

CHAPTER 13

WATER SUPPLY AND SEWERAGE

Delhi Jal Board, an autonomous body under Govt. is responsible for procurement and treatment of bulk water in Delhi. It is responsible for supply of drinking water in areas of three Delhi Municipal corporations and also makes bulk supply of treated water to Delhi Cantonment Board and NDMC area for distribution. Source of Raw water in Delhi is from Ganga River (330 MGD), Yamuna River (207 MGD), Bhakra Storage (218 MGD) and from ground water (80 MGD). The water treatment and supply capacity, which was 650 MGD in 2002 has been increased to 906 MGD in 2014.

2. To meet the growing requirement of water due to the increase in population at a rapid rate, Delhi Jal Board (DJB) is sincerely putting concerted efforts to increase the water supply and treatment capacity in every Five Year Plan. Efforts are being made by the Government for an equitable and adequate Water Supply in all parts of the NCT of Delhi by laying new water lines, construction of Under Ground Reservoirs, construction of new Water Treatment Plants, etc.
3. As per 2011 Census, 33.41 lakh households were in Delhi, out of which 27.16 lakh households were provided piped water supply system. About 4.61 lakh households were getting water supply through tube wells/ deep bore hand pumps/ public hydrants and remaining 1.64 lakh households depended on other sources like river, canal, ponds, tank, spring, etc. The information regarding distributions of households by availability of Drinking water facility and source in Delhi as per 2011 Census is presented in Statement 13.1.

Statement 13.1

DISTRIBUTION OF HOUSEHOLDS BY AVAILABILITY OF DRINKING WATER FACILITY & SOURCE IN DELHI

No	Source and Availability of Drinking Water	Households (%)
I. Sources		
1.	Piped Water Supply System	81.30
	a. From Treated Source	75.20
	b. From Untreated Source	6.10
2.	Covered Well	0.10
3.	Hand pump	5.30
4.	Tube Well	8.40
5.	Tank, Pond, Lake	1.20
6.	Other Sources	3.70
II. Availability		
1.	Within the Premises	78.40
2.	Near the Premises	15.40
3.	Away	6.20

Source: - Census of India, 2011, Houses, Household Amenities and Assets.

4. About 81.3% households of Delhi now have access to piped water supply. Water production during summer season is being maintained at 835 MGD per day consistently. Water is supplied to about 18 million population of Delhi through a water supply network comprising of 14000 km long pipelines and more than 107 underground reservoirs (UGRs). 407 new water tankers with stainless steel containers and fitted with GPS have been engaged on long duration contact for improving the water tanker supply delivery system in the city.
5. Water supply distribution network has been developed in a planned manner to cover both planned and unplanned areas. Water supply is made available to 903 unauthorized colonies. Filter water supply is also provided to another 50 unauthorized colonies, covering a population of about 2 lakh people.

6. Water Requirement

- 6.1. Based on the norm of water supply of 60 Gallon Per Capita per Day (GPCD) as per Central Public Health and Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India assessed the total requirement of water of Delhi at 1020 MGD based on population of Delhi as per 2011 Census. The details of water requirement as per norms is as under;

Statement 13.2

DETAILS OF WATER REQUIREMENT NORMS - DJB

Sl. No	Details	Requirement of Water
1	Domestic	172 LPCD
2	Industrial, Commercial and Community requirement based on 45000 liters per hectare per day	47 LPCD
3	Fire protection based on 1% of the total demand	3 LPCD
4	Floating population and special uses like Hotels and Embassies	52 LPCD
	Total	274 LPCD (60 GPCD)

Source: - Delhi Jal Board

6.2. Master Plan of Delhi-2021 prepared by Delhi Development Authority proposed water requirement with the norm of 80 Gallon Per Capita Per Day (GPCD), out of which 50 GPCD is for domestic requirement and 30 GPCD for non-domestic purposes. The domestic water requirement of 50 GPCD comprises of 30 GPCD for potable needs and 20 GPCD for non-potable water usage.

