



TOTAL WATER MANAGEMENT

JSW Steel – Group Companies



JSW Steel, Vijayanagar – 4.0 mtpa.



SISCOL, Salem



Tarapur



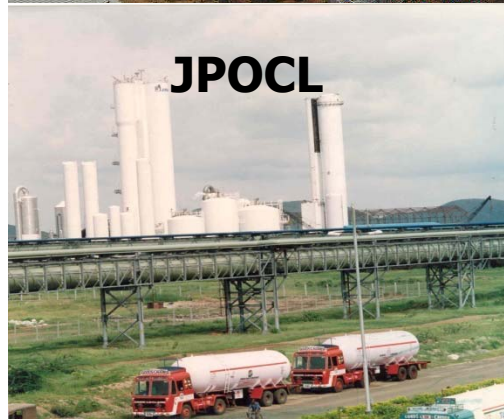
JSW Port, Goa



VMPL, Iron Ore mining



JSW Steel, Bellary

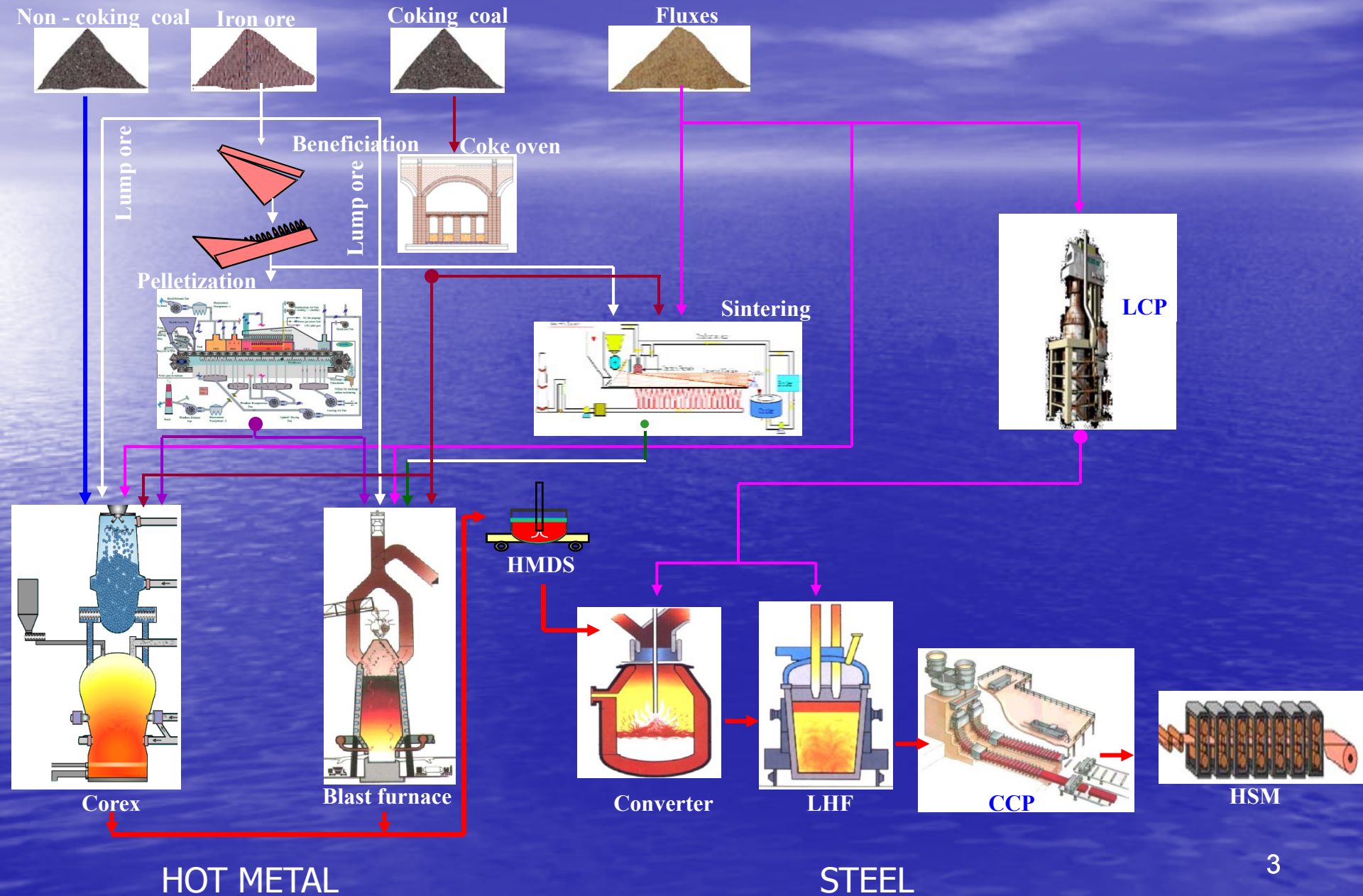


JPOCL



JSW Captive power

JSW : Process – Raw materials to finished steel



JSW Steel Products



- Slabs
- HR coils
- Cold rolled coils
- Pre coated
- Galvanised
- Bars & Rods
- Structural etc.

