

DECENTRALIZED WATER RESOURCES MANAGEMENT

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SUMMARY OF PRESENTATION

- **WASTEWATER TREATMENT:**

MINIMUM MECHANIZATION/DEPENDENCE ON POWER

QUALITY (NO CHANGE IN WATER QUALITY WHEN CAPPED & OBSERVED)

LONGEVITY (MINIMUM LIFE OF 15 YEARS)

PRICE (ENERGY, CHEMICALS, SUPERVISION, SLUDGE DISPOSAL)

- **RAINWATER:**

RAINWATER HARVESTING IS NOT A SIMPLE MECHANISM OF CONSTRUCTING A TRENCH.

SEPTIC TANK IS UNABLE TO DELIVER THE
NEEDED JOB AS IT
CONTAMINATES
GROUND WATER AND SURFACE WATER
ex: Rajasthan

SEPTIC TANK RELEASES GREEN HOUSE GAS AND
ACTS AS BREEDING GROUND FOR MOSQUITOES

HENCE, IT PROMOTES SPREADING OF DISEASES

SEWAGE TREATMENT EXPERIENCE ON CENTRALIZED PLANTS

PRACTICALLY ALL STP OPERATE **SUB-OPTIMALLY**

- DUE TO **HEAVY MECHANIZATION,**
POWER COST AND
WRONG CHOICE OF TECHNOLOGY FOR
INDIAN CONDITIONS.
- **NOT SUITABLE FOR INSTALLATION NEAR**
HUMAN SETTLEMENT DUE TO AIR
POLLUTION.

LARGE CENTRALIZED TREATMENT PLANTS
REQUIRE HUGE CAPITAL AND RECURRING
COST. HENCE, UNVIABLE

EVIDENCE:

CPCB WEBSITE,

10 TH PLANNING COMMISSION REPORT
AND MANY SUCH DOCUMENTS.

CURRENT THINKING: DECENTRALIZED SEWAGE TREATMENT

CHOICE OF TECHNOLOGY:

- ANY TECHNOLOGY WHICH WILL INVITE OWNERSHIP BY USER (VILLAGERS/CITIZENS OF THE AREA)
- COMMON MAN SHOULD BE ABLE TO CONNECT WITH THE SYSTEM
- PROMISE SOME ECONOMIC RETURN
- MINIMUM LIFE OF 15 YEARS.
- MINIMAL DEPENDENCE ON POWER

QUALITY:

FIT FOR SURFACE WATER DISCHARGE, AND
FREE FROM NUTRIENTS.

- SOIL BIO-TECHNOLOGY (SBT)

IS A PARADIGM SHIFT IN WASTE TREATMENT.

- SOIL AND PLANT AS TOOLS FOR WASTE PROCESSING AS OPPOSED TO AQUATIC BODIES, WHICH DEFIES LOGIC OF NATURE

LIFE LINK'S SBT HAS PROVEN TRACK RECORD OF
10 YEARS OF OPERATION
WITHOUT OVERHAULING AT DOMESTIC LEVEL

- NO MECHANIZATION
- NO SMELL FOR PROCESSED WATER &
TREATED WATER
- NO SLUDGE
- NO SYNTHETIC CHEMICALS

RETURNS TO USER

IN THE FORM OF BIOMASS

(FRUIT, FLOWER, FODDER/FUEL)

FERTILISER FOR FARM

- OPERATION IS SIMPLE
- NO SCOPE FOR BREAKDOWN
- CAN BE DESIGNED AND RUN AS PER POWER AVIALBILITY

ZERO DISCHARGE INDEPENDENT SINGLE FAMILY HOUSE

- **LOCATION:**

H.NO. 8-20, ANJANADRI NAGAR,
HATHIGUDA (V), HAYAT NAGAR (M),
RANGA REDDY DIST-501505 (T.S.)

PLOT AREA: 3051 sq.ft. (283.45 sq.m.)

BUILTUP AREA: 1298.33 sq.ft. (120.62 sq.m.)

OPEN AREA: 1752.67 sq.ft. (162.83 sq.m.)