Statement 13.3

WATER REQUIREMENT NORMS- AS PER MPD 2021

Sl. No	Norms	Quantum (GPCD)		Sources of Non-potable Water
		Potable	Non-potable	
1.	Domestic @50 GPCD	30	20	--
	Residential	30	20	Recycling & Permissible Ground Water Extraction at Community Level
2.	Non-domestic @30 GPCD	5	25	
	a. Irrigation, Horticulture, Recreational, Construction, Fire @6.65LPCD	-	10	Recycling from Sewerage Treatment Plants (STPs) and Permissible Ground Water Extraction
	b. Public, Semi-Public , Industrial and Commercial	5	15	Recycling from Common Effluent Treatment Plants (CETPs)
	Total @ 80 GPCD	35	45	

6.3. The estimated total requirement of water in Delhi based on the norms of MPD 2021 will be around 1140 MGD based on the norm of 60 GPCD to meet the requirement of projected population of 190 Lakhs upto 2017.

7. Water Supply Capacity

Statement 13.4

INSTALLED CAPACITY OF WATER TREATMENT PLANTS : 2006-2015

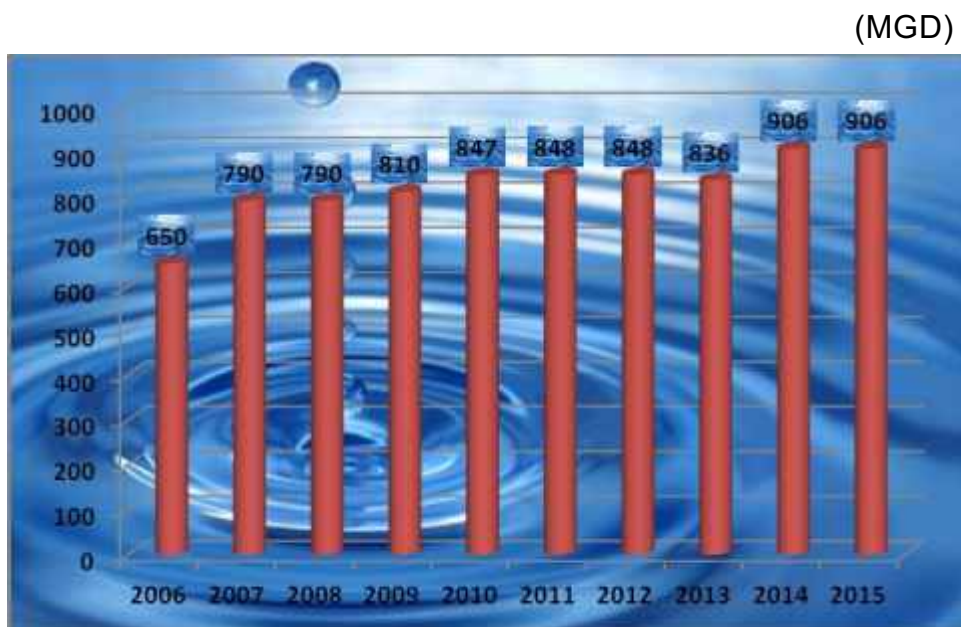
(As on 31st March)

S. No	Name of Plants	Capacity (MGD)									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1.	Chandrawal Water House No. I & II	90	90	90	90	90	90	90	90	90	90
2.	Wazirabad I, II & III	120	120	120	120	120	120	120	120	120	120
3.	Haiderpur	200	200	200	200	200	200	200	200	200	200
4.	North Shahdara (Bhagirathi)	100	100	100	100	100	100	100	100	100	100
5.	Bawana	--	--	--	20	20	20	20	20	20	20
6.	Nangloi	40	40	40	40	40	40	40	40	40	40
7.	Sonia Vihar	--	140	140	140	140	140	140	140	140	140
8.	Ranney Wells & Tube Wells	100	100	100	100	100	100	100	80	80	80
9.	Recycling of Water at Bhagirathi, Haiderpur & Wazirabad	--	--	--	--	37	37	37	45	45	45
10	Commonwealth Games Village	--	--	--	--	--	1	1	1	1	1
11	Okhla	--	--	--	--	--	--	--	--	20	20
12	Dwarka	--	--	--	--	--	--	--	--	50	50
	Total	650	790	790	810	847	848	848	836	906	906

Source: - Delhi Jal Board

- 7.1. The installed treatment capacity of Water in Delhi during 2006-15 is depicted in Chart 13.1. The installed capacity of DJB has been augmented by 39% during last 10 years. The capacity, which was 650 MGD in 2006 has been increased to 906 MGD in 2015.

