

Inspiron Engineering Pvt Ltd

Water Audit Report



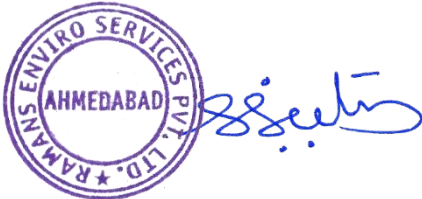
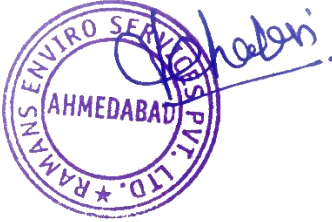
Prepared by:
**Ramans Enviro
Services Pvt Ltd**

Water Audit Report

For InspirOn Engineering Pvt Ltd



For the Year 2024-25

Project Number	01042025	Issue No.	1	Revision No.	0	Released	April, 2025
							
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1 Introduction

1.1 Background Information/ Brief about the Industry

Inspiron Engineering Pvt Ltd (Unit 1) is involved in the manufacturing of textile Flyer, Stenter Machine and machining of die-cast parts.

Product details with the capacity is mentioned in below table.

Sr. No	Product	Capacity
1	Aluminium die casting article (O/N die cast)	200 MT/Month
2	Flyer	15000 Nos./ Month
3	Stenters	3 Units/ Month
4	Surface treatment and painting of sheet metal	58 Nos/ Month

Inspiron Engineering Pvt Ltd (unit 1) is Located at Survey No 320, Near GIDC, Odhav, Odhav Road, Ahmadabad, Gujarat – 382 415

Coordinates of the site are Latitude: 23° 1'24.09"N Longitude: 72°39'39.99"E. Locations of the project, is shown in Figure 1. The project site is approachable by NH 48. Nearest railway station is Kalupur (Ahmedabad) Railway Station at about 6.5 km and Ahmedabad Airport at about 5.51 km. There is no national park, wildlife sanctuary, eco sensitive or wet land areas in surrounding 10 km radius. Distance of Site to Thol Lake is ~27.5 km. The Land use detail of project site is described in below table.

Sr. No	Land Use Details	Existing (sq meter)
1	Green Belt Area	2600.00
2	Open Land	0.00
3	Road/ Paved Area	4000.00
4	Rooftop area of building/ sheds	7000.00
5	Total	13600.00

1.2 Importance of Water Audit Report/ Scope of the Audit

A water Audit is an important management tool for the effective conservation of water. Broadly water audits should be conducted categorically in two systems, resource audit or supply side audit and the other one is consumption audit on the demand side. A water audit in the plant is conducted to identify supplied water quantity, water usage, losses, and water quality, identify and prioritize areas that need immediate attention for control, raise awareness on monitoring water consumption, and provide suggestions for effective water conservation.

The broad area of scope of work includes performance assessment of raw water sources & existing storage systems, estimation of present water consumption, water balance across the entire system, assessment of water consumption per unit generation, water quality management plan, measures of improving the efficiency of water utility networks and to enhance the operational efficiency through controls.

The plant meets its water necessity from groundwater which is extracted with the help of one bore well-constructed on site for ground water withdrawal. The groundwater is preoccupied through one bore well situated on plant premises. The water obtained from the dug well is stored in underground tank having a then it is further distributed for the use of domestic, process and cooling purpose. The treated water is reused for the gardening purpose.

2 Water Usage Overview

The unit has one bore well working for the abstraction of groundwater and the current usage mostly consists of the use of water for Domestic purpose as well as process and gardening purpose.

2.1 Source of water supply

Source of the water supply is only groundwater through the bore well. Net ground water requirement through bore well is 51 KLD. Water consumption is mainly use for Domestic, Industrial and Greenbelt for better understand water balance diagram is shown below.