DETAILS OF PLANT

TECHNOLOGY PROVIDER: LIFE LINK

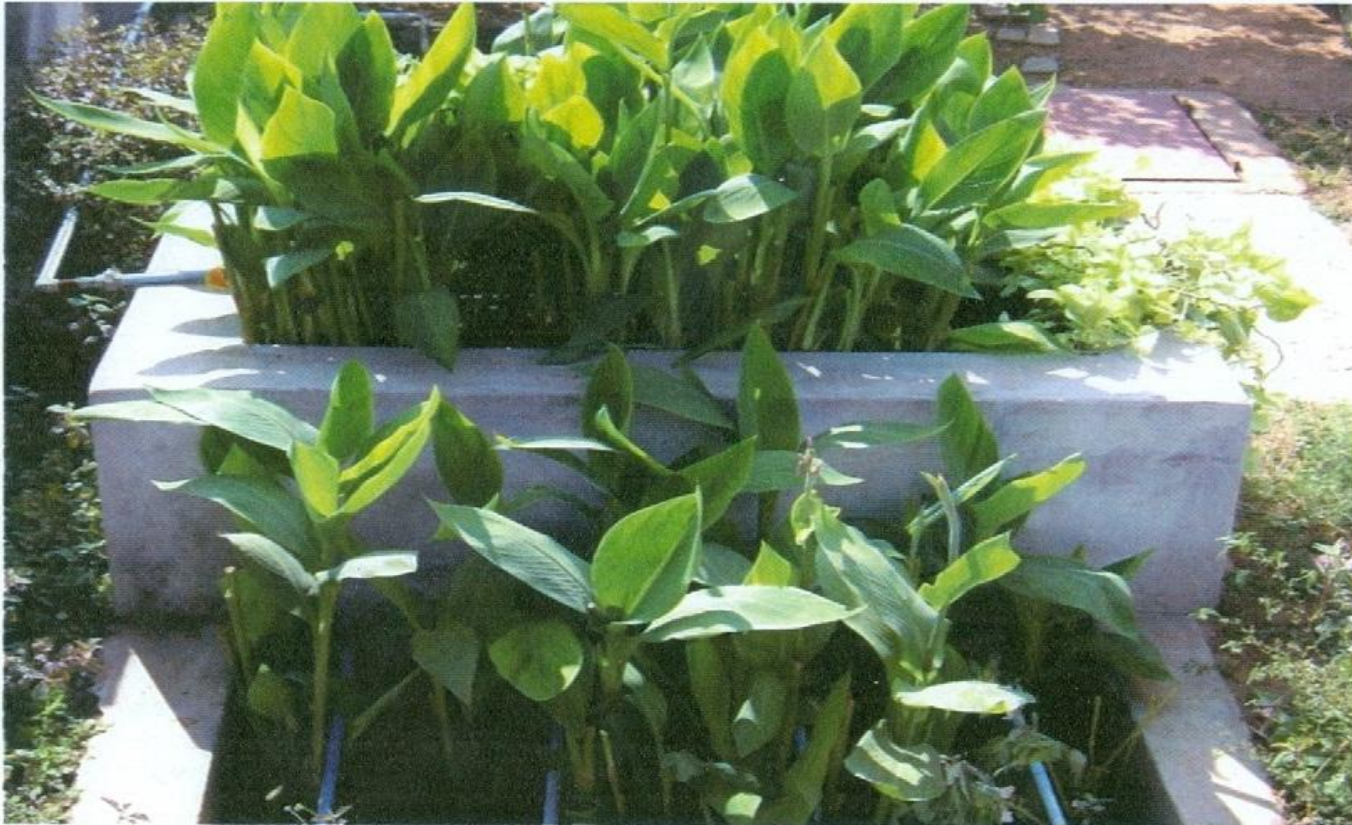
- **CAPACITY OF RAW WATER STORAGE TANK: 2500 l**
- **CAPACITY OF COLLECTION TANKS (2 nos): 500 l**
- **CAPACITY OF OVER HEAD STORAGE TANK: 500 l**