Chart 13.1
INSTALLED TREATMENT CAPACITY OF WATER TREATMENT PLANTS
DELHI- 2006-2014



- 7.2. Two new Water Treatment Plants have been constructed at Dwarka (50 MGD) and Okhla (20 MGD). Raw water for these two plants would be available on construction of the pucca parallel channel from Munak to Haiderpur. Further, Bawana Water Treatment Plant (20 MGD) will be commissioned after availability of raw water.

8. Water Consumption

- 8.1. During 2013-14, DJB had the capacity of treating 835 MGD of water from all sources i.e. river Yamuna, Bhakra Storage, Upper Ganga Canal and from underground water resources. The peak production capacity of DJB was 843 MGD in July 2014.
- 8.2. The information regarding water supplied and billed to various categories of consumers by Delhi Jal Board during 2012-13 and 2013-14 is presented in Statement 13.5.

Statement 13.5
CATEGORY-WISE WATER CONNECTIONS, SALES AND PERCENTAGE OF SALES

Sl. No	Category	Connections (in lakh)		Sales (MGD)		% of Sales	
		2012-13	2013-14	2012-13	2013-14	2012-13	2013-14
1.	Domestic	18.46	19.21	240.00	230.51	77.19	76.66
2.	Commercial & Institutional	1.31	1.44	32.62	31.87	10.49	10.60
3.	Supply to NDMC & MES	--	--	35.01	35.00	11.26	11.64
	DDA	--	--	3.30	3.30	1.06	1.10
	Total	19.77	20.65	310.93	300.68	100.00	100.00

Source: - Delhi Jal Board

8.3. The information regarding water consumption in Delhi covering number of connections, domestic, commercial and industrial consumption is presented in Table 13.1 annexed in this report.

9. Raw Water Resources

9.1. The water supply treatment plants of Delhi Jal Board treated 755 MGD surface water and 80 MGD ground water as on March, 2014. The water resources of Delhi Jal Board are indicated in Statement 13.6

Statement 13.6
WATER SOURCES OF DELHI JAL BOARD

(As on March 2014)

Sl. No	Resources	Quantity (MGD)
1	Yamuna River	330
2	Ganga River	207
3	Bhakra Storage	218
4	Ground Water/ Ranney well/Tube well	80
Total		835

Source: - Delhi Jal Board

10. Ground Water

10.1. The decreasing ground water level in Delhi has become a matter of serious concern. At some places in South and South West Delhi, the water level has gone 20-30 meter below the ground level. The quality of underground water is deteriorating in several places. It has been found to be unfit for human consumption. The salinity of ground water is increasing in

South-West and North-West Delhi. In some areas of Shahdara and Kanjhawala, Nitrate content has been found to be more than 1000 mg/ liter. Fluoride and chemical concentrations, more than prescribed limits, have also been found in ground water at various locations in Delhi. To tackle these problems, the Central Ground Water Board has taken steps to regulate the number of tube-wells being commissioned in Delhi.

- 10.2. As on March 2014, Delhi Jal Board has 3961 functional Tube Wells and 14 Ranney Wells. The Flood plains downstream of Wazirabad and the area adjacent to Najafgarh Lake are being explored for extraction of water on sustainable basis. Pre-feasibility studies for ground water recharge through the abandoned Bhatti Mines and Canal system in the North Western region of Delhi have also been taken.
- 10.3. Deepening of old lakes and other water bodies, preserving and developing the forest area in Delhi, construction of check dams at Asola Wild Life Sanctuary and plantation of trees, are some of the steps being taken to improve ground water resources by custodian department.

