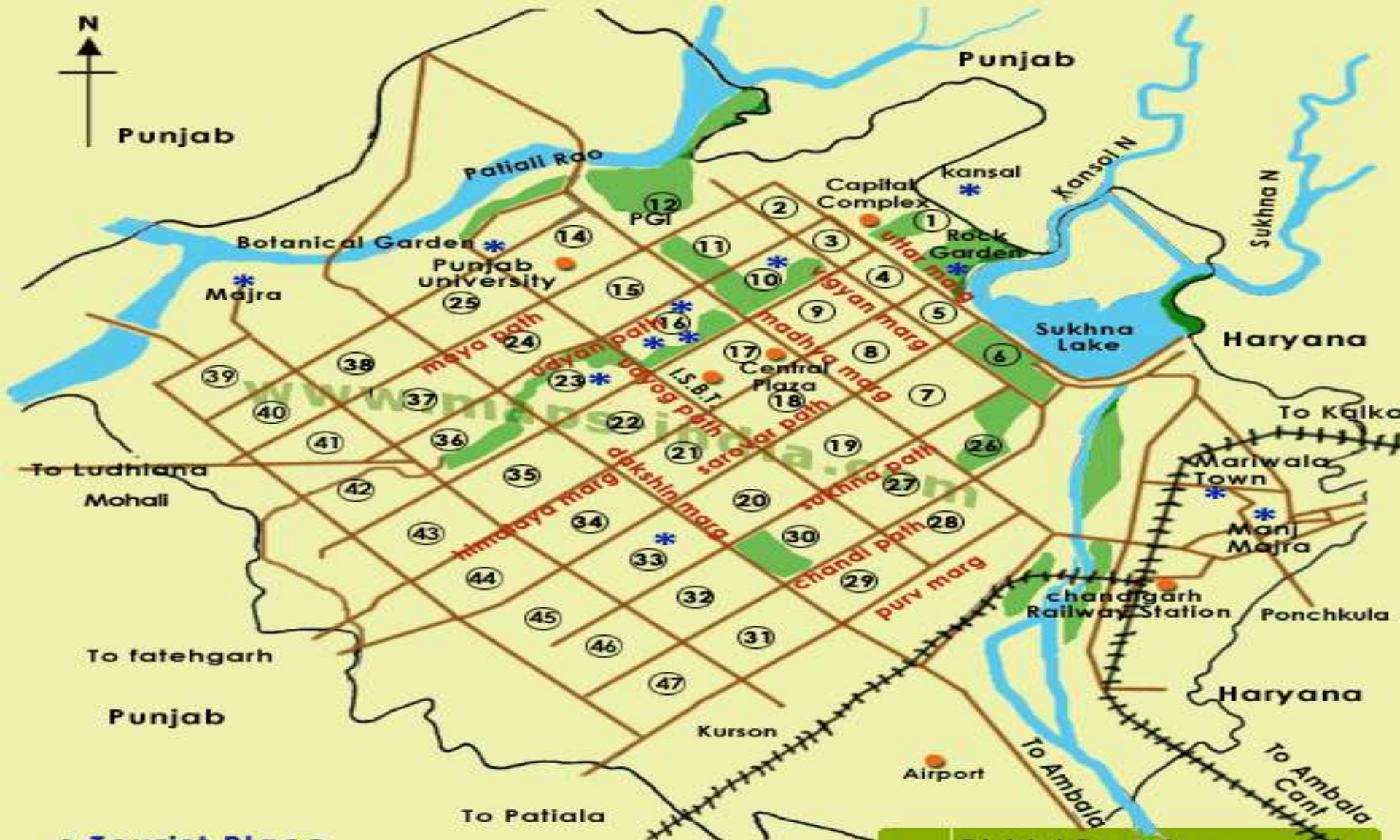




**Municipal Corporation Chandigarh
Welcomes Delegates**



*** Tourist Place**

- Zakir Rose Garden Sec-16
- Bougainvillea Garden-Sec-10
- Shanti Kunj Sec-16
- Punjab Kala Kendra Sec-16
- International dolls museum Sec-23
- Terrace Garden Sec-33

	District Boundary
	Main Place
	Green Area
	River
	Railway Line
	Major road

Chandigarh City Map

Chandigarh - An over view

- Conceived as capital of Punjab after Partition = 1949
- Legislative instrument for the development of the city = Capital of Punjab (B&R) Act 1952
- Total Area = 114 sq.km
- Municipal Area = 79.34 sq.km
- Height above mean sea level = 304 - 365 metres
- Average annual Rainfall = 1114 mm

Development of Chandigarh

Chandigarh was originally planned to be developed in three phases for a population of 5.00 lacs only with 40% built up area, 40% green area and 20% for road network.

Phases

I

II

III

Sectors

01 to 30

31 to 47

48 to 56

Development of Phase I and Phase II Completed.

❖ *Development of Phase III is in Progress.*

Scenario of Water Supply

Sources of Water

Period

- (A) Upto Year 1983
- (B) After 1983 to till date.

Sources of Water

Underground Water (Tube wells)

- 1. Underground Water (200 nos. Tube wells) - 20MGD.
- 2. Surface Water (Canal Water) - 67MGD.

