BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

EA NO. 34 OF 2023

IN

ORIGINAL APPLICATION NO. 526 OF 2019

IN THE MATTER OF :

MAHESH CHAND SAXENA ...APPLICANT

VERSUS

CENTRAL POLLUTION CONTROAL BOARD & ANR

...RESPONDENTS

REPLY & OBJECTIONS ON BEHALF OF THE ORIGINAL APPLICANT UPON THE STATUS/COMPLAINACE REPORT FILED BY THE RESPONDNETS.

MOST RESPECTFULLY SHOWETH;

1. The Applicant, when filing OA No. 526/2019, named the Delhi Jal Board, Delhi Development Authority, Municipal Corporation of Delhi, Public Works Department, New Delhi Municipal Council, and Ambedkar Hospital as the respondents. Following the issuance of the Hon'ble Tribunal's directions in OA No. 526/2019, an execution petition was filed to ensure compliance with those orders. In response, the respondents have submitted their respective status reports in accordance with the Hon'ble Tribunal's directives.
2. That it is submitted that the Applicant initially made the Delhi Jal Board (D.J.B), Delhi Development Authority (D.D.A), Municipal Corporation of Delhi (M.C.D), Public Works Department (P.W.D), New Delhi Municipal Council (N.D.M.C), and Dr. Ambedkar Hospital respondents in O.A. No. 526/2019. Subsequently, the

National Green Tribunal (N.G.T) formed a committee which, after conducting an inspection, added the National Highways Authority of India (N.H.A.I) as a respondent. It is further submitted that all the aforementioned departments have failed to comply with the N.G.T's orders dated 27.08.2019. Specifically, they have been recharging the contaminated surface water from the drain into the Rainwater Harvesting (R.W.H) system located near the stream water drain, which has adversely affected the groundwater quality.

3. That it is further submitted that these departments are misleading the Hon'ble Tribunal by providing incorrect information in their compliance reports. Furthermore, P.W.D, N.D.M.C, and N.H.A.I have disregarded the Hon'ble Tribunal's orders by failing to file their respective replies or status reports. The Applicant submits this reply to provide complete information regarding the compliance reports filed by all respondents/ departments.
4. That it is submitted that the status report/reply filed by DJB, the Chief Engineer of the Delhi Jal Board (D.J.B), R.W.H and G.W. Cell, has stated in his reply that the D.J.B has installed 594 Rainwater Harvesting (R.W.H) systems, all of which are connected to rooftop rainwater pipes and not to storm water drains. The status report by DJB further claims that all recharge bore-wells are located at least 5 meters above the groundwater level and that the D.J.B authority does not contaminate the water as alleged by the Applicant. However, the Applicant submits that the Chief Engineer has provided false information to the Hon'ble Tribunal. It is submitted that contrary to the status report filed by D.J.B, many of its R.W.H systems are connected to the storm-water drain and surface area, resulting in the recharge of mostly contaminated wastewater into the R.W.H systems.

In fact, recharge bore-wells have been drilled 50-400 feet below ground level, and 50% of the R.W.H systems are not functioning properly.

5. That during an inspection by the Applicant, sewage and chemical water were found in D.J.B's R.W.H systems. It is further stated that the DJB in its report has provided a list of the places comprising in O.A. no. 166 of 2020, this Hon'ble Tribunal took into consideration the areas mentioned at serial numbers 177 and 361, i.e., Mehrauli STP and Water Emergency G.K.-1, respectively. It was found that in these areas, 50% of the Rainwater Harvesting (R.W.H) systems contain sewage water, and 50% of the systems are non-functional. Furthermore, the Hon'ble Tribunal in O.A. 166 of 2020 directed the authorities to address the issue of sewage water detected in the R.W.H systems, particularly in the areas listed at serial numbers 177 (Mehrauli STP) and 361 (Water Emergency G.K.-1), as the same is reported in the Status Report of D.J.B. Despite this, the D.J.B's Groundwater Cell has issued a public notice promoting rooftop rainwater harvesting, even though the D.J.B itself is contributing to groundwater contamination in Delhi. The copy of the C.P.C.B's report and a photograph of D.J.B's public notice submitted by Applicant is attached and marked herewith as Annexure A (Colly).
6. That it is submitted that the status report/reply filed by the D.D.A simply stated "No" without providing any clarification or context for any response. It is important to note that all buildings constructed by the D.D.A in Delhi are equipped with Rainwater Harvesting (R.W.H) systems, which are connected to the storm water drain and surface area. As a result, these R.W.H systems contribute to groundwater contamination. The D.D.A is directly responsible for groundwater

contamination in the Dwarka area. In the newly constructed apartments in Dwarka, the R.W.H systems are similarly connected to storm water drains, and the public notice issued by the D.J.B regarding proper rainwater harvesting practices has been disregarded by all concerned parties.

