BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

Execution Application No. 5 of 2016
In
Original Application No.217 of 2016

AND

Original Application No.148 of 2015

AND
Original Application No.526 of 2019

IN THE MATTER OF :

Mahesh Chandra Saxena .....Applicant

Judgment Reserved on 23.08.2019

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Mahesh Chandra Saxena .....Applicant

SUBMISSIONS ON BEHALF OF THE APPLICANT IN COMPLIANCE OF ORDER DATED 23.08.2019

Most Respectfully Showeth:

1. That the applicant has filed the OA No.217/2016 & Execution Application No.5/2018 (Mahesh Chandra Saxena Vs MoUD & Ors.) seeking establishment of 'Rain Water Harvesting Structures' with proper design and proper functionality. OA No.148/2016 (Mahesh Chandra Saxena Vs SDMC & Ors.) has been filed seeking proper & full utility of 'treated water of STPs' particularly Mehrauli STP near Kutub Metro Station at Badarpur Gurgaon Road. OA No.526/2019 (Mahesh Chandra Saxena Vs

ensuring harvesting of top roof rain water (pure water) with proper & regular functionality:

Before suggesting in regard to 'Rain Water Harvesting' some **important terms** are required to be explained:

a) Rain Water harvesting pit / trench: A pit/trench is created and filled with filter media (different layers boulders, gravels and coarse sand). Top roof rain water is being channelized through PVC pipelines into it and such water percolates into ground water.

b) Recharge Borewell: A recharge borewell is prepared by making borewell and inserting the PVC pipelines therein with specific of approved design. This pipeline contains the slots as per design explained below.

c) Filter Media: Filter Media is combination of three layers of boulders, gravels and coarse sand. Rain Water

flyovers etc. The Guidelines of CGWB in regard to Rain Water Harvesting System provides for 'Adoption of Roof Top Rainwater Harvesting' only.

On the contrary, the Delhi Jal Board, PWD of NCT of Delhi have issued tenders to establish RWHS at Fish Market & slum area under DUSIB etc. which will cause contamination of ground water.

(ii) Harvesting Should be as per design proposed & approved by CGWB:

The applicant has obtained the standard design of 'Rain Water Harvesting', copy of design received through RTI is being annexed herewith as **Annexure-A/1**.

This document explain the areas wise details of NCT of Delhi where only trench/ harvesting pit is required with or without recharge borewell (Page No. 14 to 15).

table, recharge well are required inside trench/pit to ensure effective & speedy percolation of rain water. Therefore, DJB should rectify its design as per CGWB designs.

'Use of non-slotted casing pipe', 'depth of borewell below of water table', adopting 'Filter Media made of Charcoal by DJB instead of natural media of boulders, gravels and coarse sand' are common defects which are commonly found in Rain Water harvesting Structures being made by the different departments including Delhi Jal Board, Delhi Development Authority, New Delhi Municipal Council, South Delhi Municipal Corporation, National Highway Authority of India and Public Works Department of NCT of Delhi. Effects of such defects are clear from the reports filed by DPCC in OA No.526/2019 showing the contamination of ground water and non functionality of RWHS.

implementation of structures" at page no. ..4.... to ....17.... .

(iv) **Need of Monitoring Cell**: In view of the large no. of cases of non compliance to construct the RWHS and/or non-functional RWHS and/or defective RWHS, there is immediate need to constitute the 'Monitoring Cell' which can verify the establishment of RWHS wherever applicable, their functionality and their effect on Ground Water table & quality.

The constitution of such Monitoring Cell, apart from senior officers of concerned department in respective area, must be consist of 'Geologist' from Technical Institution i.e. I. I. T., Delhi University Jawaharlal Nehru University and/or Central Ground Water Board. Moreover, constitution of this monitoring cell must contain senior member from central agency i.e. CPCB etc also to ensure impartiality in cases against the RWHS constructed

by the authorities/departments.

This Monitoring Cell must be vested with powers enough to take action against the defaulters including departments.

B. Suggestions in regard to use of treated water of Sewage treatment Plant:

(i) Firstly, all parks & gardens should be irrigated through this water only and ground water should not be permitted for this purpose except in case of non availability of treated water. In NGT also, horticulture work is being done through STP treated water being supplied by New Delhi Minicipal councel through pipelines.

(ii) Plan should be placed on record to lay down duel pipe line to use treated water for flushing etc.

bound directions should be issued to lay pipelines for supply of treated water from STP to parks/green belts, forest areas etc. It is submitted that no pipeline has been laid down since 2015 (year of filing of OA) to utilise the treated waste water being discharged from STP of Delhi Jal Board near Kutub Metro Station, Mehrauli Gurgaon Road, Mehrauli as mentioned in the Original Application itself. In Action Plan submitted alongwith MA No.1800/2018 in OA nO.148/2015, the DJB has mislead this Hon'ble Tribunal by submitting that 3.4 MGD treated water is being used out of total treated 3.7 MGD water at Mehrauli STP. The applicant submits that quantity of treated water being utilised is not more than 1.7 MGD, rest is being discharged with sewer.

(iv) That applicant humbly submits that Government of NCT of Delhi and Delhi Jal Board are not sincere to save this treated water. The work of laying pipe line

other concerned agencies maintaining the Parks and Green Belts, pipelines would have been laid down and treated waste water would not have been discharged with sewer.

It is humbly prayed that GNCT and Delhi Jal Board may be directed to lay pipe lines in time bound manner to irrigate the parks and green belt near from STP of Delhi Jal Board near Kutub Metro Station, Mehrauli Gurgaon Road, Mehrauli as a pilot project which can be implemented in entire Delhi. The applicant is ready to provide his services and requisite assistance to authorities without any consideration. The applicant is ready to have meeting with all stack holders including DJB and agencies maintaining the parks, green belt & forest

Hauzkhas, Adhyatmic Sadhna Kendraa Chattarpur and Vidya Niketan School.