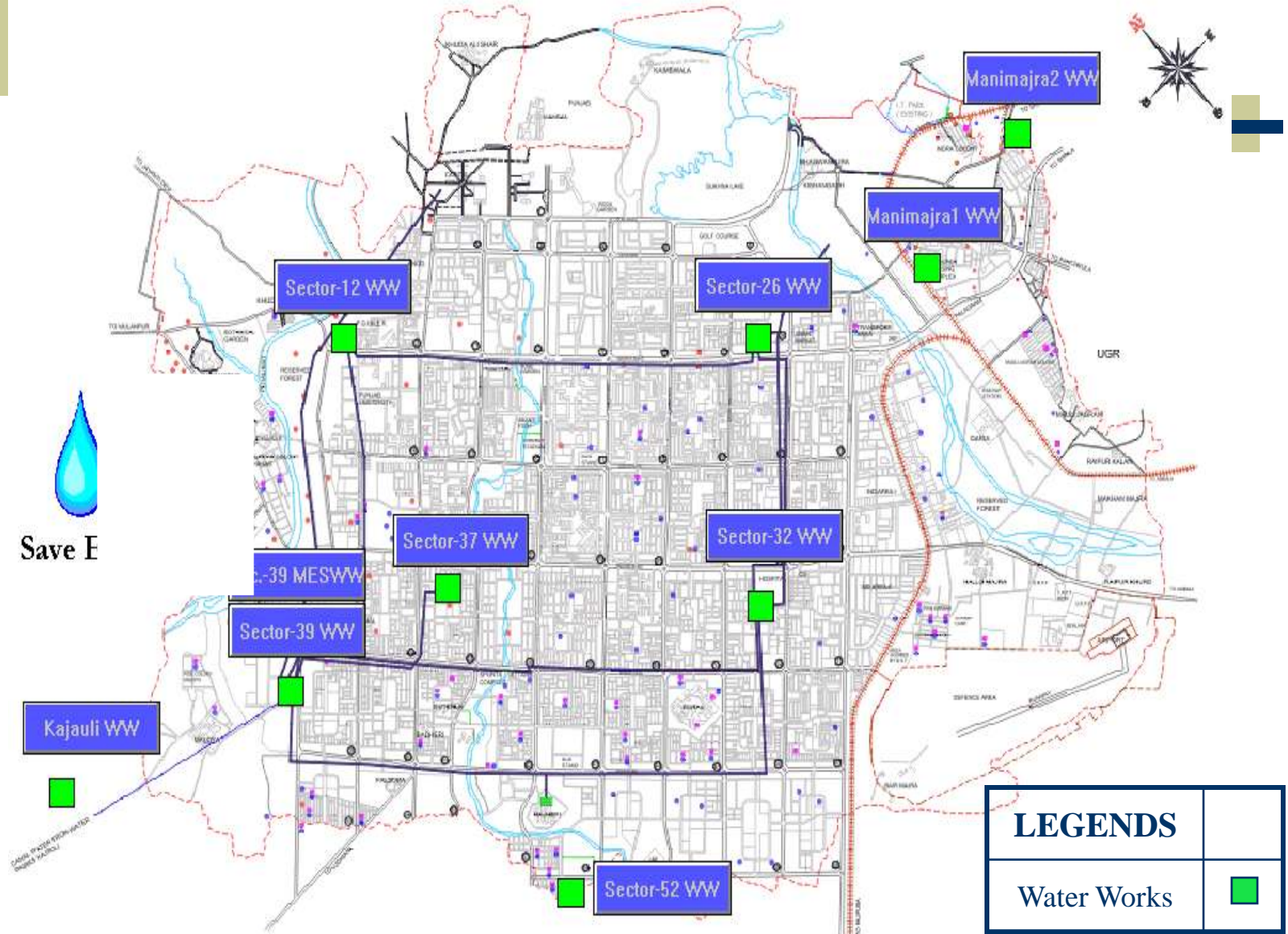
From Bhakhra Main Canal Flowing at a distance of 27.4 Km from Chandigarh.

(Tapped Near Village Kajauli, Punjab)

