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# Opinion Survey on Water Mangement in Karumeniyar River Basin

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**Abstract :** Water Resources Management is a highly serious issue in the present world scenario because of the demand for potable water. Climate change and global warming and increase in pollution are the main reasons for the depletion of water resources. Kar umeniyar, a ephemeral river which runs through Sathankulam and Thiruchendur Taluk of Thoothukudi district is the key source of fresh water for the surrounding area. A opinion survey is done on the river basin about the water resource management done in that area. The analysis of the opinion survey helps to understand and improve the condition of the river basin.

**Keywords :** Ephemeral River, Check Dam, Culvert, Maintenance of River Bed

## 1.0 Introduction

Water Resources, the spinal of a country to survive must be properly maintained and conserved. India's economic strength is in agricultural development, in which the water resources play a major role<sup>1</sup>. Karumeniyar which runs through the Sathankulam and Thiruchendur Taluk of Thoothukudi district is the key source of fresh water for the surrounding area. Even though it is a ephemeral river, it serves a important part in the agriculture and fishing of the area.

## 1.1 Karumeniyar

Karumeniyar is a ephemeral river which runs in the thoothukudi district along with thamiraparani and vaippar. The Karumeniyar has its flow only during the times of heavy rainfall. It's also called Koodauritiyaru ,which symbolises its velocity and turbulence during the flow. It flows through Ayarkulam, Mangulam, Sathankulam, Mudalur, Pothakalanvilai, Polaiyarpuram, Anbinnagaram,, Uthiraman kudierupu and drains into the bay of Bengal at Manapadu estuary<sup>2</sup>. Maninagar reach is taken for study.

## 1.2 Need for study

At times of heavy rain, the river gets flooded and the river runs full and drains into the sea. After the monsoon, it dries and water table goes down in the surrounding area. As the water is not stored effectively using hydraulic structures, the run-off could not be used to its optimum limit. Moreover during the times of flood, transportation is highly affected as the roadways are in the course of the river. So, there is a need to build bridges/culvert for facilitating the transportation during flood. A questionnaire survey is done to gather information from the users of the river.

## 2.0 Questionnaire Survey

A questionnaire is defined as a research instrument which comprises of a series of question and other prompts for the purpose of gathering information from respondents. As Karumeniyar is a ephemeral river, flood

occurs only in heavy rainy seasons and its detail is collected from the questionnaire survey. The study is specific about the Maninagar causeway.

## 2.1 Survey Details.

The Survey is conducted in Maninagar, Meyyor, Adaikkalapuram, Sundankottai, Ramasamipuram, Pallakurichi, Anbinnagaram. The survey is conducted among farmers, administrators and others. The survey conducted gives an insight about the awareness and the participation of the people.

## 2.2 Questionnaire

The Questionnaire is given to the residents in their native Tamil language. The fig.1 shows the questionnaire given to the participants.

பெயர் : \_\_\_\_\_  
 தொழில் : \_\_\_\_\_

ஊர் : \_\_\_\_\_

**V.V. College of Engineering**  
*Study of Maninagar cause way in Karumeniyaru*

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1. கருமேனியாற்றில் பாலம் கட்டுவது உங்களுக்கு விருப்பமா?  
 அ) ஆம்                      ஆ) இல்லை
2. மணிநகர் கருமேனியாற்றில் உங்களுக்கு எந்த மாதிரி பாலம் வேண்டும்.  
 அ) தடுப்பணை              ஆ) கண்பாலம்
3. வெள்ளப் பெருக்கு ஏற்படும் போது உங்களுக்கு போக்குவரத்து துண்டிக்கப்படுகிறதா?  
 அ) ஆம்                      ஆ) இல்லை
4. வெள்ளப் பெருக்கு ஏற்படும் போது உங்களுக்கு விவசாயம் பாதிக்கப்படுகிறதா?  
 அ) ஆம்                      ஆ) இல்லை
5. கருமேனியாற்றில் வெள்ளப்பெருக்கு ஏற்படும்போது உங்கள் ஊருக்குள் தண்ணீர் வருகின்றதா?  
 அ) ஆம்                      ஆ) இல்லை
6. உங்கள் போக்குவரத்திற்கு வேறு எதுவும் வழிகள் இருக்கின்றதா?  
 அ) ஆம்                      ஆ) இல்லை
7. உங்கள் தண்ணீர் தேவைக்கு கருமேனியாறு மட்டுமே உள்ளதா?  
 அ) ஆம்                      ஆ) இல்லை
8. தரைப்பாலத்திற்கு முன்பாக ஏதேனும் தடுப்பணைகள் உள்ளதா?  
 அ) ஆம்                      ஆ) இல்லை
9. மழைக்காலங்களில் வெள்ளப்பெருக்கு அதிகமாக செல்கிறதா?  
 அ) ஆம்                      ஆ) இல்லை
10. வெள்ளப்பெருக்கு ஏற்படும் போது வாகனங்களில் உதிரி பாகங்கள் பழுதடைகிறதா?  
 அ) ஆம்                      ஆ) இல்லை
11. கருமேனியாற்றால் ஊருக்கு வரும் வெள்ளத்தால் பின்சாரம் பாதிக்கப்படுகிறதா?  
 அ) ஆம்                      ஆ) இல்லை
12. கருமேனியாற்றால் வரும் வெள்ளம் எத்தகைய உயரம் செல்கிறது  
 அ) 2-3 அடி                      ஆ) 3-4 அடி                      இ) 4 அடிக்கு மேல்
13. கருமேனியாற்றின் வெள்ளப்பெருக்கால் மக்களுக்கு உயிரழப்பு ஏற்படுகிறதா?  
 அ) ஆம்                      ஆ) இல்லை
14. கருமேனியாற்றை எவ்வாறு பராமரிக்க வேண்டும் என்று நினைக்கிறீர்கள்?