4. That before departing with the submissions, it is being informed that this Hon'ble Tribunal vide order dated 27.11.2018 in OA No. 148/2016 directed the Chief Secretary, Delhi and DJB to deposit a sum of Rs. 1 crore each with the CPCB for loss caused to the environment and to now prepare and furnish action plan positively within one month. Copy of Order dated 27.11.2019 is being annexed herewith as **Annexure-A/2**. However, an MA No.1800/2018 was filed by Delhi Jal Board alongwith Action Plan. By way of said MA, the DJB Sought modification of order dated 27.11.2018 by absolving the DJB and Chief Secretary, GNCT of Delhi to deposit a sum of Rs. 1 Crore. During course of hearing on 04.01.2019, the Hon'ble Tribunal rejected the prayer for modification of the order dated 27.11.2018 and Action Plan was taken on record subject to consideration on merits. The CPCB was directed to give its view on the Action Plan proposed within one

Sir,

Kindly refer to your RTI application. You have requested to this office, information in respect of Standard Designs for Adoption of Roof Top Rainwater Harvesting ,which is enclosed herewith.

Yours faithfully,

(N Jyothi Kumar)
DDO & CPIO
Phone No: 011-23384355
Email: oicnd _cgwb@nic.in

(12)

STANDARD DESIGNS

FOR

ADOPTION OF ROOF TOP RAINWATER HARVESTING

IN DELHI

INTRODUCTION

(13)

National Capital Territory (NCT) Delhi covers an area of 1483 Sq. Km. Ground Water available in the territory is controlled by the hydrogeological situation characterized by occurrence of alluvial formation and hard rocks such as quartzite. The hydrogeological set up and the following distinct physiographic units further influence the ground water occurrence: (1) Older Alluvial Plain on the eastern and western side of the ridge. (2) Yamuna Flood Plain deposits. (3) Isolated and nearly closed Chattarpur alluvial basin. (4) NNE-SSW trending Quartzite Ridge.

High rate of population growth and high level of urbanization in NCT Delhi has resulted in over development of ground water resources. Thus in about 75% areas of NCT Delhi ground water levels are declining at an alarming rate of 0.40 m per annum. In South and Southwest districts the decline is high varying from about 1 to 2 m/year. Annual replenishable ground water resources of the State are 0.31bcm with a net annual ground water availability of 0.29bcm. Ground water draft (as on 31st March 2009) is 0.40bcm with a stage of ground water development of 138%. Out of the 27 assessment units (Tehsils) in the State, 20 have been categorized as over exploited, 05 semi critical and 02 have been categorized as safe from ground water development point of view.

In view of high state of ground water development, and depletion of ground water levels due to its over development Central Ground Water Authority (CGWA) had notified South and South-West districts vide Public Notice No. 6 of 2000 dated 15.08.2000 and imposed prohibition and restriction for construction and installation of any structure for abstraction of ground water resources to avoid further depletion and deterioration of ground water quality. Subsequently the Hon'ble Lieutenant Governor of Delhi had declared the whole NCT Delhi as notified on 31.03.2009 vide order No. F8 (348)/EA/Env./09/14433 and further orders with even numbers, requiring permissions for extraction of ground water.

Normal annual rainfall of NCT Delhi is 611.8 mm out of which 81% of the annual rainfall is received during the monsoon months of July, August and September. The rest of the annual rainfall is received as winter rain and as thunderstorm rain in the pre and post monsoon months.

In order to increase the natural ground water resources, rain water harvesting and artificial recharge to ground water has become increasingly important in ground water management. The subsurface geology, post monsoon depth to ground water level and declining ground water level conditions of the State indicate that the area is suitable for artificial recharge. The favorable aquifer zones down to depth of ground water level which is lying unsaturated presently may be suitable recharged through rain water harvesting.

Tehsil wise Rain Water Harvesting Structures in NCT Delhi

Sl No.	Tehsil	Recommended harvesting structures	Depth of recharge well (meter)	Remarks
	District: New Delhi			
1	Chanakyapuri	Trench with bore	18	
2	Connaught place	Only Trench	-	
3	Parliament Street	Trench with bore	18	
	District: North West			
4	Model Town	Only Trench	-	
5	Narela	Only Trench	-	
6	SaraswatiVihar	Only Trench	-	
	District: West			
7	Patel Nagar	Trench with bore	15	
8	Punjabi Bagh	Only Trench	-	
9	Rajouri Garden	Trench with bore	18	
	District: South West			
10	Delhi Cantt.	Trench with bore	25	
11	Najafgarh	Trench with bore	15	
12	VasantVihar	Trench with bore	35	
	District: North East			
13	Seelampur (North)	Only Trench*	-	
	Seelampur (South)	Only Trench	-	
14	Seemapuri	Only Trench	-	
15	Shahdara	Only Trench	-	
	District: East			
16	Gandhi Nagar	Only Trench*	-	
17	PreetVihar (East)	Trench with bore	15	
	PreetVihar (West)	Only Trench	-	
18	VivekVihar (East)	Trench with bore	15	
	VivekVihar (West)	Only Trench	-	
	District: North			
19	Civil Lines (North)	Only Trench*	-	
	Civil Lines (South)	Only Trench	-	
20	Kotwali	Only Trench*	-	
21	Sadar Bazar	Only Trench*	-	

Technical design of Roof Top Rain Water Harvesting and Artificial Recharge to Ground Water

A. Trench without Recharge well

Roof Top Area (Sq. m)	Highest Rainfall intensity (mtr/ hourly)	Run-off Coefficient	Runoff/hr (cu. m)	Annual Runoff (cu. m)	Size of recharge Structure (mtr)	Drawing
a	b	c	d(aXbXc)	e(aX0.54Xc)	LXBXH	
100	0.025	0.8	2.0	43.20	1.2X1.2X1.4	A1
200	0.025	0.8	4.0	86.40	1.8X1.5X1.5	A2
300	0.025	0.8	6.0	129.6	2.4X1.8X1.4	A3
400	0.025	0.8	8.0	172.8	2.7X2.1X1.4	A4
500	0.025	0.8	10.0	216	3.3X2.1X1.5	A5

Note: Normal rainfall in Delhi: 611 mm,
Normal monsoon rainfall: 540 mm

Points to be taken into consideration for implementation of the above structures:

1. Valid for buildings without basements (Cellar) and for areas for alluvial formation where ground water level is more than 5 meter and up to 15 meter below ground level. Buildings with basements should adopt rain water harvesting through storage tank.

2. Only non-polluted rain water from the roof top area/catchment areas is to be diverted to recharge structures through conveyance pipes.