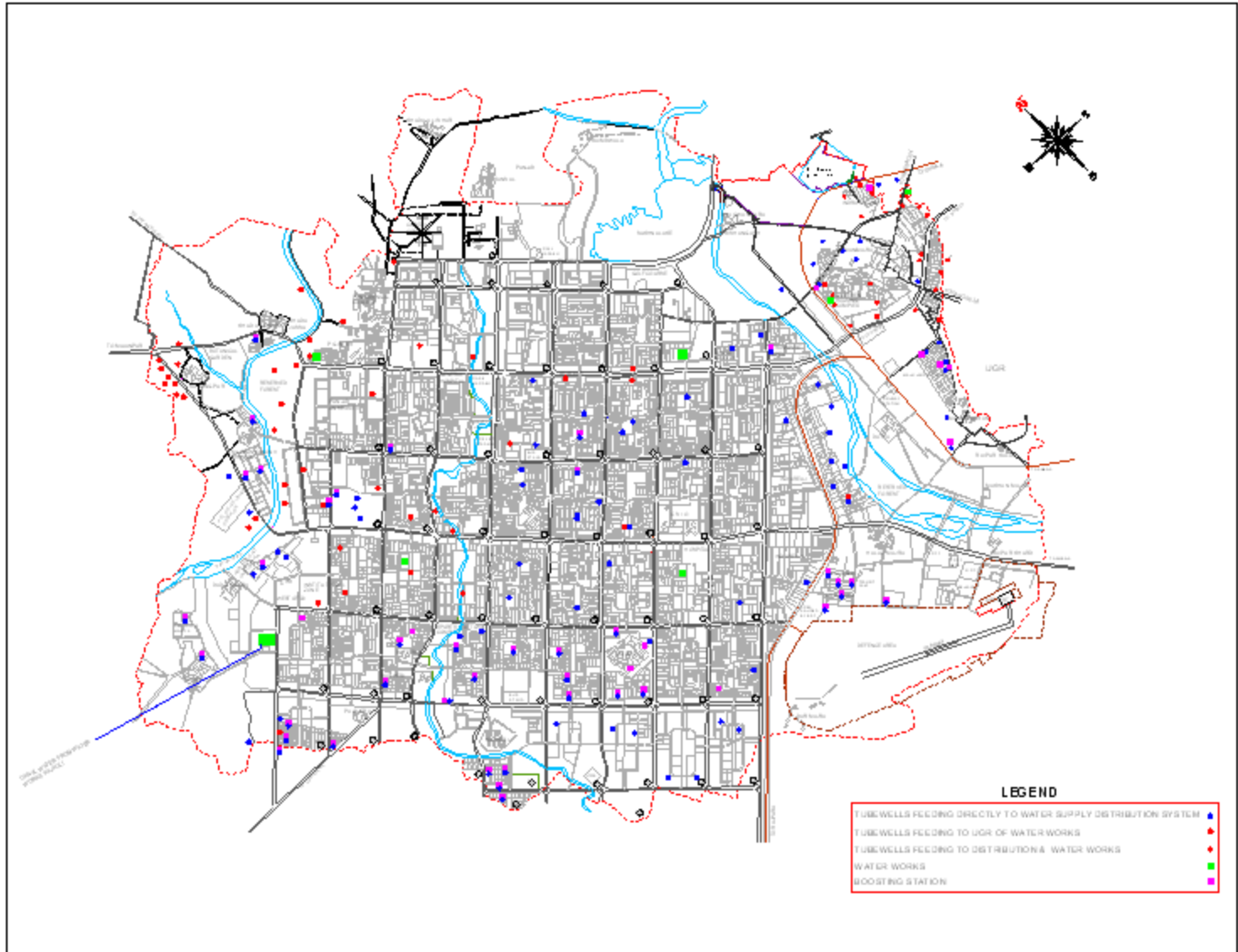
Total Availability - 87MGD

**Per Capita Supply About 280 Litres Per day
Availability of Water 13-19 Hrs**

WATER WORKS' LOCATION PLAN



TUBEWELLS' LOCATION PLAN



WATER WORKS KAJAULI



Intake from
Bhakra Main
Line at Kajauli



Inlet Control
Gates



Pumping
Machinery



Storage Tanks

WATER WORKS KAJAULI



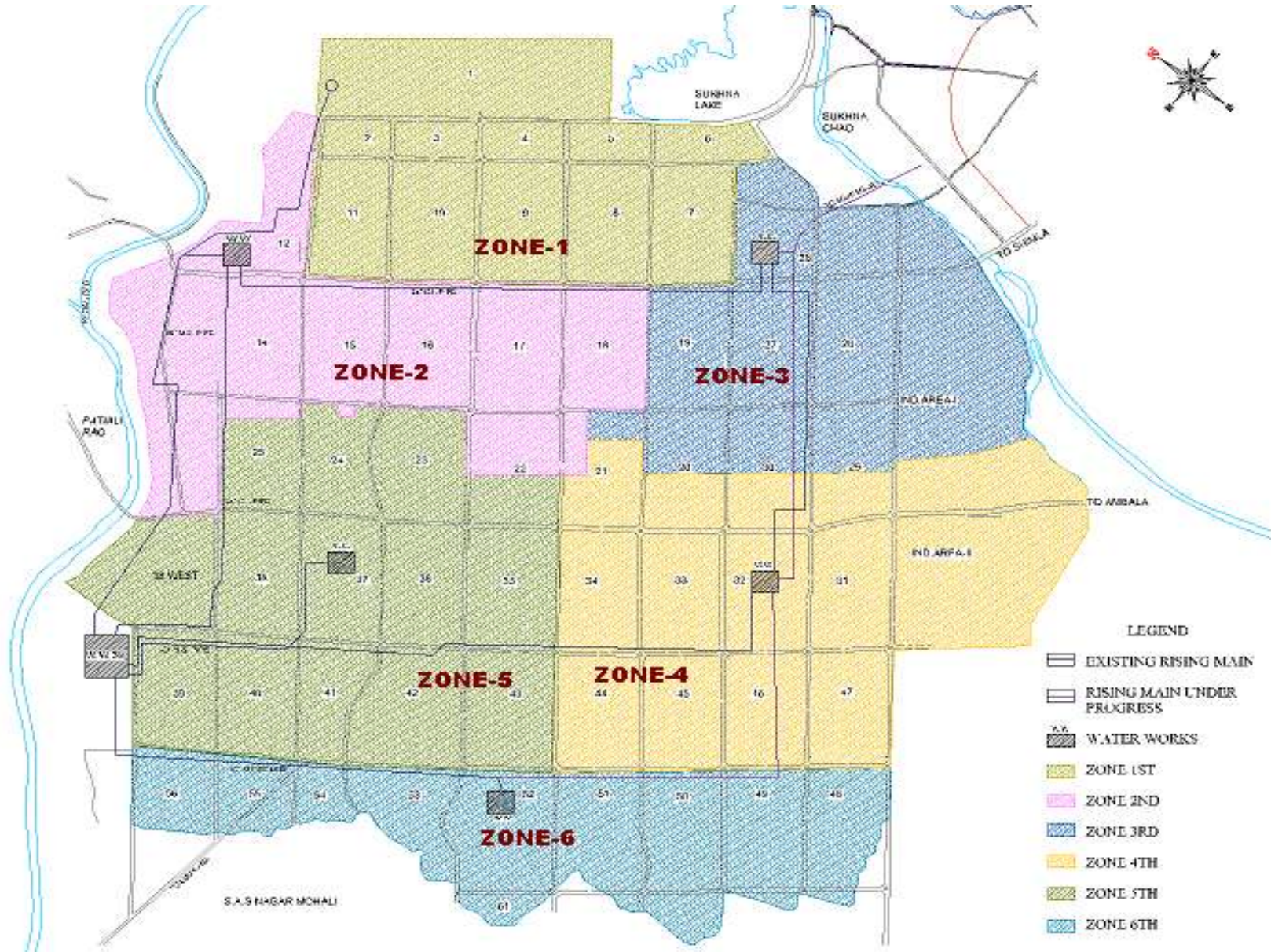
**Surge Control
Vessels**

Delivery Header

DISTRIBUTION SYSTEM FOR CITY CHANDIGARH

- ◆ The city has been divided into 6 zones for the purpose of Water supply keeping in view the slope of the city
