

# RIVER REJUVENATION AND GROUND WATER RECHARGE OF SONARAKH RIVER NEAR JUNAGADH CITY AREA

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**Abstract:** *The river ecosystem is a complex mosaic of interaction and interrelationship of the biotic and abiotic (hydrological, geomorphic etc.) The ecological function of a river is linked to the hydrological variations in the river flow. Hence flow is the most important and significant variable of a river system/ecosystem. Besides sustaining the ecosystem, and performing its geomorphic functions (erosion, sediment transport, reworking etc.), the river flow under appropriate condition recharges groundwater and rejuvenation in its flood plain. During floods the river adds nutrients to the soil. A River is the ultimate sink for surface runoff in its basin.*

**Index terms:** *Rejuvenation, Ground water recharge, Cross drainage works.*

## I. Introduction

The rejuvenation of river occurs when the river base level falls and also this can be a consequence of either a fall in amount of river level or the land rising. Also both the results of the coming and going of the water flow, its effects on the river is to produce features it's called "Knick Points".

This project provides many different facilities which are very useful so different facilities requires many data. It is multi-purpose project that's why it's required more data collection and also need different methods. The main challenges are to select convenient methods for different purposes and collect all fully complete data of villages & nearby areas.

## II. Objectives

- To improve groundwater recharge
- To reduce runoff
- To rise groundwater table
- To provide maximum water to agricultural field & reduce wastage.

## III. Study area

JUNAGADH city located 340.6 km from the state capital Gandhinagar and 102.5 km from the Rajkot city. JUNAGADH is one of the holy, heritage and beautiful place of INDIA and also it's included in 7<sup>th</sup> largest city in GUJARAT with total area of 160 km<sup>2</sup> (60 sq. mi). It located near the great mountain of "GIRNAR". The origins of the rivers are in JUNAGADH mostly it's GIR and many rivers are passing through the hills. This project based on rivers near villages of "JUNAGADH". There are many different rivers are passing through the villages from "GIR". We have to work on river "Sonarakh" for our project & collect data survey from the help of peoples nearby areas. We try to improve & maintain water collection capacity and also try to refill water from rainy and dry seasons.

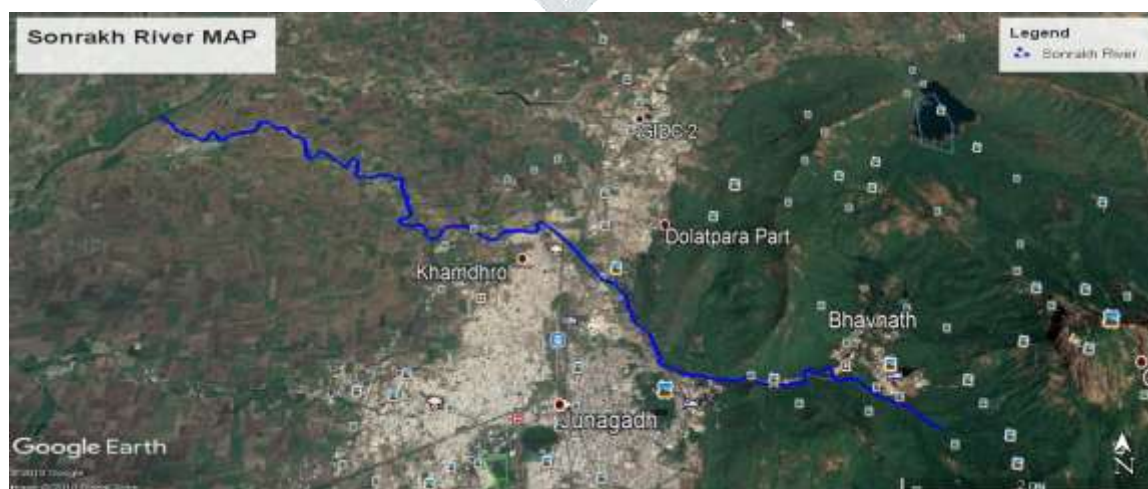


Figure: Location of river site

Selected area for project:-

The following figure shows the particular area which we selected for our project. The blue line is was total length of river and yellow pings are used for locating the number of weirs can construct.