3. Before the onset of the monsoon all the catchment area (roof top) considered for recharge is to be cleaned. The recharge structures are to be in operation during the monsoon season only so as to avoid any contamination.

4. A mesh/Jali should be provided at the inlets to roof rain water pipes so that leaves or any other solid waste/debris is prevented from entering the recharge pit. By-pass arrangement be provided before the recharge chamber to divert the first rain runoff directly into the municipal drains.

5. An overflow pipe is to be provided in recharge chamber(s) leading and out falling into municipal storm water drains.

6. Based on site condition length and breadth of the recharge chamber may be altered keepings its volumetric capacity the same.

9. A 10 cm thick protective layer of pea gravels will be provided over the coarse sand layer of the filter media.

10. Recharge Chambers shall be cleaned before onset of monsoon season every year including removal, washing and relaying with topping up of the pea gravel and filter media layers.

11. Recharge chambers shall be checked and cleaned at 7 days interval or more frequently during rainy season.

12. Post monsoon cleaning and maintenance of recharge chambers shall be carried out.

B. Trench with Recharge well

Roof Top Area (Sq. m)	Highest Rainfall intensity (mtr/ hourly)	Run-off Coefficient	Runoff/hr (cu. m)	Annual Runoff (cu. m)	Size of recharge Structure (mtr)	Drawing
a	b	c	d(aXbXc)	e(aX0.54Xc)	LXBXH	
100	0.025	0.8	2.0	43.20	1.0X0.5X0.5	B1
200	0.025	0.8	4.0	86.40	1.0X1.0X1.0	B2
300	0.025	0.8	6.0	129.6	1.0X1.0X1.0	B3
400	0.025	0.8	8.0	172.8	1.5X1.0X1.0	B4
500	0.025	0.8	10.0	216	2.0X1.5X1.0	B5

Points to be taken into consideration for implementation of the above structures:

1. Valid for all buildings and for both alluvial and hard rock formation where ground water level is more than 15 meter below ground level.

2. Only non-polluted rain water from the roof top area has to be diverted to recharge structure through connection of down pipe.

3. Before the onset of the monsoon all the catchment area (roof top) considered for recharge is to be cleaned. The recharge structures are to be in operation during the monsoon season only so as to avoid any contamination.

4. A mesh/Jali should be provided at the inlets to roof rain water pipes so that leaves or any other solid waste/debris is prevented from entering the pit. By-pass arrangement be provided before the recharge chamber to divert the first rain runoff directly into the

8. Filter media of 1.0 meter thick will be in three layers comprising of 0.4 meter thick layer of boulders (5-20cm) at the bottom, 0.3 meter thick layer of gravels (5-10mm) in the middle and 0.3 meter thick layer of coarse sand (1.5-2.0mm) at the top so that the silt content that will come with runoff will be deposited on the top and can easily be removed.

9. A 10 cm thick protective layer of pea gravels will be provided over the coarse sand layer of the filter media.

10. Recharge Chambers shall be cleaned before onset of monsoon season every year including removal, washing and relaying with topping up of the pea gravel and filter media layers.

11. Recharge chambers shall be checked and cleaned at 7 days interval or more frequently during rainy season.

12. Depth of the recharge wells should be kept 2to 3 meter above post monsoon ground water level and the slotted pipe must be placed against the granular (Sandy or Fracture) zone.

13. On non-acceptance of water by the recharge well, the same may be cleaned using air compressor.

14. Post monsoon cleaning and maintenance of recharge chambers shall be carried out.

Remarks:

1. Proper & timely maintenance is the key factor for the success of Artificial Recharge..
2. Permission to install various Artificial Recharge structures and Recharge wells is governed by the prevailing rules and laws in the area.