11. Parallel Channel from Munak to Haiderpur

- 11.1. About 30-50 per cent of the raw water discharged from Tajewala Head works is lost through seepage during transit in the present water carrier system comprising of Western Yamuna Canal system and River Yamuna. To minimize the en-route losses, a parallel pucca channel has been constructed from Munak to Haiderpur. This channel of 102 kms. has been constructed by the Haryana Govt as a deposit work on behalf of Govt of Delhi. The estimated cost of the Channel is ₹ 520 crores. Delhi is expected to have increased availability of about 95 MGD within the existing releases at Munak on commissioning of this channel.

12. Reservoirs

- 12.1. Renuka Dam, Kishau Dam and Lakhwar Vyasi Dam are proposed to be constructed so that Delhi gets its due share in Yamuna water as per Yamuna Water Sharing Agreement signed in May, 1994. The approved allocation of Yamuna water to each state is presented in Statement No. 13.7. About 275 MGD water will be available to Delhi from Renuka Dam. Delhi will also get 372 MGD water from Kishau reservoir and 135 MGD from Lakhwar Vyasi reservoir.

Statement 13.7
APPROVED ALLOCATION OF WATER FROM
YAMUNA RIVER TO STATES

Sl. No.	States	Allocation (BCM)			Total(BCM)
		July to Oct.	Nov. to Feb	March to June	
1	Haryana	4.107	0.686	0.937	5.730
2	Uttar Pradesh	3.216	0.343	0.473	4.032
3	Rajasthan	0.963	0.070	0.086	1.119
4	Himachal Pradesh	0.190	0.108	0.080	0.378
5	Delhi	0.580 (Consumptive 1926+495 return flow) or 2421 cusec	0.068 (Consumptive 231+495 return flow) or 726 cusec	0.076 (Consumptive 255+495 return flow) or 750 cusec	0.724 (Consumptive 806+495 return flow) or 2350 cusec

Source: - Delhi Jal Board

Note: - BCM - Billion Cubic Meter.

12.2. Present Status of Renuka Dam: The clearance under FCA (1980) is in advanced stage with Ministry of Environment & Forest (MoEF), Govt. of India. A meeting of Forest Advisory Committee (FAC) was held on 18th July, 2014 to consider the Forest Clearance under FCA (1980) for Renuka Dam Project and all clarification were given by the respective state government.

13. Water Accounting and Auditing

13.1. Till now Delhi Jal Board was using old system for measuring the quantity of raw water available at water treatment plants and the quantity of treated water supplied by treatment plants for distribution. Similar, was the position at underground water tanks, reservoir and booster pumping stations. Due to this system, Delhi Jal Board was not able to assess exact amount of water distribution losses. To overcome this situation, Delhi Jal Board has started a comprehensive programme for installation of bulk meters at all water treatment plants. About 282 bulk meters have already been installed.

13.2. Delhi Jal Board has also decided to install bulk meters on all distribution mains, underground reservoirs and booster pumping stations for correct measurement of water supply from these points upto different localities / consumer points.

13.3. Complete and correct water supply accounting could not be done by Delhi Jal Board due to the following facts;

- As on 1st April 2014, there were 2.87 Lakh un-metered connections. (Table 13.1)
- Around 4 lakh meters were defective or non-functional.

- Fixing of maximum average of 20 KL/30 KL per month (as the case may be) for domestic consumers, if water meters are non-functional and till defective water meter is replaced.
- 13.4. Delhi Jal Board has streamlined its system for obtaining water meters for metering of unmetered supply of water. The existing system of supply of water meter along with sanction of water connection has been amended and now consumers can purchase water meters of approved specifications from the open market. The consumers having Delhi Jal Board's defective meters have been allowed to get the defective meter replaced with private water meter and have been given option either to get the refund of meter security or get the same adjusted towards water charges in future.

