

PREVENTION OF WASTEWATER INTRUSION INTO GROUND WATER – CASE STUDY OF JEEDI METLA EFFLUENT TREATMENT PLANT



K.L. RAO

EXECUTIVE DIRECTOR (TECH.)

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Jeedimetla Industrial Estate : Established in 1975.

Infrastructure facilities -1975

Poorly laid out access roads and divided plots with power supply

Facilities for the sustainability of ecology of the area: **NOT PROVIDED**

Factors that lead to Ground Water Pollution:

- ☞ Indiscriminate discharge of untreated wastewater onto land and open nallahs
- ☞ Mushrooming of residential colonies and discharge of untreated sewage
- ☞ Indiscriminate dumping of Hazardous solid wastes

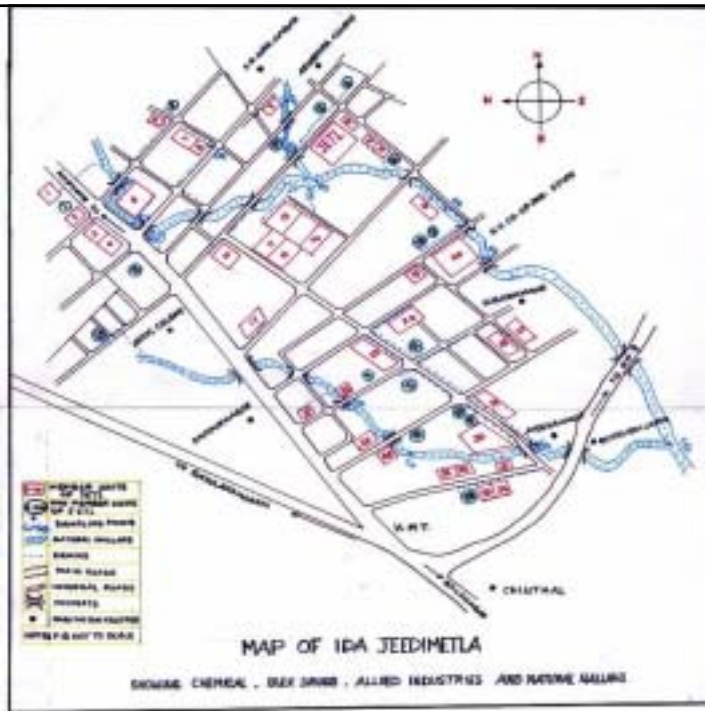
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JEEDIMETLA INDUSTRIAL ESTATE (JIE)

Area	- 450 Hectares
Developed In	- 1975
Scale Of Industrial Activity	- Predominantly SSI Units
No. of active units	- 500
Chemical and Drug industries	- 20%
Plastics, Paints and Polymers	- 17%
Mechanical and Allied Industries	- 35%
Electrical and Electronics	- 13%
Food and allied, Mineral based etc.	- 15%

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JEEDIMETLA EFFLUENT TREATMENT LTD.,(JETL) is a Public Limited Company, established in the year 1987 to address the wastewater treatment problems of small and medium scale industrial units of Jeedimetla Industrial Estate and is the **FIRST CETP** in the Indian Subcontinent.



ENTERPRENEURS FROM JIE JOINTLY FORMED A COMPANY (JETL) IN 1987.

ESTABLISHED A CETP ON 1.66 HECTARES

OPERATION OF CETP BEGAN IN APRIL 1989 ON *POLLUTOR-TO- PAY* PRINCIPLE

TO DATE CETP - JETL IS THE ONLY ONE WORKING IN INDIA SUCCESSFULLY

MEMBER UNITS	: 80
JEEDIMETLA INDUSTRIAL AREA	: 35
OTHER INDUSTRIAL AREA	: 45



WASTEWATER INTRUSION INTO GROUND WATER – ROUTES

- ❖ DISPOSAL OF WASTEWATER/TREATED WASTEWATER ONTO LAND
- ❖ SEEPAGE OF TANKS HOLDING / TREATMENT UNITS OF INDUSTRIAL WASTEWATER
- ❖ LEAKAGE AT JOINTS OF PIPELINES CARRYING WASTEWATER WITHIN THE PLANT AREA
- ❖ SEEPAGE OF WATER FROM HAZARDOUS WASTE LANDFILLS IN-SITU
- ❖ UNAUTHORISED DUMPS OF INDUSTRIAL SOLID AND HAZARDOUS WASTE IN OPEN AREAS