Water Balance Diagram

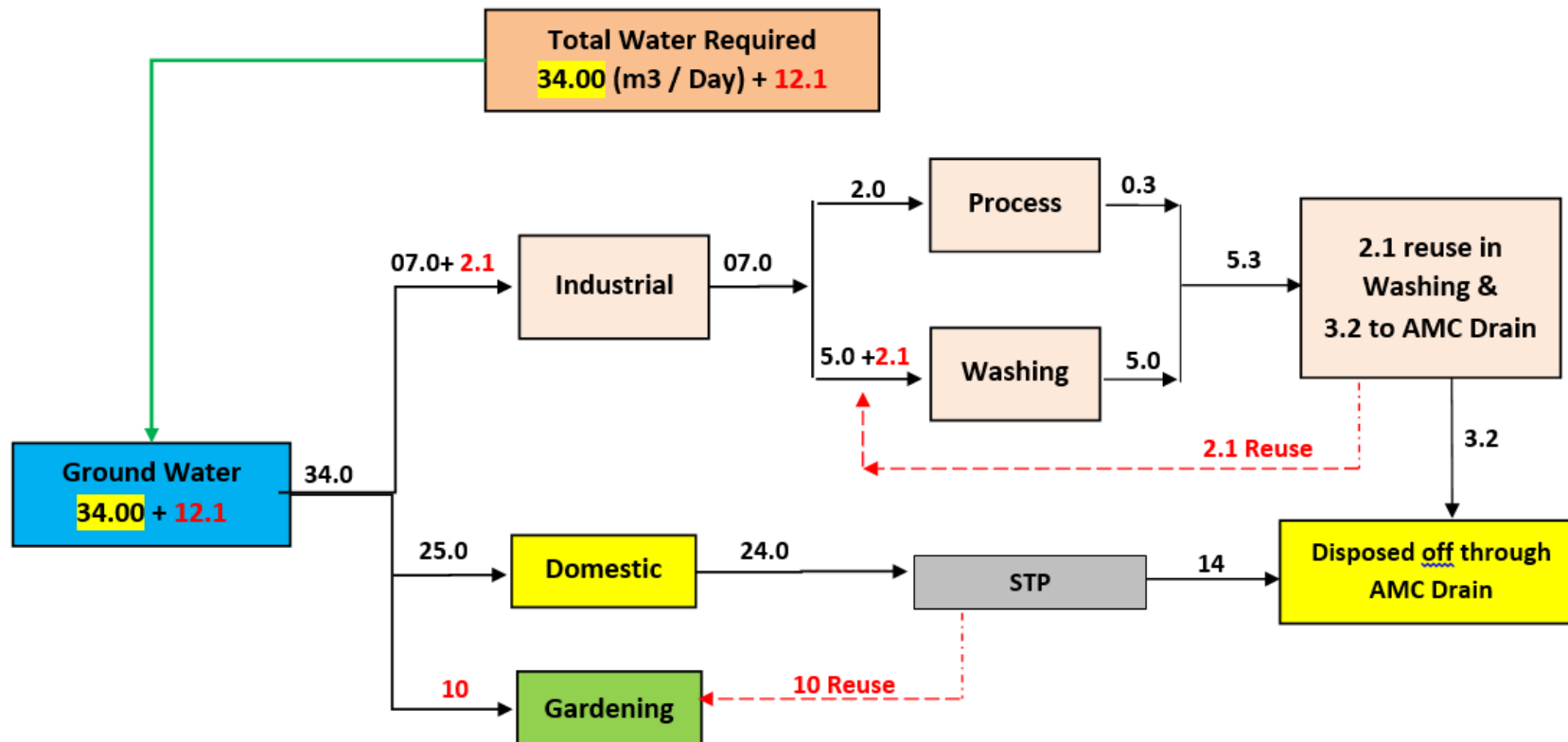
Industry Name: M/s Inspiron Engineering Pvt Ltd- Unit 1

(All figures are in m³/day)

Total Water Required: $00 + 34.00 + 12.1 = 46.1 \text{ m}^3/\text{day}$ #

1. Existing Surface Water Supply: $00 \text{ m}^3/\text{day}$
2. Initial Groundwater Requirement: $34.0 + 12.1 = 46.1 \text{ m}^3/\text{day}$
3. Recycled Water Used: $12.1 \text{ m}^3/\text{day}$
4. **Net Ground Water Requirement = $34.00 \text{ m}^3/\text{day}$ – CONSIDERED FOR NOC**

