

Treatment Of Municipal Waste Water In Salem City

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ABSTRACT

The treatment processes and quality of the final effluent produced by tertiary filtration for phosphorus removal typically meet state criteria for wastewater reclamation. Reuse of this high quality effluent can be an attractive alternative to direct discharge into surface waters in situations where restrictive NPDES permit limitations apply. In this report, EPA region 10 presents observations of advanced wastewater treatment installed in Salem city. These facilities employ chemical addition and a range of filtration technologies which have proven to be very effective at producing an effluent containing low levels of phosphorus. Tamil Nadu Government Made A Policy Announcement Of Providing Under Ground Sewerage Scheme In All Urban Local Bodies In A Phased Manner At District Head Quarter Towns. The Municipal Sewerage Collection Network Systems Are Implemented and the Household Sewage Are Collected and Moved to the Collection Chamber of STP. The STP consists of various unit operations and processes to treat the raw sewage into the final treated effluent quality as per the stipulated standards. The project will have construction phase and operation phase impacts which have been assessed and the Environment Impact Assessment has been prepared.

KEY WORDS: STP, Karuppur Village, Salem Municipality

I. INTRODUCTION

Tamil Nadu Government Made A Policy Announcement Of Providing Under Ground Sewerage Scheme In All Urban Local Bodies In A Phased Manner At District Head Quarter Towns. The Municipal Sewerage Collection Network Systems Are Implemented and the Household Sewage Are Collected and Moved to the Collection Chamber of STP. The STP consists of various unit operations and processes to treat the raw sewage into the final treated effluent quality as per the stipulated standards. The project will have construction phase and operation phase impacts which have been assessed and the Environment Impact Assessment has been prepared.

II. NEED FOR THE PROJECT

With the rapid growth of the population in salem district, the lack of proper drainage system and sewage treatment facility has become an ever – larger problem for public and from environmental point of view. Therefore, government has decided to provide an underground sewerage scheme with STP at karuppur as a part of urban development project for salem municipality.

III. PROFILE OF SALEM

Males constitute 49.5 % of the population and females 50.5%. The decadal growth rate is 8.43%. Salem has an average literacy rate of 83.26%, male literacy is 89.65%, and female literacy is 77.02%. 11.98% of the population is under 6 years of age. Satellite image of the Site Location as shown in figure 3.1.

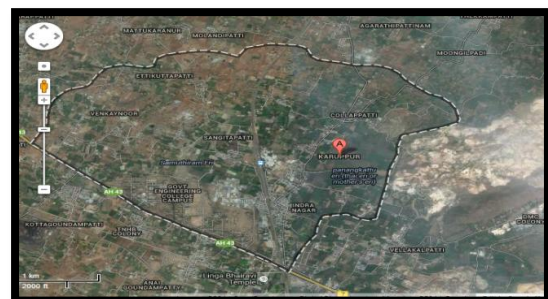


Figure 3.1

3.1 Project Brief

Project Town	:	Karuppur
Village, Municipality	:	Salem
Municipality		
District	:	Salem District
State	:	Tamil Nadu
Technology used	:	Activated Sludge Process (ASP)
Capacity of the Plant :		6.92 MLD

The project involves the construction of Sewage Treatment Plant with an intermediate capacity of 6.92 MLD and an Ultimate capacity of 8.55 MLD. Basic Information on Proposed project in Salem is enclosed as Annexure-I

3.2 Proposed Project Site

Salem Municipality is located at a distance of 60 Km from East of Salem town. The satellite image and the current status of the project site are shown in Figures 1.2 and Figure 1.3 respectively. With the rapid expansion and urbanization of Salem Town, an underground sewerage scheme has been formulated for the town and the collection system works are in progress/ nearing completion. The final sewage from the Zone V will be redirected to the proposed Sewage Treatment Plant for final treatment and the treated effluent will be redirected to the downstream flow of Sukkanar (a channel formed by the drainage of the agricultural lands in the village) which is about 100 m from the proposed site.

3.3 Project Description

Name of the project :designing, providing, constructing, erection and commissioning, startup of sewage treatment plant with selected modern technology at salem municipality of salem district in tamilnadu on DBOT basis. Proposed land use plan is given the table 3.1.