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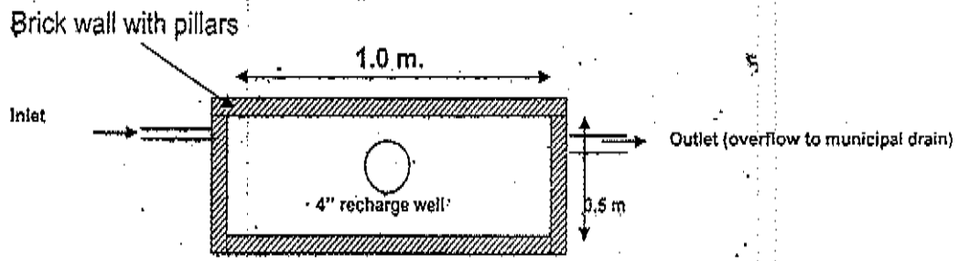
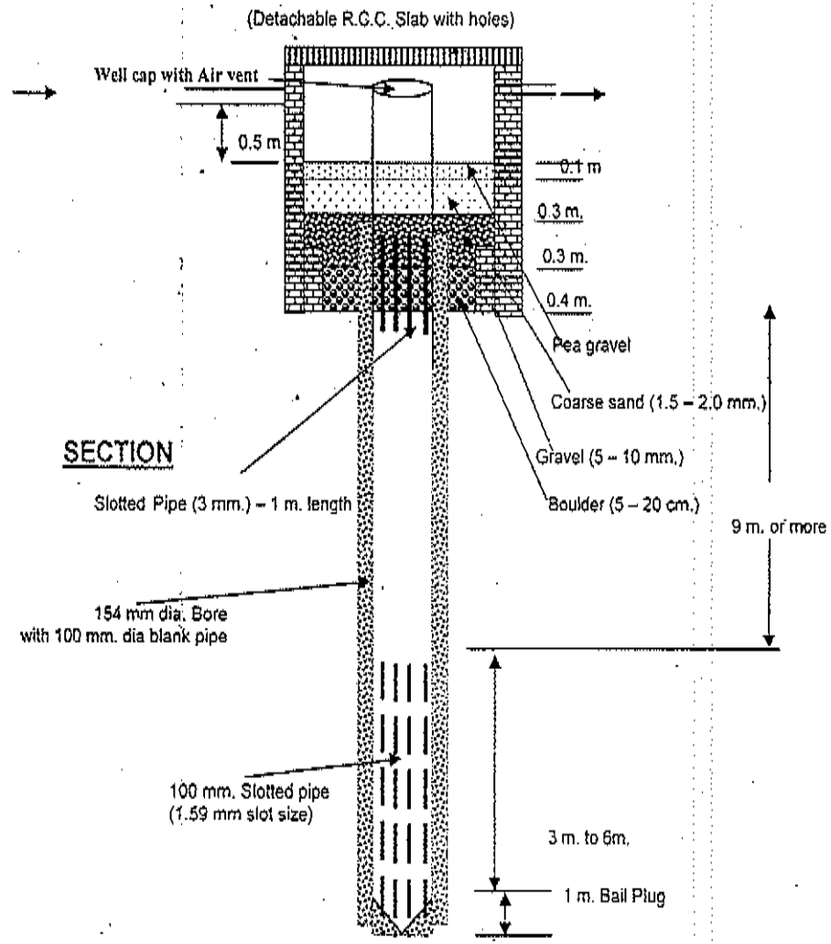
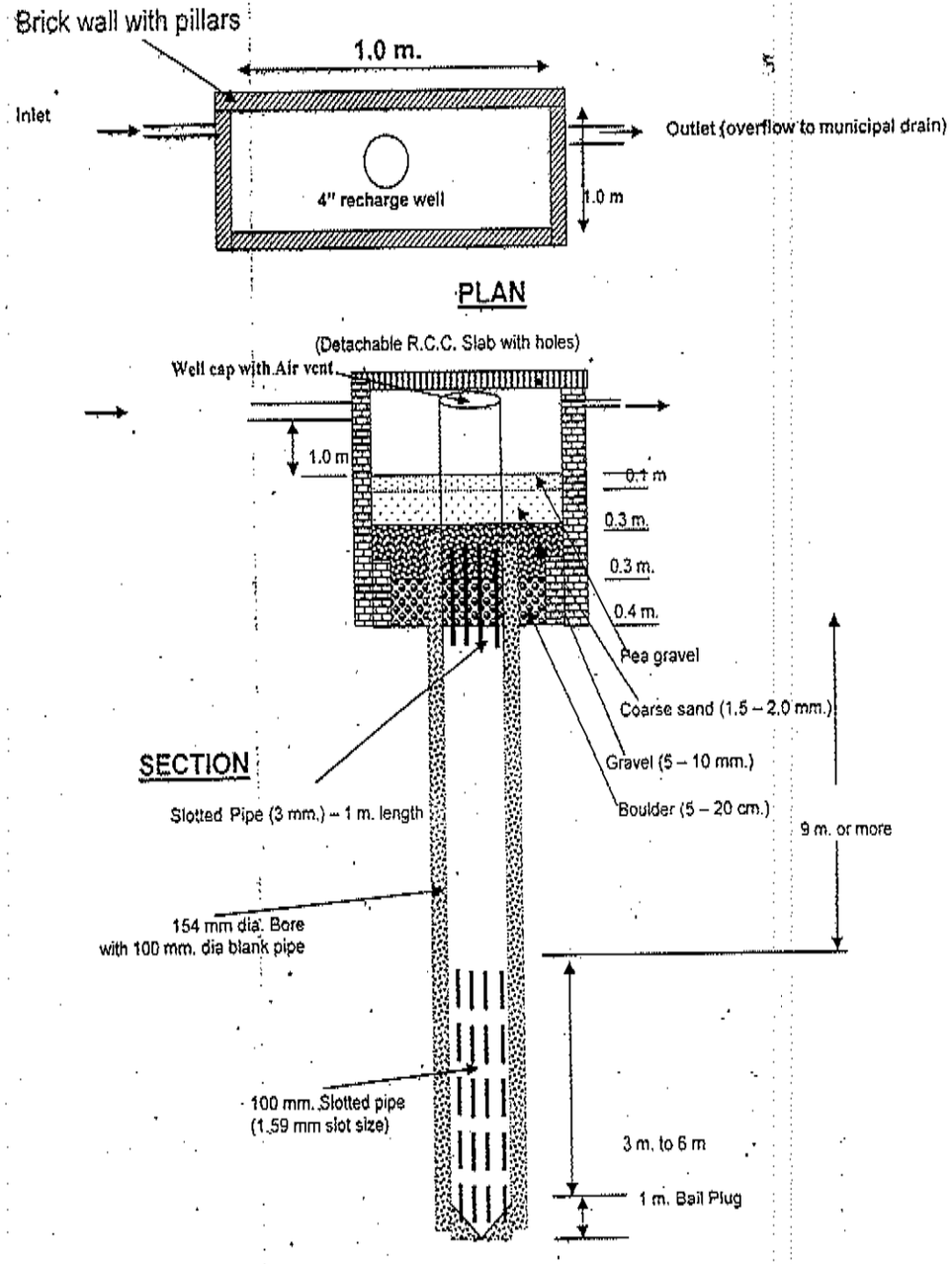
Trench with Recharge well
(Roof top area up to 100 sq. m)
(B1)