1. Industrial Water Requirement: $\approx 07 \text{ m}^3/\text{day}$.
2. Residential /Domestic: $25.00 \text{ m}^3/\text{day}$.
3. Green Belt etc.: $10.00 \text{ m}^3/\text{day}$
4. Other Uses: $00 \text{ m}^3/\text{day}$



2.2 Regulatory Compliance

The unit has obtained Groundwater Abstraction permission from the Central Ground Water Authority. The CGWA NOC no. CGWA/NOC/IND/ORIG/2021/13849 dated 20/11/2021, Application No. 21-4/7992/GJ/IND/2021.

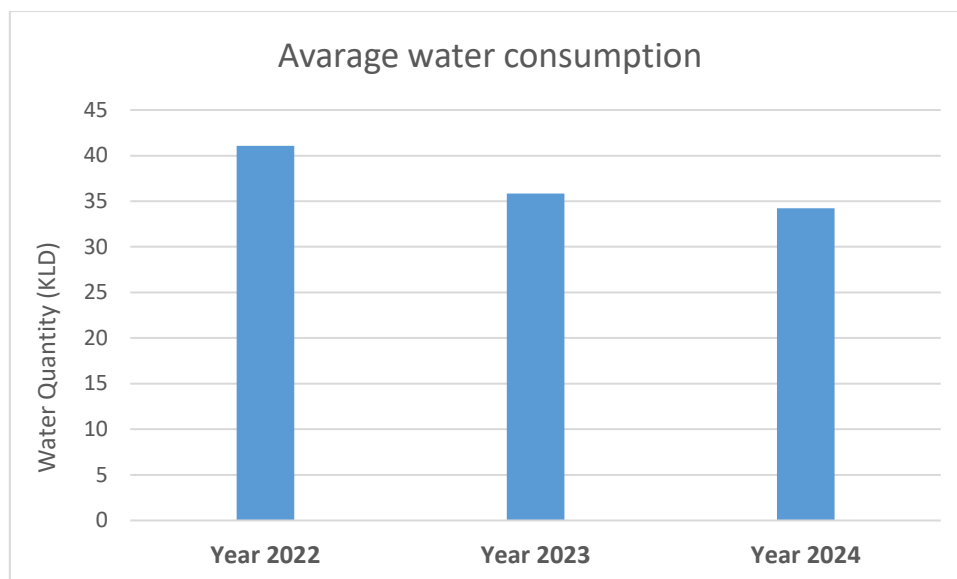
2.3 Consumption of the Water data

The current water consumption of the plant is within the permissible limit of CGWA NOC. Consumption of the water data of the year 2022 to 2024 is shown below.

year 2022		Year 2023		Year 2024	
Month	Water Quantity KLD	Month	Water Quantity KLD	Month	Water Quantity KLD
March	44.02	Jan	30.6	Jan	31.04
April	52.25	Feb	31.8	Feb	33.19
May	53.41	Mar	31.6	Mar	35.68
June	47.47	Apr	40.6	Apr	37.65
July	39.53	May	38.19	May	41.71
August	33.5	Jun	34.28	Jun	37.28
September	32.62	Jul	35.83	Jul	33.5
October	42.81	Aug	36.32	Aug	26.69
November	32.39	Sep	35.75	Sep	33.98
December	32.76	Oct	41.54	Oct	34.8
		Nov	36.97	Nov	30.94
		Dec	36.93	Dec	34.72

