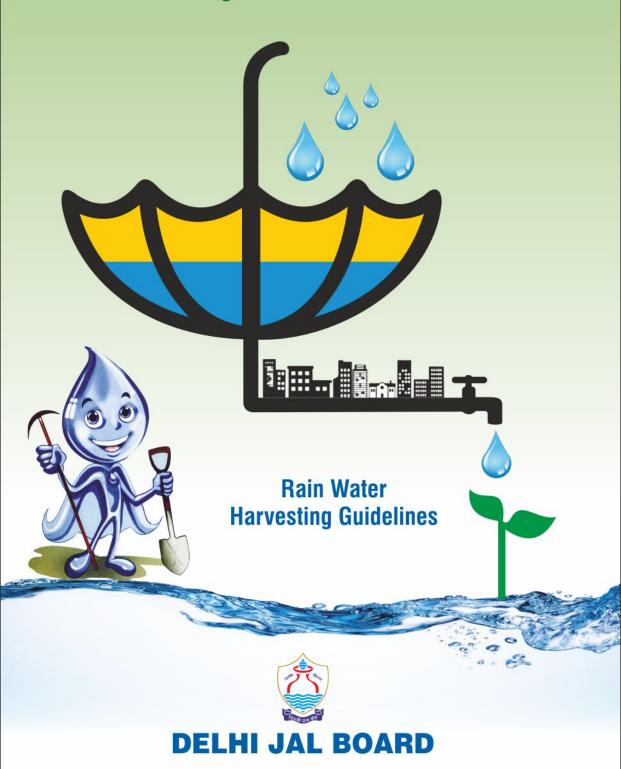
Easy Rain Water Harvesting Easy Tomorrow





हिन्दुस्तान 2 5 APR 2016

जुलाई के पीक ऑवर में दिल्ली जल संकट से दो चार हो सकती है , इस बाघ से दिल्ली को करीब 300 क्यूसेक पानी मिलता है

दैनिक भारकर आज से शुरू कर रहा है जल सत्याग्रह, क्योंकि..

भीषण गर्मी में टिहरी का पानी घटने से दिल्ली में बढ़ सकता है संकट

नई दिली | प्रमुख संवादय

ण के बाद अब उत्तराखंड है। यह सकट हटहरा साथ में पान का सभी की मजह से हो सकता है और जुलाई के पीक ऑकर में दिल्ली इससे दो पार हो सकती है। इस सांघ से हिल्ली को करीब 300 वसूसेक श दिल्ला का सरोब 350 जुरूर पानी मिलता है। इसका रोधिन कर दिल्ली घर में पानी की अधूर्ति की जाती है। टिहरों में जल स्तर में आई कभी की कजह से यह हास्तर बनते नजर आ रहे हैं। फार फुरू नहर का खड़ना अरि इसके बाद स्थानित के ननदीक फेक्टरों से निकालने बाले गंद पानी को नहर में उतलब रहा है। इस बना से हालता ऐसे हुए कि दिश्ली को प्रमुख प्लंड्डर से ही अपूर्ति के स्थान पानी हैं। आज तक दिश्ली ने ऐसे निकाल का हाला नहीं किया था। इसके लिए रहानित का सहारा लिए यह था। सामान्य निर्देश में शिल्ली में इसके लिए एसिन का मान इसके लिए एसिन का महारा स्थित यह था। ग्रामान्य स्टिमें में दिल्ली में करीब 200 से 950 एमचीडी चाने की आवस्त्रज्ञ होती है। यह मान गर्मियों के पीक और में नाम 1100 से 1200 एमचीडी



दोनिक भारकर 2 5 APR 2016 के विवास नहीं है। स्थितिको

हेदरपुर 1 व 2 नांगलोई

सोनिया विहास

हिल्ली के कई इलाकों में श्रीमण का धानी का संकट है। इन इसाकों में टैंकर आयुर्ति भेजने की जगह पर जल बोर्ड निर्माण गतिविधिकों के लिए खनी बोर्ड निर्माण गतिविविद्यों के लिए बनी उपलब्ध करा रहा है। यह मामला शत-ही में तुमाशकाबाद व आस्त्रवास के इतावार्ष में सामने आया है। खराब प्रधान की कराइ से अस्त्र जनता की टेक्टर माजिया की उराला में लालव यह रहा है। नेता प्रशिपस दिलीद गुन्न में स अरोप बतावार है। उनतीन कहा कि देशकाद व अस्त्रवास है। जानी में का

