CHAPTER 4

STUDY AREA

The Pichavaram in Chidambaram Taluk is situated on the South East coast of Peninsular India. It is located about 225 km south of Madras, the Tamil Nadu state capital and 40 km south of Cuddalore, a minor port in the Tamil Nadu state. It is situated in-between the northern vellar and southern coleroon estuary systems and along with Killai lagoon, is referred as the Vellar Coleroon estuary complex. Covering an area of approximately 1100 ha, it is represented by 51 islands, waterways, gullies, channels and rivulets.

The mangrove ecosystem in Pichavaram is well known for its luxuriant growth of mangrove plants with high productivity and diversity of fauna and is provided with rich detritus, nutrient salts, vitamins, trace elements etc. Freshwater is supplied to the Pichavaram mangroves during the late pre monsoon to early post monsoon through two major canals. A main channel from Coleroon river contributes considerable amount of freshwater before its entry into the Bay of Bengal. Khan Sahib canal, which is mainly used for irrigation, contributes freshwater to some extent. Brackishwater enters mangrove area through the Vellar and Coleroon estuaries. Neritic waters from the adjacent Bay of Bengal enters through the Chinnavaikkal. The study area is given in Figure 4.1. The picture of mangroves and aquafarm in Pichavaram are given in Figure 4.2 and Figure 4.3, respectively.

In spite of its economic, ecological and human values, the extent of this mangrove is getting reduced every year due to human interference directly
Figure 4.1 Location of Pichavaram
Figure 4.2 Mangroves in Pichavaram

Figure 4.3 Aqua farm in Pichavaram
by way of deforestation. Recent developments in tourism with construction of cottages within this mangrove forest area and establishment of boating facilities to take the tourist to the very core area of mangroves, has added up to the ill effects of human intervention to the mangrove eco system. There are many aqua farms located on the sides of Vellar and Coleroon river and in and around the Pichavaram area.

4.1 LOCATION

Pichavaram lies in between 79°45'-79°52'E and 11°22'-11°30'N in Cuddalore district of Tamil Nadu. The total area of the wetland of the Vellar-Pichavaram-Coleroon estuarine complex is about 2335.3 ha.

4.2 CLIMATE

It enjoys tropical climate with high rainfall during north-east monsoon.

4.2.1 Temperature

The mean annual temperature is 29.8°C. The temperature is lowest in the month of December with 21.1°C and highest in the month of May with 38.5°C. The area falls under hyper thermic soil temperature zone i.e., soil with less than 5°C difference between mean summer and winter and with annual temperature of above 22°C.

4.2.2 Rainfall

The annual precipitation varies from 1000-1400 mm with the mean precipitation of 1360.9 mm. It receives maximum rainfall during northeast
monsoon. Low lying areas were flooded due to the heavy pour down from October to December. Summer showers are negligible.

4.3 GEOLOGY

The study area consists of quartemary Alluvium. The Alluvium of the Vellar river partially overlies the cretaceous and the cuddalores. The average thickness of the aquifer is approximately 40" with a width of about 6 miles. Very low sand dunes occur all along the coast in a belt approximately, 1 mile in width. The morphology is great plain occupied by tertiary deposits subjected to aggradational and degradational processes.

4.4 PHYSIOGRAPHY AND DRAINAGE

The tidal mud flats are present along the Bay of Bengal. These mud flats are associated with marshy swamps and lagoons consisting of mangrove forests. The slope is from west to east. There are no hills or mountains in the area. The main source of irrigation is old Coleroon river, which has got a perennial flow and Vellar river, which has got only a seasonal flow during monsoon rains. The quality of ground water is saline. The tidal amplitude is small, ranging from 1.0 to 1.2 m at the mouth and 0.60 to 0.70 m at the inner regions. Because of small tidal amplitude, the breadth of the intertidal area is very narrow. The Coleroon and Uppanar river serves as drains for shrimp farm effluent discharge. The quantity of discharges is given below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Discharge (kl/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Killai area</td>
<td>2620</td>
</tr>
<tr>
<td>Pichavaram</td>
<td>1680</td>
</tr>
<tr>
<td>TTDC hotel</td>
<td>5</td>
</tr>
</tbody>
</table>
4.5 VEGETATION

The natural vegetation consists of shrubs, trees and grasses and herbs. The mangrove forest all along the fringes of lagoons and islands and in and around the Pichavaram village presents a green canopy of trees and shrubs. It is unique because of its multi species formation whereas in other mangrove forests of India, one or two species alone mostly dominate.

4.6 AGRICULTURE AND LAND USE

Climatic conditions, availability of water, productivity of the soil and socio economic conditions of the farming community are the prime factors that have determined the agriculture and land use in the area. Paddy and groundnut are the major crops. Groundnut is widely grown both under irrigated and rainfed conditions. In addition, coconut and casuarina are also cultivated.

4.7 WIND AND RELATIVE HUMIDITY (%)

The maximum relative humidity was 80 % and the minimum was 40 %. The wind blows in NE and NW direction. The maximum wind speed was 5 km/h and the minimum speed was 2 km/h during normal days.

4.8 SOIL

The soil is saline in nature. It is reddish yellow to brown in colour and the texture ranges from sand to sandy loam. It has the characteristics of dry loose, moist friable, wet non sticky and non plastic, rapid permeability and gradual smooth boundary.