Industrial management system

Entire Integrated Steel Operation certified



ISO 14001 : 2004



ISO 9001 : 2000



OSHAS 18001 : 1999

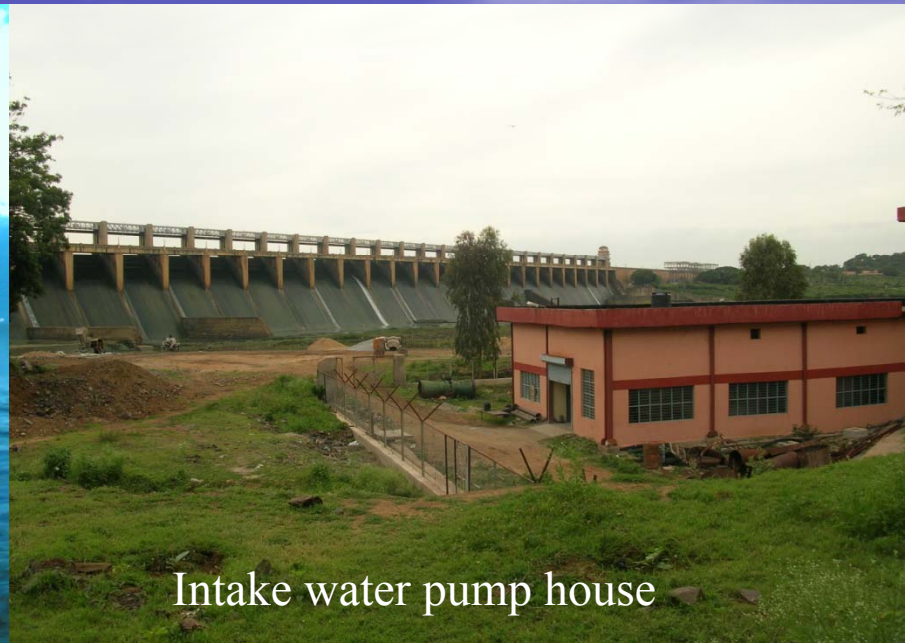
BENEFITS DERIVED:

- Consistent quality and quantity of water .
- Continuous improvements in quality.
- Lower Operational & Maintenance costs.
- Reliability of water for critical systems.

Water from Tunga Bhadra Reservoir (32 MGD)