जल बोर्ड निर्माण के लिए दे

रहा है पानी : भाजपा

2 6 APR 2016 दैनिक जागरण

अभियान बने जल संरक्षण

अभियान बने जल संस्थिण

के का प्रशासिक था, संसद के बनद सब के दूसरे हिस्से की पुरुक्त का तमि के काम में हुई निराम प्रशासिक था, संसद के बनद सब के दूसरे हिस्से की पुरुक्त का तमि के काम में हुई निराम प्रशासिक हुई के स्वार्थ में स्वार्थ के स्वर्ध के स्वर्ध के स्वार्थ के स्वर्ध के स्वर के स्वर्ध के स्वर के स्वर्ध के स्

PIONEER 2 MAY 2016

THE WATER SAGA



हम पानी बना नहीं सकते, सिर्फ बचा सकते हैं...इसलिए एक ही रास्ता है- पानी चाहिए तो उसे अभी से बचाइए जलसंकट की बोलती तस्वीरें



मराठवाड़ा के ही कर्त TRIBUNE

के गांचों में तो महिलाएं नदी में बालू खोदकर,

मीलो पैटल चलकर आधा घडा पानी जुटा पा रहे हैं। सीराष्ट्र के राजकोट, जाननगर और अमरेली जिलों के गांगों में 7 से 18 दिन के अंद्रशल पर 2 6 APR 2016

और घर में पानी बचाने के 9 तरीके

रूप है। जन्म भाग एक रात रंग जात पुरान की देन से भेजना पड़ रात है। हम येते नहीं तो कल हमारे रातर को भी यही दिन देखना होगा। व्यस्त वॉय इस्टिट्यूट की व्यस प्रेसिडेंट सेंट्रा पोस्टल कहती हैं-प्रानी को पानी की तरह बहान देशभर से जुटाई गई भयावह जलसंकट की तस्वीरें, तथ्य दराभर स जुट्छ फ भगवन जरासकट का तस्वार, तथ और अंकड़े। सक्ष में जल विशेषज्ञों से बात कर राजमर्र की जिंदगी में पानी बच्छने के आसान तरीके। पहिस्मे (पेज 2 पर

Tribuno -5-Yamuna level drops, water crisis in many districts

CHANDIGABI, APBEL 25
Drop in water level of Yamunahas led to searcity of drinking water in several districts,
including Yamunanagar, Hissart, Brisvani, Mahindergarh
and Rewari. Those districts
are supplied water through
the Western Jamuna Canal
and other water channels
emanating out of Yamuna.
The daily gauge ship of the

The daily gauge slip of the

which, 761 cusecs is meant for the national pool, leaving 887 cusecs to distributed on

887 cusees to distributed on 13rd and 23rd basis between Uttar Pradesh (290 cusees) and Haryana (298 cusees) respectively. Due to soaring heat, the average discharge of water at Hathnikund Barrage on the Yamuna this month stood at 22r8 cusees against 571 cusees recorded in 2014 and 5 292 cusees in Anril 2015.

The daily gauge slip of the 6,233 cuses in April 2015.
The average discharge of er touched a record low of

Year	Monthly/ Cusecs		
2016	2,278	1,064	
2015	6.323	5.954	

2014 5,716 age flow of 5,954 cusecs in 2015, 6,280 cusecs in 2014 and 5,055 cusecs in 2013.

The Supreme Court directed the state to give De ordered Haryana to leave 352 cusees in the Yamuna for to support aquatic life and other ecological reasons.

Angad Bishnoi, superin-ending engineer (SE), Pub-Angad Bisses, tending engineer (SE), Public Health Engineering (PHE) Department, where 62 out of 235 waterworks get their water supply from the control of t Western Jamuna Canal (WJC), said the situation

supply are followed by 16 days of closure," Bishnoi added. In Bhhwari district, villagers have been sitting on dharms for the past 13 days in protest against acude water shortage in Siswari Mandi.

