RESEARCH ARTICLE

ANALYSIS OF HUKURILA BEACH TOURISM LAND SUITABILITY HUKURILA VILLAGE SOUTH LEITIMUR SUB DISTRICT AMBON CITY

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Manuscript Info

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Abstract

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This research was conducted at the location of Hukurila beach tourism object, Hukurila village,South LeitimurSub District, Ambon City. The analysis results of tourism land suitability showed from the three monitoring stations found for Station 1 the Tourism Suitability Index Value (IKW) 87.17%, with land suitability class S1 (Very suitable), Station 2 85.25%, land suitability class S1 (Very suitable), and Station 3 87.17%, with land suitability class S1 (Very suitable). Overall, the Tourism Suitability Index (IKW) value obtained for Hukurila Beach natural tourism objects is 86.53%, by having land suitability class of Very Suitable (S1), thus Hukurilabeach natural tourism object can be said to be suitable to be developed as beach natural tourism object for recreation category.

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Introduction:-

As archipelago country, Indonesia has enormous coastal and marine resources, so marine tourism is one type of tourism that needs to be developed (Haris and Godwin, 2002).

Coastal areas in general have the potential for diverse coastal natural resources, and are very useful for meeting the communityneeds. Utilization of the coastal area will always have different impact on existing resources and on the communitysocial conditions. One form of utilization is for tourism activities, which is the marine tourismdevelopment. Coastal resources use related to efforts to coastal tourismdevelopment, today has not been fully carried out seriously. Coastal tourism development especially coastal nature tourism has not been directed to the development that led to the tourism area quality use, related to the utilization of the owned resource potentials.

Tourism destination development, especially the coastal natural tourism object development should be done with the first step is to analyze the suitability level of tourism land, it is caused by the land suitability analysis iseffort to make matched use for the certain use, through the land class value and the land use order that direct to the maintain the ecosystem.The suitability analysis of tourism land is carried out in order to analyze the tourism landsuitability in area or location of tourism objects. The analysis results conducted are expected to provide information on whether a coastal area is suitable for tourism destination development or not (Yulianda, 2007).

Ambon city which is the capital of Maluku province located at the Eastern Indonesia, withwater area of 82.33 km^2 and coastline of 30.12 km 2. Having the potential of coastal natural resources is very potential for the coastal tourism development (Sihasale, D. A. 2013). The beauty of coastal marine waters mostly spread in the South of this city, such as Hukurilathat are South Leitimur sub district of Ambon city. The village has territory (Petuanan) of

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7.50 Km^2, is one of the beach natural tourism destinations in the city of Ambon. As tourist object, Hukurila beach is visited by tourists both in regular holidays and religious holidays.

The natural potential of the coast as far as thewriters observation still need to be investigated, especially regarding land suitability level. Land suitability analysis is necessary regarding the problems encountered by the authors are the locations of beach natural tourism object built and developed now in Ambon city today is largely not been analyzed toward the land suitability level for it is supposed tourism land suitability analysis is carried out and one of them is the natural tourism object of Hukurila beach.

With the land suitability analysis that will be carried out on Hukurila beach tourism objects, it is expected to know whether Hukurila beach tourism objects can be categorized into suitable classor not to be developed as beach tourism locations.

