

# Use of Coconut Shell As A Capping Material In Rapid Sand Filter

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**Abstract-** Downpour water is a significant source to take care of the ground water spring, which is done straightforwardly or by gathering and recharging. Purging is constantly a need from the old period of human progress. The significance of refinement is for reducing the danger of toxins from the reviving run off downpour water and for evading the different ailments. So the central and state government are requiring exertion to give satisfactory and safe drinking water to society by constructing water treatment plants in India. In India quick sand channel are generally used to expelled the suspended and colloidal particles from water in filtration process for the quicker rate by setting out the distinctive sand beds in constructing it. The utilization of sand channel as a strategy consider not costly and usually use to remove contaminants from water and waste water treatment in enterprises. The filtration procedure experiences debasement at initial and last stage which influence the underlying nature of filtrate after discharging. There are some loss to deal with introductory filtrate quality issue as filtrate to squander, defer start, slow beginning and channel melding by coagulant during discharging. Additionally, the utilization of coconut shells in filtration is go about as a double media in the filtration. Designing 'Dual media channel topped with squashed coconut shells' ends up being progressively effective, conservative and strong. It improves the presentation of channel as far as high filtration rate, increment channel run, significantly reduce backwashing prerequisites, high turbidity evacuation and subsequently making it progressively pertinent for drinking reason and for further employments.

## I. INTRODUCTION

The Rapid sand channel is an adjustment of conventional moderate sand channel, which has been used for network water treatment for just about 200 years. The fast sand channel is littler in size and received for discontinuous use, making it reasonable for family units. The channel container can be made of concrete or plastic and is loaded up with layers of uniquely chose and prepared sand and rock. Quick sand filtration is a basic unit process in the water decontamination process. It captures and evacuates coagulated

and flocculated material and other suspended issue not removed during the previous treatment forms. The pores in the channel bed bit by bit become obstructed and the media logically gathers store through the constant use and life of the channel. During normal activities cleaning is started by over the top head misfortune, weakening in filtrate quality or when the foreordained time for a

## II. RAPID SAND FILTER USING COCONUT SHELL AS A CAPPING MEDIA

Presenting and channel topping for turbidity evacuation for consumable water medicines plant of Mosul/Iraq - This paper proposes sand channel topping innovation in which the top part of a rapids and channel is supplanted with anthracite coal so as to accomplish the improved exhibition if introduced in water treatment plants. Improved fast sand channel for execution upgrade – This paper focuses on a less expensive and effectively accessible topping material for better activity of quick sand filtration. So in these work PVC granules are utilized to check its appropriateness

## III. OBJECTIVE OF INVESTIGATION

- To Design and develop pilot scale model of fast sand channel.
- To discover different test after effect of waste water before filtration.
- To discover different test after effect of waste water after filtration.
- Comparative investigation of after effects of when filtration.

## IV. PROBLEM STATEMENT

The testing offices, test systems and exploratory projects are incorporated. Structure of exploratory set up is done dependent on the fundamental plan of fast sand filtration. According to the writing audit the structure for set-up is

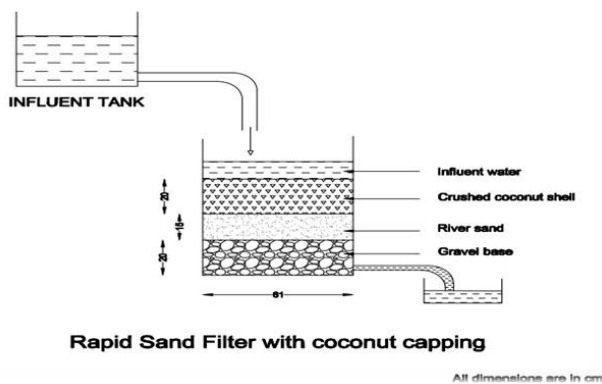
finished. The fig no. 1.2.shows the test arrangement of quick sand channel with coconut topping

The accompanying method was received for leading the test.

1. Channel layer comprising of rock bed of 20cm thickness, sand layer of 15cm thickness and squashed coconut shell layer of 20cm thickness was spread in the channel unit.
2. The water got from the lake was put away in an enormous compartment for a detainment time of around 3-4 hours. The supernatant water after sedimentation process was gone through fast sand channel.



Fig. Arrangement of filler media



Rapid Sand Filter with coconut capping

All dimensions are in cm



Fig .Coconut shell

## V. EXPERIMENTAL IMPLEMENTATION AND RESULTS

Sr No.	Name of the test	Before filtration	After filtration
1	PH	9.7	7.5
2	TUEBUDITY	2.0 NTU	0.33 NTU
3	TDS	341 PPM	177 PPM
4	BOD	12.5PPM	3.2 PPM
5	COD	-	-

### ANALYSIS

Test no. 1:

1. To discover pH estimation of refined water, faucet water, drinking water when filtration
2. Take 100 ml refined, tap and savoring water three distinct containers. Put cathode in container to set temperature of room. Note down the pH esteem appeared on meter.
3. Do this method when filtration through fast sand channel.

Test no. 2:

1. To discover turbidity of water when filtration Switch on Nephelometric turbidity meter and hang tight for few moments till it worm up.
2. Set the instrument on 100 on the scale with a 40NTU suspension Shake altogether the example and save it for quite a while to dispose of the air bubble Take test in a cylinder put it in test chamber and discover the incentive on scale

Test no. 3:

1. To locate the Dissolved Solids, Suspended Solids and Total Solids of water when filtration

### 3.1 Total Solid:

1. Weight the given porcelain dish spotless and dry and record its weight (w1)gm.
2. Take 100ml of test in porcelain dish Spot the dish in a broiler Vanish to dryness in a stove at 103c to 105c for about 24hrs Cool the dish and weight it (w2) gm.

### 3.2 Suspended Solid:

1. Take a what man's channel paper and record its weight (w3) gm
2. Filter 100ml example of water utilizing before channel paper
3. Place channel paper inside buildup in a stove and dissipate it to dryness
4. Read the heaviness of channel paper and buildup (w4) gm

### 3.4 Total Dissolved Solid:

Absolute Dissolved solid,(mg/lit)= (Conc. Of TS) - (Conc. Of SS)

Test no.4:

To discover BOD and COD of water when filtration.

### 4.1 DO (Dissolved Oxygen):

1. Fill the given water test in glass stoppered 300ml of BOD water Include 2ml Magnesium Sulfate (MnSo4) Include 2ml soluble base corrosive arrangement it will frame ppt in broke down O2 Shake well Include 2ml Concentrated (H2SO4 ) to broke up ppt dark colored shading structure
2. Take 50ml example in cone shaped cup
3. Treated with sodium thiosulphate
4. Include starch marker and treated up to blue shading appearance record the perusing

### 4.2 BOD (Biological Oxygen Demand):

1. Save the 0 set in BOD hatchery for 5 days 20c
2. Take BOD bottle containing test Rehash the above strategy
3. Note down the underlying and last burate perusing

4. The distinction in beginning and last perusing in ml legitimately gives the sum oxygen request.

## VI. CONCLUSIONS

Ends introduced here depend on the outcomes and perceptions made when different examinations were done on the full scale plant and in situ synthetic strategy for channel restoration.

These ends relate to the particular goals of this examination.

- after the filtration procedure did the channel water
- the absolutely activity of the channel media the water change our quality.
- the outcome are appeared after completely process sloppy shading water change to unadulterated water, this water utilized for drinking reason.

We Projected suggests the utilization of RSF with coconut shells as topping media innovation to be embraced.

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