7. That the status report filed M.C.D provided information regarding the Rainwater Harvesting (R.W.H) systems installed in schools and parks. In schools, instead of connecting the R.W.H systems to rooftop rainwater sources, they have been connected to surface water drains within the school premises. Additionally, the recharge bore-wells have been drilled deeper than the water table, which raises concerns. Despite allocating a budget of ₹5 lakhs for each R.W.H system, the actual expenditure has ranged from ₹15-20 lakhs, and yet, these systems remain non-functional and contribute to groundwater contamination. It is further submitted that in reference to O.A. 148 of 2016, the Hon'ble Tribunal directed an inspection of the R.W.H system in the M.C.D park at Chhatarpur village. The inspection was conducted by C.G.W.B scientist namely Jyoti Kumar and D.J.B officer namely Gopal Singh (A.E), and the report revealed that the park's R.W.H system was non-functional and also contributed to groundwater contamination.
8. That is further stated that in O.A. 148 of 2016, the Applicant provided information to the Hon'ble Tribunal that the authorities has its Sewage Treatment Plant (S.T.P) and is using its own fertilizer instead of organic animal dung in parks and green belts. Additionally, chemical sprays are being applied to trees and plants to prevent insect infestations, which leads to the contamination of rainwater. For this reason, R.W.H systems should not be installed in parks, as they

would inevitably capture this contaminated water. Despite this, M.C.D officials have installed R.W.H systems in 250 parks, seemingly for personal gain while asserting compliance. If samples were taken from these systems, they would likely reveal the presence of harmful chemicals and bacteria like Coliform etc. These installations, however, pose a significant risk to both environmental safety and water quality.

9. That the authorities i.e. P.W.D, N.D.M.C, and N.H.A.I have failed to file their compliance reports, despite having installed a large number of R.W.H systems connected to storm water drains. The storm water drains maintained by P.W.D and N.H.A.I contain sewage water, while the drains under N.D.M.C are filled with road runoff and waste water. This improper management of storm water drains is leading to the contamination of groundwater in these areas.

10. That the Hon'ble Tribunal did not issue an order requiring Dr. Ambedkar Hospital to file a compliance report, despite the hospital being a respondent in the case. The hospital's Rainwater Harvesting (R.W.H) system is connected to the storm water drain, which contains chemical and waste water. This contaminated water is being directed into the recharge bore well, leading to the pollution of groundwater.

11. That the status report/ reply filed by the CGWB, it was stated that three R.W.H systems were installed in Jahan Panah Park or forest area, and one in Nehru Place Park. Upon inspecting these systems, the Applicant found that the recharge bore-wells were filled with mud and silt due to the absence of end caps, which allowed debris to enter. While no damage to groundwater was observed, the R.W.H systems were not functioning as intended. It was also noted that Nehru Place

Park, which spans 100 acres and contains a 10 lakh Litre, remains dry even after 1000 mm of rainfall. Instead of installing R.W.H systems, C.G.W.A should have created a water body in Jahan Panah Park to better manage water resources.