Tunga Bhadra Reservoir



Intake water pump house

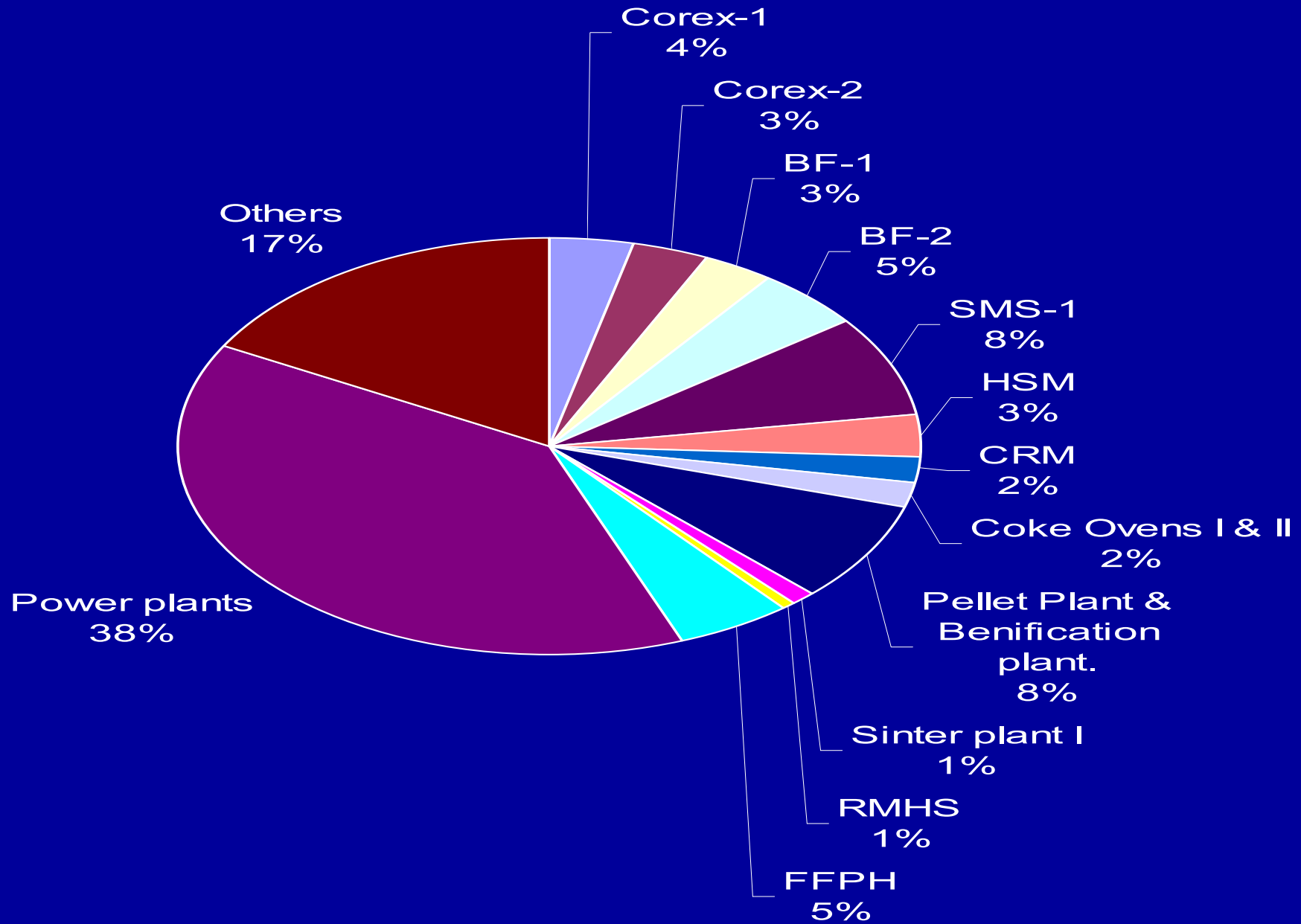


Raw water pond(6.5 Mm³ capacity)



Clariflocculators(22.8 x 3 MGD)

Water usage at JSW Steel



Water Usage in Integrated Steel Plants

- 1. Cooling of Metallurgical equipment (ICW)**
- 2. Gas cleaning & Fume flushing**
- 3. Miscellaneous (Fire, drinking, gardening)**



Water usage – Company “Policy”

1. Efficient use of available water

Reduction of evaporation rate

- **Maximize use of alternate sources rain water & seepage.**
- **Reduction of fresh water in closed circuits by higher COC.**
- **Reverse osmosis plant for recovering good quality water.**

2. Zero Discharge

Cascading usage of water

- **Use of blow down of one process as make up water in other processes.**
- **Equalization of final blow down water quality and its use in less critical applications.**
- **Treated sewage for gardening.**