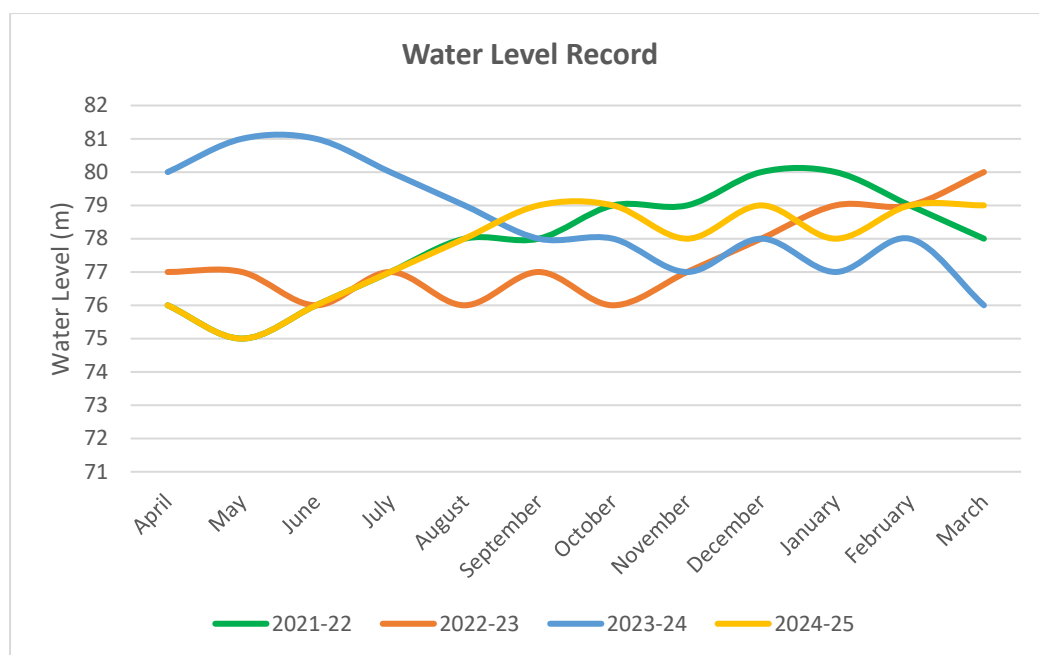
2.4 Seasonal Usage Patterns

All over usage of the industry is remain same in all season will reached approved CGWA NOC.



There is piezometer well also constructed to monitor the water level variation due to the groundwater abstraction. The water level data for the piezometer well is mentioned in below table.

Month	Water Level (m)			
	2021-22	2022-23	2023-24	2024-25
April	76	77	80	76
May	75	77	81	75
June	76	76	81	76
July	77	77	80	77
August	78	76	79	78
September	78	77	78	79
October	79	76	78	79
November	79	77	77	78
December	80	78	78	79
January	80	79	77	78
February	79	79	78	79
March	78	80	76	79



3 Water Supply Infrastructure

3.1 Description of water supply Infrastructure

As it is discussed above groundwater through bore well is the only source of water to reach all need of Industry involved activity as domestic, process and greenbelt.

The water is extracted through bore well and then it is supplied for the Industrial and Domestic purpose and the waste water generated from the domestic purpose i.e. sewage is use in gardening and from ETP treated waste water is reused for washing purpose and toilet flushing.

3.2 Maintenance Records

Inspiron Engineering Pvt Ltd (unit 1) has installed a Flowtech make Digital water flow meter with a telemetry system which is compliant with the CGWA NOC conditions. The unit has a documentary system of maintaining a logbook for water consumption from bore well on a daily, monthly, and annual basis. Detail of the flow meter is mention below in the table.

Location of Installation	Type	Make	Model	Stream Measurement	Calibration Details
Bore well	Electromagnetic	Flowtech	UPC/ UPCS MAG 110	Ground water	Calibrated valid 15-09-2025

3.3 System Efficiency

M/s. Inspiron Engineering Pvt Ltd (UNIT-I) gets the meter systems calibrated at regular intervals of time and the data has been maintained at regular intervals of time.

Monitoring is the most important prerequisite for efficient water management. Thus, in the water supply network, it is necessary to have a robust system of monitoring. During the audit, the available flow meters were identified, and their working conditions were checked.

The unit has installed a flow meter for water measurement at bore well however it is advised to install at multiple locations and maintain the data to identify and mitigate water losses.