14. Water Tariff

- 14.1. The tariff is based on the principle of "use more pay more". At higher consumption levels, the tariff acts as a disincentive to consumer for excessive use of water or wastage of water. As against the Estimated of revenue collection of ₹1268.69 crore, ₹1092.25 crore has been collected up to March 2015 with collection efficiency of 86%.
- 14.2. Special subsidy in water charges has been allowed to resettlement colonies and rural areas where water charges are being recovered on assumed average of 10 Kl. per connection per month. As a public welfare measure, water consumption upto 6 Kl. per connection in a month is without any charge for all domestic consumers except service charge. Salient features of existing water tariff are as under:
- Existing water tariff has two parts. One is Service Charge and other Volumetric Water Consumption Charge applicable w.e.f. 1.12.2004 and 1.4.2005 respectively.
 - 60 per cent of water consumption charges are recoverable towards Sewerage Maintenance Charge from such colonies / areas where sewerage services have been provided / maintained by the Delhi Jal Board.
 - In case of bulk connection for a colony / group housing society serving a number of residential premises, water charges will be worked out as per residential unit-wise at the domestic rates applicable from time to time.
- 14.3. Water Tariff for Un-metered Connections in JJ Resettlement Colonies and Rural Areas: Water charges are applicable on assumed average of 10 Kl. Per month per connection and service charge. Water consumption rates are same as referred to in the preceding Para. Sewerage maintenance charge is also recoverable, if sewerage services are being managed by Delhi Jal Board. Besides above, water cess is recoverable from all consumers at the rates determined by the Central Government from time to time.
- 14.4. Present Subsidy on Water: All domestic consumers of Delhi Jal Board consuming water up

to 20 KL per month and having functional water meters are being given 100% subsidy and fully exempted from payment of water bill including all components namely, water charges, sewerage maintenance charge, service charges, meter rent (wherever applicable) and cess w.e.f 01.03.2015.

15. Rain Water Harvesting

15.1. DJB has provided Rain Water Harvesting in its 151 no. installations. DJB has provided financial assistance to the tune of ₹ 82 lac for 172 cases in the institutional category for providing Rain Water Harvesting Systems. The Rain Water Harvesting Cell of DJB provides technical assistance to individuals for providing Rain Water Harvesting. DJB has provided the information regarding Rain Water Harvesting on its website www.delhijalboard.nic.in for public facilitation. 2 no. of NGOs have been engaged by DJB to create public awareness and promote community participation to implement Rain Water Harvesting.

15.2. The following provisions have been made in the Delhi Water & Sewer Tariff and Metering Regulations, July' 2012 for promoting Rain Water Harvesting:

(A) Regulation 8(d) of Chapter II provides that for Category D consumers, the following rebate is given in tariff for provision of Rain Water Harvesting, Waste Water Recycling or both:-

- i) Such plot/properties which are having area of 2000 square meter or more and having installed functional rain water harvesting system or waste water recycling system, shall be granted rebate of 10% in the total bill amount and 15% if both the above systems have been set up and functional.
- ii) If the Rain Water Harvesting system is adopted by a society then the individual member of that society will be entitled to above mentioned rebate in water bill.
- iii) The area Zonal Engineer or such other suitable agency as authorized by the board will provide a functional certificate in respect of the above systems mentioning therein that substantive portion of the plot/ property has been covered as far as Rain Water Harvesting is concerned. Similarly, he will certify that substantive quantity of the waste water generated has been recycled by the consumer. A certificate will be issued after every six months.

(B) Regulation 50 of Chapter V provides that rainwater harvesting is mandatory :-

- i) The consumer of the Board having a plot/property of size 500 sq. metre or more shall make provision for rain water harvesting covering the entire plot area, within one year, in case of commercial/industrial property and within three years for residential property from the date of coming into force of these regulations under intimation to the area ZERO.
- ii) In case, the consumer fails to comply the above provisions within the time limit the tariff as applicable for the consumer respective category will be increased by 1.5 times till the provision is installed.