- ◆ Each of these zones is fed through an independent water works namely Water Works-52, 39, 37, 32, 26, 12.
- ◆ These Water Works' are fed from Mother Water Works i.e. Water Works-39, which receive canal water from Water Works-Kajauli and various Tubewells (about 80 Nos.) spread all over Chandigarh.
- ◆ The canal water as received from water works Kajauli is treated at the water treatment plant Water Works-39.

CHANDIGARH ZONING PLAN



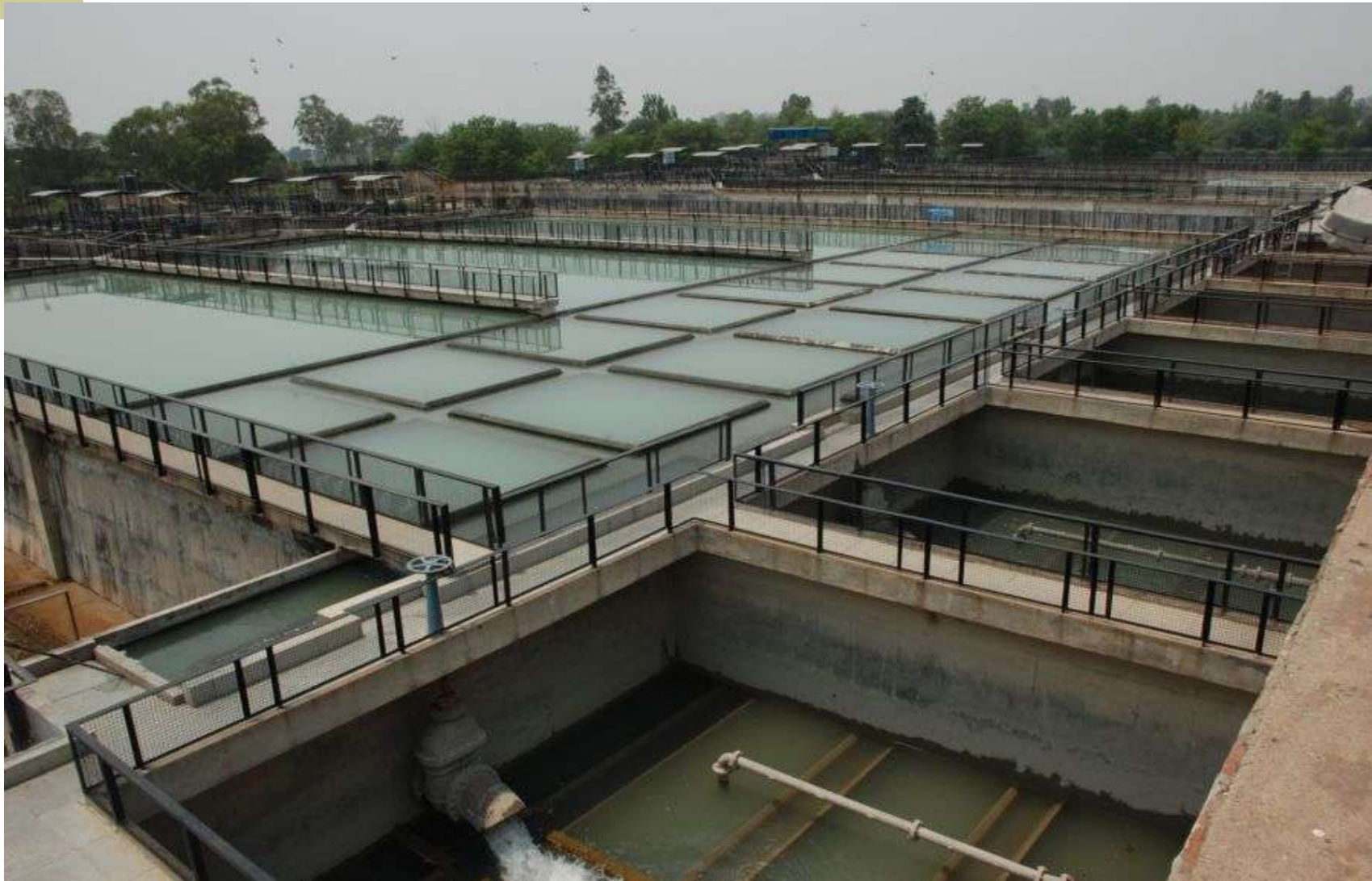
WATER TREATMENT PLANT SEC-39, Chandigarh