Methods:-
This research activity was carried out from April-May 2019. This research was conducted at the location of the natural tourism object of Hukurila beach, Hukurila village, LeitimurSub District, Ambon City (Figure 1). The research technique uses purposive for station determination. Purposive technique is sampling technique with specific considerations data source (Safina, et al 2014).
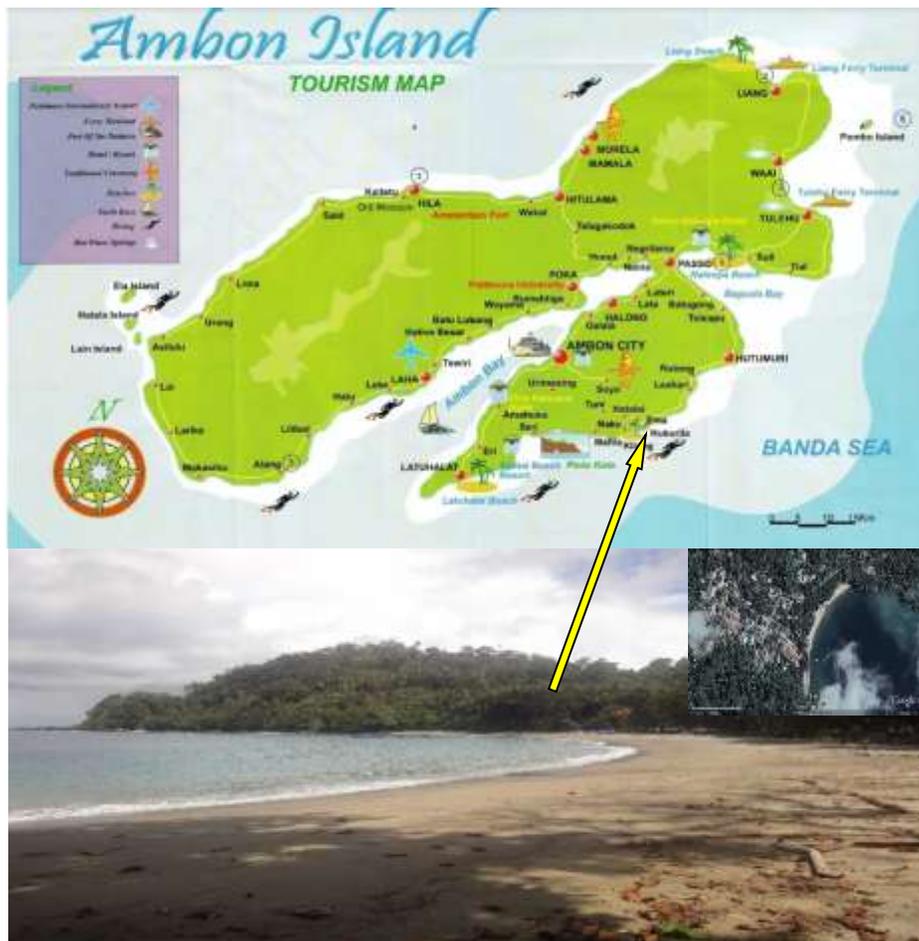

Figure 1:- Direction of the arrow showing the location of Hukurila Beach.

The tools used during the study are: stationery, used to record observations in the field, cameras for taking pictures, roll meters to measure the length and width of the beach, GPS (global positioning system) to determine the location of coordinates, Secchi disks to measure levels waters brightness, questionnaires as list of questions, current kite to

measure current speed, Snorkeling tools for observation of dangerous biota, Laptop for processing data, and other Literature to support research.

Primary data collection is obtained directly from the field with activities; determine the stationlocation, beach width, beach type, water base material, current speed, water brightness, hazardous biota, availability of clean water. In this study also provided questionnaire to solicit answers from the public or tourists who are in the tourism location. Interviews were conducted directly by researchers. While secondary data were obtained from the city tourism office, journals, and books.

Measurement of water depth is done by using a scale pole sign. On the scale pole there is value that indicates the value of depth. Measurements were made at the research station by determining the depth of 10 meters from the coastline (Masita et al, 2013).Determination of beach type and seabed material is based on visual observations in the field (M ASITA et al, 2013). The use of total Secchi Disk is done by tying with rope and then lowered slowly into the waters at the observation to the limit of visual Secchi Disk can not be seen and then measure the length of rope and record the data retrievalposition. Effendiopinion (2003) that value of brightness is strongly influenced by suspended solids and turbidity, weather conditions, time of measurement, and people accuracy who take measurements. Beach width measurement is done by using roll meter, which measured the distance between the last vegetation there on the shore with the limit of the highest tide (Masita et al, 2013), Determining the type of beach material and bottom waters is done based on visual observations in the field, (Masita et al, 2013). Current speed is measured using current kite, namely by setting the distance of the current kite (5 meters) and then measuring the travel time of the kite. Current speed calculation using the formula:

$$V = S / T$$

Note:
V = Current Speed
S = The length of the current parachute (m)
t = Current kite travel time (seconds)