Ground Water Extraction Details

Source	Flow (m ³ /h)	Running Hours	Total Water Extracted (KL/Day)
Bore well /2007	5	10	51

A copy of the calibration certificate is presented at section 7.1.

4 Water Quality Assessment

4.1 Testing method

This sub section will deal with the quality of ground water and shall include maps of electrical conductivity as contour and other parameters as point value. Samples need to be collected from bore well pre monsoon and post monsoon and analysis in NABL approve laboratory.

4.2 Parameter measure

Parameter tested for the bore well sample is shown in the analysis report which is reflect quality of ground water.

4.3 Result and Analysis

M/s. Inspiron Engineering Pvt Ltd (UNIT-I) get the water quality tested on the regular basis and the copy of analysis report is attached in Section 7.3 for the reference purpose.

5 Losses and Leakages

5.1 Audit finding on Losses

No leakages or losses has been identified throughout the site premises as the unit pays proper attention to regular maintenance and in case of any leak identified and then immediately attend the same.

5.2 Leak detection Method

There is a manual check and visual inspection mechanism for the any leakage within the plant.

All employees are responsible for promptly reporting any signs of water leakage, including dripping faucets, running toilets, or visible pipe leaks.

The Utilities team will conduct regular inspections to identify and address leaks.

6 Water conservation Method

6.1 Current measure in place

Water Conservation measures taken:

1. ETP & STP Treated water is reused for below mentioned systems
 - Gardening
 - Washing
 - Toilet Flushing
2. Level sensors are installed on all the storage tanks.
3. Sprinklers are installed for the greenbelt development purpose
4. Training is imparted to the workers for water conservation and the posters for the same are installed throughout the premises

6.2 Cost Benefit Analysis

As per the guideline prescribed by the Central Ground water Authority, Ground water abstraction charges for the Ahmedabad region considering Critical Category, the charges are Rs.4 per Kilo litres of groundwater abstraction. The cost analysis is mentioned in below table.

Details	Per Day	Rs. Per KLD	Amount	Per Year
Actual water requirement	46.1	4	184.4	55320

Fresh Groundwater Requirement	34	4	136	40800
Recycle water Quantity	12.1	4	48.4	14520

Considering the recycled water Industry is saving Rs.14,520/- per annum due to recycling the water for the Gardening, washing and toilet flushing activities.

6.3 Recommendation for Improvement



Reducing water usage in the engineering industry is crucial for sustainability and cost-efficiency. Here are some recommendations:

1. **Conduct Water Audits:** Regularly assess water usage to identify inefficiencies and areas for improvement.
2. **Implement Water Recycling Systems:** Reuse treated wastewater in industrial processes to minimize freshwater consumption.
3. **Upgrade to Efficient Equipment:** Use water-efficient machinery and technologies, such as low-flow valves and cooling systems.
4. **Adopt Closed-Loop Systems:** Design processes where water is continuously treated and reused, reducing wastage.
5. **Monitor and Detect Leaks:** Use IoT-enabled sensors and smart meters to identify and fix leaks promptly.
6. **Optimize Processes:** Modify production methods to reduce water dependency, such as using dry cooling instead of water-based cooling.
7. **Employee Training:** Educate staff on water conservation practices and encourage responsible usage.
8. **Rainwater Harvesting:** Collect and use rainwater for non-potable purposes like cleaning or landscaping.
9. **Sustainable Landscaping:** Use drought-resistant plants and efficient irrigation systems to reduce water usage in facility landscaping.

These strategies not only conserve water but also contribute to environmental sustainability and operational savings.