Project town	:	karuppur village, salem district, tamil nadu. STP capacity : 6.92 mld
Technology used	:	activated sludge process (ASP)
project cost	:	5.9 crores
Land available	:	8.87 acres

Table 3.1: Proposed Land Use Plan

Land use	SALEM Town		SALEM LPA (excluding Town)		SALEM LPA	
	Requirement (in Ha)	% to Total Area	Requirement (in Ha)	% to Total Area	Requirement (in Ha)	% to Total Area
Residential	664.80	58.00	1385.00	17.50	2049.00	23.00
Commercial	65.50	6.00	6.30	0.10	71.80	0.80
Industrial	11.50	1.00	135.00	1.70	146.50	1.60
Educational	17.00	1.50	4.70	0.05	21.70	0.20
Public & Semi-public (including Transportation)	90.00	8.00	308.40	3.80	390.40	4.20
Agriculture	285.63	25.50	6067.01	76.85	6353.34	70.20
Total	1134.43	100.00	7898.41	100.00	9032.84	100.00

IV. SCOPE OF THE REPORT

To assess the baseline of air, water, land, soil and noise environment around the proposed site in relation to the town by collecting the samples of air, water, soil and noise in the project setting and analyzing for the recognized parameters as per local statutory regulations and prepare the baseline document and to predict the potential impacts.

To identify the potential impact by the STP on related environmental issues like wildlife, bird sanctuaries, flora & fauna, public health, social uplift, archeological monuments, heritage structures and bring up the appropriate preventive & remedial procedures without compromising the objective of STP. To develop a set of practices to be followed during preconstruction, construction and post construction periods in order to avoid the foreseeable negative impacts. In keeping with the operational policy of the World Bank 4.01, go through a process of public consultation and transparently appraising the public of the foregoing and securing their concerns, evolving mutually agreeable measures to all the concerns, document the same and ensuring a periodic and continual follow up with project persons and the public.

4.1 Objectives Of This Report

- The objectives of the report are
- To identify and assess any potential negative environmental and social impacts and to facilitate the planning of preventive and remedial measures.
- To identify possible environmental enhancements in the project setting and lay down the action plans.
- To develop a set of environmental monitoring and management plans compliant with the relevant codes, statutes & social norms.

1. CATEGORIZATION OF PROJECT:

The proposed project is categorized under E1 since it includes sewerage network, pumping station and

treatment plant as per Tamil Nadu Urban Infrastructure Financial Services Limited, Chennai. As per the MoEF Notification S.O. 1533, notification under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986, dated 14th September 2006, the Sewage Treatment Plant is not categorized in the schedule.

5.1 Connectivity

Airport - The nearest airport to the town is in Trichy at a distance of 120 km. Railway – The town is well connected with railways. It serves as a railway junction for Salem- Nagapattinam and Chidambaram- Pattukkottai railway sections.

5.2 Land Use

Developed area constitutes around 54% of the total area of the town. Of total developed area of the town, about 72% of the land is under residential use and 14% under public and semi-public uses, which includes land under transportation also. Land under industrial use constitutes only 2.4% reflecting that there are no major industrial activities in the town. 34% of the total area of the municipality is under agriculture.

Existing land use in Salem Local Planning Area (excluding Salem town), as per Master Plan 2001, is given in the table below

5.3 Rainfall & Climate

The district has a hot tropical climate. The summer season, which is very oppressive, is from March to about the end of May. The humidity is generally high in the region throughout the year and exceeds 70 percentages during period from August to May. It is much drier towards the interior of the district.

5.4 Data Inference

All the Ambient Air quality monitoring is under the category of commercial and industrial zone. The locations were selected based on the wind direction, taking into the consideration of one location in the up wind direction and 5 locations in the down wind direction. In all the locations the observed values of PM 10, SO2, & NOX are within the prescribed limits of CPCB. Water Sampling Locations as shown in figure 5.1. and Raw sewage characteristics table 5.1 is given below.