The monitoring of dangerous biota is carried out to find out is there a dangerous biota that will disrupt tourist visitors. Observation of hazardous cities was conducted based on snorkeling around the research station (Masita et al, 2013). While observations of freshwater availability is done by measuring the distance between the research station at the location where the source of fresh water available (Masita et al, 2013). Ecotourism activities, the availability of clean water in the form of fresh water is very necessary to support management facilities and ecotourism services. This is also criterion for evaluating the feasibility of developing coastal ecotourism priorities (Handayawati, 2010).

Analysis of land suitability for the beach natural tourism recreation category is carried out to determine the Tourism Suitability Index (IKW) for the development of beach natural tourism in the recreation category. Analysis for beach tourism has two categories, namely: Suitability of Regions for Recreational Beach Tourism including, Depth, Beach Type, Beach Width, Water base Material, Flow Speed (m/s), Brightness (m), Dangerous Biota, Freshwater Availability (km).

Information:-
Category S1 = Very suitable
Category S2 = Suitable
Category N = not suitable

Calculation Analysis of the Tourism Suitability Index (IKW) is based on the formula IKW = $\sum$ [Ni Nmaks] x 100%. (Yulianda, 2007).

Information:
IKW = Tourism Suitability Index:
Ni = Overall total value
Nmaks = Maximum value of tourism category
(S1) = 77.78 –100%,
(S2) = 55.56 - <77.78%,

(N) = <55.56%

The land suitability evaluation approach is used with mathematical approach method by multiplication and addition of each parameter, while for the assessment of land suitability classes carried out at the class level. Quantitative analysis toward all 10 parameters, will determine the level of land suitability classes through $Y = Xn.\Sigma ai$ wherein $Y = Y$ is maximum value with Xn as land suitability level category S1 (Very suitable) and ai is total weightvalue, with the maximum value is 156 (Table 1).

Table 1:- The Matrix of The Suitability of Coast Area for Beach Tourism.

No	Parameters	Weight	Categories and Scores							
			Category S1	Score	Category S2	Score	Category S3	Score	Category N	Score
1.	Waters base depth (m)	5	0-3	4	>3-5	3	>5-10	2	>10	1
2.	Beach type	5	White sand	4	White sand with little coral	3	Black sand with coral	2	Mud with steep stone	1
3.	Beach width (m)	5	>15	4	10-15	3	3<10	2	<3	1
4.	Water base material	4	Sand	4	Sandy coral	3	Muddy sand	2	Mud	1
5.	Current speed (m/det)	4	0-0.17	4	0.17-0.34	3	0.34-0.51	2	>0.51	1
6.	Beach slope (°)	4	<10	4	10-25	3	>25-45	2	>45	1
7.	Water brightness (m)	3	>10	4	>5-10	3	3-5	2	<2	1
8.	Beach land cover	3	Coconut tree, open space	4	Shrubs and savanna	3	High shrubs	2	Mangrove, settlement, port	1
9.	Dangerous biota	3	-	4	Pig fur	3	Pig fur, rayfish	2	Pig fur, rayfish, shark	1
10.	Fresh water availability distance (distance/km)	3	<0.5 (km)	4	.0.5-1 (km)	3	>1-2	2	>2	1

Result and Discussion:-
Based on the analysis results carried out toward 10 (ten) parameters of land suitability for beach natural in the Hukurilavillage Ambon, then it can be described as follows (Table 2).

Table 2:- Land Suitability Index for Hukurila beach, Ambon City.