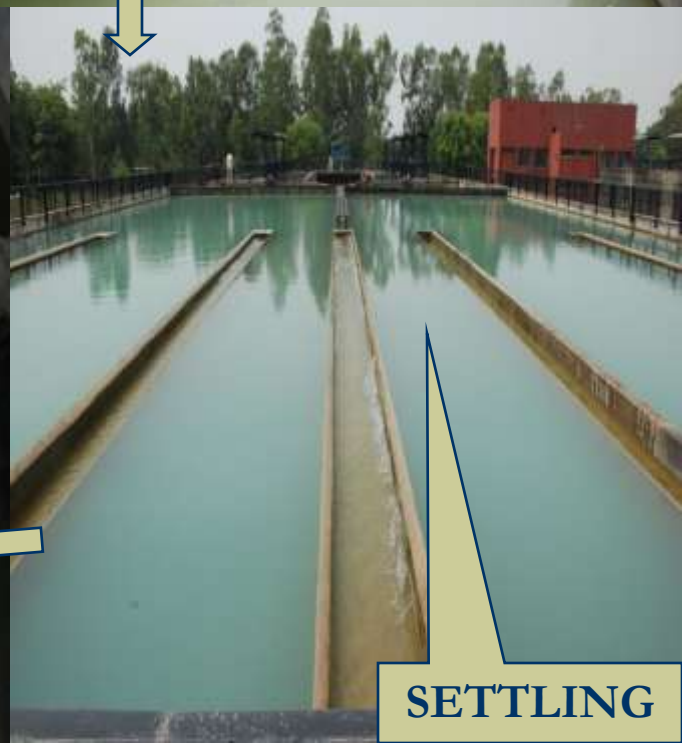
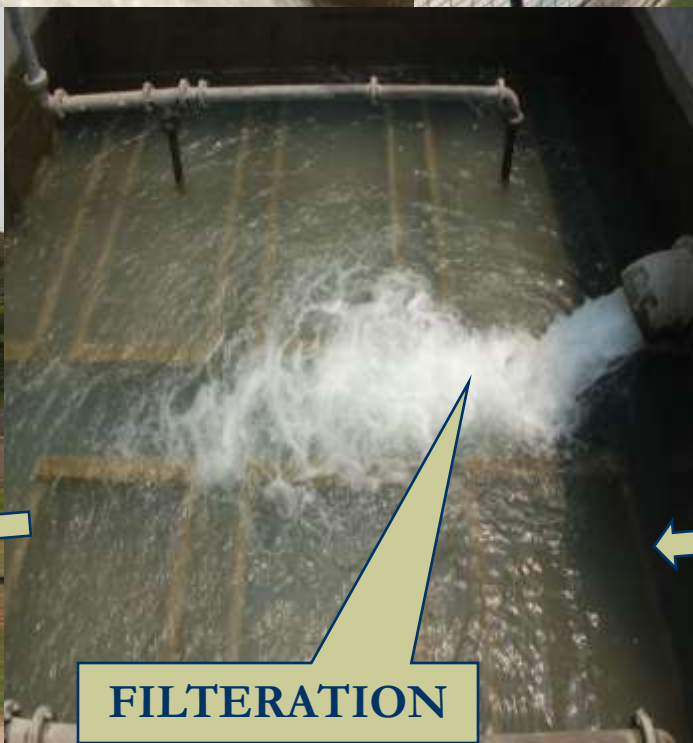
WATER TREATMENT PLANT