16. Water Conservation

- 16.1. Delhi has a network of about 11350 Kilometers of water supply mains, of which, a significant portion is as old as 40 to 50 years and prone to higher leakage losses. Normally, water losses are calculated by water billed or consumed subtracted from the water produced. In the case of Delhi, water billed or consumed and leakage losses there from cannot be calculated exactly as a majority of houses do not have working meters. According to the estimates of Delhi Jal Board, the total distribution losses are of the order of 40 per cent of the total water supplied. These are quite high as compared to 10-20 per cent in the developing countries. The distribution losses include losses due to (a) leaking pipes and (b) theft of water through unauthorized connections.
- 16.2. Delhi Jal Board has taken several steps to minimize leakage losses. To address this problem, a leak detection and investigation (LDI) cell was set up. The Board has replaced about 1200 KM length of the old, damaged and leaking water mains during the last five years. As a result of these initiatives, the Board expects to bring down the distribution losses to 20 per cent level in the near future.
- 16.3. Delhi Jal Board has formulated a programme for recycling of backwash water in four major water treatment plants at Haiderpur, Bhagirathi, Chandrawal and Wazirabad. The work for commissioning of recycling plant at Haiderpur, Bhagirathi, Wazirabad recycling plant has been completed. About 45 MGD water supplies will be available without any additional raw water from these four plants.

17. Sewage Treatment Capacity

- 17.1. Sewage treatment capacity of Delhi Jal Board increased from 402.40 MGD in 31st March 2001 to 613.72 MGD in 31st March 2015. The information regarding the sewerage treatment capacity and percentage of utilization is presented in Statement 13.8.

Statement 13.8
SEWERAGE TREATMENT CAPACITY AND ITS UTILIZATION

(MGD)

Sl. No	Name of Sewerage Treatment Plants(STPs)	Capacity		Actual Treatment as on 31.3.2015	% of Utilization
		31.3.2001	31.3.2015		
1.	Okhla	140.00	170.00	134.40	79.06
2.	Keshopur	72.00	72.00	56.15	77.99
3.	Coronation Pillar with Oxidation Ponds at Timarpur	46.00	46.00	19.96	43.39
4.	Rithala	40.00	80.00	54.19	67.74
5.	Kondli I, II, III, IV	45.00	90.00	40.10	44.56
6.	Yamuna Vihar I,II	10.00	20.00	16.57	82.85
7.	Vasant Kunj	5.00	5.00	4.39	87.80
8.	Ghitorni	5.00	5.00	0.00	0.00
9.	Pappankalan	20.00	30.00	30.82	102.73
10.	Narela	10.00	10.00	1.01	10.10
11.	Najafgarh	5.00	5.00	1.10	22.00
12.	Delhi Gate	2.20	2.20	2.38	108.18
13.	Sen Nursing Home	2.20	2.20	2.41	109.55
14.	Rohini	--	15.00	2.65	17.67
15.	Nilothi	--	40.00	12.50	31.25
16.	Mehrauli	--	5.00	3.12	62.40
17.	CWG Village	--	1.00	0.19	19.00
18.	Molarbad	--	0.66	0.66	100.00
19.	Bakkerwala	--	0.66	0.01	1.52
20.	Timarpur				
21.	Kapeshera		5.00	2.65	53.00
22.	Chilla		9.00	9.00	100.
	Total	402.40	613.72	394.26	64.24

Source: - Delhi Jal Board

17.2. It is evident from the above statement that the percentage of utilization of sewerage treatment plant in Delhi as on 31st March 2015 was 64.24 per cent. The sewerage

treatment plants are not functioning up to their optimum level due to various reasons such as low flow of sewage to STPs, trunk and peripheral sewer lines still to be connected to these STPs, Rehabilitation of Silted and settled Truck Sewer Lines yet to be completed, etc. The sewage generation, at present, is estimated to be around 670 MGD = (840 water production x 0.8) and treatment is around 394 MGD only.