"Ns many as 30 villages of the district are facing serious water crisis. The situation might turn even worse than in Latur district of Maharastra," alleged Bahwan Bagri, a protestor.

Millenium Post 3 0 MAY 2016

दिल्ली में बढ़ सकता है पेयजल संकट टिहरी बांच से पानी आपूर्ति घटी तो यमुना पार सहित कई इलाकों में लोग बूंद-बूंद पानी को तरस जाएंगे

चज्ज ब्यूज, नइ ।परपा: जजनामा क कर इलाकों में अभी से पेयजल किल्लत शुरू हो गई है। उत्तरखंड के ट्रिहरी बांध से जिस तरह पास नदी का जल स्तर गिर रहा है। अप्रैल गई है। उत्तराखंड के दिहरी बांध से जिस तरह पानी का स्तर घटने की सूचनाएं आ रही है यह दिल्ली के लिए अच्छे संकेत नहीं है। इसलिए

दिल्ली में पेयजल संकट बढ़ सकता है। टिहरी बांध से पानी आपूर्ति घटी तो दिल्ली के यमुना पार सहित कई इलाकों में लोग बूंद बूंद पानी को तरस जाएंगे। ऐसे में भूजल का दोहन भी बढ़ते की आशंका है। दिल्ली पानी के लिए दूसरे

PIONEER

राज्य ब्यूरो, नई दिल्ली: राजधानी के कई संवंत्र से दक्षिणी दिल्ली में भा पानी की आपूर्ति महीने में ही करीब 16.50 मीटर तक जल स्तर गिर चुका है। मई में जल स्तर और गिरने की आशंका है। इससे दिल्ली जल बोर्ड भी चिंतित

है। क्योंकि टिहरी बांध से पानी आपूर्ति प्रभावित होने पर सोनिया विहार व भागीरथी जल शोधन संयंत्रों से पानी आपूर्ति कम हो जाएगी। इससे पूर्वी दिल्ली और दक्षिणी दिल्ली में पानी के लिए

Rainwater harvesting yet to catch up despite dip in groundwater level

NEW DELHI: The national Capital is witnessing sharp decline in the groundwater level, but residents are reluctant to complying with rainwa-ter harvesting bye-laws.

ANUP VERMA



ally and the number of rainy days are as low as 20-30, yet the water-saving technique is a workable model to gather water from precipitation.

Deputy Chairman Stand-ing Committee, North MCD, Rajesh Bhatiya, who is likely to move a proposal for strict

TOURDER 2 MAY 2016 from the groundwater table dips in Southwest to move a proposal for strict implementation of rainwater table dips in Southwest was being used extensively in the Delhi for both irrigation and raw water requirement. The level of groundwater was dat 51.76 meters down from earth's surface.

In South district, the level of groundwater was found at 51.76 meters down from earth's surface; Land usage and rainfall both contribute in fluctuating groundwater, says CGWB experts

SAPNA SINGH M NEW DELHI

Situation of groundwater
Slevel in South and Southwest
districts of Delbit is critical as
water level has depleted, however, hydrogeologits in the
Central Ground Water Board
(CGWB) said the situation is
not alarming because condition
of groundwater in other places
is normal.

PNA SINGH IN NEW DELHI

Itituation of groundwater
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ntral Ground Water Board
(SWB) said the situation is;
relarming because condition
groundwater in other places
tormal.

It is broaver CGWB monit.

GROUNDWATER REPO	
State: Delhi	
District: East	
1 Chilla Regulator	8.4 (mbgl)
2. MayurVihar	8.08
3.Nagali Rajapur	3.46
4. Nizamuddin Bridge -1	4.39
5.Nizamuddin Bridge -2	3.76
New Dethi	
India Gate	8.13
Lodhi Garden	8.31
Mahabir Vansth	27.19
Nehru Park	21.9
OBOTES OF WAY	

CGWB.