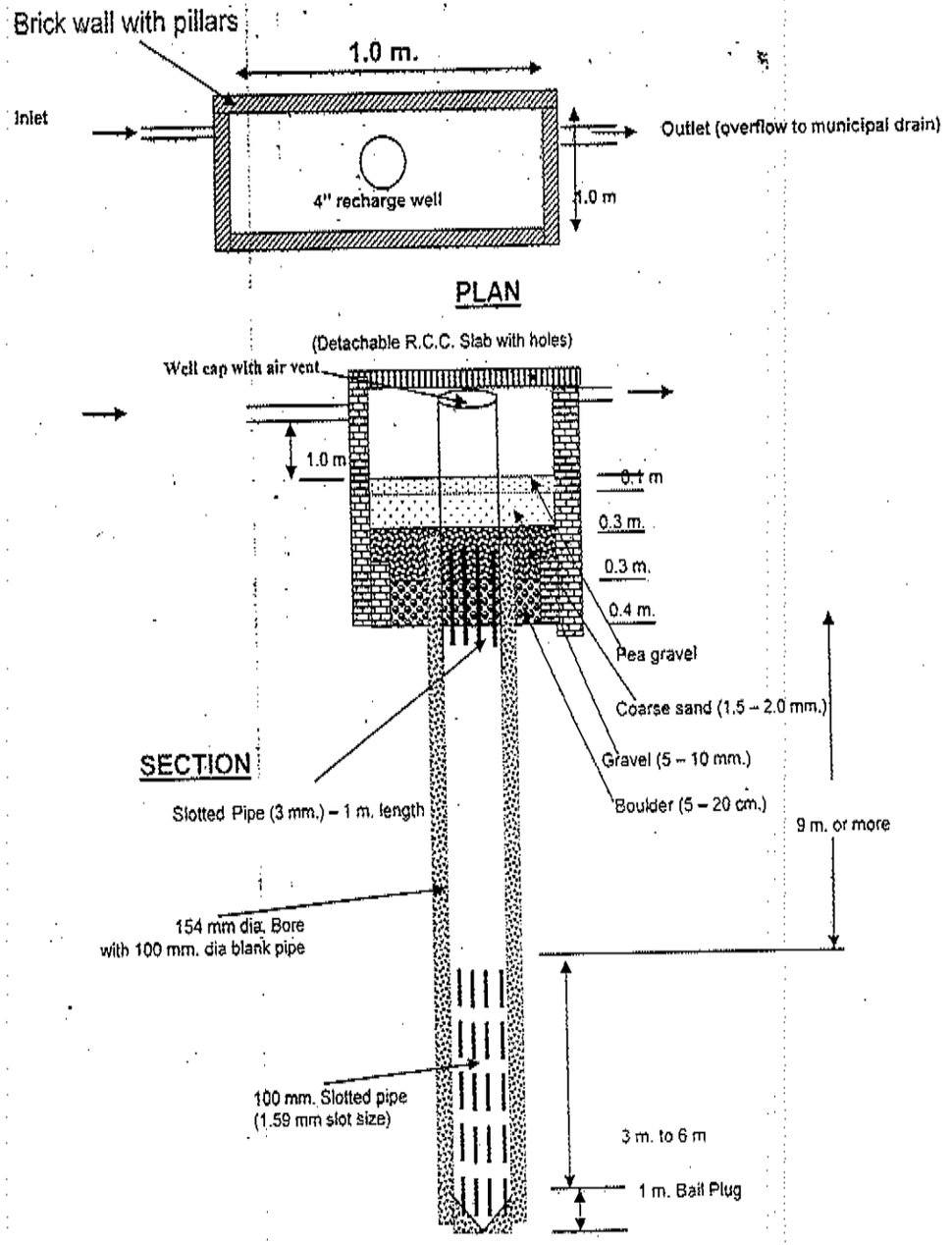
PLAN



Trench with Recharge well
(Roof top area100-200 sq. m)
(B2)



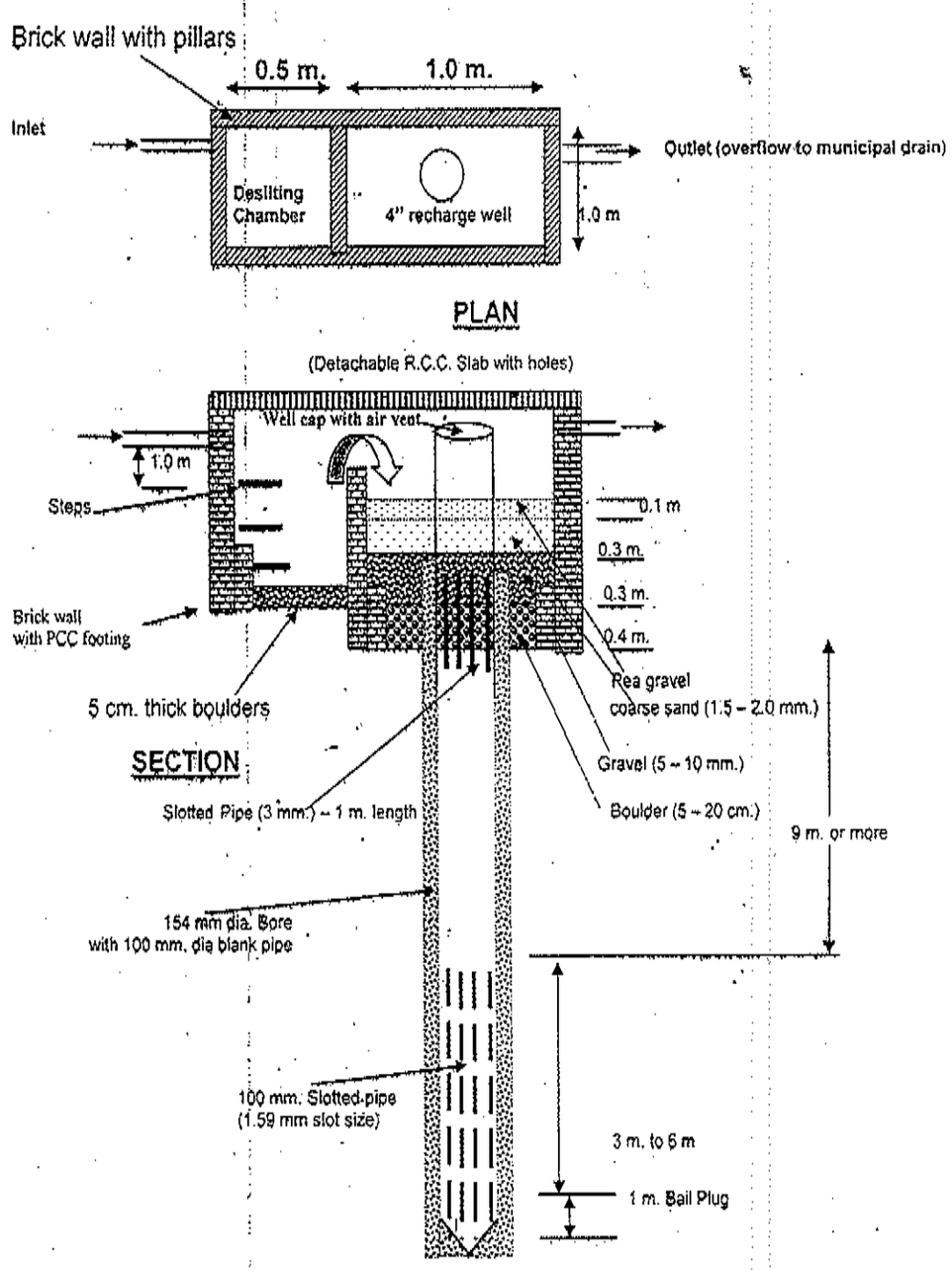
Trench with Recharge well
(Roof top area 200-300 sq. m)
(B3)