SEC-39, Chandigarh

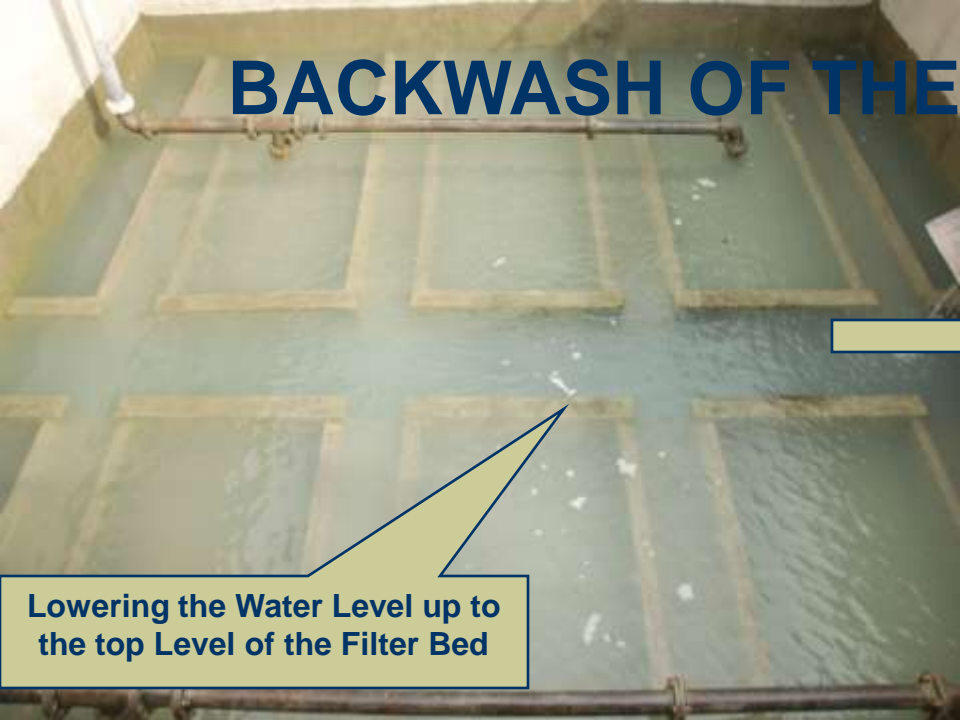
TYPICAL OVERVIEW



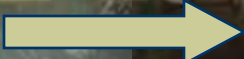
WATER TREATMENT PLANT AT SEC-39 (At a Glance)



BACKWASH OF THE FILTRATION UNIT



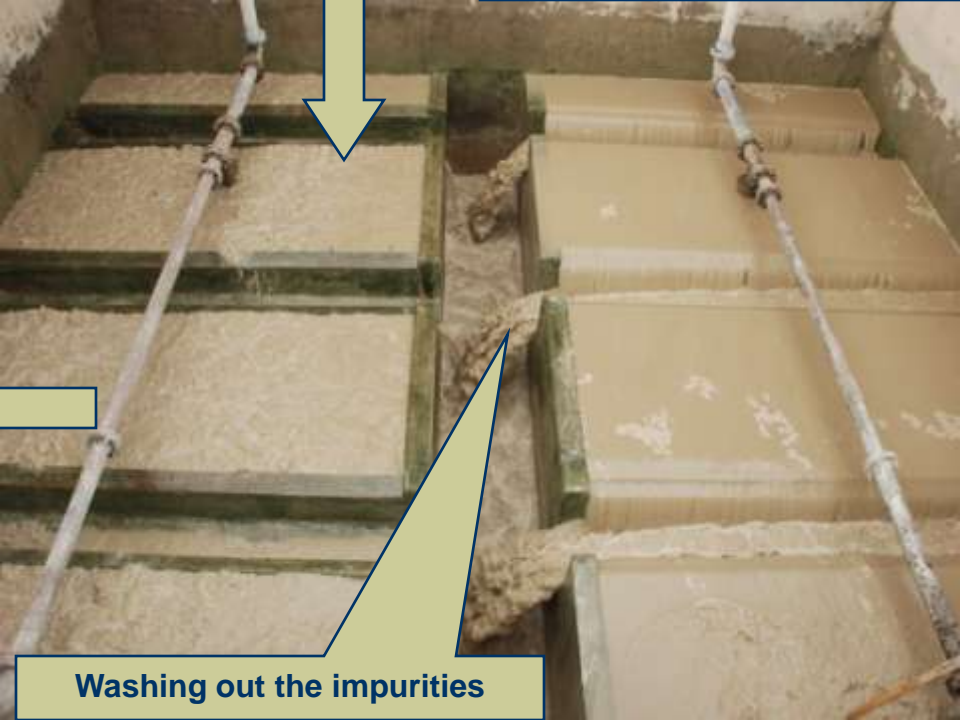
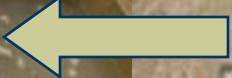
Lowering the Water Level up to the top Level of the Filter Bed



Supply of Compressed air to dislodge the impurities



Refilling



Washing out the impurities

WATER TREATMENT PLANT

SEC-39, Chandigarh

Water Quality Testing Lab



WATER TREATMENT PLANT SEC-39, Chandigarh

Testing Under Process using UV Spectrophotometer



WATER TREATMENT PLANT SEC-39, Chandigarh

Jar Test (For fixation of Optimum Alum dose) Under Process



WATER TARIFF

- The water tariff is low to moderate.
- The domestic rate varies from Rs.1.75 to Rs.6/- per KL for domestic depending upon the slab.
- The commercial rate of water is Rs.11/- per KL which is average 2.5 times the domestic rate.
- The bulk consumers of water are P.G.I., Punjab University and CSIO.



WATER SUPPLY IN SLUM AREA (Best Practice)

- ◆ Slum Areas are being supplied water through public stand posts, apart from water tankers.
- ◆ Recently an experiment has been successfully implemented to minimize wastage of water. Water is being made available 24 hrs through Sumps fitted with hand pumps.