- 17.3. Delhi Jal Board has a network of branch, peripheral sewers of about 7000 kms. Also there is network of 192 kms of trunk sewers. The rehabilitation/ de-silting have been completed in a trunk sewer and is in progress in peripheral sewer.
- 17.4. The consultant for World Bank funded, "Delhi Water Supply & Sewerage Project" estimated 5259 MLD water supply requirement for Delhi in 2021 and waste water generation from this level of water supply will be about 3760 MLD. The information regarding the same is presented in Statement 13.9.

Statement 13.9
WATER SUPPLY REQUIREMENT AND WASTE WATER
GENERATION ESTIMATED

Sl. No	Details	Volumes (MLD)				
		2004	2005	2006	2011	2021
1.	Total water demand	2685	3763	4090	5181	6272
2.	Total net water supply	2265	2362	2461	3573	5259
3.	Waste water generated	1812	3010	3272	4144	5017
4.	Treated at CETP	200	217	234	346	755
5.	Proportion not sewered	14%	13%	13%	10%	5%
6.	Outside sewered area	254	302	302	294	210
7.	Net generated waste water	1358	1722	1798	2218	3242
8.	Infiltration	518	518	518	518	518
9.	Gross Wastewater to treatment	1876	2240	2316	2736	3760

Source:- Delhi Jal Board

18. Expenditure Incurred on Water Supply and Sewerage Programmes

- 18.1. The expenditure incurred on water supply and sewerage programmes in Delhi during 2007-15 is presented in Statement 13.10.

Statement 13.10

PLAN FUND RELEASED TO DJB FOR WATER SUPPLY AND SEWERAGE PROGRAMMES IN DELHI DURING 2007-2015

(₹ Crore)

Sl. No	Year	Water Supply	Sewerage	Total
1	2007-08	962.01	383.96	1345.97
2	2008-09	1015.17	441.73	1456.90
3	2009-10	1080.35	568.55	1648.90
4	2010-11	1080.14	527.93	1608.07
5	2011-12	1033.02	528.02	1561.04
6	2012-13	964.97	752.40	1717.37
7	2013-14	796.77	753.23	1550.00
8	2014-15	854.50	934.50	1789.00

18.2. It may be observed from Statement 13.10 that for water supply and sanitation, Govt. of Delhi has released fund to DJB ₹ 1789 crore in 2014-15. The same was ₹ 1346 crore in 2007-08, thus the funding support to DJB by GNCTD was increased by 33% during the last 8 years.

19. Re-use of Waste Water

19.1. The major reuse of treated waste water in and around the city is for irrigation, horticulture and industrial use. There is now demand for use of treated waste water for cooling in the power stations. Other options include ground water recharge, return to be raw water source, and the treatment and reuse of treated waste water, for flushing of toilets, i.e. use for non-potable purposes like washing of Railways, Buses, Construction industry.

19.2. Presently, Delhi Jal Board supply about 142 MGD of treated waste water to the Irrigation Department, Power Plants and for irrigation purposes by CPWD and in Rohini area by DDA & Flood Control and Irrigation Department. Treated water supply to various purposes in Delhi is presented in Statement 13.11. Efforts are being made to increase the treated waste water supply from 142 MGD to 210 MGD in subsequent years.

Statement 13.11
TREATED WASTE WATER SUPPLY FOR VARIOUS PURPOSES

Sl. No.	Details	Units (MGD)	Per cent
1.	Treated effluent supplied from Keshopur STP for Irrigation purposes	30.00	56.60
2.	From Okhla STP to CPWD and Irrigation department for horticulture/Irrigation purpose	37.00	29.60
3.	From Coronation Pillar STP for DDA Golf Course at Bhalswa, Gammon India for construction purposes. Minor Irrigation Department at Palla	12.00	70.59
4.	From Rithala STP to PPCL for their plant at Bawana and NDPL for their owner plant at Rohini	27.00	62.79
5.	From Vasant Kunj to Sanjay Van	5.00	100.00
6.	From Mehrauli STP to Garden of Seven Senses	2.00	66.67
7.	From Delhi Gate and Sen Nursing Home STP to PPCL	4.00	83.16
8.	From Nilothi STP to Flood Control & Irrigation Deptt. for Irrigation purposes	16.00	100.00
9.	From Papankalan STP for Irrigation purposes to DDA	8.00	50.00
10.	From Commonwealth Gamrs Village STP to Common Wealth Games Complex for non-potable purposes	1.00	100.00
	Total	142.00	51.00

Source: - Delhi Jal Board.