Efficient Use of water



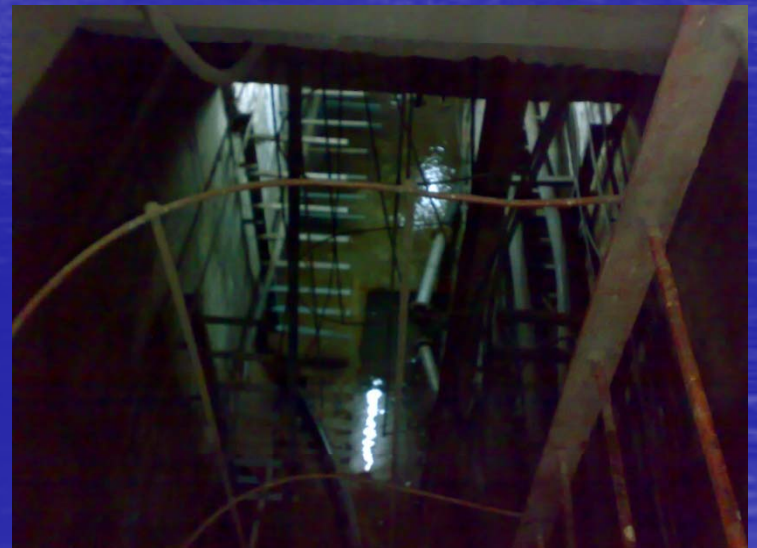
Fin-Fan heat exchanger



Rain water harvesting

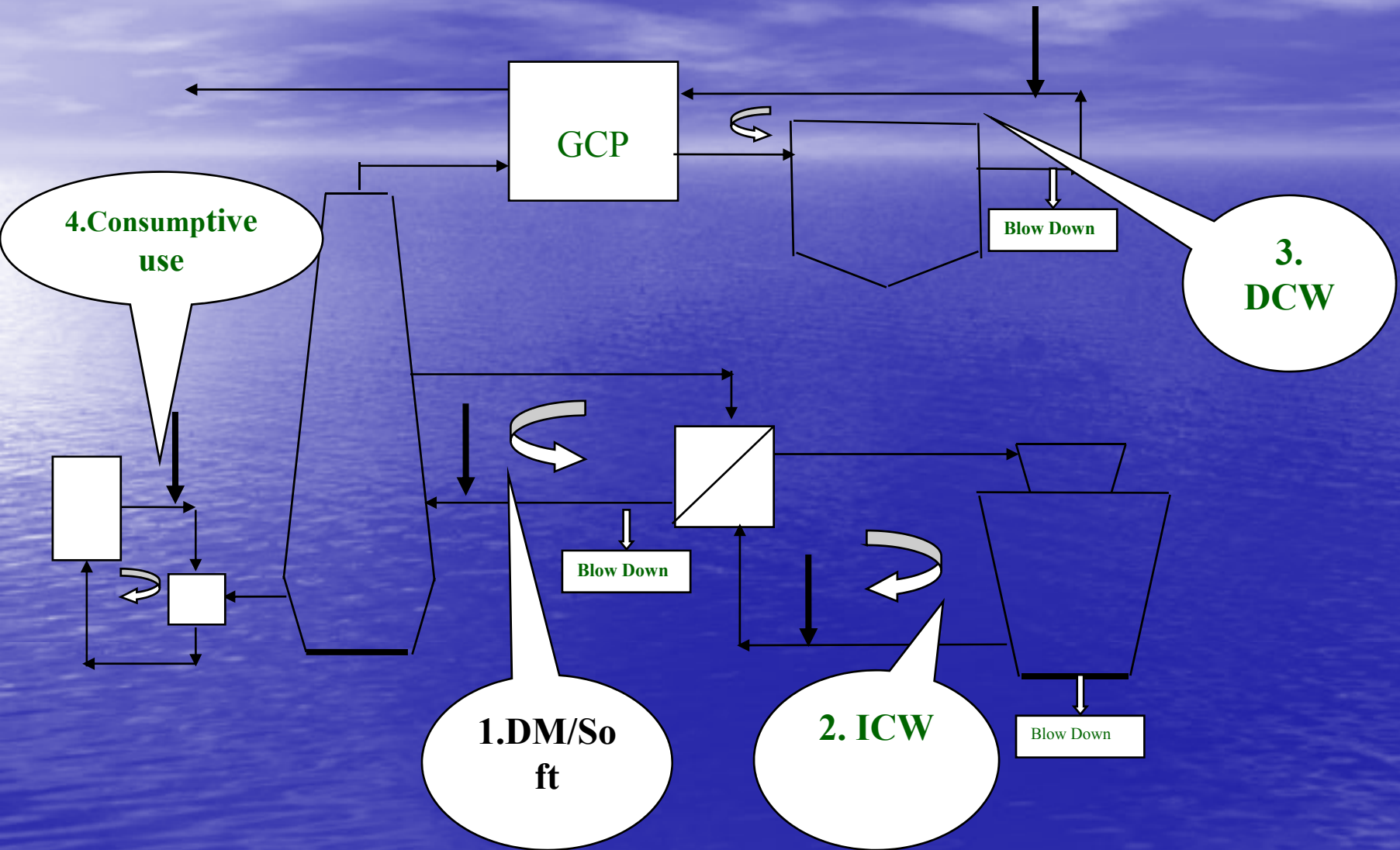


Higher COC in Cooling towers

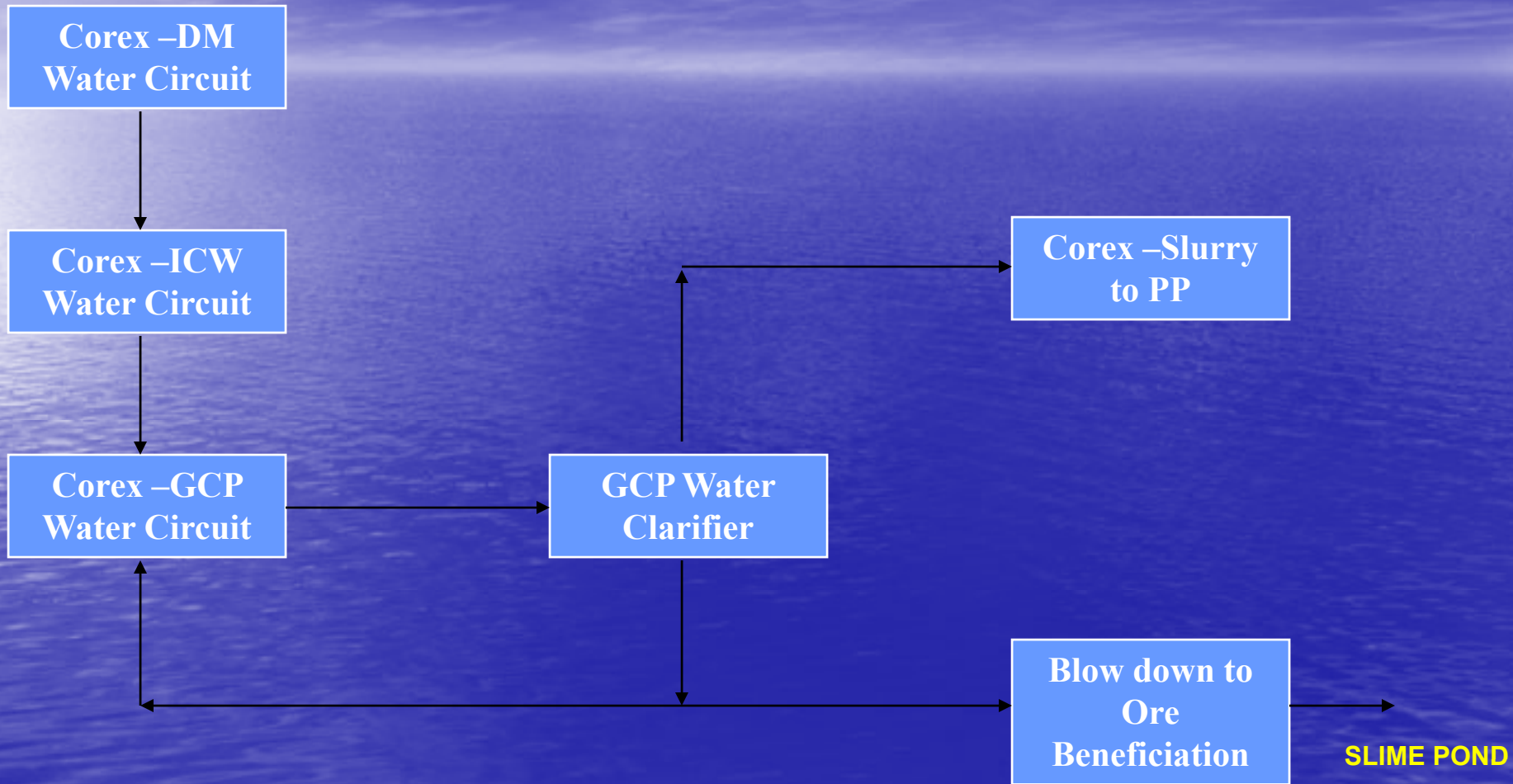


Seepage water pumping

Cascading use of water



Water Cascading – Corex Plant



Waste water discharge – ‘zero’