Trench with Recharge well & De-silting Chamber

(Roof top area 300-400 sq. m)

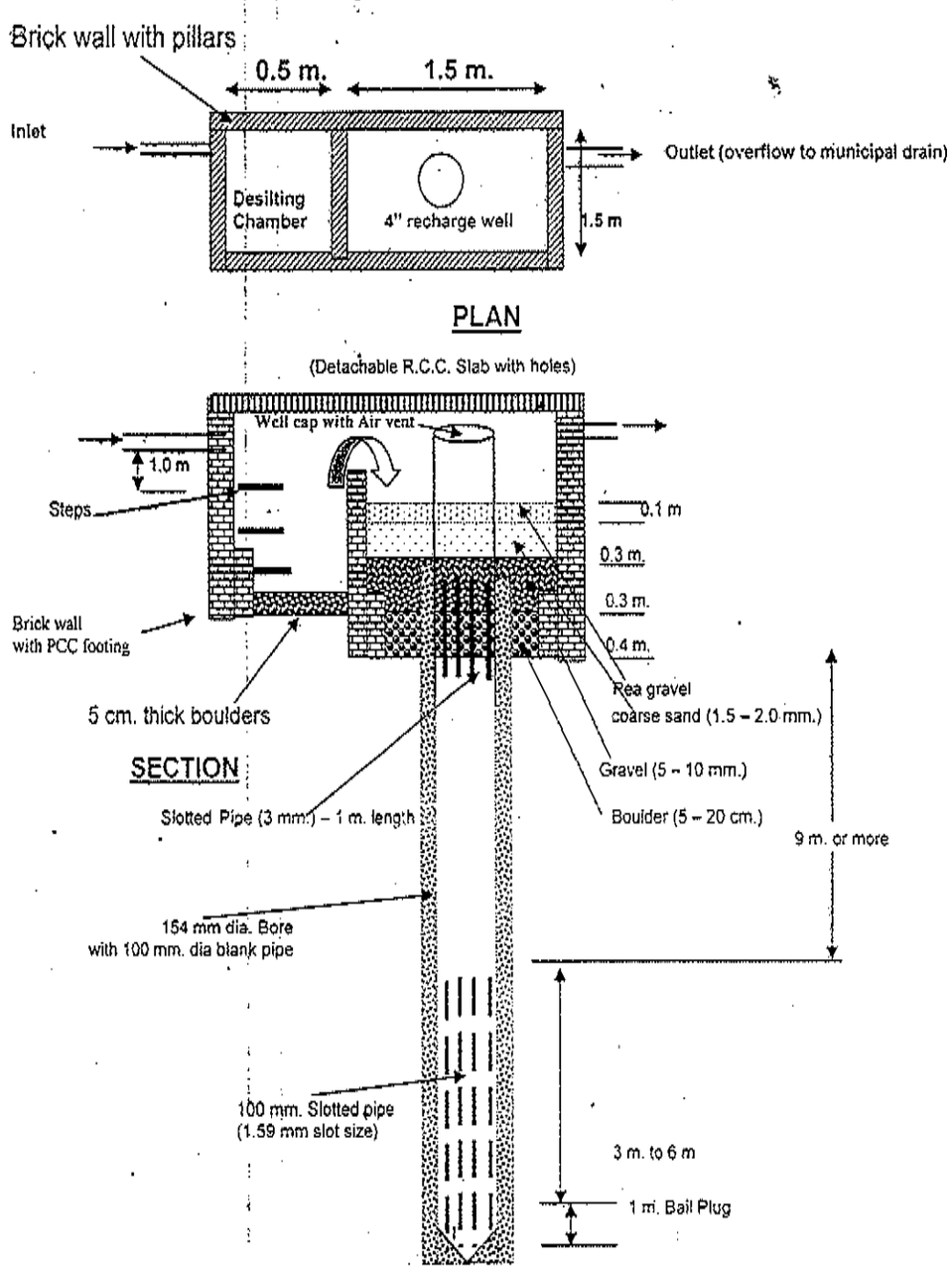
(B4)



Trench with Recharge well & De-silting Chamber

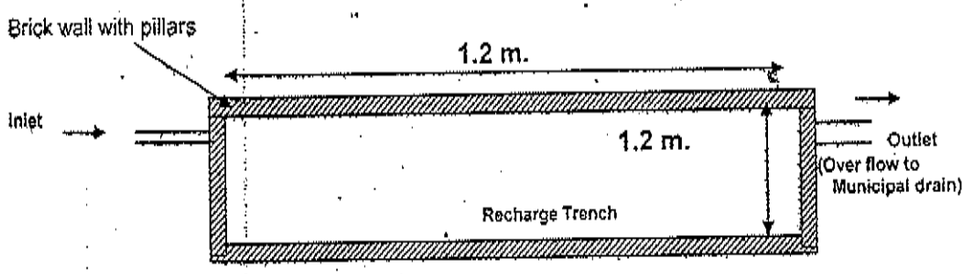
(Roof top area 400-500 sq. m)

(B5)



Recharge Trench (Roof Top area upto 100 sq. m.)

(A1)



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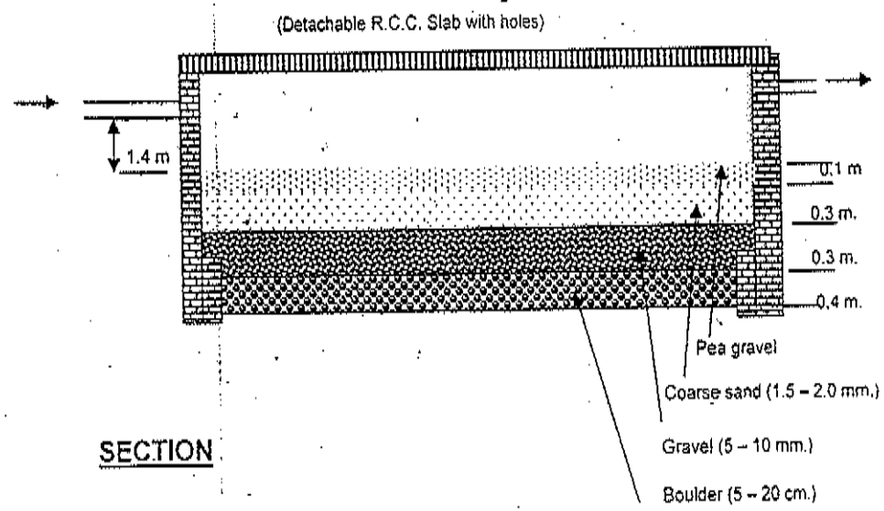