- 19.3. A number of small reuse projects are in the planning stages. Besides, Sewerage Treatment Plants of Delhi Jal Board, treated waste water is available from Common Effluent Treatment Plants in industrial areas being maintained by DSIIDC and Mini Sewerage Treatment Plants of Delhi Urban Shelter Improvement Board (DUSIB).
- 19.4. Major drains pollute Yamuna River for various reasons due to over-flow of untreated sewage from unsewered areas. It has been decided to lay interceptor sewers for cleaning Yamuna River. Work has been started on laying of interceptor sewers along Najafgarh, Supplementary and Shahdara drains.
- 19.5. Delhi Development Authority is responsible for 4,451 hectares of open spaces, all of which are irrigated via tube wells. There is also irrigation of Delhi Municipal Corporations open spaces, Central Government properties, private parks and properties, road verges, sports stadiums etc. The information regarding the green areas being maintained by the various agencies is presented in Statement 13.12.

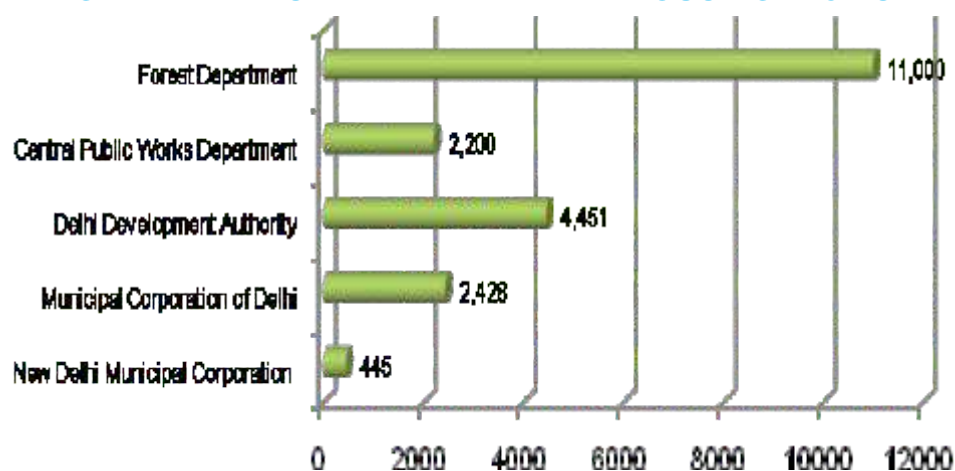
Statement 13.12
GREEN AREAS MAINTAINED BY VARIOUS AGENCIES

Sl. No	Agencies	Green Areas (in hectares)	% age
1.	New Delhi Municipal Council	445	2.17
2.	Municipal Corporations of Delhi	2,428	11.83
3.	Delhi Development Authority	4,451	21.69
4.	Central Public Works Department	2,200	10.71
5.	Forest Department	11,000	53.60
	Total	20,524	100.00

Source:- Delhi Jal Board

19.6. The green areas maintained by various agencies in Delhi are depicted in Chart 13.2.

Chart 13.2
GREEN AREAS MAINTAINED BY VARIOUS AGENCIES



19.7. The colonies/category wise progress of sewerage system is given in statement 13.13.

Statement 13.13
COLONIES/CATEGORY WISE PROGRESS OF SEWAGE SYSTEM

Sl. No	Colonies / categories	Total no of colonies	Total no of Sewerage System
1.	Unauthorised Regularised Colonies	567	535
2.	Urban Village	135	129
3.	Rural Villages	219	34
4.	Unauthorised Colonies	1639	98
5.	Resettlement Colonies	44	44

Source: - Delhi Jal Board - SMP 2031