest Management System in Mountain Province.
- COORDINATING COMMITTEE of the NATIONAL WORKSHOP of INDIGENOUS PEOPLE on HUMAN RIGHTS, 2004. National Workshop of Indigenous People on Human Rights.
- DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES-FMB, 1996. Philippines Forestry Statistics. P.xii. Manila DENR, 1996
- PERIERA, H. 1989. Policy and practice in management of tropical watershed. Boulder: Westview Press; London: Belhaven Press, 1989
- REIMOLD, R. 1988. Watershed management: practice, policies, and coordination. New York: McGraw Hill Co., 1988
- TACLOY, J. 2000. Indigenous forest conservation system in the Cordillera Region. Unpublished PhD Dissertation. Benguet State University La Trinidad, Benguet.



## APPENDIX A

### Letter to the Respondents

Republic of the Philippines  
BENGUET STATE UNIVERSITY  
COLLEGE OF AGRICULTURE  
La Trinidad, Benguet

Dear Respondent:

Greetings!

I am a fourth year Bachelor of Science in Agriculture – Extension Education student of the Benguet State University presently conducting a study entitled “Community-Based Watershed Conservation Practices: A Case Study of Maupa Watershed in Ampucao, Itogon, Benguet.” the study aims to document the present situation of the Maupa watershed and the problems encountered by the watershed.

In connection to this, I am seeking your assistance by supplying the necessary information asked attached on the questionnaire. Thank you and rest assured that all information will be treated confidential and used for research purposely only.

Respectfully yours,

APRIL A. TOLBE  
Researcher



## APPENDIX B

### Survey Questionnaire

#### I. PERSONAL INFORMATION

Name (optional):

Gender: Age:

Civil Status:

Religion:

Occupation:

Highest Education Attainment?

\_\_\_\_\_Elementary

\_\_\_\_\_High school

\_\_\_\_\_College

\_\_\_\_\_Vocational

Listed here under are indigenous forest management practices. Check on the appropriate column for those which are practice in your watershed. Based on your experience and observation, kindly rate the extent of implementation by checking the appropriate column using the following description.

3- very much undertaken (VMU)

2- moderately undertaken(MU)

1- not undertaken(NU)



## II. Activities undertaken by the community

ACTIVITIES UNDERTAKEN BY THE COMMUNITY	3 VMU	2 MU	1 NU
1. Planting trees on grassland/barren lands			
2. Replacing dead trees			
3. Caring of wildlings or naturally-grown trees.			
4. Safeguarding the watershed from forest fire, illegal loggers and illegal settlers.			

## III. Intervention from the Municipal and Barangay LGU

INTERVENTION OF LGU'S	3 VMU	2 MU	1 NU
1. Barangay LGU allows the community residents have free access on the watershed for hunting wild animals and birds.			
2. Barangay LGU allows the community residents to have free access to fauna and flora products but not for commercial purposes.			



INTERVENTION OF LGU'S	3 VMU	2 MU	1 NU
3. Barangay LGU process documents on the ownership of the watershed.			
4. Barangay LGU donated planting materials (seedlings) during the tree planting activities.			
5. Barangay LGU set policies and implements sanctions to violators relative to the conservation of the watershed.			
6. Barangay LGU prohibits the community residents and nearby communities relative to occupancy and/or alienation of the watershed.			



## IV. Problems encountered by the community in the conservation of the Maupa Watershed

3-Very much serious

2-Moderately serious

1-Not serious

PROBLEMS ENCOUNTERED	3 VMS	2 MS	1 NS
1.Presence of illegal loggers in the area.			
2. Presence of swidden farms and other agricultural production activities in the area.			
3.Run-off water from the mining area affects the watershed.			
4. Shortage of water supply resulting from human intervention on the watershed.			
5.Natural Calamities affects and destroys the watershed.			

Thank you so much.