SECTION

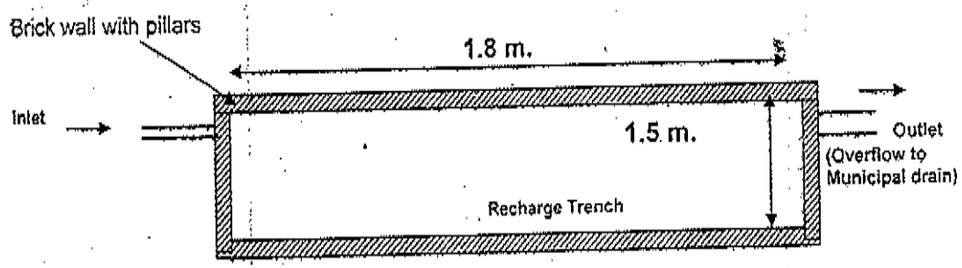
(All the dimensions are inner)

Note:

1. The design is indicative; the actual design depends on site condition.

Recharge Trench (Roof Top area 100-200 sq. m.)

(A2)



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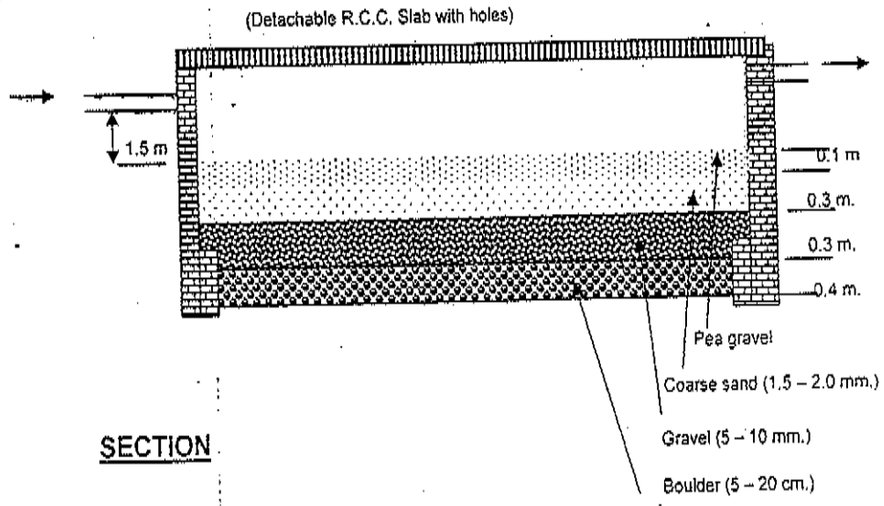


SECTION

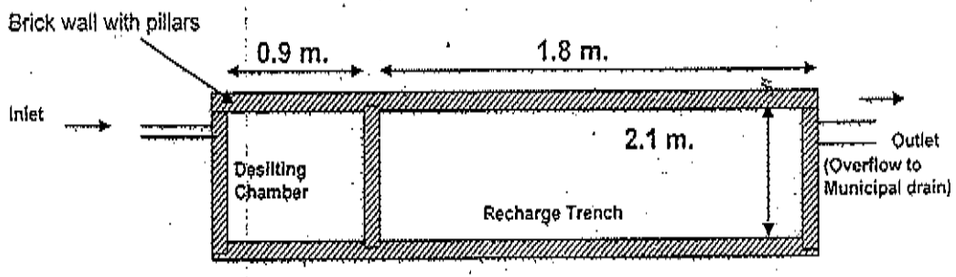
(All the dimensions are inner)

Note:

1. The design is indicative; the actual design depends on site condition.

Recharge Trench with Desilting Chamber (Roof Top area 300-400 sq. m.)

(A4)



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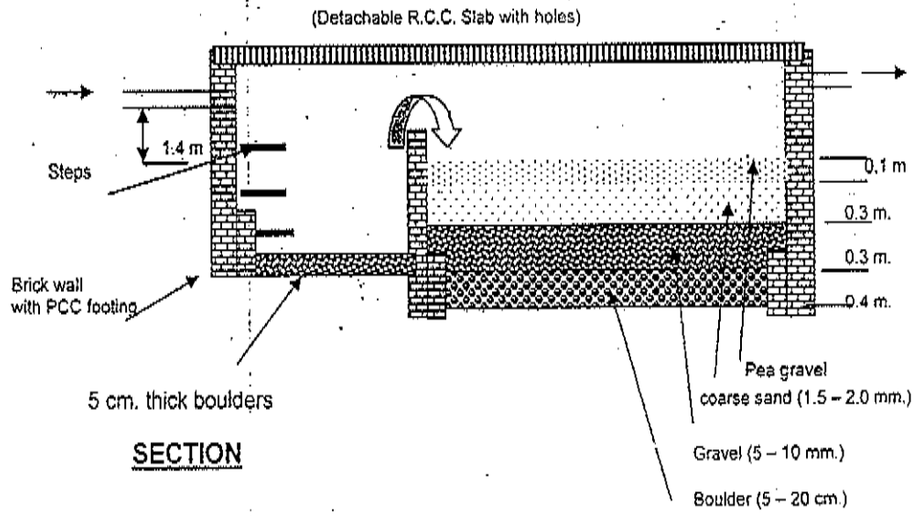


SECTION

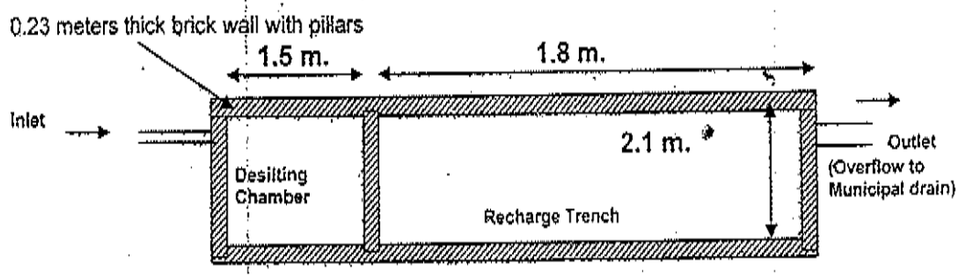
(All the dimensions are inner)

Note:

1. The design is indicative; the actual design depends on site condition.

Recharge Trench with Desilting Chamber (Roof Top area 400-500 sq. m.)