12. Any other ground that may be taken at the time of arguments with the leave of this Hon'ble Court.

PRAYER

It is, therefore, most respectfully prayed that, keeping in view the above-stated facts and circumstances, this Hon'ble Tribunal may be pleased to:

a. Direct the respondents to ensure compliance with the Hon'ble Tribunal's directions issued in O.A. No. 526 of 2019 Vide judgment dated 27.08.2019, specifically regarding the proper installation and management of Rainwater Harvesting (R.W.H) systems. The respondents must take immediate corrective action to disconnect these systems from storm water drains that contain wastewater and sewage, to prevent contamination of groundwater.

b. Direct the respondents Public Works Department (P.W.D), New Delhi Municipal Council (N.D.M.C), National Highways Authority of India (N.H.A.I), and Dr. Ambedkar Hospital to file their compliance reports and address issues and implementations related to groundwater contamination due to improperly installed R.W.H systems or connections with storm water drains.

c. Direct the respondents to immediately stop groundwater contamination and implement corrective measures in coordination with the CPCB, CGWA, CGWB and DPCC to ensure the preservation and protection of groundwater resources.

d. Pass any other directions or grant any other relief that this Hon'ble Court may deem fit and proper in the interest of justice

PLACE: NEW DELHI
DATED:

APPLICANT IN PERSON
MAHESH CHANDRA SAXENA

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AFFIDAVIT

I, Mahesh Chandra Saxena S/o Late Sh. Ram Bihari Lal Saxena R/o A-388, Chhatarpur Enclave, Phase-I Chhatarpur, New Delhi-74, do solemnly affirm and declare as under:

1. That I am the applicnat in the reply /objections to the reply by the respondent authorities in the present Execution Petition, and as such I am well-versed with the facts and circumstances of the present case. Hence, I am competent to depose on the present Affidavit.
2. The contents of the reply/objection in the Execution Petition are not being repeated herein for the sake of brevity, and the same may be read as part and parcel of the present Affidavit.
3. That the Counsel of the Applicant has drafted the present reply/objections under my instructions, and the contents of the same are read over to me in my vernacular and the contents are true and correct to my knowledge.

DEPONENT

Identify the Excutant/ Deponent who has seen in my Presence

self

17 SEP 2024

VERIFICATION: I, the deponent hereinabove do hereby verify that the contents of this Affidavit are true to the best of my knowledge and belief. I state that no part of this Affidavit is false and nothing material has been concealed therefrom.

Verified before me on this __ day of September, 2024.

DEPONENT

NOTARY
Naresh Kumar Seth
DELHI
Regn. No. 16937
Expiry Date
30-01-2025
GOVT. OF INDIA

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CERTIFIED THAT THE DEPONENT
Shri/Smt. Mahesh Chand Saxena
S/o W/o D/o Late Sh. R.B.L. Saxena R/o as
Identified By Shri self
has solemnly affirmed before me at Delhi
on 17/9/24
that the contents of the affidavit who
Have been read & explained to him at
true and correct to his/her knowledge
Notary Public Govt. of India

17 SEP 2024

DELHI JAL BOARD: GOVT. OF NCT DELHI
OFFICE OF THE DY. SE (RWH)
ROOM NO-208, VARUNALAYA PHASE-I,
KAROL BAGH, NEW DELHI-110005

No.DJB/DY.SE(RWH)/2023/1084 to 1088 Date: 14/2/2023

PUBLIC NOTICE

Ground water resources in many parts of the city are over exploited. The extent of replenishment of ground water is much less than what the city as a whole is withdrawing due to its rapid urbanization. There is need to preserve ground water resources and to take effective measures for its sustainable availability. Rain Water Harvesting is considered as a simple, viable and eco-friendly method of conservation of water and a simple solution for ground water recharge.

Hon'ble NGT constituted a Joint Committee of DJB, DPCC and CPCB in the matter of O.A. No.147/2021 to ascertain the technical efficacy of installed systems, changes, if any required and the issue of contamination of ground water. Accordingly DPCC has directed DJB under section 33 (A) to issue necessary instructions to all the Group Housing Societies giving suitable timeline to make the arrangements for separate pipelines for roof top rain water for reaching to the Rain Water Harvesting Structures and separate disposal of Sewage/other waste water including the waste water arising from washing area and floor washing water.

It is here by informed to the Public that only Roof Top Rain Water should be connected to Rain Water Harvesting System and all other waste water from Balcony, Washing and Paved/Parking area should be separated from Rain Water Harvesting System. All concerned are directed to implement the above provision by 31.03.2023 positively failing which action shall be taken as per DJB norms.