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OPERATIONS OF JETL

- COLLECTION OF WASTEWATER FROM THE SOURCE OF GENERATION
- TREATMENT
- DISPOSAL

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TRANSPORTATION OF WASTEWATER FROM INDUSTRY TO CWWTP

- CONVEYANCE BY ROAD TANKERS AND NOT UNDERGROUND PIPELINES
- WASTEWATER TRANSPORTATION AS PER WASTE MANIFEST SYSTEM : MONITORING TOOL
- SPILLAGE CONTROL FROM TANKERS.
- BESIDES ALL THE MEMBER INDUSTRIES HAVE BEEN EDUCATED ON THE NEED FOR LINING ALL THE WASTEWATER DRAINS AND SUMPS AT PLACE OF GENERATION.

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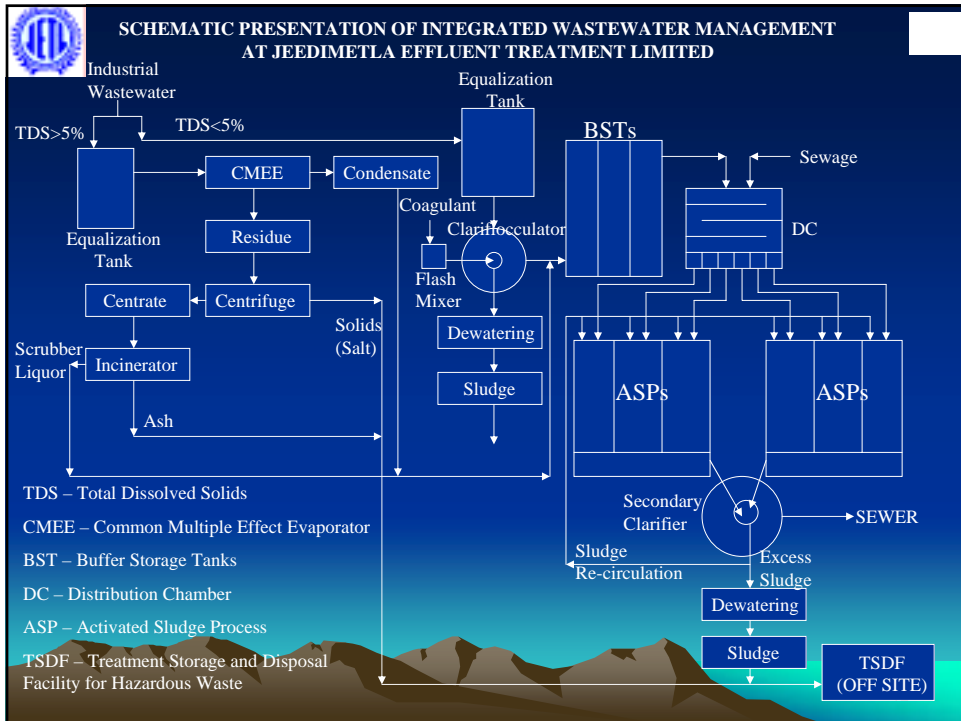
WASTE TRANSPORT MANIFEST
ANDHRA PRADESH POLLUTION CONTROL BOARD

Manifest No. **32402**

JETL

PART A <small>To be completed by the producer of waste</small>	1. Name of Waste Producer	2. Disposer's Registration No.
	3. Address	7. Disposer's Certificate
	4. Waste Description	8. Disposer's Acknowledgment of Receipt of Waste
PART B <small>To be completed by transporter</small>	4. Transporter's Registration No.	Vehicle Permit No.
	8. Transporter's Acknowledgment	
PART C <small>To be completed by the depot receiving waste</small>	10. Facility Name: JEEDEMETLA EFFLUENT TREATMENT LIMITED	
	11. Facility License No.	13. Treatment Type
	15. Disposer's Acknowledgment of Receipt of Waste	

1. To be filled in blue ink. 2. The value must be the same as in the manifest. 3. The value must be the same as in the manifest. 4. The value must be the same as in the manifest.





