



## Ingress of Salinity in Coastal Area of Junagadh

\*Ravi Sureshkumar Panchal

\*\*Bhavikkumar Ganeshbhai Patel

\* M.E (Water Resource Management ), LDCE, AHMEDABAD

\*\* M.E (Water Resource Management ), LDCE, AHMEDABAD

### ABSTRACT

The problem was brought to the notice of the Government. Considering the situation, importance of combating salinity in the saurashtra region, Government formed two high level committees in the year '76 and '78 respectively to investigate the problem of salinity ingress and to give suggestions for its remedial measures. Solutions suggested by them were construction of Tidal Regulators, Bandharas, Checkdams, Spreading channels, afforestation and some management techniques which include regulation of lifting of underground water and change of crop pattern and coastal land Reclamation bunds. As per the suggestions given by the committees, various infrastructure development plan had taken place through constructions of Bandharas, Tidal regulators, Recharge reservoirs, recharge tanks, check dams and spreading channels in the Districts of the Saurashtra region by the Government of Gujarat in last 30 years & as such benefits have been obtained, which includes, increase in irrigation potential for land and the increase in the quantity of benefited areas of cultivable land. The lines of 2000 TDS have been moved towards the coastal region from the non-coastal region. Migration of the population has been arrested and in majority of the cases the migrated people have returned and restored to their respective villages and professions. The prices of agriculture land have also improved considerably. This has direct bearing on the improvement of economic prosperity of the region.

The efforts made by the Government of Gujarat have changed the scenario of rural people, who were suffering from the problem of salinity for a long time. Now they witnessed the development. The future is bright in the coming years. We have to save every drop of water, and have to use water as per requirement, adopt proper water harvesting technology and rain water harvesting must be promoted. Let us work together for combating the deteriorated ground water and help the mankind

### Keywords :

#### Preambles

Most often, Seawater intrusion is caused by ground water over pumping in coastal wells. It is generally observed where fresh water aquifers are hydraulically connected with sea water. The fresh water body will overlie the saline water body because the unit weight of fresh water (1gm/cm<sup>3</sup>) is less than that of saline water (about 1.022 to 1.031 g/cm<sup>3</sup>). When fresh water is withdrawn faster than it's replenishment as a result the water table depletes. This reduces the hydraulic pressure. When this happens salt water from the ocean is pulled into the fresh water aquifer and contaminates it.

#### Details of Study Area



Junagadh district lies between 21° 10' and 21° 40' north latitude and 70° 18' and 71° 15' west longitude region, in the state of Gujarat India, known as Kathiawar or Saurashtra. This

district is bounded by the Rajkot district in North, Amreli district in East, Arabian Sea in South and by the Arabian Sea and Porbandar district in the West. Total geographical area of Junagadh district is 6,996,011.21 hectares

My study Area Covers following Talukas Una, kodinar, Malia, Mangrol & Veraval in Junagadh Coastal Reach this is also called Una to Madhavpur Coastal Reach As suggested by HLC-1.

#### Effect of Salinity

- Quality of ground water deteriorated,
- 2. Deterioration to Fertile Land
- 3. Reduction of crop yield
- 4. Shortage of irrigation and drinking water
- 5. Health hazards for men and cattle
- 6. Economic life of people seriously affected
- 7. Migration of people
- 8. Disturbance in social life

#### Suggested solution by HLC I & HLC II

The committee studied the problem in coastal belt of saurashtra and kutch and recommended the salinity prevention works amounting to Rs.64.00 crores (revised Rs.100.24 crores) in Una-Madhavpur reach. Rs. 168.70 crores (revised Rs.802.54 crores) in Una-Bhavnagar reach and Rs.370.42 crores (revised Rs.1427.30 crores) in Madhavpur-Malia reach. Following are the main schemes/techniques which were suggested to be constructed to combat salinity ingress in the saurashtra coastal region.

Salinity Control Techniques:- (1) Tidal Regulators and Bandharas at river mouth/creek (2) Fresh Water barriers (3) Ex-

traction barriers (4) Static barriers

Recharge Techniques :- (1) Check dam (2) Recharge Tanks (3) Recharge Reservoir (4) Recharge Wells at suitable locations (5) Spreading Channel (6) A forestation & Nala plugging

Management Techniques :- (1) Change in cropping pattern (2) Regulation of ground water extraction

#### Data Base Analysis

Analysis is done by various record given by HLC I Report ,GWRDC & SIPC data by use of surfer software.By mostly use of datas are TDS of different wells,Reduced water level & Sea water intrusion ratio of different well & after this analysis gives conclusion & remedial measures.

#### Remedial Measures

- Coastal sea erosion policy needs to be framed.
- There is a need for critical survey of all the coastal areas, to find out the ingress of salinity and as such development of policies for combating the same and more funds should be provided.
- More useful and suitable technology to minimize the salinity in the coastal region must be developed and implemented.

- Public awareness creation programmes should be implemented to avoid injudicious use of scarce water resources.
- Technology transfer needs to be done, to learn from other countries and apply it in India's context.
- Setup of more organisations is needed in the coastal areas to combat salinity ingress.
- More awareness creation should be done for the use of geo-synthetic materials for the construction of irrigation structures in this region.

#### Conclusion

The Problem of Salinity ingress happened due to less and irregular rain, rocks soil,topography lke other natural factors and also man made factors. This problem was started in the decade of 1960. This problem was affected with the high speed of 0.5 to 1.0km/year to 1 lakh hec land in the year of 1971 to 1977. It was greatly affected directly or indirectly the people who join with agriculture. This problem was increased day by day more & more. After 1988 Government & Non government organisation take part & constructed various structures like bandhars,tidal regulators,check dams,spreading channels etc.in the affected areas to built up fresh water head & thus obstructing further ingress of sea water.

#### REFERENCES

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