ST	No.	Parameters	Field data	Weight	Score	$N_i = BxS$
S	1.	Water base depth (m)	5,15	5	2	10
T	2.	Beach type	White sand	5	4	20
A	3.	Beach width (m)	23	5	4	20
T	4.	Water base material	Sandy coral	4	3	12
I	5.	Current speed (m/det)	0,088	4	4	16
O	6.	Beach slope (°)	5-10°	4	4	16

ST	No.	Parameters	Field data	Weight	Score	$N_i = BxS$
N.1	7.	Water brightness (m)	4,27	3	2	6
	8.	Beach land cover	Coconut tree, ketapang, open land	3	4	12
	9.	Dangerous biota	Not exist	3	4	12
	10.	Fresh water availability distance (distance/km)	0,362	3	4	12
		Total = ($\sum N_i$)		39		136
		IKW = 87,17%	**Land suitability level S1 (vey suitable)**			

ST	No.	Parameters	Field data	Weight	Score	$N_i = BxS$
STATION.2	1.	Water base depth (m)	5,22	5	2	10
	2.	Beach type	White sand	5	4	20
	3.	Beach width (m)	20	5	4	20
	4.	Water base material	Sandy coral	4	3	12
	5.	Current speed (m/det)	0,076	4	4	16
	6.	Beach slope (^{o})	5-10°	3	4	16
	7.	Water brightness (m)	4,20	3	2	6
	8.	Beach land cover	Coconut tree, ketapang, open field	3	4	12
	9.	Dangerous biota	Not exist	3	4	12
	10.	Fresh water availability distance (distance/km)	0,517	3	3	9
		Total = ($\sum N_i$)		39		133
		IKW = 85,25%	**Land suitability level S1 (vey suitable)**			

ST	No.	Parameter	Field data	Weight	Score	$N_i = BxS$
STATION.3	1.	Water base depth (m)	5,19	5	2	10
	2.	Beach type	White sand	5	4	20
	3.	Beach width (m)	18	5	4	20
	4.	Water base material	Sandy coral	4	3	12
	5.	Current speed (m/det)	0,073	4	4	16
	6.	Beach slope (^{o})	5-10°	4	4	16
	7.	Water brightness (m)	4,13	3	2	6
	8.	Beach land cover	Coconut tree, ketapang, open land	3	4	12
	9.	Dangerous biota	Not exist	3	4	12
	10.	Fresh water availability distance (distance/km)	0,421	3	4	12
		Total = ($\sum N_i$)		39		136
		IKW = 87,17%	**Land suitability level S1 (vey suitable)**			

Waters Depth Condition:
The waters depth is one of the most important factors and is very taken into account in the process of determining area to be used as beach tourism object, especially for bathing and swimming activities because this factor is very influential to security during swimming, the depth factor should be relatively shallow. The average water depth is ± 2.5 meters. Waters with shallow depths physically good enough to be used as location for bathing and swimming. Swimming can not be done if you have high risk if the sea is steep with depth more than 5 meters.

The measurement analysis results of waters depth for the location of Hukurila Beach Natural Tourism Object, up to distance of 100 meters to the sea, the range at each station, namely for Hukurila Beach, at station I ranged from 5.15 meters, station II between 5.22 meters, and station III between 5.19 meters. This is supported by the statement (Hazeri2014) which provides depth value limit for the depth adjustment for the ecotourism of beach category to suitable between 3 and 6 meters. (Table 3).

Table 3:- Results of Measurement of Water Depth.

No	Beach tourism object	Station	Waters depth (m)
1.		I	5,15
2.	Hukurila	II	5,22
3.		III	5,19

Based on observations in the field, the condition of the waters in the location of the natural attractions of this beach, also have an impact on each form of visitor tourism activities. Swimming activities can be done by various age groups, including adolescents, and adults. However, considering the depth of the water above the range 5 meters, for children, swimming activities carried out need to be extra careful and need supervision (Figure 2)

Figure 2:- Measurement Location of Waters Depth, station I, II, III.