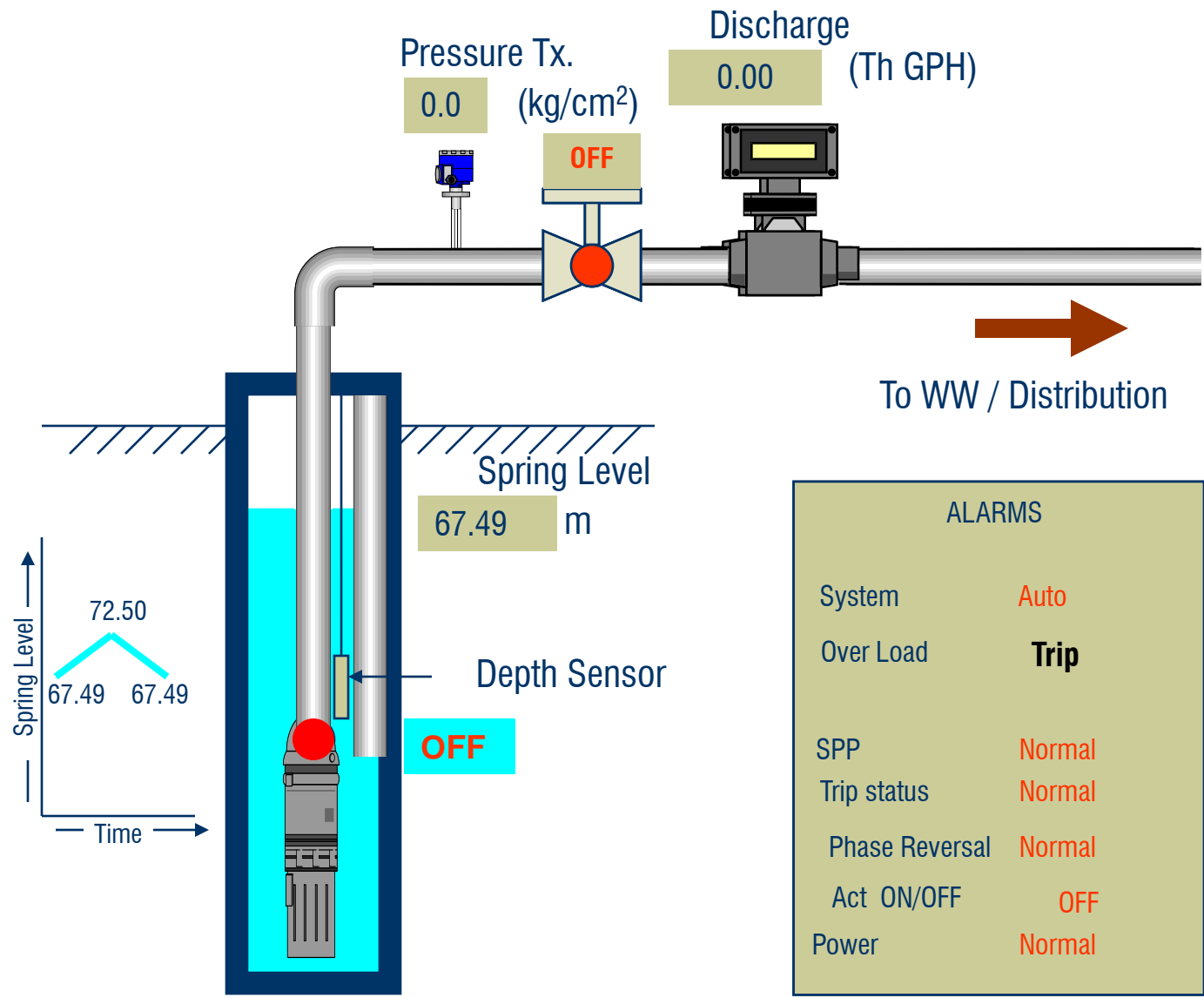
JNNURM PROJECT – I

Name of Work : Up-gradation of water supply infrastructures for proper monitoring & automation with remote computerized surveillance system to accomplish 24 x 7 water supply in Chandigarh under JNNURM. (Estimated Amount : 20.26 Crores)

INFRASTRUCTURE COVERED

1. Provision of SCADA, EM Flow meter, Actuator S/V, Pressure Transmitter, Depth Sensors at 204 tubewells/ Boosters.
2. Provision of EM Flow meters, Actuator S/V , Pressure Transmitters and Level sensors at Water works Kajauli, Sector 12, 26, 32, 37, 39 and ManiMajra.
3. Automation of Filtration Plant at Sec-12 and Sec-39 including provision of SCADA, Magnetic Float switch sensors, Actuator S/V, Turbidity sensor and Residual Chlorine sensor.

AUTOMATION OF WATER GENERATION SCHEME (SCADA)



PARAMETERS

Phase Voltage (v)	
R-Y	408.97
Y-B	415.20
B-R	409.84
Motor Currents (A)	
IR	0.0
IY	0.0
IB	0.0
Freq. (Hz)	49.08
PF	0.0
Power (KW)	0.0
KWH	17860.59
Run hrs.	1.0

ALARMS

System	Auto
Over Load	Trip
SPP	Normal
Trip status	Normal
Phase Reversal	Normal
Act ON/OFF	OFF
Power	Normal

Status of Project

Up-gradation of water supply infrastructure for proper monitoring and automation with computerized surveillance in water supply system of Chandigarh.