While stating about the deeper and shallower water levels in the National Capital Territory (NCT), the hydrogeologist in the CGWB said the

normal in other parts



meters below ground level (mbgl) and nearly 30 per ceni wells showed depth to water level in the range of 20 to 46 meters below ground level. In New Delhi district 77

In New Delhi district 72 per cent of wells showed depth to water level in range of 8 tr. 12.36 mbgl while only 30 per cent wells showed depth to water level from ground abow 20 per cent.

Notably in North Delhi ten per cent of well showed depth to water level is



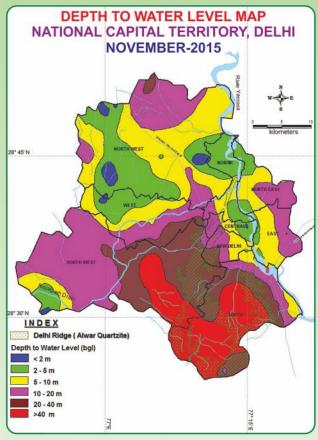
Easy Rain Water Harvesting Easy Tomorrow

WHY?

RAIN WATER HARVESTING THE NEED OF THE HOUR

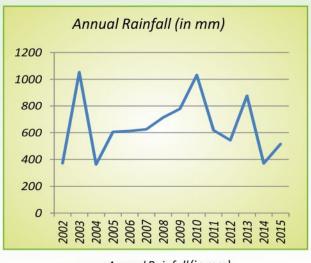
Rainwater Harvesting is critical for Delhi's Water Security. By adding to Delhi's own limited water resources it will

- Help cater to the potable water needs of the ever growing population
- Stop the rapid fall in Ground Water Level
- Increase availability of Portable Water
- Help maintain Green Cover
- Help revive Water Bodies



Annual Rainfall of Delhi NCT

Year	Annual Rainfall (in mm)
2002	372.8
2003	1052.8
2004	364
2005	607
2006	613.1
2007	626.7
2008	713.9
2009	779
2010	1031.5
2011	618.5
2012	544.3
2013	875.8
2014	370.8
2015	515.1



-Annual Rainfall(in mm)

Source: India Meteorological Department

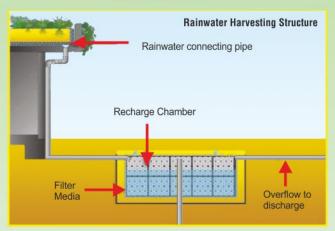


What is Rainwater Harvesting (RWH)?

Rainwater harvesting is

- Collection and storage of rainwater
- That runs off from catchment area likes roofs, roads, pavements, etc.
- This rainwater can recharge the ground water.

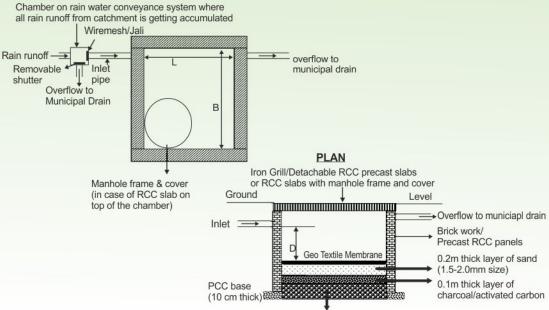
HOW?



Rainwater Harvesting Structure in a building

Two Type of RWH Recharge Chambers

Fig. 1 Rectangular Recharge Chamber for RWH

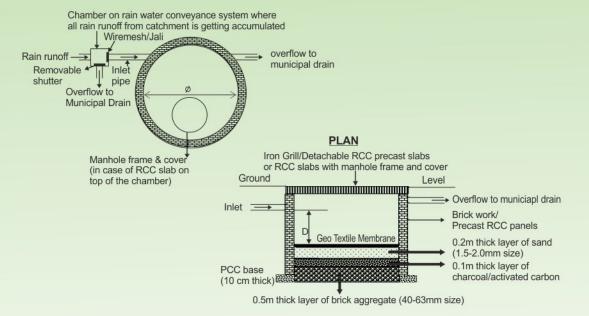




AREA REQUIREMENT

S. No	Plot Area (sq.m)	Maximum Roof-top area as per DDA MPD-2021	Required Capacity (cum)	Suggestive dimensions of Recharge Chambers/Trenches {length (L) X breadth (B) X depth (D) in meters}
1	100	90	1.8	1.2X 1.2 X 1.25
2	200	150	3	1.2 X 1.2 X 2.1
3	300	225	4.5	1.5 X 1.5 X 2.0
4	400	300	6	1.8 X 1.8 X 1.85
5	500	375	7.5	1.8 X 1.8 X 2.30