Beach Type Conditions:
Yulianda (2007) that for beach tourism will be very good if beach is sandy beach or in other words dominated by sand substrate, compared to rocky beaches or beaches dominated by coral substrate can disturb tourist comfort, whereas visually according to Pangesti(2007) in (Hazeri2014) the type and color of sand in an ecotourism object gives its own value for the aesthetics of the beach itself, where beaches that have white and medium sized black sand are very popular for tourists.

Based on the material of its Natural Tourism Object, Hukurila Beach is beach composed of loose material. This type beach divided into Sandy Beach, which are beaches composed of sand deposits and gravel beaches, Gravely Beach, which are composed of loose gravels or rocks (Fig. 3).

Figure 3:- (a). The direction of the arrow indicates Sandy Beach type
(b). The direction of the arrow indicates Gravely Beach type

Viewed from the perspective of the process of forming the Hukurila Beach, it is known that this beach occurs by the results of sedimentation processes.The beach has little white beach sand color brown. The color of the beach sand is the result of sedimentation process that occurs due to the process of transporting soil material, and gravel from the mountain land by water (Figure 4).

Figure 4:- (a). The direction of the arrow indicates the sand color on the beach natural tourism objectdue to sedimentation that occurred.
(b). The direction of the arrow indicates the river waterflowwhich brings spoiland rock from the mainland.

The color uniqueness of the Hukurila Beach Natural Tourism Object is in accordance with what Pangesti (2007) said that visually, the type and color of sand in tourism object will also provide its own value for the beachaesthetics.

Beach Width Conditions:
The width of the beach greatly affects various activities or tourist activities. Wide beach width will make visitors or tourists free to carry out tourism activities. According to Rahmawati (2009) that the width of the beach is related to the extent of coastal land that can be utilized for various beach tourism activities. The width of the beach which is very suitable for beach tourism is more than 15 meters, while the width of the beach less than 3 meters is considered not suitable for beach tourism. The width of the beach greatly affects the activities carried out by tourists, the wider a beach is, the better it is for tourists to do their activities, but the smaller the width of the beach owned by a tourist place, the visitors feel uncomfortable to do the activity.

Measuring the width of the beach in HukurilaBeach Natural Tourism Object is done to find out how wide the beach area can be used for beach tourism activities. This beach width measurement is done by dividing the beach zone into three stations. The three predetermined stations are then measured (Figure. 5).

Figure 5:- Measurement Location of Beach Width, Station I, II, and III.

The measurement results on the Beach Natural Tourism Object of Hukurila, obtained beach width at station I is 23 meters, station 2, which is 20 meters, and station 3 is 18 meters (Table. 4).

Table 4:- Results of Beach Width Measurement.

No	Beach Tourism Object	Station	Beach Width (m)
1.		I	23
2.	Hukurila	II	20
3.		III	18

Source: Results Measurement, 2019.

Based on the measurement results of the suitability of stationI, II and III Hukurilabeach classified in category 'Very Suitable'. With the beach width owned and the stretch of sand allows visitors or tourists to do sunbathing or relaxing activities.

Waters Base Material Conditions:
The observations results of the waters base material on the Hukurila Beach Natural Tourism Objects indicate that the Hukurila Beach Natural Tourism Objects have water base material conditions that have relationship with climatic conditions, topography, vegetation and the composition of rocks. Besides that, the process of transporting the basic material of the waters at the Hukurila Beach Natural Tourism is mostly carried out by water and wind. The existence of river which is not far from the tourism object, helped bring variety of solid and liquid materials from the mainland. In addition, the wind also brings various leaves from various vegetation in the tourist sites to the waters.
The basic material for watering the Hukurila Beach Tourism Object is dominated by coral and sand. Based on the suitability index of stations I, II, and II on the Natural Tourism Object of Hukurila Beach, it is classified in the quite suitable category. Based on observations made of visitors or tourists who do swimming activities at the location of these attractions it turns out that the basic material conditions of waters dominated by coral and sand do not affect their activities, and this can be seen by the number of visitors or tourists who do swimming activities and sunbathe.

