

Chapter-III

OBRA -ENVIRONS AND STUDY SITES

Town of Obra is situated $23^{\circ} 52'$ to $25^{\circ} 32'$ N latitude and $82^{\circ} 7'$ to $83^{\circ} 33'$ E longitude in south hilly part with unbearable dry hot atmosphere of Sonebhadra district of South eastern (U.P.) India. The elevation above the mean sea level ranges between 315 and 485m. Sonebhadra is the second largest district of Utter Pradesh (India), previously a part of southern Mirzapur. It is bounded by Mirzapur, district in the northwest, Chandauli district in the north, Bihar state to the northeast, Jharkhand state to the southeast, Chhatisgarh state to the south and Madhya Pradesh state to west. The district headquarters at Robertsganj, 90 km south from Varanasi city. An area of 6,788 sq km and population is over 1.4 million. Hindi, English, and Bhojpuri are the main languages spoken.

This area has been known as “Sonaghati” (golden valley) due to the richness of minerals, rocks and its natural resources. Red coloured and fine textured sandstone (Dhandraul orthoquartzite) is the most important rock of the area. Sandstone is generally underlain by shale and limestone.

The Sonbhadra district can be called the power capital of India, as the region has many electrical power stations. Power project is located in Anpara, Obra, Renusager, and Pipri. Obra **Thermal Power Station** is located at Obra in Sonebhadra district in the Indian state of Uttar pradesh, about 125 km from Varanasi . It has 1500 M.W. capacity was constructed by Utter Pradesh Rajay Vidut Utpadan Nigam Ltd. (U.PRVUNL) Govt. of Utter

Pradesh in Obra town; it fulfills the desired condition of semi-urban nature.

An important place is the Sonebhadra, Kaimoor Wildlife Sanctuary and Sonbhadra Fossils Park (the age of the fossils is around 1400 million years) at Salkhan are some of the major tourist attractions nearby. There are many tourist and religious places including Vijaygarh fort, Aghorigarh fort, Shivdwar temple, Renukeshwar Mahadev temple; Mukha water fall, Dhanraul dam and Vindham fall. One can also find a number of beautiful tourist destinations such as Lakhania Dari, Chuna Dari, Rihand Dam and new established Vaishno mandir at Dalla road.

VEGETATION:

The potential natural vegetation of the region is tropical dry deciduous forest and exhibits various xerophytic characters. The soil, which is completely exposed during summer season, bears a beautiful canopy of green plants in rainy season, belong to various taxa.

A good number of trees, herbs, shrubs, grasses and climbers grow at and around Obra. The common tree species are *Acacia auriculiformis*, *Acacia catechu*, *Acacia nilotica*, *Azadirachta indica*, *Casia fistula*, *Dalbergia sissoo* and *Eucalyptus* etc. various types of fruit plants including *Mangifera indica*, *Psidium guajava*, *Tamarindus indica* also planted in the town. Common shrubs and herbs belong to *Lantana indica*, *Rosa*

indica, Parkinsonia, Ricinus communis, Calotropis procera, Justicia adhathoda Euphorbia hirta, Hibiscus rosa sinesis etc.

Parthenium hysterophorus, the dreaded and dangerous weeds which cause various types of skin allergies is growing at each corner of the town of Obra.

CLIMATE: METEOROLOGY OF OBRA SONEBHADRA

Climate affects the distribution pattern of plants and human activities, directly or indirectly. The quantity and quality of air biocomponent are evidently influenced by the changes in the climatic conditions. Obra Sonebhadra experiences a semi arid type of climate, with three seasons in a year, i.e. summer (March to June), rainy (July to October) and winter (November to February) seasons. It remains too hot during summer and too cold during winter season. The maximum monthly temperature varies from 21°C in January to 45°C in June. . The average rainfall varies between 850 and 1300 mm, about 85% of the annual rainfall occurs during the rainy season from the southwest monsoon. The distinction of seasonal pattern may be attributed due to marked variation in temperature, sun-shine, pattern of precipitation (mainly rainfall) and many other climatic factors.

The meteorological data during the present study were procured from the Department of Meteorology, Obra Thermal Power Plant (U.P.). Monthly record of temperature, relative humidity and total rainfall during the study

period (September 2006 to August 2008) is presented in Table 3.1, 3.2&Fig 3.2.

TEMPERATURE:

One of the characteristic features of the climate of Obra, Sonebhadra is the extremes of temperature. The trend in the variation of temperature round the year has remained constant during the tenure of this work. The average temperature starts increasing from March and attains the peak during May and June (Table 3.1, 3.2&Fig 3.2).

The coldest month in both the year was January with yearly average minimum temperature as 8.9⁰C while May was the hottest month in both the year average maximum temperature of 44.7⁰C.

RAINFALL:

Obra has marked rainy season from July to September. The average annual rainfall over the district is 1285 mm. In both the year i.e. 2006-07&2007-08, the maximum rainfall was experienced during the month of August with a total of 535.8 mm & 490.5mm respectively. The rain free months were December/April in year 2006-07 and February/May in 2007-08.

RELATIVE HUMIDITY:

It is the ratio of the actual amount of water vapour contained in unit volume of the air to the amount that would be present if the air was saturated at the same temperature, expressed as a percentage. The average relative humidity was high during rainy season and low during dry season (summer). During autumn and winter months the air was moderately humidity. (Fig.3.2)

WIND VELOCITY:

Observations (Table- 3.1&3.2) indicate that mean maximum wind velocity (16.5 km/hr) was in the month of June and minimum (3.4km/hr) in December.

STUDY SITES:

Five different sites were selected for the study; these sites are situated at different direction and are far away from each other (Fig.3.1& Plate 3.1-3.2). A marked difference was observed in vegetation and other biological factors, at selected sites.

1. THERMAL POWER PLANT (TPPS, SITE I).

It is situated towards southwest direction of the Town. This site is very polluted by fly ash and dust. Surrounding area covered by hill and vegetation. The road side plantations are very poor at this site.

2. KHAIRATIA VEGETABLE MARKET (KVMS, SITE II).

It is famous market of Obra among dominated by Vegetable and fruits. Towards south from the Town and The roadsides were encroached by the basket of vendors and behind them there were many shop containing items of daily use. There was also grains godown situated in the market.

3. BILLI RAILWAY STATION (BRSS, SITE III).

It is about 5 km towards north east form thermal power plant obra. It is much polluted area by dust particles, many stone crusher plant is situated around this site. The vehicular pollution happens to be at high level because maximum numbers of vehicles pass through this area. The road side plantation is very poor at this site.

4. OBRA RESIDENTIAL COLONY (ORCS, SITE IV).

It is about 4 km towards North West from Thermal power plant Obra. It is surrounded by residential colony houses, government hospital and Children Park with luxuriant vegetation and road with avenue trees.

Eucalyptus sp., *Mangifera indica* and *Parthenium hysterophorus* were the common plant at this site.

5. BAGGHA NALA ROAD (BNRS, SITE V).

It is control site and 6 km away north east from thermal power plant. Baggha nala road connects obra and state highway Varansi-Shaktinagar marg. it is surrounded with hills of Vindhyans.

The study sites are shown in the Map of Obra, Sonebhadra (Fig 3.1).