7 Annexure

7.1 Calibration Certificate of Water Flow Meter


FLOWCALIB SERVICES LLP


CALIBRATION CERTIFICATE

ULR No.	Calibration Certificate No.	Date of Calibration	Certificate Issue date	Suggested next due date
CC397124000000019F	FCS/2024/09/019	14/09/2024	16/09/2024	15/09/2025


Customer Name & Address	Inspiron Engineering Pvt. Ltd. (Unit-I) Survey No. 320, Near GIDC Odhav, Odhav Road, Ahmedabad - 382 415		
Condition on receipt	Satisfactory		
Details of Unit Under Calibration:			
Discipline	Fluid Flow Onsite Calibration		
Nomenclature	Digital Flow Meter		
Make/ Model	UPC/ UPCS MAG 110		
Serial No.	2202505167		
Range	0-71 m ³ / hr		
Accuracy	As per specification		
Resolution / L.C.	0.01 m ³ / hr		
Line Size	Line 50 MM	Pipe Material PVC	
Location of Calibration	Near Parking		
Calibration Method	Comparison Method (As per FCS call. procedure CP-01)		
Medium of Fluid	Water		
Environment Details	Temperature 24.2 °C	Humidity 69.2 % RH	

Reference Standard & Measurement Traceability (The standards used for calibration are traceable to National / International Standard.)

Nomenclature	Make/ Model	Serial No. / ID No.	Certificate No.	Calibrated at	Calibration dt/ Valid up to
Ultrasonic Flowmeter	pFlow / P117	V4600395 / FCS01	CFCM2024-73-FL/1	Nagman	01.02.2024 / 01.02.2025
Digital Thermo-Hygrometer	TESTO / 608-H1	05606081 / FCS02	UL/2024/03693	Unimark	15.07.2024 / 14.07.2025
Ultrasonic Thickness Gauge	-- / UM6800	T22E223 / FCS03	SCS-MD-0182/04/24-25	Sensewell	27.04.2024 / 26.04.2025
Measuring Steel Tape	BOA Tools / -	-- / FCS04	20240615-13154-21	Action Engineers	15.06.2024 / 14.06.2025

S.A.Patel

Calibrated By
Samarpit Patel
Calibration Engineer



Gaurav Shah

Reviewed & Authorized By
Gaurav Shah
Lab Head

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GF-15, Lotus aura 2, Near IOCL Petrol Pump, Sama Savli Main Road, Vadodara-390 008 Gujarat, India.



FLOWCALIB SERVICES LLP



ULR No.	Calibration Certificate No.	Date of Calibration	Certificate Issue date	Suggested next due date
CC397124000000019F	FCS/2024/09/019	14/09/2024	16/09/2024	15/09/2025

CALIBRATION RESULTS

Sr. No.	Standard Reading (m ³ / hr)	UUC Reading (m ³ / hr)	Deviation (%)	Uncertainty of Measurement (+/-) %
1	20.22	20.12	-0.47	1.8

UUC: Unit under calibration

Notes: -

- (1) The uncertainty of measurement is expressed at a confidence level 95.45% with coverage factor k=2.
- (2) The results relate only to the item(s) calibrated.
- (3) This certificate shall not be reproduced except in full without a written permission of the laboratory.
- (4) The results reported here are valid only at the time of performance of calibration under specified environmental conditions only.
- (5) No deviation or exclusion from the calibration method.
- (6) The above UUC result is not from any external agency or organization.
- (7) Calibration is performed without doing any adjustment/ Repairing in its original condition.
- (8) Each Calibration results is an average of 5 Readings & calibration points were taken as per customer suggestion.
- (9) K factor for sensor = 0.9100

S.A.Patel.

Calibrated By
Samarpit Patel
Calibration Engineer




Reviewed & Authorized By
Gaurav Shah
Lab Head

Format No.: - Form-26
Rev. No/Dt: - 01/15.07.2024

-End of Certificate-

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GF-15 , Lotus aura 2, Near IOCL Petrol Pump, Sama Savli Main Road, Vadodara-390 008 Gujarat, India.