Dy.SE (RWH)
(Delhi Jal Board)

DELHI JAL BOARD: GOVT. OF NCT OF DELHI
OFFICE OF THE EXECUTIVE ENGINEER(RWH)-I
ROOM NO. 208, VARUNALAYA PHASE-1
KAROL BAGH, NEW DELHI-110005
E-mail: rainwaterharvesting2013@gmail.com

No.DJB/EE (RWH)-I/2024/ 2265 Dated:- 16/02/2024

PUBLIC NOTICE

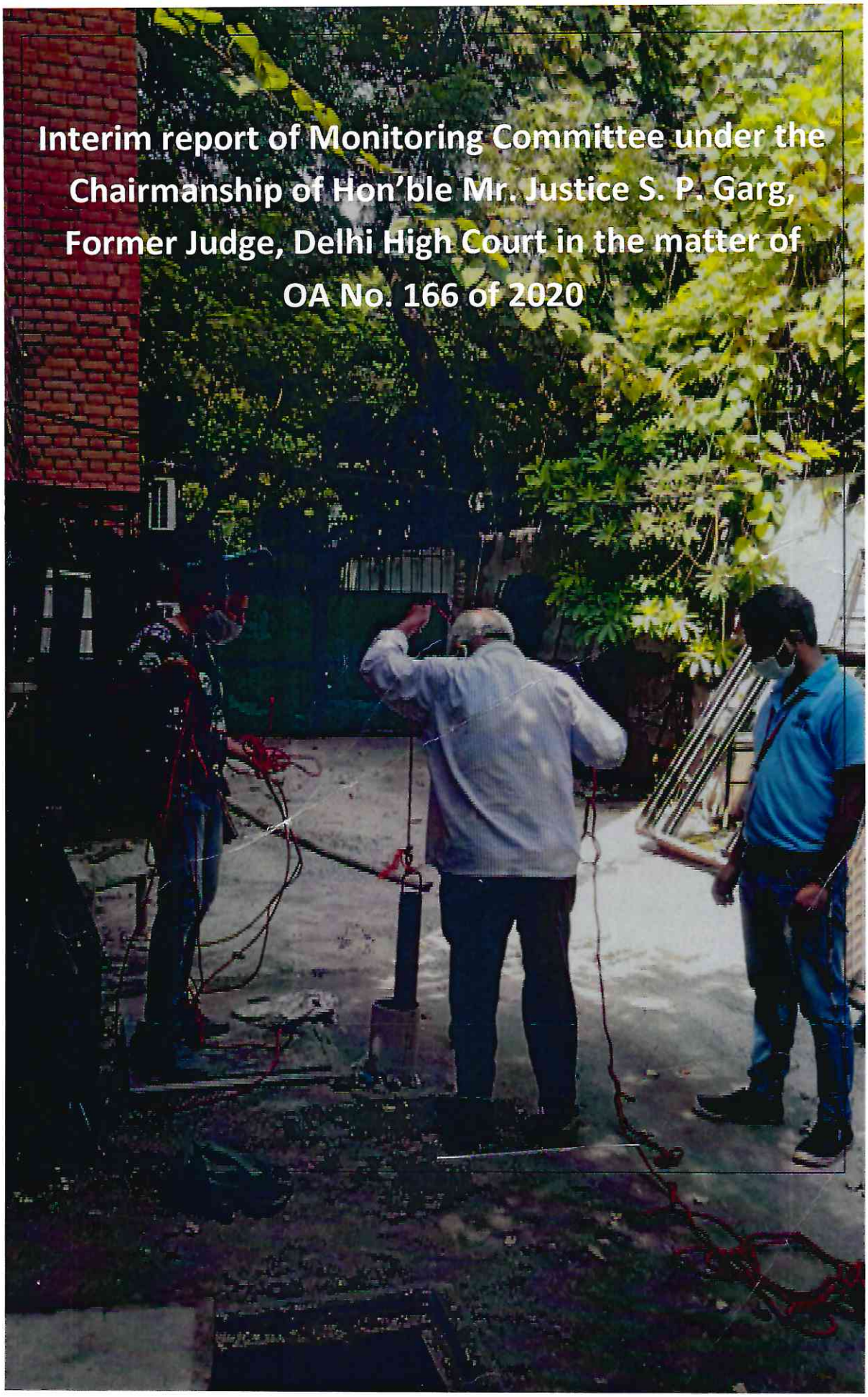
It is here by informed to the Public that:

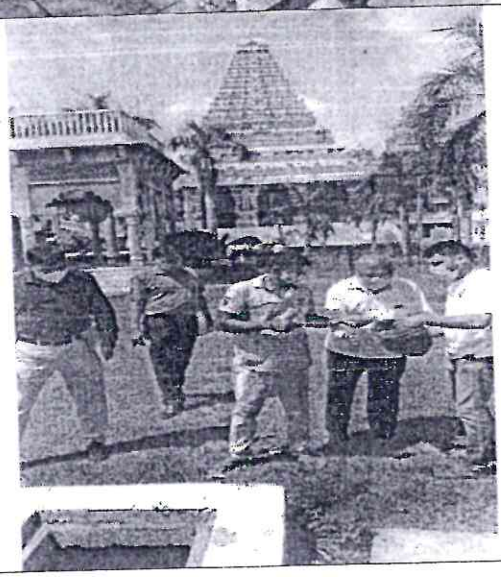
- Only Roof Top Rain Water be connected to Rain Water Harvesting System and all other waste water from Balcony, Washing and Paved/Parking areas, where vehicular movement takes place, be separated from Rain Water Harvesting System. After installation of adequate & functional Rain Water Harvesting system , the Adequacy Certificate be obtained from RWH Cell of DJB, HQ/ DJB Empanelled Service Providers/ Architects registered with Council of Architects to avail rebate on monthly water bill & financial assistance scheme to the consumers of DJB.
- On expiry of the validity of Adequacy Certificate of RWH system i.e. after two years from issue date, the same will be renewed mandatorily from RWH Cell of DJB, HQ for regular monitoring & inspection of recharge structures to avoid contamination and continuity of rebate.

All concerned are advised to ensure for implementation of the above provisions, failing which action will be taken as per DJB norms.

EE (RWH)-I
(Delhi Jal Board)
EXECUTIVE ENGINEER
RWH-I. D.J.B.
JHANDEWALAN, N.D.-05

ANNEXURE –


Interim report of Monitoring Committee under the Chairmanship of Hon'ble Mr. Justice S. P. Garg, Former Judge, Delhi High Court in the matter of OA No. 166 of 2020

	Chhatarpur temple: Water sample collection is in progress
	Chhatarpur temple: Depth of borewell measurement is in progress

As per order of chairperson Retd. Justice Hon'ble S P Garg, the monitoring committee for groundwater visited following places for assessment of water quality of available ground water in certain specified area to assess the suitability of design given by CGWB abd DJB. The following observations were made:

The reached first to SDA, Hauz Khas. The YWA Girls Hostel exist in the said locality. The CGWB had designed the RWH in this area. The preliminary design description were assess at the time of inspection. During inspection- the existing recharge borewell were found dry. The harvesting pit was also found clear all the ways. The depth of the recharge borewell was measured 26 meters. As discussed with the petitioner, the static groundwater level of the said area is around 30-35 meters. . Accordingly, the rain water which was coming through roof top is seems to be reaching to ground water readily. Since no barrier was observed in between, the water seems to be free from all sort of visible- and non-visible contaminants. NO SAMPLE WAS AVAILABLE FOR ANALYSIS.

In the subsequent monitoring step, the team reached to Mehrauli STP. In this place, 2 RWH pits were inspected by the team . In this point of monitoring- on measurement of a recharge borewell- the depth of the borewell was measured 30 meters. As stated by the applicant, the static water level in the area is only around 16-18 meters. The water sample from this point was collected and report is as mentioned in Table.

Table : Analysis report of water sample collected form Recharge borewell at Mehrauli STP- M1:

Mehrauli STP

Physico-chemical analysis

Sample collection from	parameters					
	pH	Conductivity (u mho/cm)	COD (mg/l)	TSS (mg/l)	TDS (mg/l)	Chloride (mg/l)
M1-Mehrauli Recharge pit	7.4	511	151	652	280	30

Microbiological analysis

Sampling location	Parameters		
	Total coliform MPN/100ml.	Fecal coliform MPN/100ml	Fecal streptococci MPN/100ml
M1 Mehrauli Recharge pit	8200	320	130

The physicochemical- and microbiological measurements indicate that the ground water is highly contaminated. As a suggestion, if monitoring committee is eager to know the extent of contamination of water table by digging monitoring pit at the interval of 20 meters peripherally. Such exercise will definitely help us to assess the level-, extent and potential of ground water contamination with respect to time and space. It is observed that at this rain water collection point- the existing road and surrounding contaminated surface water reaches to ground water creates increased chances of groundwater contamination.