GUARD POND -1



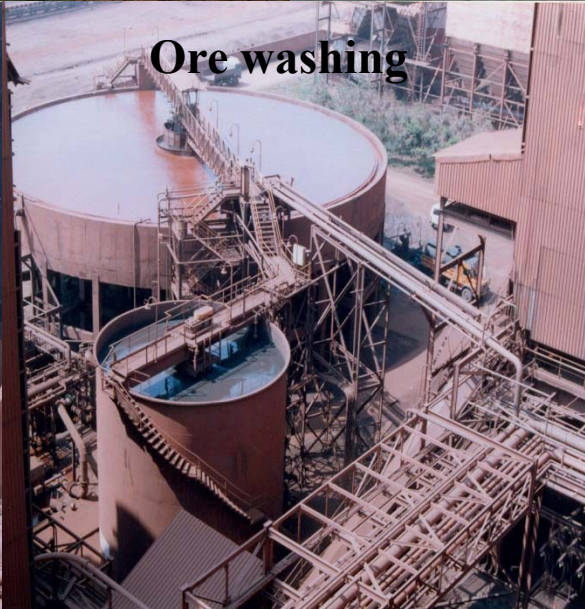
GUARD POND -2



Slag & Coke quenching



Ore washing



**Best Practices-Green belt
Greenery Development**



Water conservation – ‘total involvement’

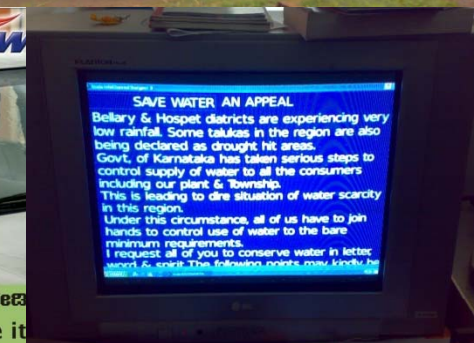
Employee involvement



Awareness



ನೀರು ಜೀವನ, ನೀರು ಆರೋಗ್ಯ, ಅದನ್ನು ವ್ಯರ್ಥ ಮಾಡಬೇಡಿ
Water is life. Water is wealth. Don't waste it.



- Water Help-Desk: Call-33457.
- Attend 15-20 calls per day.
- Action taken within 6 hours.

Water – “Suggestion mela”



Water - MIS

Monitoring system

Consumption:

- Flow meters at TOP of Shops:165 Nos.
- Daily readings at Production shops & Hourly reading readings at FFPHs.

Quality:

- Hourly analysis of Raw water & Drinking water.
- Monthly water analysis by external chemical laboratories.

Reporting system

Reports:

- Daily water consumption report ([Enclosure3.xls](#)).
- Monthly water report ([Enclosure-5.xls](#))
- Monthly water cost ([report](#))

Review:

- Water consumption review in Daily HOD meeting.
- Weekly water conservation meeting ([Enclosure4.xls](#)).
- DQEC meeting ([MOM-May 2008.doc](#)).

Specific water consumption

Year (April - March)	Annual Water consumption			Production in tons	Specific fresh water Consumption
	Quantity (m ³)		Source of Water		
	Industrial	Domestic	Industrial		
2004– 05	59,28,810	7,06,050	River	1875148	3.16
2005 – 06	67,48,791	10,85,670	River	2243509	3.01
2006 – 07	85,51,293	11,38,490	River	2648359	3.23
2007 – 08	98,19,801	16,72,610	River	3159209	3.13

Year	Industrial			Township water consumption	
	Consumption m ³	Average employees per day	Per capita consumption	No of persons	Per capita Consumption
2004-05	7,06,050	25,000	77	3,500	557
2005-06	10,85,670	28,000	106	4,000	487
2006-07	11,38,490	30,000	103	8,500	225
2007-08	16,72,610	35,000	130	18,700	124

Water conservation projects

A. Efficient use of water.

SI No	Water Saving project implemented	Year	Savings	Invest.	Payback Period (Months)
			m ³	Rs. Lakhs	
a	Collection of seepage water from raw water pond by constructing check dams and pump it back to reservoir	2004-2006	43.8	15	1
b	Construction of guard pond-1 for 4 mtpa units	2005-06	1.8	6	12
c	Construction of guard pond-2 for 7 mtpa units	2007-08		9	
c	Construction of lake in Vidyanagar to harvest rain water	2005-06		40	
d	Improvement in the cycle of concentration by improving water treatment measures	2004-2008 (continuous)	10.5	194	45
e	RVDF project in RWTP	2005-2006	0.012	205	48
f	Collection of seepage water by Bore wells and utilization in iron making zone.	2007-2008	1.28	2	4
g	Collection of seepage water along the RWP bund area and pumping it back to pond	2006-2008	52.56	5	1
f	Utilization of guard pond water for VV Nagar township/Vidyanagar township/Plant horticulture/	2007-2008	8.76	15	5