7.2 Photos and Diagram

	
<p><i>Digital Water Flow Meter on Groundwater Structure Bore well</i></p>	<p><i>Telemetry system connected to Piezometer Well to record water level</i></p>
	
<p><i>Borewell and Telemetry System</i></p>	<p><i>Effluent treatment plant to treat effluent</i></p>

7.3 Water Quality Report



Ramans Enviro Services Pvt Ltd

TEST REPORT: WATER

Report No. RESPL/10-427/24-25

Reporting Date: 25/10/2024

Format No.: F/WAT/04

ISSUE No.: 04

W.E.F.: 14-11-2022

Name of The Customer
Address of The CustomerInspiron Engineering Pvt. Ltd. (Unit-1)
Survey No. 320, Odhav Road, Odhav, Ahmedabad-382 415

SAMPLE DETAILS

Discipline	Chemical	Date of Receipt of Sample	19/10/2024
Group	Water	Condition of sample during receipt	Satisfactory
Sample Description	Borewell water	Env. condition during the test	25±2°C
Sampling by	RESPL	Analysis completed on	23/10/2024
Sampling Date & Time	19/10/2024 (11:45 AM)	Sampling Method	IS 17614 (part-1)
Env. Condition during sampling	At Ambient Temperature		

TEST RESULTS

				Sampling Location		Borewell Water
				Sample Identification Number		10/618/24-25
Sr. No.	Parameters	Test Method	Unit	Acceptable Limit (As per IS 10500:2012)	Permissible Limit (As per IS 10500:2012)	Results
1.	pH @ 25°C	IS 3025(Part11): 2022	-	6.5 - 8.5	No Relaxation	8.10
2.	Color	APHA (24 th Edition) 2017-2120: C	Plt/Co	Max 05	Max 15	<5
3.	Turbidity	APHA (24 th Edition) 2130 B: 2017	NTU	Max 01	Max 5	<1
4.	Total Dissolved Solids	IS 3025(Part 16): 2023	mg/L	Max 500	Max 2000	688
5.	Total Alkalinity as CaCO ₃	APHA (24 th Edition) 2017 -2320: B	mg/L	Max 200	Max 600	350
6.	Chloride as Cl	IS 3025 (Part 32):1988	mg/L	Max 250	Max 1000	220
7.	Sulphate as SO ₄ ²⁻	APHA (24 th Edition) 2017 -4500 SO ₄ ²⁻ : E	mg/L	Max 200	Max 400	63
8.	Oil & Grease	IS 3025 (Part 39): 2021	mg/L	Max 0.5	No Relaxation	<1
9.	Total Hardness as CaCO ₃	APHA (24 th Edition) 2017 -2340: C	mg/L	Max 200	Max 600	346.50
10.	Magnesium as Mg	IS 3025 (Part - 40): 2019	mg/L	Max 30	Max 100	50.52
11.	Calcium as Ca	IS 3025 (Part - 40): 2019	mg/L	Max 75	Max 200	55.55
12.	Fluoride as F	APHA (24 th Edition) 2017 -4500 F-: D	mg/L	Max 01	Max 1.5	<0.2
13.	Residual Chlorine	APHA (24 th Edition) 2017 -4500 Cl: B	mg/L	0.2 Min if Chlorine is used as disinfectant	1	<0.1
14.	Copper	APHA (24 th Edition) 2017 - 3500 Cu: B	mg/L	Max 0.05	Max 1.5	<0.1

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TC-5091



Ramans Enviro Services Pvt Ltd

TEST REPORT: WATER

Sampling Location						Borewell Water
Sample Identification Number						10/618/24-25
Sr. No.	Parameters	Test Method	Unit	Acceptable Limit (As per IS 10500:2012)	Permissible Limit (As per IS 10500:2012)	Results
15.	Iron	APHA (24 th Edition) 2017 - 3500 Fe: B	mg/L	Max 0.3	No Relaxation	<0.2
16.	Total Chromium	IS 3025 (Part 52) 2003	mg/L	Max 0.05	No Relaxation	<0.2
17.	Boron	APHA (24 th Edition) 2017 - 4500 B: C	mg/L	Max 0.5	Max 1	<1
18.	Nitrate	IS 3025 (Part 34) 1988	mg/L	Max 45	No Relaxation	<1

Note: Test results reported relate to the sample identified under sample details.
Test Report shall not be reproduced except in full, without the written approval of the laboratory.

Remark: --

Authorized by

Sanket Patel – Quality Manager

----- End of Report -----

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