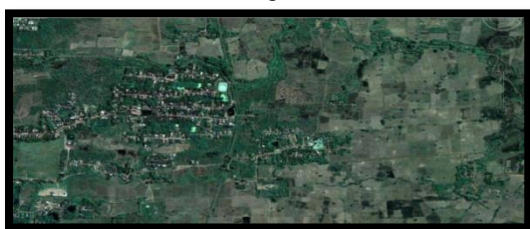


Figure 5.1

Table 5.1: Raw Sewage Characteristics

S.No.	Parameter	Values	Unit of measurement
1	pH	6 to 6.95	.
2	Total suspended solids	6.92	mg/l
3	Bio-chemical Oxygen Demand	180 to 300	mg/l
4	Chemical Oxygen demand	385 to 600	mg/l

5.5 Baseline Environmental Data

The baseline environmental status with respect to various environmental components like air, noise, water, land, flora & fauna and socio-economic, being integral part of an EIA, forms the basis for predicting/assessing the environmental impacts of the proposed project. Field monitoring at site was performed for the month of april 2010, representing the post-monsoon season.

Various environmental components were monitored and samples were analyzed. Apart from this, additional data were also collected from secondary sources like government/non-governmental agencies, universities, irrigation department, india meteorology department.

2. POPULATION DISTRIBUTION OF SALEM DISTRICT

Population distribution of salem district as shown in figure 6.1

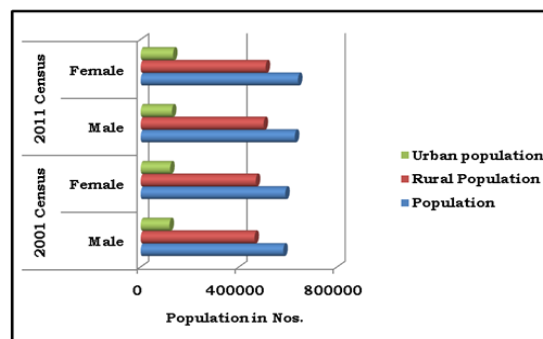


Figure 6.1

V. ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan (EMP) is aimed at mitigating the possible adverse impact of a project and ensuring the existing environmental quality. The EMP converse all aspects of planning,

construction and operation of the project relevant to environment. It is essential to implement the EMP right from the planning stage continuing throughout the construction and operation stage. Therefore the main purpose of the Environmental Management Plan (EMP) is to identify the project specific activities that would have to be considered for the significant adverse impacts and the mitigation measure required.

7.1 Green Belt Development Plan

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. The green belt helps to capture the emission and to attenuate the noise generated apart from improving the aesthetics. Development of green belt and other forms of greenery shall also prevent soil erosion and washing away of topsoil besides helping in stabilizing the functional ecosystem, make the climate more conducive and restore water balance. The area along the plant boundaries shall be used to plant various trees and shrubs.

7.2 Safety Training & Health Monitoring

- Safety & training will be given to the O & M staff to rectify the problems arising during the operation of STP.
- The following are safety training will be provided for the workers:
- Workers should wash their hands with anti-bacterial soap frequently.
- Open cuts or wounds should be protected.
- Always wear rubber gloves and protective clothing when working with wastewater.
- Do not wear contaminated or soiled clothing, wash clothes regularly to remove contaminants.
- Workers need to be able to identify and deal with hazards associated with confined spaces.
- To train them how to use the personal flotation device (PFD) during drowning.
- Regulatory requirements to be applied while traffic hazards occur.
- Proper techniques to be given for trenching and shoring while digging.
- Good housekeeping practices to be given for removing slipping or tripping hazards.
- The staff will be given training on awareness & first aid to save during electrocution or mechanical hazards

VI. CONCLUSION

The impact on environment will be minimum and can be further reduced by implementing various mitigating measures and regular monitoring programs. The proposed sewage treatment Plant have

beneficial impacts in terms of hygienic and safe disposal of treated effluent in Salem with incidental benefits like employment opportunities both in the construction stage and operation stage. Also the modernized installation will facilitate greater level of operating safety. Due to the proposed project the socio economic activities will be developed in and around the project area. The monitoring program on various environmental parameters will be undertaken for the continual improvements towards protecting the environment to achieve the above requirements. Proper methods have been planned to safe and secured disposal of treated effluent and handling of solid waste. Hence the project has been strongly recommended by the consultants.

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