B. Cascading use of Water.

SI No	Title of Water Saving project implemented	Year of Implementation	Annual Water Savings		Invest. Made	Payback Period (Months)
			m ³ Lakhs	Rs. Lakhs	Rs. Lakhs	
a	Utilization of blow down of GCP water of Corex, BF 1&2 for make up in ore beneficiation plant	2007-2008	7.58	3.79	10	32
b	Conversion of open circuit ID fan cooling to closed circuit cooling	2007-2008	2.73	13.65	15	14
c	Utilization of blow down water from CPP-2 for coke quenching in to Coke oven-1,2	2007-2008	6.57	32.85	6	3
d	Collection of seepage water from MSDS cable tunnel and use in scale pit, of BOF.	2007-2008	4.97	24.82	10	5
e	Recycling of blow down water to slag quenching at BOF-CCP	2007-2008	2.6	13	50	46

Water usage - analysis

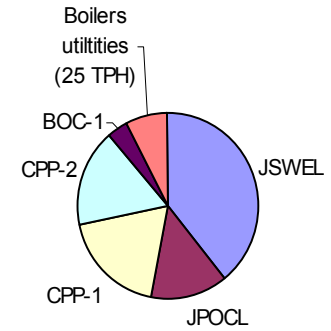
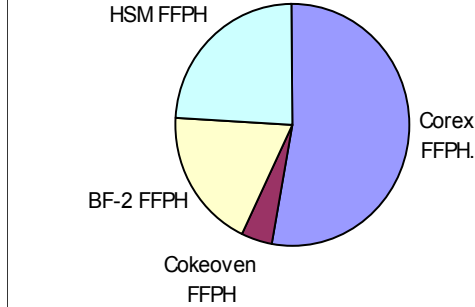
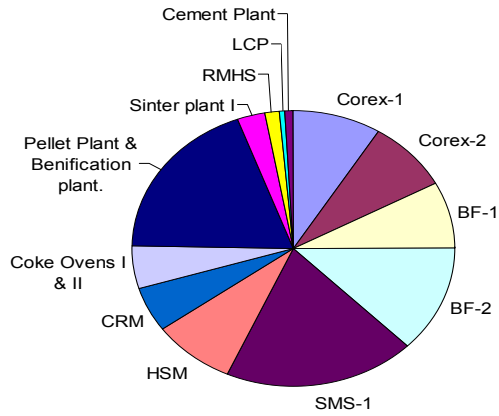


Chart-1, 4 MT Production units

Chart-2, Fire fighting pump houses

Chart-3, Power Plants

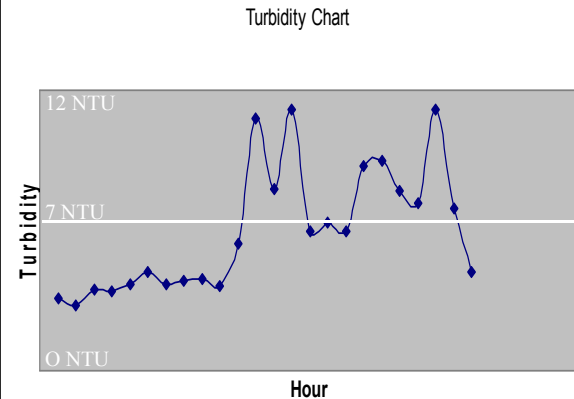
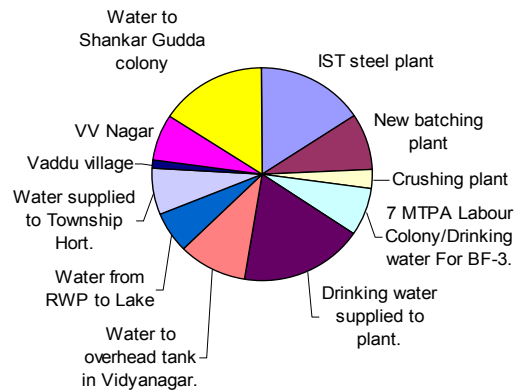
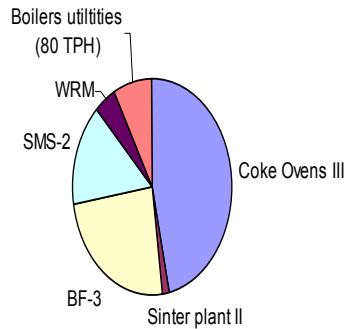


Chart-4, 7 MT Production units

Chart-5, Miscellaneous units

Chart-6 SPC

Conservation projects - highlights

A. Application of Chemical in Raw water pond to reduce Evaporation .

1. Name of chemical : Ceta styrol Alcohol.
2. Supplier : Aqua Savia.
3. Cost (Rs/kg) : 120 Rs/kg.
4. Application rate (kg/day) : 64 kg/day.
5. Cost of application per day : 8500 Rs/day.
6. Potential saving of water at 50% efficiency : 8000 m³/day.
7. Savings due to reduction. : Rs 20,000/day

