

GUIDELINES FOR INLINE RAIN WATER HARVESTING SYSTEM IN DELHI

Delhi Jal Board has formulated a guidelines for INLINE Rain Water Harvesting System in Delhi. The INLINE RWH System comprises a pipe filter installed horizontally in rain water pipe which is then connected to non-functional and defunct bore wells. The filter media of INLINE RWH System has Geotextile membrane as cover at the mouth of the rainwater pipe. This is to be followed by wireless jali at the entry point of the different media, which includes coarse sand (1.5 to 2.0 mm), gravel/stone aggregate (6 to 12 mm), gravel/stone aggregate (12 to 20 mm) in that sequence starting from mouth of the filter. The total length of the filter media is around 90 cm.

1. Wire-mesh jali should be fixed on the roof at the mouth of rain water pipe to avoid entry of any foreign material i.e. polyethene's, rubbish, leaf, sashes and debris etc.
2. This system is applicable for abandoned/defunct existing bore wells.
3. Size of the INLINE filter should be such that there is no flooding on the roof top.
4. Applicant shall have to submit the affidavit that the defunct/abandoned bore well already exists at site, also the applicant shall no claim with regard to registration/regularization of said bore wells for its legality.
5. The required retention capacity shall be workout as per the above existing guidelines / formula as under;
6. Filter media vassal should be of required shape and size and fixed in horizontal location and rain water should be of treated quality as per standards, quantity and requirement of retention capacity.
7. Non-functional and defunct bore wells can be used as recharge well , the outlet pipe of INLINE RWH System can be connected directly in to the abandoned or defunct bore well as per guidelines of Hon'ble NGT after developing the same by air compressor. If total water available for recharge is more than the volume of bore well plus infiltration capacity (3lps), a recharge pit with filter material may be constructed around defunct bore well. The assessment of recharge water may be made by assuming 22mm a maximum per hour rainfall.
8. INLINE filter should be regularly cleaned /back washed and also check the existing recharge well is properly recharging.

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9. The bypass arrangement should be provided to bypass the first rainfall to avoid contamination by providing a sluice valve before inline filter and provide steel wire mesh jail as per drawing.
10. The display board placed on INLINE RWH System by providing following information;
 - a) Total plot area (In sqm)
 - b) Roof top area (In sqm)
 - c) Required retention capacity (in Cubic meter)
 - d) Recharge capacity of existing recharge well (in Cubic meter)
 - e) Annual Rain Water Recharge (in Cubic meter)
11. After installation of the INLINE System the inspection of the site shall be made by DJB.
12. The installing firm of INLINE System shall make the arrangements for checking of the flow rate after installation of INLINE System.
13. In this case the maximum discharge per hour should be able to pass through filters/ inline system i.e., maximum discharge passing through INLINE system should be equal to the maximum discharge of rain fall as calculated above to avoid water logging on roof top.
14. There may be a possibility that the existing abandoned bore well may not be able to take the maximum discharge, as per the formula above. In such cases storage tanks need to be constructed around the abandoned bore well, so that the discharge can be taken, without overflow.
15. As a thumb rule, the intake capacity of bore well is considered as 70% of the pumping capacity of the bore well i.e. yield of the bore well, maximum to 3 lps (three ltr. per second) or 10.8 cubic mtr. whichever is less.
16. The size of the storage tank will be equal to above recharge capacity of the bore well plus effective size of RWH recharge pit as per drawing.
17. To avoid any contamination in to the ground water through bore well, a geotextile membrane shall be covered in two or more folds on the replaced slotted pipe in the bore well and filter media as per drawing.
18. To assess the intake capacity of the existing abandoned bore well. It will be cleaned by compressor before installation of INLINE RWH System.
19. Filter media shall be transparent to its accessibility.
20. The excess roof top rain water from small houses/locality where there is no defunct bore well, can be diverted to nearest park either for flooding or recharge

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in through along the boundary or park or directly recharge into horticulture tube well.

21. As per directions of Hon'ble NGT in O.A. No.526/2019, "Depth of recharge bore well should be at least 5m above the static Water Table of the area. However, it should not be made compulsory considering the geological aspects and static ground water level of the area.
22. The functionality of the recharge well shall be assessed by recharging the bore with the quantity of flow for one hour as per retention capacity.

Also the following guidelines, suggested by CGWB shall be followed.