(A5)



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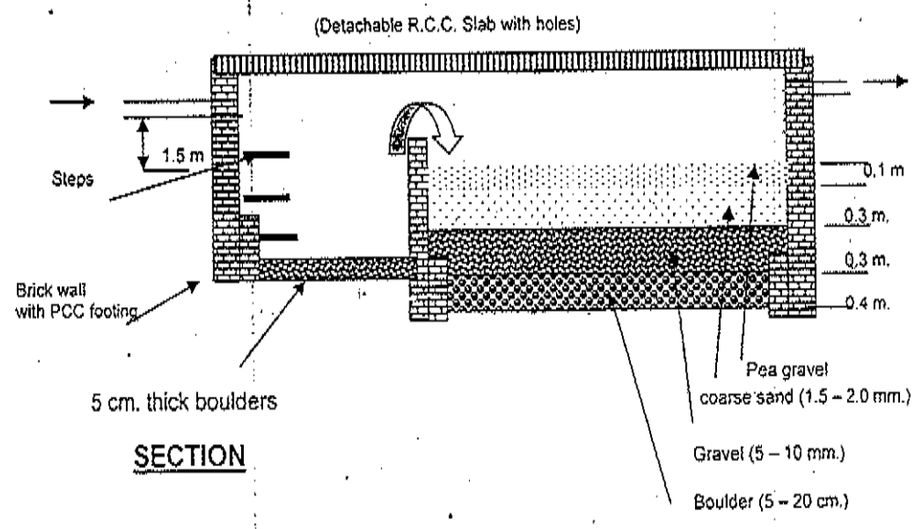

SECTION

(All the dimensions are inner)

Note:

1. The design is indicative; the actual design depends on site condition.

Item No. 01 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(27)

Original Application No. 148 of 2016
(M.A. No. 686/2017)

Mahesh Chandra Saxena Applicant(s)

Versus

South Delhi Municipal Corporation & Ors.

Respondent(s)

Date of hearing: 27.11.2018

CORAM :HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Mr. Rahul Khurana, Advocate with Mr. Mahesh Saxena, Applicant in person

For Respondent (s): Mr. Kush Sharma, ASC and Mr. Prateek Gautam, Advocate for Delhi Development Authority
: Mr. Narender Pal Singh, Advocate with Mr. Dinesh Jindal, LO
: Mr. B.V. Niren, Advocate for Central Ground Water Authority
: Ms. Sakshi Popli, Advocate and Mr. K.G. Mishra, Ex. Engineer for Delhi Jal Board
: Ms. Puja Kalra, Advocate and Mr. Raghuvendra Rathore, ADH for SDMC

ORDER

3. On 18.04.2017, the Tribunal directed holding of a meeting of SDMC, DJB, DDA and NCT Delhi to resolve the issue of laying of pipeline for utilization of treated water. Again, on 05.07.2017, SDMC and DJB were directed to hold a meeting and to resolve the issues.

4. On 17.07.2018, this Tribunal was informed that the pipeline could not be laid on account of the cost involved but an alternative could be considered to enable this to be done. The matter was adjourned for such alternative being considered.

5. On 11.10.2018, the DJB was directed to file an affidavit, indicating an action plan for utilization of treated waste water from all the STPs in Delhi. The Tribunal observed that treated water should be used as a resource for horticulture/floriculture and pisciculture (fish production) and not wasted. The Chief Secretary, Delhi was directed to hold a meeting and sort out the issues of inter-se responsibility of different departments.

6. An affidavit has been filed on behalf of the Delhi Jal Board on 16.11.2018, stating that there are 34 STPs at 20 locations where 460 MGD waste water is being treated. Huge quantity of treated waste water was being wasted. To tackle the problem, work of preparation of feasibility report was handed over to private agency.

8. There is thus clear failure on the part of the DJB as well as by Chief Secretary Delhi to carry out the directions of this Tribunal and also to utilize the treated waste water. This is also failure of their duties, entrusted to them under the law resulting in continuing waste of available treated water.

9. Needless to say that water is scarce resource and proper utilisation of waste water is utmost necessary to reduce the pressure on the ground water and to conserve the same. Failure of the Chief Secretary as well as DJB is detrimental to environment and also to the rule of law.

10. To compensate the environment for the loss caused on account of inaction, inspite of directions being given, it is necessary to reiterate the direction already issued and require DJB as well as Chief Secretary, Delhi to remedy situation to upload the rule of law.

11. Accordingly, we direct the Chief Secretary, Delhi and DJB to deposit a sum of Rs. 1 crore each with the CPCB for loss caused to the environment and to now prepare and furnish action plan positively within one month. The Chief Secretary must resolve any inter-se issue of responsibility of the concerned departments.

12. If there is further failure, the DJB and the Chief Secretary,

14. That report may be put up for consideration on 10th May, 2019.

15. A copy of this order be sent to CPCB by email for coordination and compliance by communicating with all the Chief Secretaries.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

November 27, 2018
sn

Item No. 13 (31) Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

M.A. No. 1800/2018
In
Original Application No. 148/2016

Mahesh Chandra Saxena — Applicant(s)

Versus

South Delhi Municipal Corporation & Ors. — Respondent(s)

Date of hearing: 04.01.2019

CORAM: **HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON**
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Mr. Sushil Kr. Jain, Senior Advocate and Mr. Ajay Jain, Advocate

ORDER

This application seeks to place on record an Action Plan prepared by Delhi Jal Board in the light of order dated 27.11.2018 and also seeks modification of the order with regard to the requirement to deposit the cost for loss to the environment. We do

(32)

Till the report of CPCB is received, direction to deposit the amount is held in abeyance.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

January 04, 2019
M.A. No. 1800/2018
in Original Application No. 148/2016
R