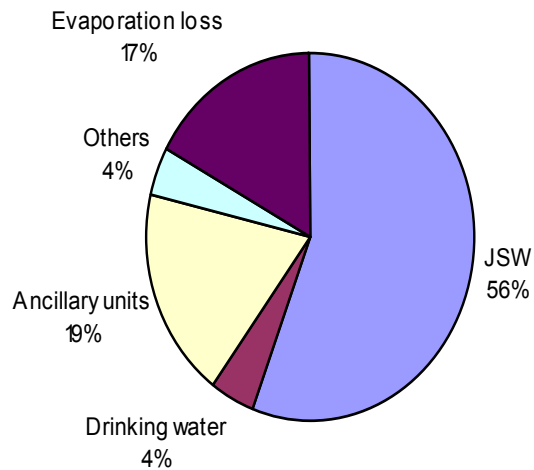




Evaloc is being mixed with water

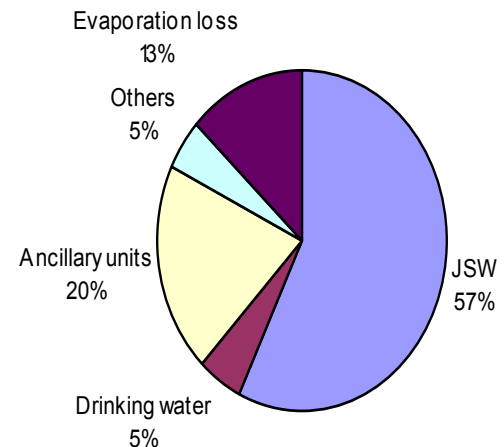
Solution is poured into a container

Water Consumption - March 2007



Total consumption = 2815.66 X 1000 m³

Water Consumption - March 2008



Total consumption = 2397.44 X 1000 m³

Raw Water Pond level

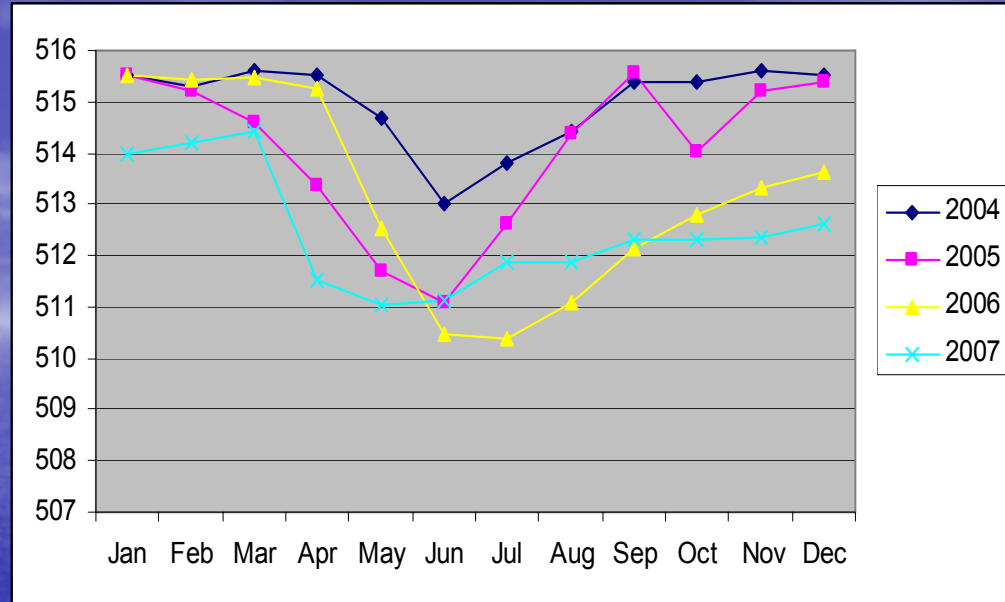
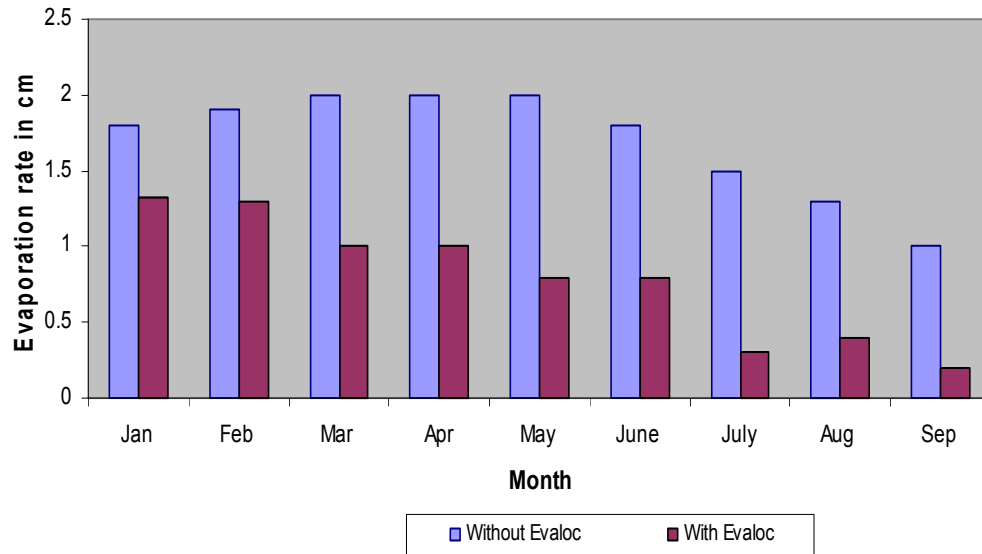


Fig-3: Comparison of Evaporation Rates in cm



With & without Evaloc application.