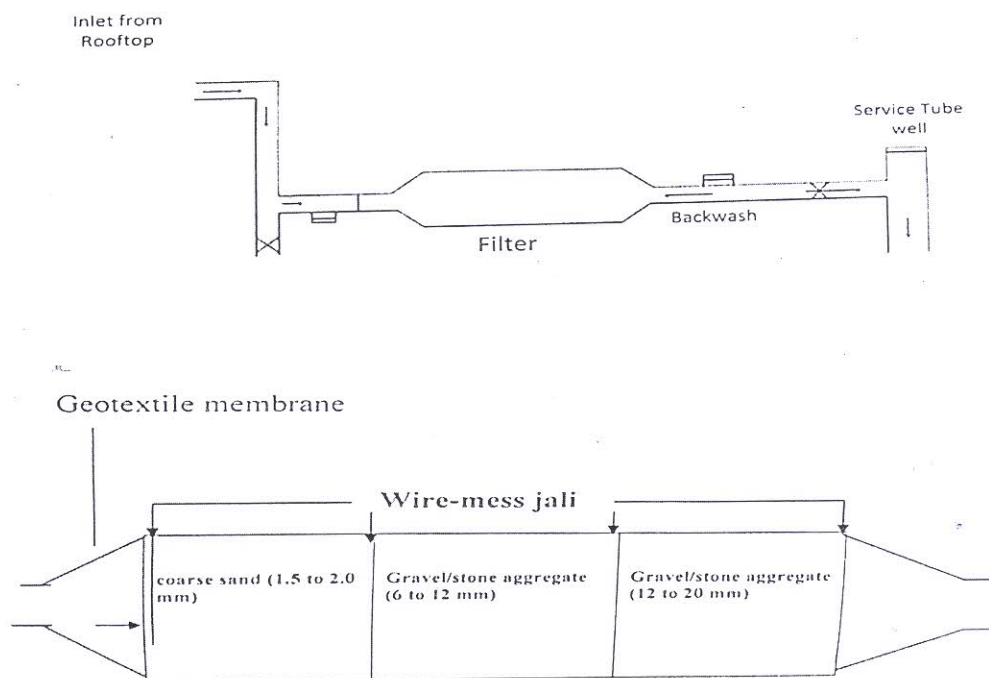
1. The wire-mesh jali to be fixed on the roof at the mouth of the rain water pipe.
2. Proper maintenance of filter media is mandatory.
3. INLINE RWH System to be installed only in areas where defunct /abandoned bore wells exit. In case of rest of the buildings having roof-area of equal to or more than the roof top area specified under building byelaws, conventional methods of roof top rain water harvesting structures to be installed following Hon'ble NGT and Government guidelines issued from time to time.
4. The roof top surface used as catchment for rain water runoff should be free from any possible source of contamination.
5. Water from first rainfall to be bypassed by installing suitable arrangements.
6. The filtration capacity of the inline filter to be more than rate of rainfall runoff generated. Similarly the recharge capacity of bore well to be more than or equal to filtration capacity. In case of larger runoff/filtration, the same to be diverted to storage tanks.
7. The penalty clause of non-implementation of rain water harvesting system as mentioned under 'Benefits of installing rain water harvesting structure' to be placed under suitable heading.
8. Various clauses on rainwater harvesting mentioned in CGWA guidelines issued on 24/25.09.2020 should be strictly adhered to.
9. Industries which are likely to pollute ground water (chemical, pharmaceutical, dyes, pigments, paints, textiles, tannery, pesticides/insecticides, fertilizers, slaughter house, explosives etc.) shall store the harvested rain water in surface storage tanks for use in the industry. Similarly, hospitals and other premises prone to contaminated surfaces shall harvest rain water in surface storage tanks.

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Roof Top Rain Water Harvesting through INLINE System

(Plan and cross section of INLINE System and filter)

Schematic diagram of filter used in RWH system:-



Note:- Size/ dia of vessel for INLINE filter of RWH system will be of required filtration per hour.

FILTER MEDIA OF INLINE SYSTEM:-

| S.No. | Material of Filter media | Thickness of layer |
|-------|--|---------------------|
| 1. | Top Layer of Geo-textile Membrane | As per Manufacturer |
| 2. | Coarse sand (1.5 to 2.0 mm) | 30 cm |
| 3. | Gravel / Stone aggregate (6 to 12 mm) | 30 cm |
| 4. | Gravel / Stone aggregate (12 to 20 mm) | 30 cm |
| | Wire-mess Jalli in upstream and downstream | As per manufacturer |

From
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