Pkg No.	Brief title of package	Estimated cost	Awarded	Upto date expenditure	Physical progress	Remarks
1.	Software & SCADA system for T/Wells & boosters	627.00	741	718.59	Completed	
2.	EM Flow meters for T/Wells, boosters & water works	350.00	330.04	254.38	80% completed and in progress	Target Date March 2011
3.	Actuators for Sluice Valves for 200 No. T/Wells & boosters	350.00	320.59	300.14	Work completed	
4.	SCADA system and Actuators for Sluice Valves of main Water Works	700.00	680	243.64	The Work in Progress	Target Date March 2011
				1516.75		

Need for Automation

- Chandigarh has a vision to make the water supply 24 X 7.
- To reduce Unaccounted For Water by identifying losses.
- Better surveillance and monitoring of Water received and pumped from different water works.
- Better surveillance and efficient operation and maintenance of pumping machinery.
- Generation of data for MIS for cost effective decision making.
- Reduction in manpower
- Reduction in recurring cost
- More reliable water supply system

Direct Benefits of Automation

- Downsizing Workforce by 500.
- Energy Saving by optimization – Rs. 1.00 lacs / year
- Decreasing Unaccounted for Water upto 5% -Saving Rs. 166 lac/year
- Saving because of less wear and tear of pumping machinery
- Total yearly saving : 425 lacs
- Planning 24 X 7 Water Supply, conducive for less water pollution.
- Online operation of water works and tubewells.



Infrastructure Covered under the Scope

- A. All the 200 tubewells.
- B. Raw Water Pumping Station at Kajauli.
- C. Main Water Works Sector 39.
- D. All Subsidiary Water Works at Sector 12, 26, 32 ,52 ,37 and Mani Majra.
- E. Boosting Stations in the City and at Mani Majra.



Technical Scope



- Provision of Electromagnetic Flow meters.
- Motorization and Automization of Sluice valves.
- Provision of Remote Terminal Units for each group of Tubewells and each Water Works.
- Provision of Computer hardware including cabling.
- Setting up of Centralised monitoring stations.

Cost Benefit Analysis

Total Project Cost = Rs. 20.26 Crores

Benefits/Savings Rs. (in crore)

i) Energy and Manpower Saving in Tube well = 2.00

ii) Energy Saving in Water Works = 1.00

iii) Saving due to less wear & Tear in Machinery = 0.60

iv) Saving on account of reduction of UFW = 0.65

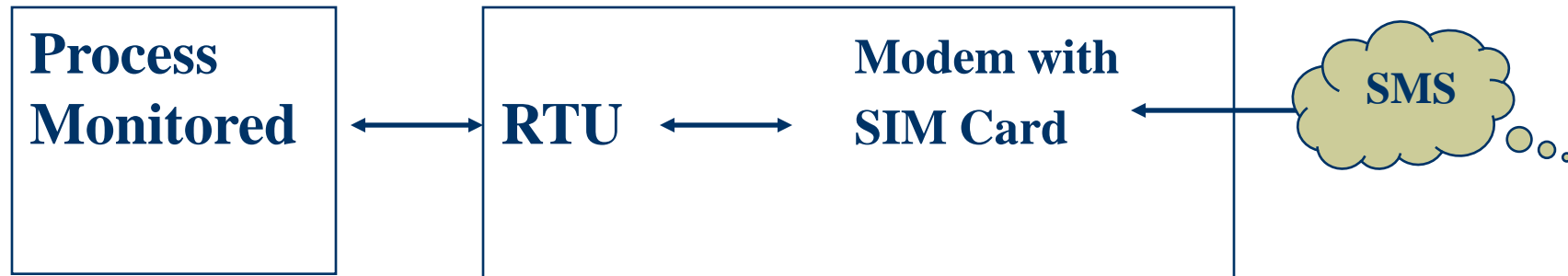
Total annual savings = 4.25

**Annual Operation & Maintenance Cost for
proposed project = 0.37**

Payback Period = 4-5 Years

Technology

- Each RTU has a SIM Card integrated into its communication module. This remote terminal unit conditions and transforms this data into compressed data packets. These data package are transmitted as SMS message by RTU using the GSM infrastructure of the selected service provider.



This SMS data packet can be received at two locations:-

- a. Mobile phones
- b. Centralized Control Stations

Surveillance Methodology

- Identifying the factors involved in deciding the basic communication backbone linking the Local Control Units and Master Control Station.
- Acquiring the important data like water discharge, level, pressure, temperature, current, voltage, frequency, etc. through fields instruments.
- Transmit the analog/digital data by means of smart transducers through control cables to the SCADA hardware i.e. RTU.
- Monitor and analyze the logged data and to generate reports on control signals, event history, alarms and management reports.
- Safe and uninterrupted data storage and acquisition.

SAVING (ACHIEVED) MANPOWER

No. Of Tube Wells which were Outsourced For Operation (Now operated on Auto Mode)	112 Nos.
Operating Cost of these Tube wells Per Month	Rs.21.09 Lac
Annual Cost Of Outsourcing Of Operation of these T/w	Rs.253.11 Lac
Average 1.5 person is deployed for watch and ward against 3.5 person(s), then annual cost of watch and Ward saved (112X12X7000)	Rs.94.08 Lac
Annual Savings By Automation Of Tube Wells	Rs.159.03* Lac (1.59 Cr.)

MAINTENANCE

The comparative maintenance cost of the water supply system have not increased due to provision of instrumentation and proper monitoring of Power Factor etc. and there is a saving of approx. **Rs. 2 Crores** annually.

**TOTAL SAVING
3.59 Cr. Annually**

A young cycad plant with vibrant green, feathery fronds is the central focus. It is planted in a circular bed of light-colored, smooth stones. The background is a well-maintained green lawn. The text "Thank You" is overlaid in a large, bold, red, italicized serif font.

***Thank
You***