



सत्यमेव जयते
Government of India
Ministry of Human Resource
Development



उन्नत भारत अभियान UNNAT BHARAT ABHIYAN

स्वस्थ भारत- स्वच्छ भारत- स्वावलंबी भारत- संपन्न भारत
विज्ञान एवं प्रौद्योगिकी आधारित ग्रामीण विकास कार्यक्रम

VILLAGE DEVELOPMENT PLAN FOR MIRAPUR, GANDHINAGAR GUJRAT INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR January-2018



शिक्षित भारत- स्वस्थ भारत- स्वच्छ भारत-
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भारत

Village Development Plan for Mirapur

1.0 Introduction

Unnat Bharat Abhiyan was launched by the Ministry of Human Resource Development (MHRD) in November 2014. Subsequently, in August 2015, guidelines were provided by MHRD to the educational institutes to initiate work under UBA in consultation with the district administration. Accordingly, IIT Gandhinagar identified five clusters of villages and different work plan for their upliftment. The present report pertains to one of the village, viz; Mirapur.

1.1 Selection of the Village

As part of UBA activities, IIT Gandhinagar decided to adopt five villages in Dehgam block of Gandhinagar district in Gujrat, so as to help in proper planning of the development activities as outlined by Additional Secretary, MHRD and also detailed in the concept note on UBA drafted by IIT Gandhinagar. Prof Pranab Mohapatra carried out field research activities in villages in this block. It was decided to approach the district administration for identifying a suitable village in the area.

A meeting with the Gandhinagar District Collector (DM) was held in this regard. He put IITGn team in touch with the SDM of Dehgam. The prime objective of this meeting was to apprise the officers of the scope of the participation by IIT Gandhinagar in the upliftment of a village/village cluster. Accordingly the BDO was requested to identify a backward village in the block Dehgam (District- Gandhinagar) which could be the focus of the work by this IIT Gandhinagar team under UBA.

Subsequently, the village Mirapur was identified which is at around 40 Km from IITGn Palaj campus. All other four villages are in the vicinity of Mirapur. and a *Gram Sabha* was called which was attended by the BDO, four members of the IITGn team, and more than 30 villagers including men and women of all age groups. They were eagerly waiting for the meeting and handed over a neatly written list of the major problems faced by them. Many problems were brought out through discussion. A few of these are as follows:

1. Street road in kuchcha. However, the main road is *pucca* (*under construction at the time of visit to village*) and full of slush. Street roads are of without light.
2. No drainage of wastewater. It flows through the streets resulting in all roads being slushy.
3. No place for garbage disposal.
4. No primary health centre/First Aid Service in the village.
5. Families have a toilet but they are reluctant to use it.
6. There is no Gramin bank in the village.
7. Lack of teachers and building in primary school.
8. Issues related to potable water.
9. Polluted water of the both ponds located in the village.

10. Employment issues among youths

Village was very backward having lack or inadequacy of even basic amenities. Mr Veer Sangh is the village *sarpanch*.

1.2 Objectives of Intervention

Based on the preliminary interactions with the villagers and the district/block administration, the objectives of the work to be carried out by the IIT Gandhinagar team in this village was defined as follows:

1. To effectively *participate* in the holistic development of the village Mirapur by preparing an integrated plan for the development of the village using eco-friendly sustainable technologies and local resources creating sufficient employment opportunities in the process, harnessing multifarious Govt. schemes.

2. To establish the communication between district administration and panchayati raj institutions to help them prioritize the fund allocation to various developmental activities and provide necessary inputs on technologies to be implemented in the field.

1.3 Methodology: The objective can be met only when experts from various fields of knowledge come together to create an integrated plan for village development. The steps involved in the same can be enumerated as follows:

(a) The first step towards this is identification of the areas in which IITGn can provide technical inputs along with the experts who will be part of the team.

(b) Subsequently, a coordinated effort has to be made with each expert helping in preparation of the plan for their component. This may require conducting village level surveys to get information required for preparation of the plan.

(c) This will be followed by integration of all these components to prepare a holistic plan.

(d) At this stage, the cost estimates for the plan will be obtained.

(e) This plan will be discussed with the District officials, viz., the DC, SDM, BDO and the Sarpanch to seek advice on which schemes can be used to provide funds for the same.

(f) The plan will now be presented to the Gram Panchayat and the Gram Sabha and fine-tuning will be done in the same if required considering the feedback from the villagers.

(g) It is proposed that after this, IITGn team will be involved in providing the technical support in implementation of this plan, like, preparation of technical specifications in tenders, selection of the supplier, being part of the team to oversee the work to ensure compliance with the specifications.

