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WATER MANAGEMENT AT PARANDWADI VILLAGE

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Abstract: *Water supply is one of the most important sectors in development. Access to water supply is the basic human needs and rights. Worldwide, 71% of the rural population has access to improved water supply. In rural India, 60% of the population has access to improved water supply and in rural Maharashtra, the percentages are 70%.In parandwadi village 80%of people connected to water distribution system. The objective of this study was to assess the water supply system and storm water management in the village of Parandwadi, a rural village in Tal. Maval Dist. Pune, Maharashtra.*

By conducting an assessment of determine water supply system. Identify water supply system problems in the village and then propose solutions to improve water supply system. Water supply coverage is defined as the percentage of the population with access to safe (improved) water supplies that provide 130 liters/person/day within one kilometer of the household compound. Population of Parandwadi village in 2000-2001 was 1350 and in 2015-2016 population is 2350. The 90% houses connected with water supply system and 30 % of houses are their own boreholes and well.

1. INTRODUCTION

Village parandwadi is situated in Maval Taluka of pune District. Maharashtra. It is situated on Mumbai pune express way. The population as per 2011 census of village is 2350.A water supply scheme designed for population of 1250 souls for design year 2031 is there in the village. There is one supply well of 5 m dia and 10m deep with a switch room of 3m x 3m x 3m size 8HP Submersible pump sets having 20000 LPH discharge and 59m head is installed on the supply well.

A PVC 110mm 6kg/sqcm rising main of length 5450m is laid from supply well to existing ESR of capacity 150000 liters and a distribution system of PVC 110mm to 75mm dia length 1385m is laid in the village.

This water supply scheme is catering the need of only one half of total village population which is not at all sufficient. Secondly the yield of existing supply well is not sufficient especially in summer season. As the development is very fast and hence a new water supply scheme is urgently needed. Purpose of redesign water distribution system is to achieve daily water demand of every person in the village of parandwadi. Second reason was the water is supplied has a poor treatment before supply in village. Third reason is increase in the number of patients of water bond disease in the village.

2. PROJECT METHODOLOGY

2.1. To Assess The Existing Water Distribution System:

A water supply scheme designed for population of 1250 for design year 2020 is there in parandwadi village.This water supply scheme is catering the need of only one half of total village population which is not at all sufficient. Secondly the yield of existing supply well is not sufficient especially in summer season. As the development is very fast and hence a new water supply scheme is urgently needed.

2.2. *Visited Existing Water Distribution System Of Parandwadi Village:*

After deciding the project topic we visited in parandwadi village we had seen whole water distribution system. The starting point the system pawana river to intake well thenusing pump water is pumped to ESR (elevated storage reservoir) then chemicals like chlorine and bleaching powder than distribute to whole village.Maintaining the Integrity of the Specifications.

2.3. Data Collected Of Water Distribution System

In this survey we estimated no of houses connected with distribution system. Than we collected information about ESR .capacity of ESR is 150000 lit. PVC pipes of 10 cm to 30

cm diameter pipes are use to distribute water to whole village. 20 horsepower capacity of pump is use to for pumping of water. Intake well of 5 meter dia is located near the pawana river.

2.4. Problems of Villagers Due To Water Distribution System

1. Daily water demand as per IS code is not fulfill by existing water supply system in village
2. Due to low degree of treatment of water increase in water born disease
3. Due to increasing crack in pipe line water get polluted and wasted which effect daily water demand
4. Decrease in ground water table ground water getting polluted and scarcity of water occurring in village.

2.5. Hospital Visit Near By Parandwadi

1. We visited nearby hospital came to know getting affected by drinking water.
2. Increasing no of patients in hospital due water borne diseases.

2.6.Testing Of Water From Source And Water Distribution System

1. The testing of water is done at kana phata health center.
2. No of tests carried out on water are BOD, COD, DO, etc.

2.7. Rain Fall Data Collected From Indian Metrological Department Pune(Imp)

Rain fall data is collected from IMD pune in shivajinagar .We have collected annual rain fall parandawadi village from last 30 years.

3. TYPES OF DESIGNS

3.1. Population Design Of Village

$$Pop_{Future} = Pop_{Present} X (1+I)^{n}$$

Where :

Pop_{Future} = *Future Population*

$Pop_{Present}$ = *Present Population*

i = *Growth Rate (unknown*

n = *Number of Years*

3.2. Requirement Of Daily Water Demand To Be Treated

Bathing: 55 liters

Toilet flushing: 30 liters

Washing of clothes: 20 liters

Washing the house: 10 liters

Washing utensils: 10 liters

Total water demand = 135 liters

3.3. Estimation Of Storm Water Management

$$\text{Storm water quantity, } Q = \frac{C.I.A}{360}$$

Where,
Q = Quantity of storm water, m3/sec
C = Coefficient of runoff
I = intensity of rainfall (mm/hour) for the duration equal to time of concentration, and
A = Drainage area in hectares

4. CONCLUSIONS

In present study of Parandwadi village and Water Distribution Network (WDN) was studied, which was located at district Pune, State Maharashtra, India. For the design of Parandwadi water distribution network study of present population, forecast Population for the three decade, daily water demand, flow and also survey of village parandwadi was done. The surface run-off resulting after precipitation contributes to the storm water. The quantity of storm water reaching to the sewers or drains is very large as compared with sanitary sewage. The rainfall intensity could be measured by using rain gauges and recording the amount of rain falling in unit time.

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