Fig. 2: Circular Recharge Chamber for RWH



AREA REQUIREMENT

S. No	Plot Area (sq.m)	Maximum Roof-top area as per DDA MPD-2021	Required Capacity (cum)	Suggestive Diameter (Ø) (internal) of Circular Chambers (mtrs)	Depth (D) of Circular Chambers (mtrs)
1	100	90	1.8	1.2m (4 ft)	1.6
2	200	150	3	1.5m (5 ft)	1.7
3	300	225	4.5	1.5m (5 ft)	2.5
4	400	300	6	2 structures of size mentioned in S. No. 2	
5	500	375	7.5	1 structure of size mentioned in S. No. 2 & 1 structure of size mentioned in S. No. 3 (i.e. total 2 structures)	



Remember: The above calculations give the 'effective' capacity i.e. the space inside the pit that will actually hold water. So the depth X width X length of the pit should be equal to the figures 1 & 2. The depths should be calculated from the inlet pipe down to the top of the filter media.



How to make and maintain RWH system?

Your Rainwater Harvesting systems should be designed in such a way that:

- even if it rains with high intensity continuously for 1 hour, your system should be able to store and recharge the runoff that flows into it.
- It is safe, easy to make and easy to maintain.
- It complies with the DJB guidelines so that you are able to avail of the RWH rebate.

 Based on this, some recommendations for Implementation, Operation and Maintenance of RWH systems are:
- Calculate the water holding capacity of the pit (in cubic metres or kilolitres) that you will build by using this simple formula:

Rooftop area* (in sq.m.) X 0.8** (runoff coefficient for roof top/concrete area) X 0.025*** (average maximum rain fall intensity in meters per hour)

= roof top area x 0.02

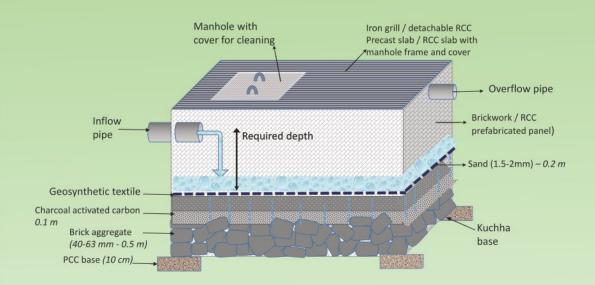
^{*} Rooftop Area – This is the total area of the rooftop of the building for which RWH is being made.

^{**} Approx 20% of the rainwater that falls on a rooftop evaporates or is absorbed by the concrete. The balance 80% flows as runoff. That is why 0.8 is taken as the 'Coefficient of Recharge for rooftops

^{*** 0.025} metre or 25 millimeters is the average rainfall that falls in an hour over 1 metre square area in Delhi.



Rectangular Recharge Chamber for RWH



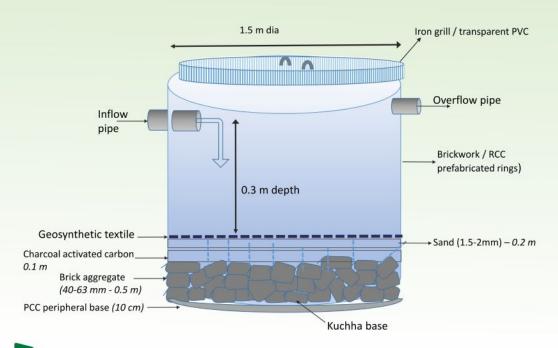
- Instead of filter media as mentioned in the drawings above, residents may also use multiple layers of jute mats in recharge chambers / modular filters in rain water pipes from rooftops. The objective is simply to arrest the silt in the rain runoff generated from the catchments before its percolation into the natural soil strata.
- It has to be ensured that no waste water enters Recharge Structures.
- Depths of recharge structures should be 1.0m - 4.0m.
- Recharge systems should be located at a safe distance away from the buildings/foundations.
- ✓ Run-off coefficient for bituminous roads/paved areas and open/green areas without steep slopes should be 0.6 and 0.1 respectively.
- Only non-polluted rain water from the catchment areas should be directed to recharge structures.