Fig.1 Questionnaire

The questionnaire survey consists of series of question regarding the construction of culvert, check dam, water level of Karumeniyar River in Maninagar causeway and the consequence of flood in agriculture and transportation.

## 2.3 Survey Analysis

The questions asked and the answers received from the respondents are given in table I.

**3 Table II Opinion Of People In Percentage**

S.No	Questions	Opinion In %	
		Positive	Negative
1.	Do you want to construct a bridge/ Culvert on the Karumeniyar river?	100	0
2.	Does the flood affect the transportation?	98	02
3.	Does the flood affect the agricultural practice?	74	26
4.	Is there is any alternate route to go to your village?	10	90
5.	For fresh water, is Karumeniyar river is the source?	86	14
6.	Is there any check dam, in the river?	10	90
7.	Is the flow of water is high during the rainy seasons?	94	06
8.	At the time of flood, are the spare parts of your vehicle getting affected?	98	02
9.	Do you get proper Electricity Supply during flood?	76	24
10.	Is there any account of people dying in Karumeniyar river flood?	84	16

**4 Storage of water**

The river water must be stored for future usage. The water flows in the stream during monsoon and the water remains only during rainy season. The runoff drains into sea without proper storage .So to use the water to its optimum percentage, construction of check dam is essential. But people’s choice is to build culvert.

Check Dam would facilitate the storage of water, which would in turn increase the water level. A cascade of tanks present in this stream would also facilitate the storage. Addition to the tanks, check dams would also increase the storage and would maintain the level of water in the river.

**5 Transportation through causeway**

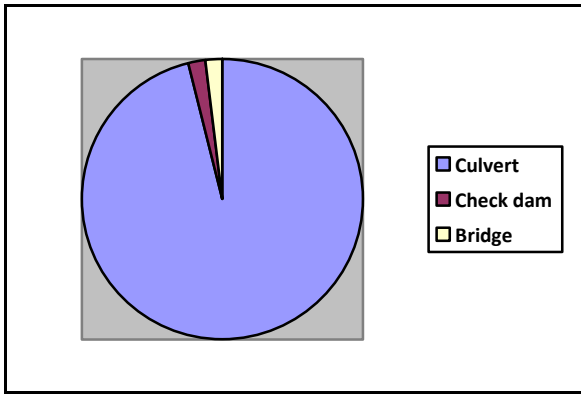
Maninagar causeway is an important route to the city nearby from the villages round the river basin. During flood, the causeway is heavily flooded and transportation is blocked. Some villages are blocked completely and they have no way out. This affects the usual routine life of common people.

The traffic density of the causeway is found s 178 PCU per hr. This shows the importance of the causeway. The fig.2 shows the flooded causeway.



**Fig. 2 Flooded Maninagar causeway**

To facilitate transportation over flooded causeway, culvert or bridge could be constructed. People chose culvert over check dam and causeway for the reason of facilitating transportation.



**Fig.3 Opinion on Construction of hydraulic structure**

The fig.3 shows the opinion of people to construct Culvert over Check dam. From the survey, it is analysed that 96 % of people have chose culvert and 2% chose check dm and 2% chose bridge.

### 6 Hydraulic Particulars

As Karumeniyar is Ephemeral River, the flow data is not properly maintained. So, the suggestions from the users are collected and used as data for further hydraulic analysis. Majority of users said that the depth of water would increase in the range of 5 to 6 ft in times of flood.

The velocity of water flow is high and the turbulence is high during flood. 84% of People accepted the fact that the wild stream is dangerous and people have been victim to its flood.

### 7 Maintenance of River Bed

The river bed is not maintained Properly.The River is full of Babul tree and there is no clear surface. The embankment of the river is not in proper condition. Bunds are present in middle of the stream to a height of 2 m.

The people have suggested the clearance of babul trees and for the clearing of bunds in the middle of the stream. As the Madurai court has ordered for the removal of babul trees, the administrators are in the removal work of babul trees.

### 3.0 Conclusions

The stream is extremely useful to the farmers and the residents nearby. The questionnaire survey has been used as a tool to gather information about the stream. The important data gathered through the survey are as given below

- People chose culvert over check dam
- Transportation is affected during flood times and construction of culvert would be suffice
- The depth of river passing over existing causeway would be over 4 feet.
- The river, which the only source in the area should be maintained and conserved.

### 4.0 References

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