PRACTICES AT JETL TO PREVENT / MINIMISE SEEPAGES

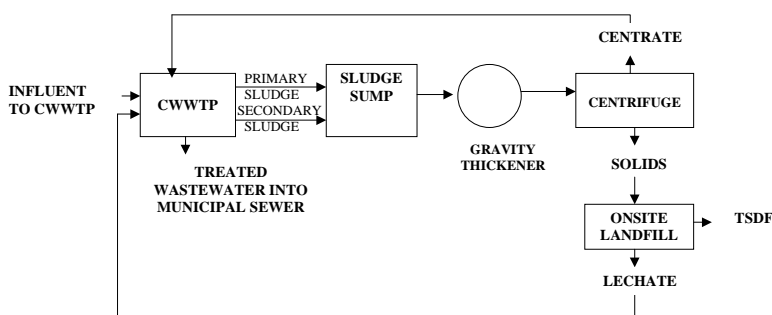
- ☛ CONSTRUCTION OF TANKS WITH LINERS
- ☛ CONSTRUCTION OF DUCTS FOR PIPELINES CARRYING WASTEWATER. PROVIDING HDPE LINING FOR THE DUCTS SO CONSTRUCTED
- ☛ REGULAR MONITORING OF PIPELINES LAID IN BETWEEN THE TREATMENT UNITS AND ALSO THE CONVEYANCE PIPELINE.
- ☛ TO CONTAIN THE LEAKAGES DUE TO CORROSION, ALL THE INTERCONNECTED PIPELINES ARE OF HDPE
- ☛ TO PROVIDE A SUMP AT THE END OF THE DUCTS TO COLLECT THE WATER, EVEN IF THERE ARE LEAKAGES AT PIPE JOINTS OR ANY BREAKAGES OF THE PIPES WITH AN ARRANGEMENT TO PUMP THE EFFLUENT WATER SO COLLECTED INTO THE SYSTEM. THUS PREVENTING OVERFLOW IN THE SUMP