In another part of same STP, it has been observed that there was no recharge well in the existing RWH system. In this system, the rain water from roof top of pump house was reaching in the harvesting pit. Because of non availability of recharge borewell, the standing rain water was seen. The quality of standing water was also not good as it was exposed to environment and increased chances of contamination through air sweeping. During discussion, it has been observed that if ther would be a recharge borewell, the same would be helped in dispersal of rain water below the surface. Since it was stagnant fresh water, there are increased risk of mosquitoes population especially dengue breeds.

Table : Analysis report of water sample collected form Recharge borewell at M2_

Physico-chemical analysis

Sample collection from	parameters					
	pH	Conductivity (u mho/cm)	COD (mg/l)	TSS (mg/l)	TDS (mg/l)	Chloride (mg/l)
M-2 Recharge borewell	8.1	1143	33	71	628	111

Microbiological analysis

Sampling location	Parameters		
	Total coliform	Fecal coliform	Fecal streptococci

	MPN/100ml.	MPN/100ml	MPN/100ml
M-2 Recharge borewell	$78*10^2$	$27*10^2$	$33*10^2$

The team further approached to E Block of DJB office, Saket. It has also been observed that there was no recharge borewell in this rain water harvesting system. The rain water pit was also found totally dry. As discussed locally, there is a conclusion that more than 110 sq. meters inflow comes. As informed by the responsible officer that there was around 40,000 litres rain water received. Though the said amount of water does not contaminate the existing ground water. Unfortunately, the said amount does not reach to existing ground water layers. According to expert opinion, the said amount of water is sufficient to reach upto maximum 20 meters. Since there is no more mansoon in Delhi NCR, there is a increased chances of get evocated the stored rain water. Again the inspection team visited the Rain Centre at saket. In this visit, Mr. Harish Chandra XEN and Mr. Umesh Rana, Asstt Engineer, RWHGW Cell, DJB were also present. There was an in depth discussion with the visiting team. Mr. Harish Chandra informed that at this rain centre, only around 10-12 meter depth is gets recharged through rain water. Notice that the static ground water level in this area is around 60 to 65 meters. Since the collected rain water does not reaches to desire level, it is a question that why RWH system was installed? The discussion concluded that there should be required- and proper recharge borewell and concerned authorities are also agree to recommend the required borewell to desirable depth. Alternatively, the collected rain water can be diverted to nearby abandoned borewell, which are not in use since many years and available in the locality.

The monitoring team also visited Young Women Association's Hostel to assess the RWH pit and discharge borewell. It has been observed that the depth of the discharge borewell was about 50 meters, measured manually. No residual water was seen in the pit. While discussing with the locals, it was known that the RWH was designed by the CGWB. The exact date of the construction was not known but seems to be more than 25 years old functional system still in operation.

The monitoring team then reached to Water tanker emergency filling point at Greater kailash. This point is generally used for filling water tankers that are used to cater emergency water supply. At this point, it has been observed that the recharge borewell was made up of MS steel. The end cap of the same was found welded made us not possible to collect the sample. According to petitioner, the total depth of this borewell is around 65-70 meters, while the static water table of this locality is around 25 to 30 meters. Interesting to know that rain water which is collected from the surrounds is ultimately reaches to the pit. The pit is also linked with the catchment of surface water of the adjoining area. Near to the said pit, there were 2 borewells were in operation, situated around 15 meters away. At the time of inspection, they were non-functional. In the RWH pit, the water comes from roof top arrangement and also from surface gathering. Here a provision has been made the excess amount of water is diverted as by-pass to adjoining nallah. It is important to know that in this filling point round the clock tankers come for filling and moves away to destination. Since there is a continuous overflow of the water from the filled tanker, the surface water carries substantial amount of pollutants reaches to pit and then ultimately contaminate the ground water. At this point, the water sample was collected from the RWH pit.

