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GROUND WATER RECHARGE BY USING CHECK DAM

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ABSTRACT

The aim of this study is to increase in ground water level by using check dams. The main object of this paper is to prevent a reconsideration of research work carried out on the collision of a check dam in improving the ground water quantity, quality and livelihood of people. Further, investigation carried out result of check dam across, Junnar district of pune. The study revels that correct maintenance of check dam will result in the sustainable under ground water in the area. The various studied know that check dam is efficient method to improve the ground water charged and quality which in turn improve the livelihood of community. Case studies carried out near pune in an evident that check dam has increase the ground water level 1.2 m. thus MAR (Managed aquifer recharge with the help of check dam is considered as best option for efficient and sustainable management of ground water resource.

Study shows the basic properties check dam it an important to increase ground water level & it is helpful for human and other living things. With the help of constructing check dam across the streams.

Keywords *:check dam benefit, application, limitation, methodology, Etc.*

I.INTRODUCTION

This paper is focus on check dam is preliminary built for two purposes. The first is to provide directly irrigation when rains fail and other one is to facilitate the recharging the surrounding area wells trough the percolation of water from check dam. Additionally it is also provide other purposes such as washing, bathing and for the drinking purpose of animals and people.

Being the shallow structures, with the accumulated water body over the large area water logging does not take place. Deposited silt provides fertile soil for the field. A series of a check dam built on a stream help to conserve phenomenal amount of water, and their primary example of thinking globally and acting primary.

A check dam is an the structure across the stream in the area of the origin of stream. It is the construction In local communities as they are help in the replenishment of water replacement and restore moisture to rural ecosystem and benefit to environment. Check dam are used to modify the velocity of flows of stream, reduces errosion and also traps amounts of channels sediment, and help to stabilized side slope of channel. This study will illustrate for identify the application of check dam in an creek streams.

The use of simple check dam wear evaluated for gully control as part of watershed management adapted in phrae Thailand. There are two styles of check dam use in phrae Thailand. First, temporary check dam are use with available local material such as stone, sandbag, lumber or net. second, permanent and semi permanent check dam are constructed by the strengthen concrete of steel. The check dam is feasible and great benefits are given to the local people.

II. BENEFITS

- Easy and inexpensive to the construction.
- It may be use for as permanent storm water control devices if properly design .
- It can show storm water runoff velocities .

III. APPLICATIONS OF CHECK DAM

Check dam may be appropriate in the following situations :

- Sedimentation behind the dam is to be promote.

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- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- The size of the drain of small open channels is 10 acres space or less.Use of fly ash in concrete can save the thermal industry disposal costs and produced a 'greener' concrete for construction.
- For the steep channels where storm water runoff velocities above 5ft /s.
- During the establishment of grass lining in drainage ditches or channels.

IV. LIMITATIONS OF CHECK DAM

Following are limitations of check dam

- It cannot be used with extended base flows in live streams or in channels.
- Not appropriate in channels that drain area is the greater than 10 acres.
- It can be difficult to removal of check dams.
- It can be require extensive maintenance following high, velocities flow.
- It can requires periodic repairs and sediments remove up stream of check dam.

V. METHODOLOGY

To improve the ground water table level check dam is very useful, so that we can performed the case study at in Pune (junnar) :

- Introduction
- Study area.
- Objectives.
- Collected data.

Table1- Village, check dam and beneficiaries of sample size Properties

Villages	No of check dam	Beneficiaries	Non beneficiaries
Dhamankhel	1	5	1
Khanapur	2	9	2
Khodad	2	8	2
Mavaal	1	6	-
Total	6	28	4

Table 2- Average water table in non-beneficiaries wells:

Sr. No	Year	Water table in feet
1.	2003-04	20
2.	2005	15
3.	2006	30

Table 3- No of irrigation required and actually provided before and after check:

Crops	No of irrigations required	Provided
Cotton	15	8
Bajara	7	3
Mung	5	1
Wheat	11	6
Summer nut	10	-
Vegetable	12	5

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1) Collected data

Data has been collected for three periods of time

- Before construction of check dam 2003-04
  (Average rainfall was 500 mm)
- After construction of check dam 2004-05
  (Rainfall was above 900 mm)
- After construction of check dam2005-06
  (Rainfall was below average 300 mm)

Taking data for three years has help to assess the true impact of check dam by comparing low and high rainfall year

2)Study area

Pune (junnar) is a drought area with an annual rain fall 450mm and 70% variability of rain fall the area is hilly and semi arid where 30% area under waste land and 60% is under cultivation. There is great need for soil and conservation of water in this region.

- IS 12089:1987 – Specification for granulated slag for the manufacture of portland slag cement.
- IS 456:2000 (Clause no.5.2.2) – Plain and reinforced concrete code of practice.
- ASTM C 989 99 – Standard specification for ground granulated blast furnace slag for use in concrete and mortar.

3)Objectives:

The objectives of the study is to assess the benefits of check dam are following :

- Change in pattern of cropping
- Change in water tables in wells
- change in depth of irrigation given to crops
- other extra benefits

VI. CONCLUSION

- Due to provide of check dam water table of wells goes on increasing which must be less before constructing the check dam structure.
- When water table is increase of wells and ponds it will helps the increase the cropping area and cropping season.
- With the help of provision of check dam across the stream or river silt content reduces to much extent.
- It can be provided anywhere across the river or nallah cause of low cost and easy construction.
- Check dam reduces the soil erosion .
- The establishments of check dam to resisting the erosion of lining .
- The above study is a strong indications of the benefits perceived from the construction of check dam at the micro level.
- Small check dam is very useful for farmer to support irrigation.
- It will help to reduce the energy and time of in summer seasons women had to walk 2-3 km performed the bating and cloth activities.
- In summer high evaporation of check dam water.

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