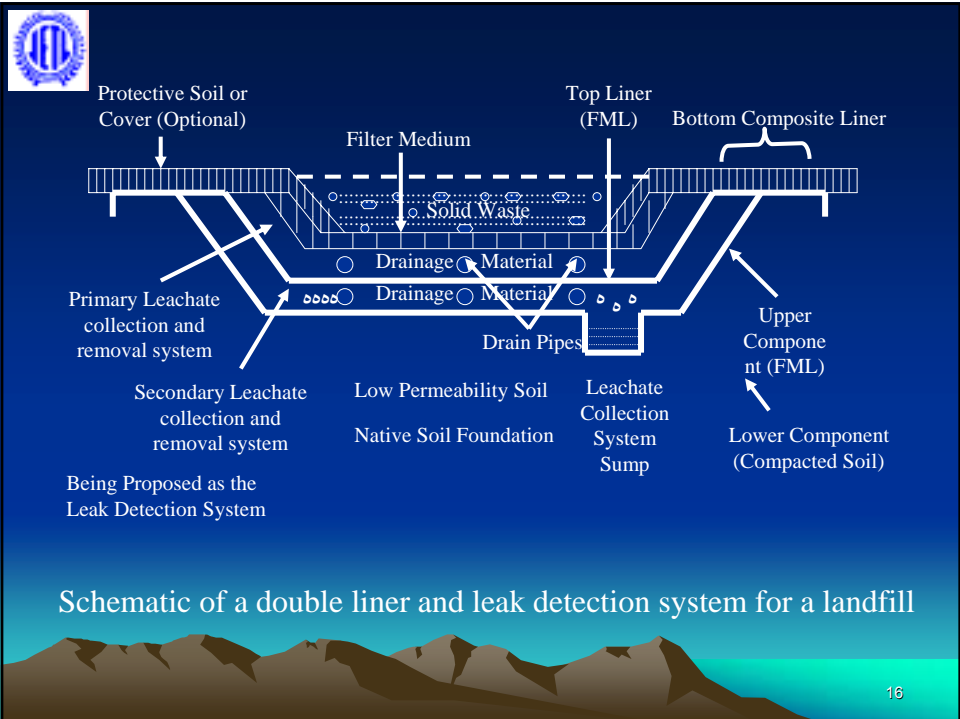
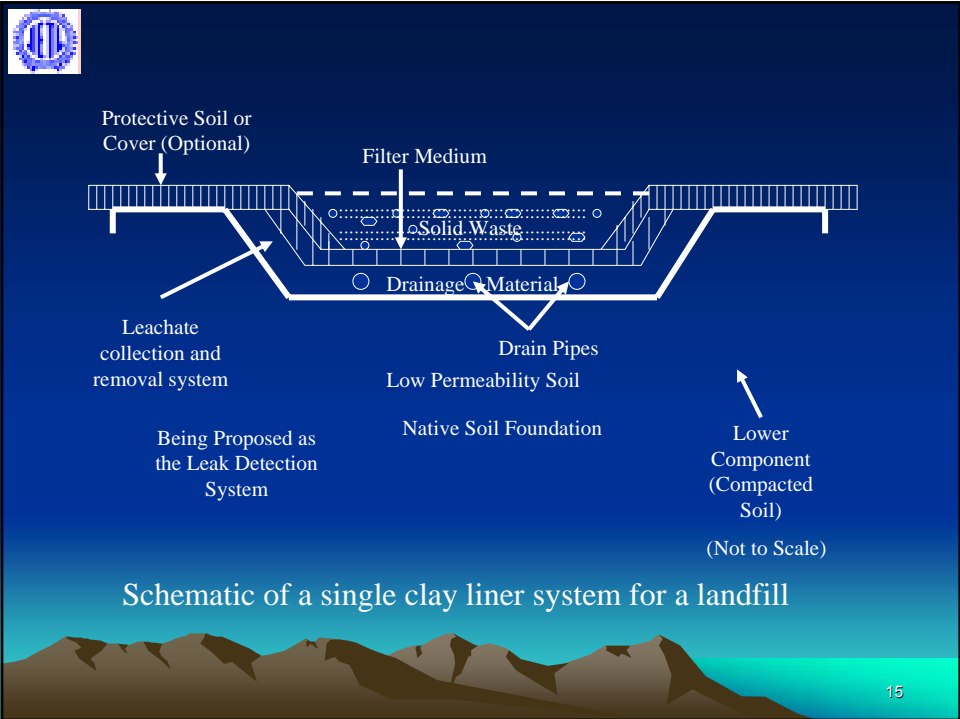
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SCHEMATIC ON-SITE LAND FILL WITH LEACHATE MANAGEMENT FOR SLUDGE HANDLING







* TREATED WASTEWATER CONVEYANCE IS BY CLOSED PIPELINE FROM JETL TO K&S MAIN AT BALANAGAR

* LENGTH OF PIPELINE - 9.4 K.M.

* MATERIAL OF CONSTRUCTION - SULPHATE RESISTANT RCC PIPES

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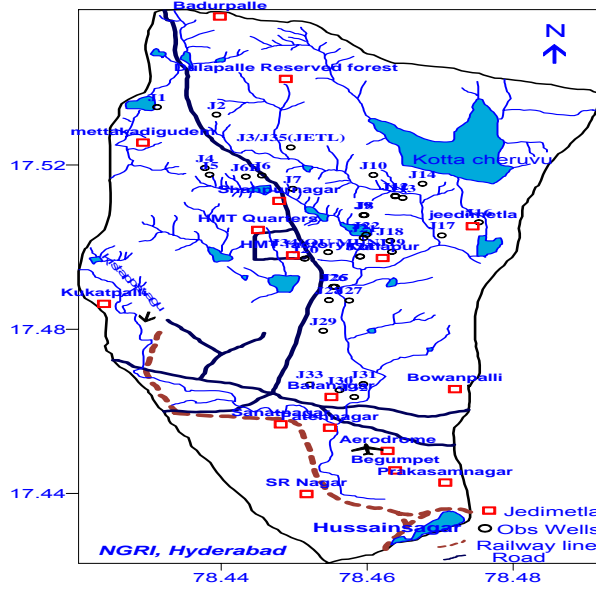