Current Speed Condition:
According to Sudarto (1993), there are several types of currents that are commonly known are tidal currents, currents due to waves (current parallel to the coast), currents due to wind, and currents caused by differences in density of sea water. The current is a period of water vertically and horizontally so that it does not balance. The movement that occurs is the result of variety of forces acting on the surface, column and bottom of the water. Current speed parameters are closely related to the safety of visitors or tourists in their tourist activities, especially bathing and swimming. Very fast currents can endanger security for tourists, on the contrary small and calm currents will provide a sense of comfort for tourists to bathe and swim. Based on the results of measurements of current speed carried out on the Hukurila Coast Natural Tourism Object, the measurement results obtained are, at station I the current speed is 0.088m / sec, station II is 0.076m / sec, and station III is 0.073m / sec (Table 5).

Table 5:- Current Speed Measurement Results.

No	Beach Tourism Object	Station	Current Speed (m/d)
1.		I	0,088
2.	Hukurila	II	0,076
3.		III	0,073

Source: Measurement Results, 2019

In accordance with the suitability matrix, current velocity at stations I, II, and III, the HukurilaBeach Natural Tourism Object can be classified in the suitable category for coastal tourism activities, and this is also in accordance with the opinion of Widiatmaka (2007) which states that the current velocity is very suitable for coastal tourism activities ranging from 0-0.17 m / sec, which is the current classified as a weak current. The condition of the speed of the currents at the two natural attractions of the beach is very safe for visitors or tourists who will do swimming activities.

Beach Slope:
The measurement results on the beach slope on the Hukurila Beach Natural Tourism Objects show that the Hukurila Beach Natural Tourism Object has beach slope with flat beach category that is with slope of less than 5-100, thus according to the opinion of Purbani (1999) that the slope of the flat slope to with ramps very suitable intended for beach tourism such as bathing and swimming activities, as well as what is said by Yulianda (2007) which states that the flat slope of the beach can make the visitors or tourists who visit feel safe and comfortable in carrying out

tourism activities. With a non-steep beach slope, tourists can be more free to do their recreational activities on the beach.

The measurement results of the beach slope for the determination of the swim safe zone boundary on the Hukurila Beach Natural Tourism Object are carried out with a tolerance to a depth of less than 150 cm or limited to the neck of an adult. This measurement is based on the statement of Pragawati (2009) which states that a coastal tourist area must have safe limits for swimming. These limits must be reached at a minimum at the adult neckline with the consideration that visitors or tourists who swim are still able to stand up and take a breath when swimming. The measurement results show that the Hukurila Beach slope is still relatively safe at a distance of 100 meters, and this is based on the suitability matrix which is classified into a very suitable slope category.

Waters Brightness:
Waters brightness is the level of water transparency that can be observed visually using secchi disk. Brightness is picture of the water depth that can be penetrated by light and is visible to the eye in general. (Boyd, 1988). The comfort of visitors or tourists is very much determined also by the level of brightness of the waters, this is because it is directly related to the vision in the water. The brighter the conditions of the waters, the better for the convenience of visitors or tourists when bathing and swimming. According to Effendi (2003) states that the value of brightness is strongly influenced by suspended solids and turbidity, weather conditions, time of measurement, and accuracy of people who take measurements.

The measurements results carried out on the Nature Tourism Object of Hukurila Beach, showed that at station I it was 4.27 meters, station II was 4.20 meters and station III was 4.31. Based on the suitability matrix, stations I, II and III of the Hukurila Coast Natural Tourism Object have the level of water brightness classified in the suitable category (Table. 6).

Table 6:- Results of Waters Brightness.

No	Beach Tourism Object	Station	Waters Brightness (m)
1.		I	4,27
2.	Hukurila	II	4,20
3.		III	4,31

Source: Measurement Results, 2019.

The brightness level of waters which is quite suitable very helpful for visitors or tourists in swimming or diving activities. The condition of the watersbrightness is enough to provide its own comfort for tourists. Underwater scenery or panaorama can be enjoyed directly by visitors or tourists.