Conservation projects - highlights

B. Re use of seepage water & blow down water .



- Cable Tunnels constructed to collect seepage water .
- There are about 12 cable tunnel structures- VS-1, VS-2...VS-10.
- Entire seepage water is collected in VS-10(ventilation system).



- Cable Tunnel water is measured using Electromagnetic flow meter.
- Cable tunnel water is being pumped to consumer units.
- About 150 to 200 m³/day water is being saved.

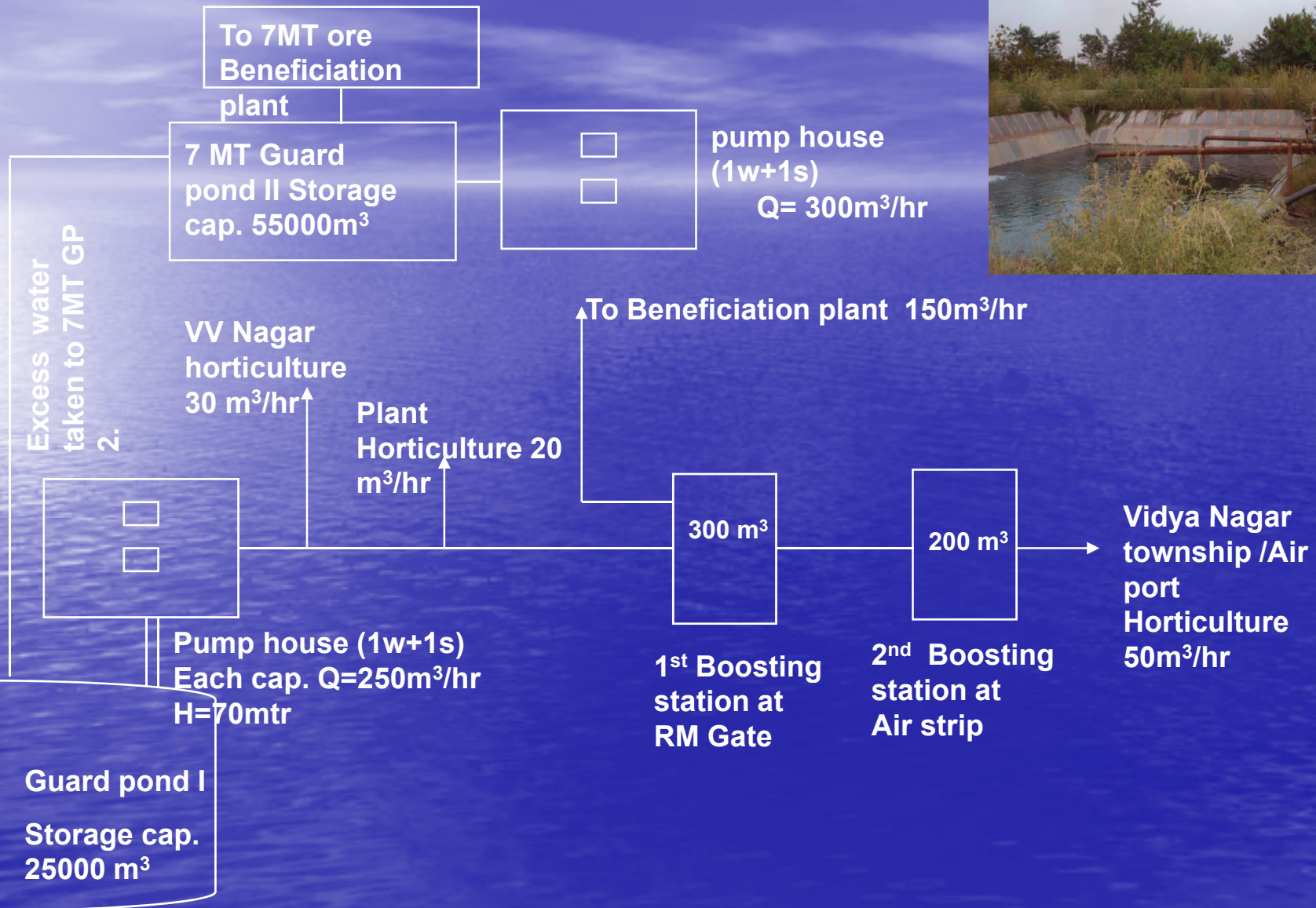
Conservation projects - highlights

C. Use of Guard pond water .



- Capacity of Each Guard pond is 55,000 m³ .
- There are two separate Guard ponds for 4 MT & 7 MT Stage.

Guard pond pipeline network



THANK YOU