- ASSESSMENT OF WASTEWATER INTRUSION INTO GROUND WATER
- PERIODIC MONITORING OF GROUND WATER QUALITY
- INTERPRETATION OF DATA WITH REFERENCE TO GEOGRAPHICAL TERRAIN, SOIL TYPE ETC.
- APPCB HAS BEEN MONITORING THE QUALITY OF GROUND WATER FROM TIME TO TIME

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Well Location Map of Jedimetla IDA and Environs



Courtesy: NGRI 19



GROUND WATER QUALITY OF JEEDIMETLA – AS ANALYSED BY NATIONAL GEO-PHYSICAL RESEARCH INSTITUTE (NGRI 2001), HYDERABAD

LOCATION	pH	TDS	TDIS	COD	Hard-ness	Cl ⁻	SO ₄ ⁻²	NO ₃
Up stream of JETL								
R.G. Nagar (J1)	7.0	1068	980	80	454	167	450	37
Baghat singh Nagar (J2)	6.5	3472	3055	152	1359	975	510	125
Down stream of JETL								
Basawatarakam Nagar(J4)	7.5	2420	2178	80	523	584	530	290
Nehru Nagar (J5)	7.0	2140	1712	64	946	389	450	436
Chanda Nagar (J18)	6.8	4004	3443	176	1358	803	570	213
Venkanna Hills (J19)	7.2	3068	2870	112	1049	740	950	97
Vivekanandanagar Colony(J20)	7.1	1132	1018	24	559	306	160	77
Raju Colony (J30)	7.0	696	666	24	232	89	50	62
Vinayaka Nagar Colony (J31)	7.0	3144	2830	104	1187	757	700	29
Balanagar Nallah (J32)	7.0	3360	3096	496	705	890	1057	NIL

NOTE: Except pH all other parameters are expressed in mg/l

Courtesy: NGRI



All our efforts should be oriented to avoid
contamination of fresh water sources

otherwise

The survival of human race is threatened

(Followed by photo slides)

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SEWAGE CESS POOL



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SEWAGE CESS POOL



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SEWAGE CESS POOL



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SEWAGE CESS POOL



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ACTIVATED SLUDGE PROCESS UNITS



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CONSTRUCTION OF WATER TANK



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EQUALISATION TANK



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BUFFER STORAGE TANKS



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BUFFER STORAGE TANKS



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ON-SITE ENGINEERED LAND FILL



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ON-SITE ENGINEERED LAND FILL



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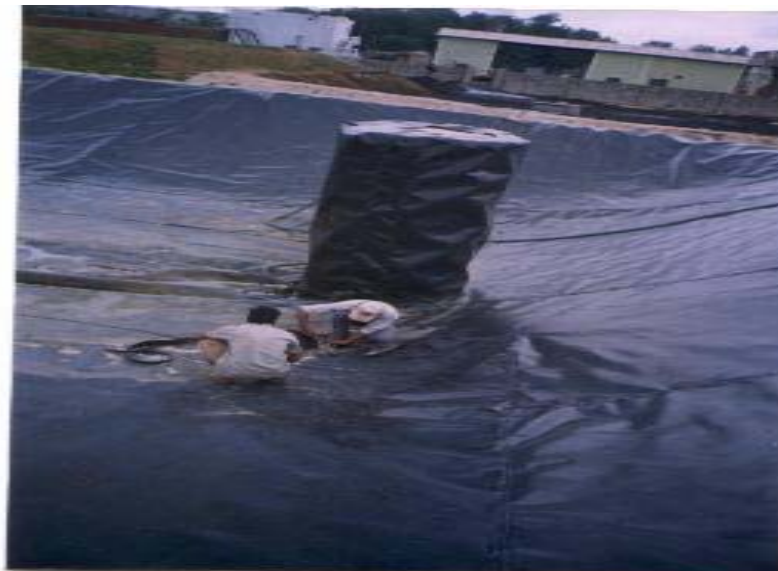
ON-SITE ENGINEERED LAND FILL



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ON-SITE ENGINEERED LAND FILL



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INTERNAL PIPELINE DUCT



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JETL CONVEYANCE PIPELINE



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FOR FURTHER QUERIES CONTACT

JEEDIMETLA EFFLUENT TREATMENT LIMITED

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THAN Q