Beach Land Cover:
Based on observations made on the cover of coastal land in HukurilaBeach Natural Tourism Object, it was found that this beach natural tourism object, beach cover is dominated by vegetation composition consisting of coconut trees (CocosNucifera), ketapang trees (TerminaliaKatappa) and open land. The cover of coastal land which is dominated by the growth of coconut trees, ketapang trees and open land, provides a shady and cool atmosphere to the visitors doing recreational activities. Thus according to the suitability matrix of coastal land cover conditions, these natural tourism objects can be classified into egoreic words accordingly (Fig. 6).

Figure 6:- Beach Land Cover.

The cover of beach land which is dominated by the growth of coconut trees, ketapang trees and open land, provides shady and cool atmosphere for visitors or tourists who are doing recreational activities. Thus according to the suitability matrix of the conditions of beach land cover, these natural beach tourism objects can be classified into very suitable categories.

Dangerous biota in the waters:
Based on observations at the location of tourism objects and information obtained from the public and visitors to the Hukurila Beach Natural Tourism Object, showed that no harmful biota was found such as sea urchins, stingrays, sharks and so forth. Thus at stations I, II, and III of these attractions, according to the matrix of the suitability of the presence of hazardous biota on the coast can be classified into very suitable categories.

Freshwater Availability Distance of (Clean water):
Tourism activities will not run smoothly if it is not supported by the availability of fresh water. Based on observations made on natural objects of Hukurila Beach, it is found that in this tourism object it has distance of availability of fresh water to a resident's house which can be said to be quite close, which is around 500 meters from a water source. As according to Yulianda (2007) in the land suitability matrix of the coastal tourism category that a beach tourism can be said to be very suitable if it has a distance of fresh water availability <0.5 km. (Figure 7).

Figure 7:- Freshwater sources.

According to (Handayani, 2010) When conducting tourism activities, the availability of clean water in the form of fresh water is very necessary to support management facilities and tourist services. This is also a criterion for evaluating the feasibility of developing coastal tourism priorities. The existence of fresh water sources in the Hukurila beach natural tourism objects has almost entirely been channeled to people's homes, but some are not yet flowed. Residents who have not yet received water from their homes can still obtain fresh water or clean water by fetching water from fresh water or clean water that has been made available to the public. For residents whose homes are near these water supply places, it is very easy to take it, but for residents who happen to live far away, it is very difficult. In accordance with the suitability matrix, the availability of fresh water or clean water around the location of attractions can be classified into very suitable categories. The distance of the availability of fresh water that helps every recreational activity of tourists, especially for bathing, and rinse the body after finishing bathing or swimming on the beach.

Conclusion:-
According to analysis results that have been done to 10 (ten) parameters of the land suitability it is seen that the Hukurilabeach in the Hukurila village, South LeitimurSub District Ambon city is, has the potential of nature and diversity of the coast to be developed become better tourism object. From the analysis results from the calculation of the Tourism Suitability Index (IKW), and the land suitability classdetermination, it shows number of natural conditions that are still natural (natural based) in the form of flora and fauna, biodiversity, and ecosystems, such as: coral reefs, seagrass beds, mangrove forests, sandy beaches, rocky beaches all of which have their own uniqueness and beauty. These potentials are development factors that can be used as tourism potential, but in the development effort needs to be done with good planning, so that later it can benefit the wider community.Tourism development

direction also needs to be done by supplementing and improving facilities and infrastructures, improving tourism objects, deceive the public and visitors to participate in maintaining cleanliness of tourist environment, doing publicity or promotions as well as developing objects that exist around into one package. In addition, there is a need for good cooperation between the government, the private sector, the community and visitors, to be able to make a harmonious partnership between stakeholders in the development and management of tourism areas. The development of the Hukurila beach tourism object with all its potential needs to be directed towards the sustainable use of natural resources both micro and macro at the planning level.

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