(h) After implementation of the plans in each component, the IITGn team will also provide support in monitoring and evaluation of the same by guiding the technical personnel who can

be hired by the Panchayat. IITGn team will also help these technical personnel in preparing the monitoring and evaluation report.

(i) Subsequently, a consolidated report will be prepared based the experiences of the IITGn team related to the development work in the village Mirapur followed by preparation of guidelines for participation of any technical institute in the development of a village

2.0 Interactions and Data Collection

In the first few months, the IITGn team was still trying to understand the ecosystem of the village and their needs beyond the list provided by them. After September, 2016, we started interacting frequently with the *Sarpanch* trying to collect information in an informal way. The experts from the Civil Engineering department felt that getting a map of the village and digitising it would be a good starting point. Besides, faculty from IITGn specializing in different domains, viz., waste water treatment, rural roads, solar energy, design etc. visited the village to take stock of the situation so as to get clarity on further steps for an effective intervention.

2.1 The Village Map

The village *Sarpanch* provided the map of the village (Mirapur). As we do not have co-ordinate for any ground control point (GCP) in the map, we could not geo-reference it with the Google earth. Our team tried a lot to digitize the map but of no use. As the village is small we cannot visually assign latitude/longitude to any GCP as a very minute difference in co-ordinate may lead severe mistake. Map provided by the sarpanch shows survey number of gamtal. It does not show the roads within the gamtal. Map cannot be used for addressing the village problems, like water shortage, providing drainage, sanitation etc.

2.2 Basic Information about the Village

To collect some gross data about the village, a questionnaire was prepared by the IITGn team. A copy of the same is provided in the appendix. This questionnaire was filled with the help of the *Sarpanch*. It was significant to note that there are some educated youth in the village who can possibly be part of the local workforce required for implementing the plans to solve various problems being faced by the villagers.

2.3 House-to-house Survey

A *gramsabha* was called by the *Sarpanch* to inform the villagers about the engagement of IIT Gandhinagar in the village development for which a house-to-house survey would have to be conducted. All the villagers were very positive about the proposal of having this survey.

A questionnaire for the house-to-house survey was obtained from a Village Development plan prepared by NIRD, Hyderabad. A team of faculty, students and staff from IIT Gandhinagar did the pilot survey using this form in village. Based on this experience, the survey was modified to some extent and this form was then used for all the remaining households. A group of students from IIT Gandhinagar along with faculty and staff were involved in completing the survey. The Sarpanch identified the elected member or his close associate to help the surveyors

in identifying the households in each ward. The villagers were very cooperative in responding to the survey.

3.0 Data Analysis

The entire data was entered in the computer and analysed for some broad parameters as given below.

No. of families in the village: 250

Total Population (according to sarpanch of the village): 1000.

No of families having BPL card: 58

No. of families having land: 250

No. of families without any savings account in bank/post office/cooperative society: 00

No. of families facing unemployment/poverty as a problem: 200

No. of illiterate adults: 100

Table 1: Distribution of people in the working age of 18-60

Academic accomplishment type	Labour/Farmer	Other
Illiterate	200 (50 M/150 F)	N. A
Below Matric	800 (450 M, 350 F)	N. A
Matric pass	24 (All male)	1- Government Job
Above 12th	11 (All male)	1- Government Job

4.0 Prioritization of needs by the community

Almost all families perceived the lack of physical infrastructure such as houses, regular water supply and lack of proper roads as a major problem in the village. Road connecting to the farm lands are almost kuchcha. Almost fifty percent of the houses are kuchcha. There is strong need of construction of pucca building. IITGn is trying to come up with the idea of low cost housing. For this, IITGn is in contact with the experts of this field. Some households whose children were going out of the village for studying in middle/senior schools felt the school in the village must be till higher classes. School building must be expanded as students have to sit on floor in the class. When inquired about the sport participation or organisation activities, it is strongly felt that such activities should be promoted and it will be really good if a proper sport faculty is recruited. School lacks in faculties of Maths, Science and Computer. Lack of employment opportunities was also a concern of many families who worked as labour. Village has a community centre but it is very old so new community centre is required to be constructed.

There is a demand of one borewell by Sarpanch and he has reiterated this many time while collecting the information from him. The villagers need crematorium. For cattle drinking, a open water tank at low level should be constructed.

When prompted, many villagers expressed the need for a health centre in the village since for any ailment they had to go to Dehgam and in some cases even to Gandhinagar.