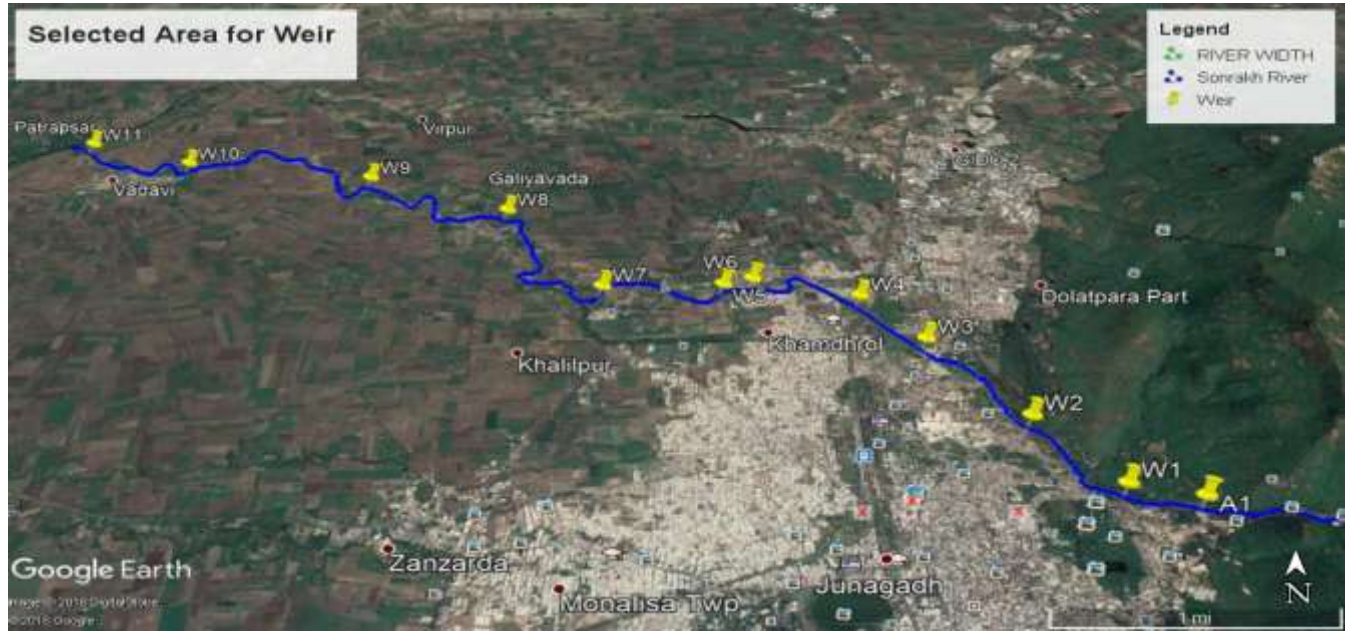
Figure: Weir location on river site.

Previously we discuss about the weirs it helps to control velocity, reduce runoff, control discharge, increment in ground water table, and increase storage of water.

We gives name to number of weirs like W1, W2, W3, W4, etc.

Blue line: - River Length

Yellow pings: -Weirs



**IV: METHODOLOGY**

**1. Data analyses and interpretation should be divided as follow:**

- i. Flowing period of river
- ii. High flood level
- iii. Irrigation area

**2. Methodology to Identify Spot**

We have collected the data from irrigation department, local public across the surrounded area to get information about the flowing period of river during a year.

**3. Calculation of Storage:-**

- Following data are collected from the weir points, the number of weirs can constructs for rejuvenation. We have take 10m average of the weir and height difference is around 20 feet.

Table: data storage calculation

NO.	WEIR POINTS	LENGTH(M)	HEIGHT(M)	WIDTH(M)	VOLUME(M <sup>3</sup> )
1	W1	490	10	3.8	18620
2	W2	963	10	4.63	44586.9
3	W3	1173	10	5.38	63107.4
4	W4	702	10	6.28	44085.6
5	W5	1123	10	7.44	83551.2
6	W6	266	10	9.6	25536
7	W7	1169	10	2.38	27822.2
8	W8	2062	10	2.66	54849.2
9	W9	1895	10	10.7	202765
10	W10	2400	10	11.2	268800
11	W11	1384	10	3.6	49824

**V. Conclusion:**

- Sonakrakh River will be charged with storage method of weir construction.
- Surrounded area will be irrigated well after many years.

- It will be useful for groundwater recharge and improve well efficiency.
- It will be also helpful for municipal water resource department because of river is situated near the junagadh town.

**VI. References:**

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