- **AREA OF REACTORS : 2.7 sq.m.**
- **NUMBER OF REACTORS : 3 (BATCH WISE OPERATION)**
- **PROCESSING TIME : 30 min/d**

- **CAPACITY OF RAW WATER PUMP IS 0.25 h.p. &
TREATED WATER IS 0.5 h.p.**

- **MONTHLY POWER EXPENDITURE: <Rs50**
- **UTILITY OF PROCESSED WATER: GARDENING &
TOILET FLUSHING**

VIEW OF SINGLE FAMILY SBT UNIT FOR SEWAGE TREATEMENT AND REUSE



TECHNOLOGY PROVIDER: LIFE LINK









FRUITS GROWN WITH SBT TREATED WATER











WATER QUALITY (IN THE YEAR-2005) OF SBT PLANT INSTALLED BY LIFE LINK FOR SINGLE FAMILY SEWAGE TREATMENT AND REUSE

Parameter	pH	TDS (mg/l)	TSS (mg/l)	BOD (mg/l)	COD (mg/l)
RAW	7.7 @ 21.9 ⁰ C	341 @ 21.1 ⁰ C	92 @ 21.1 ⁰ C	136.0	139.0
AFTER FIRST STAGE	8.8 @ 21.9 ⁰ C	288 @ 21.1 ⁰ C	49 @ 21.1 ⁰ C	26.0	47.0
AFTER SECOND STAGE	8.8 @ 21.9 ⁰ C	280 @ 21.1 ⁰ C	0 @ 21.1 ⁰ C	10.0	28.0
FINAL STAGE	9.3 @ 21.9 ⁰ C	249 @ 21.1 ⁰ C	0 @ 21.1 ⁰ C	4.5	16.7

**WATER QUALITY (IN THE YEAR-2015) OF SBT PLANT INSTALLED
BY LIFE LINK FOR SINGLE FAMILY SEWAGE TREATMENT AND
REUSE**

Parameter	pH	TDS (mg/l)	TSS (mg/l)	BOD (mg/l)	COD (mg/l)
RAW	7.8 @ 25.5 ⁰ C	278 @ 25.5 ⁰ C	139 @ 25.5 ⁰ C	120.0	133.0
AFTER FIRST STAGE	8.2 @ 25.5 ⁰ C	270 @ 25.5 ⁰ C	21 @ 25.5 ⁰ C	30.0	89.0
AFTER SECOND STAGE	8.6 @ 25.5 ⁰ C	257 @ 25.5 ⁰ C	0 @ 25.5 ⁰ C	12.0	56.0
FINAL STAGE	8.7 @ 25.5 ⁰ C	227 @ 25.5 ⁰ C	0 @ 25.5 ⁰ C	5.0	15.0

MAINTENANCE PROBLEMS

- RAW WATER STORAGE TANK AS WELL AS COLLECTION TANKS WERE CLEANED AFTER 8 YEARS
- RAW WATER PUMP FOOT VALVE WAS REPLACED TWICE IN 10 YEARS. CLEANED OCCASSIONALLY MAY BE ONCE IN AN YEAR

**Table 28 Sizing of Rain-Water Pipes for
Roof Drainage**

Dia of Pipe (mm)	Average Rate of Rainfall (mm/h)					
	50	75	100	125	150	200
	Roof Area (m ²)					
50	13.4	8.9	6.6	5.3	4.4	3.3
65	24.1	16.0	12.0	9.6	8.0	6.0
75	40.8	27.0	20.4	16.3	13.6	10.2
100	85.4	57.0	42.7	34.2	28.5	21.3
125	159.71	106.73	80.50	64.3	53.5	40.0
150	249.60	166.82	125.27	100.00	83.6	62.7

NOTE — For rain-water pipes of other materials, the roof areas shall be multiplied by (0.013/coefficient of roughness of surface of that material).





Table 434 Spacing For Fixing Clamps

<i>Type of Pipe</i>	<i>Dia of pipe, mm</i>	<i>Interval for horizontal run m</i>	<i>Interval for vertical run m</i>
Steel Pipes	15	2	2.5
	20	2.5	3
	25	2.5	3
	32	2.5	3
	40	3	3.5
	50	3	3.5
	65	3.5	5
	80	3.5	5
	100	4	5
Cast iron Pipe	50	2	2
	80	2.5	2.5
	100	2.5	2.5

Ranges of average pollutant concentration in
stormwater and combined sewer overflows (CSO)
(**Source**: Geiger et al, UNESCO, 1987)

Pollutant→	TSS (mg/l)		BOD₅ (mg/l)		COD (mg/l)	
	Stormwater	CSO	Stormwater	CSO	Stormwater	CSO
Residential	28- 736	177-271	8-55	23-114	28-213	138-209
Commercial	56-275	90-391	17-38	46-95	46-170	138-145
Industrial	114-1220	274-637	9-28	86-153	86-343	---

GRADES OF WATER

- PROTECTED WATER: USED FOR DRINKING & COOKING (OBTAINED FROM A PUBLIC STAND-POST SITUATED AT A DISTANCE OF 100')
- GROUNDWATER: USED FOR BATHING, CLEANING VESSELS & WASHING OF CLOTHES
- RAINWATER: USED FOR FLOOR WASH
- RECYCLED WATER: USED FOR GARDENING & TOILET FLUSHING

THANKS FOR YOUR PATIENT LISTENING

&

OPEN FOR DISCUSSION