- All catchment areas should be cleaned before the onset of the monsoon to avoid any contamination.
- An overflow pipe in recharge structures should be provided leading out/falling into municipal storm water drains / open areas. Under no circumstances should they be connected to the sewer.
- Recharge structures with requisite structural soundness must be implemented and adhered to all the construction and structural norms. The structure should not pose any danger to people and building. The design should be based on the soil type and land use. Thickness of RCC cover slabs and reinforcement shall be dependent on structural loads.
- Filter media consisting of brick aggregates (40/50/63 mm size)/charcoal and activated carbon/coarse sand (1.5-2.0mm) /geo textile membrane ought to be provided. For membrane even thick blankets can be used.
- Recharge structures are to be cleaned after every 2 rainfalls during the rainy season.
- Post monsoon cleaning and maintenance of recharge chambers shall be carried out.

Circular Recharge Chamber for RWH





- Roof should not be painted since most paints contain toxic substances and may peel off.
- Chemicals, rusting iron, manure or detergent should not be stored on the roof.
- Terraces should not be used for toilets either by human beings or by pets.
- Polluted water should not be used to recharge ground water.
- Rain water should not be harvested where post monsoon ground water levels are less than 5m.

Is Rainwater Harvesting Necessary in Delhi?

- 1. Regulations from Ministry of Urban Development, GOI:
 - By law it is mandatory for all NEW buildings or plots of 100sqm and above or discharge of 10,000 litres and above per day
- 2. Regulations from Delhi Jal Board
- a. Water permission to be granted to new house, only when a certificate given by the concerned Zonal Engineer, DJB, that applicant has provided the requisite systems in the building plans sanctioned by the MCD/DDA/any other land developing authority



- b. Bulk water connection is given to an applicant only when he has a certificate of installation of functional rainwater harvesting structure in his building by Executive Engineer / Superintending Engineer of the area.
- c. All plot / property of size 100sqm and above can avail the benefit
- d. Intimation needs to be given to the nearest ZRO
- e. Failing to install RWH structure will invite **penalty** of 1.5 times the water bill for all property 500 sq. mtrs and above.
- RWH through artificial ground water recharge structures is not recommended where post monsoon ground water levels are shallower than 5m. Penalties as per the Delhi Water & Sewer (Tariff & Metering) Regulations, 2012 will not be levied on DJB consumers for non-provision of RWH system in such areas. However, in such areas rain water storage for its use in non-potable purposes after required treatment may be carried out as a voluntary option.

Such areas are **Sidharth Extension**, **Okhla Phase 3**, **Jahangirpuri** and **Civil Lines**. Areas like **East Delhi colonies along Yamuna** exempted from RWH. The above list of places are only illustrative and not exhaustive.

3. BENEFITS OF INSTALLING RWH STRUCTURE:

- Rebate of 10% of water bill for all plot/properties above 100 sq.m for installing functional RWH structure.
- ii. Each individual member from that society will be entitled to the 10% rebate if a society installs functional RWH structure as per the guidelines issued.



Use the water when its falls

Guidelines on Rain Water Harvesting are available at DJB

Website: www.delhijalboard.nic.in or Call on our Tollfree No. : 1916.

You may also visit Office of EE (RWH/GWC)

Delhi Jal Board, Room No. 11, Varunalaya Phase-I, Karol Bagh, New Delhi-110005, Tel. No. 011-23558264 May be contacted for technical assistance on Rain Water Harvesting.







For more details: Visit: http://djb.gov.in or call our toll free no. 1916 and also visit our Facebook page.





DELHI JAL BOARD

Rainwater Harvesting Assistance Cell, Varunalaya Phase-I, Karol Bagh, New Delhi - 110005 Ph.: 23558264, 23678380-82 Extn.-227 e-mail: djb@delhijalboard.nic.in website: www.delhijalboard.nic.in