Table : Analysis report of water sample collected form Recharge borewell at GK-1- Greater Kailash

Physico-chemical analysis

Water Emergency GK-1

Sample collection from	parameters					
	pH	Conductivity (u mho/cm)	COD (mg/l)	TSS (mg/l)	TDS (mg/l)	Chloride (mg/l)
GK-1 Greater Kailash	8.1	397	36	284	236	33

Microbiological analysis

Sampling location	Parameters		
	Total coliform MPN/100ml.	Fecal coliform MPN/100ml	Fecal streptococci MPN/100ml
GK-1 Greater Kailash	$23*10^3$	$78*10^2$	$13*10^2$

The monitoring team also reached to Chhatarpur temple to assess the RWH system the measured depth of recharge borewell was around 30 meters. The interaction with the locals showing the static level of the chhatarpur area is more than 70 meters. On the questions related to the designing agency of the system, the JE interacted with the SE of the locality. The SE informed that the design of this system was also given by the CGWB.

Table : Analysis report of water sample collected form Recharge borewell at CT1- Chhattarpur Temple

Physico-chemical analysis

Sample collection from	Parameters					
	pH	Conductivity (u mho/cm)	COD (mg/l)	TSS (mg/l)	TDS (mg/l)	Chloride (mg/l)
CT1- Chhattarpur Temple	7.2	1364	46	792	110	38

Microbiological analysis

Sampling location	Parameters		
	Total coliform MPN/100ml.	Fecal coliform MPN/100ml	Fecal streptococci MPN/100ml
CT1 Chhattarpur Temple	$14*10^2$	680	110

CONCLUSION

Rainwater harvesting is the solitary realistic option to counter the growing menace of rapid water depletion. It involves accumulating, filtering and storing rainwater to be utilized for assorted industrial

and residential purposes. Rainwater harvesting used in residential properties, which involves trapping rainwater from roofs and directing it into underground storage tanks or cisterns, can satisfy 50% of a regular family's water needs. The truth is rainwater harvesting isn't just a strategy to make maximum use of the natural resource — it also has minimal environmental impact. Urban water supply calls for pumping stations in addition to setting up treatment plants and supply conduits. With the increase in urban population, city planning authorities cannot match utilities in a majority of Indian cities. With bore well shafts going deeper as the hunt for more water continues in our cities, water supply can actually be significantly supplemented by rainwater and decrease the pressure on the usual water supply.

Rain water harvesting is one of the most effective methods of water management and water conservation. It is the term used to indicate the collection and storage of rain water used for human, animals and plant needs. It involves collection and storage of rain water at surface or in sub-surface aquifer, before it is lost as surface run off. The augmented resource can be harvested in the time of need. Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that under natural conditions of replenishment. The collected water is stored and pumped in a separate pipe distribution. This is a very useful method for a developing country like India in reducing the cost and the demand of treated water and also economising the treatment plants operation, maintenance and distribution costs. Rainwater Harvesting is one of the most commonly used methods to save water. It refers to storing of rainwater for various uses. The notion behind rainwater harvesting is to not waste the rainwater and prevent it from running off. In other words, it is done to collect rainwater using simple mechanisms. This method is very useful considering the water scarcity that is happening in India. Moreover, rainwater harvesting is so easy that almost anyone can do it. We must encourage this practice to help people get access to clean water easily without any cost. As we know by now, rainwater harvesting is very easy and economical. Following the water scarcity in so many parts of the world, rainwater harvesting has become the need of the hour. It must be practiced by people of all regions. This will also give them a sense of comfort in knowing that they won't have to face water scarcity.

Furthermore, rainwater harvesting holds more importance than you actually think it does. As we know that surface water is not enough to meet the demands of the people, we can get additional help from rainwater. Also, most people now depend on groundwater for their uses. Many houses and even flats have submersible pumps in their place. The groundwater is decreasing day by day because of excessive usage, deforestation, urbanization and more. The monitoring team visited few RWH systems in Delhi to assess the suitability of the existing harvesting system and prevailing quality of harvested rain water. Based on analytical reports and discussion with experts, following conclusions have been drawn summarized in following points:

1. While inspecting the rain water harvesting system, it has been observed that no water was seen in the three rain water harvesting pit. It is interesting to note that the design of 2 RWH systems was given by CGWB and DJB also given design to one RWH system. In entire monitoring programme 2 samples were collected from 2 recharge borewells and 2 samples were collected from RWH pits. Again. Note that the design of 1RWH system was given by CGWB and 3 samples from the design prepared by DJB. The individual report of different sampling locations is also given separately. The reports of Recharge borewell and RWH pits indicate that this is **not classified as rain water**. The general characteristics nd associated environmental specifications are given in the annexure. It seems to be it is highly contaminated water entering into ground

water by some illegal means that cannot be used further. It needs further investigation that how this contaminated water reached to RWH pit and recharge borewells? It is recorded that water level of DJB, GK1 and RWH system and recharge borewells of Mehrauli STP is substantially lower side. This contaminated water might have definitely deteriorate the existing ground water substantially. As precautionary measures, few test borewells in the peripheral side of RWH pit may be dug out as test borewell and samples will be collected and analysed to assess the severity and extend of contamination of ground water in locality under investigation.

2. As precautionary measures, the roof should be regularly clean to collect pure- and comparatively contaminants free rain water. All the RWH- roof top system needs to be instructed accordingly to avoid substandard rain water to reach to ground water. The places where surface area is used for harvesting rain water, more concentration on quality parameters are required. If roof is substantially bigger, the rain water can be collected at a settling system to remove dirt and other unwanted pollutants to be controlled to enter into ground water system. Similarly, if the surface area is properly maintained, the collected rain water first enter into settling chamber for a considerable time before entering into ground water system.
3. It is also observed that the design given by CGWB of RWH holding rainwater for about ~~1 meter~~ 10 METER depth. In this system, no recharge bell is required As a standard protocol, if the static water level is around 10 meters from the surface, in this situation, no recharge borewell is required. But if the level is beyond 10 meters, here recharge borewell is required. The surface water which is also partially or fully contaminated is suppose to pass through solid soil strata of around 10 meters reduces the chances of further contamination of ground water. The chances of highly contaminated water in lower soil strata are comparatively low. Notice that the soil itself acts as a natural filter in the environment. In the artificial environment, the same action is performed by the RO system in purification of water. Interesting to note that the mother earth has her own self purification capacity. If the input is beyond her capacity, pollution occurs in various forms and extent.
4. Notice that the depth of the recharge borewell should not touch the level of static water table of the concerned locality. Depending upon the climatic condition, soil strata, availability of the ground water, consumption pattern of he locality, there should be standard distance between recharging water and existing water. It can be understood by simple experiment. If few drops of indigo containing water drops are poured into a bucket containing crystal clear water, one can see that after a small interval, the indigo disperse into the whole body. To extrapolate the same philosophy, one can imagine the extent of contamination of ground water by simple untreated disposal of contaminated water in the lower strata of the soil.
5. Whenever roof top system is adopted for harvesting the rain water, it is required that the roof should be properly maintained and should be free from clutter, dirt, silt etc. and regularly monitored. The RWH pit should be directly connected to rain water pipes. In case of overflow, there should also be appropriate provisions for connection to storm water drain. Again there should also be a provision for settling chamber for rain water, if the plot size is beyond 500 square meters in size.
6. There should be standard filter media to be adopted in RWH pit. If silt appears in the rain water, the media helps to obstruct the silt to enter further. Accordingly borewell pipes also not get chocked. Notice that the filter media is only to help to obstruct solid impurities into system but cannot purify the contaminated rainwater.

7. While discussion with the experts in previous meeting, the ground water expert Mr. Mehmood recommended proper training to RWH constructing personnel including builders as well as concerned officers so the real- and useful system will be constructed.
8. In the subsequent discussion, Mr. Chadda, Ex. Chairman, CGWB recommended the use of ISI PVC pipe of 80 mm dia for recharge borewell. Conventional 90 mm submersible which is conventionally used had increased the chances of misuse. It is also advisable that CGWB and DJB jointly prepare a groundwater Cell. Under thee supervision of such cell proper RWH should be constructed to avoid further contamination of groundwater with due emphasis on surveillance quality parameters.
9. It is also recommended that if the water sample of existing RWH is found not meeting the quality criteria of any time, should be immediately inspected and department/operators if any should be worn with immediate corrective action. Expert opinion for short- and long term corrective actions should also be implemented for modification and proper functioning of the system.

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