5.0 Plan of Activities

Part A: Basic Amenities

5.1 Water Management

5.1.1 Present Scenario

Water Resources: The village has two ponds. None of the ponds receive the grey water from the village. In the near mataji-temple pond, the water is quite contaminated and does not even support fish. It is very small pond. Even the cattle do not come here to drink water. The villagers have made a concrete rectangular tank on the ground for the drinking purpose of the cattle. Other pond is known as Behola. This pond has no utility as of now for the villagers.

Both these ponds are not fit for drinking water. Thus, for drinking water, a bore well is supplying piped water to every household. It is proposed to get the distribution network checked for adequacy of the design. There is a water tank in the village which is in very dilapidated situation. It is settling and highly damaged. So, there is an urgent requirement of making a water tank.

Grey water disposal: Currently, from every household the grey water comes out directly into the unpaved street. So, in large parts of the village, the unpaved roads are very slushy due to the grey water from several parts of the village. The water that flows in the drains finally ends up in one of the two ponds.

Sewage: Currently, all the toilets in the village have soak pits underneath and hence there is no flow of sewage through the village.

5.1.2 Drinking Water Supply and Purification: The underground water in the village is very deep. For domestic usage and drinking purposes, bore well is available but owing to increase in the demands sarpanch has requested to set up one more bore well in the village. Once the pond is cleaned, the bore well in the middle of the pond can possibly be used for supplying drinking water to the village. Primary school in village has R.O. for drinking water.

The drinking water currently received by the villagers are potable and if required may be tested for the quality.

Action Plan:

1. Contact will be established with the concerned authorities to work out a long-term plan for sustainable use and recharge of water in the area.

2. After the availability of funds, suitable filters can be installed at key locations in the village.

5.2 Roads

Construction of roads is a major requirement for the village. Very few streets have paving that too are old and it must be reconstructed. Most parts of the village streets are kachcha road. Roads connecting the village to Ghamij are pucca road and other two main roads which connect the village with Shiyapur village and Kanipur are under construction at the time of developing this VDP for Mirapur. In all parts of the village, there is no proper drain or gutter line and the waste water from the houses gets collected in the middle of the street leading to slush and filth in the streets. It is proposed that when the roads will be paved, open drains will be provided on the sides with suitable slopes to ensure proper flow of waste water in the drains. The length of the roads has already been found out from the Sarpanch.

Total length of the streets/roads in the village which needs to be constructed: 2.6 km.

The details of the estimated stretch of road have been provided by the Sarpanch and listed in Table 2. A map (Fig. 2) has been prepared by our team after visiting the village and identifying the roads which shows the connectivity within the *gramtal* (village hamlet) Map provided by the sarpanch only shows survey number of gamtal. It does not show the roads within the gamtal.

Table 2: Details of road needs to be constructed

S. No	Origin of road	Termination point of road	Total stretch (m)
1.	Panchayat (Mamtanagar)	Bidnapara	1000
2	Damar Road	Kanjhi Bhai house	150
3.	Damar Road	Laxman ji house	100
4.	Panchayat	Bathiji Mandir	300
5.	Panchayat	Tower Sudi	150
6.	Dairy Milk	Primary school	150
7.	Bathi ni mandir	Primary school	200
8.	Damar road	Chauwar sudi	350
9.	Damar road	Behol talab	250

Action Plan:

1. Identify the various road types and select the ones suitable for paving of different streets/roads. The estimates for road construction will be available only after that step.
2. Get a survey done by the students to determine the topography of the entire hamlet with slopes required in each street.

5.3 Solid Waste Management

The village needs an integrated waste management system. The IITGn team may take help from an organisation/NGO working on solid waste management. As of now, no NGO is looking this village. The following points need to be discussed and addressed are as follows:

1. Encourage the women in the village to make bins for the waste using locally available grass. Suitable liners, preferably washable, can be used for these bins. This exercise can become a source for income generation.
2. Provide three bins in each household and train the villagers in household level segregation of waste into three types: (i) biodegradable waste (wet as well as dry) (ii) dry non-biodegradable waste (iii) wet non-biodegradable waste.
3. Have a trolley/cart with three bins for collection of the waste from every house.
4. In order to accomplish the above, there should be minimum level of awareness among the villagers regarding this. We may conduct small workshop or awareness programme to educate them.

Action Plan:

1. To ascertain the amount of biodegradable waste being generated in the village per day. Also ascertain whether any amount of cattle dung can be made available for charging in a biogas plant.
2. Hence decide whether a biogas plant can be made for biodegradable waste.
3. Also ascertain whether anyone in the village would like to operate a shredder for the plastic waste. This machine can then handle waste from several villages in the surrounding area.

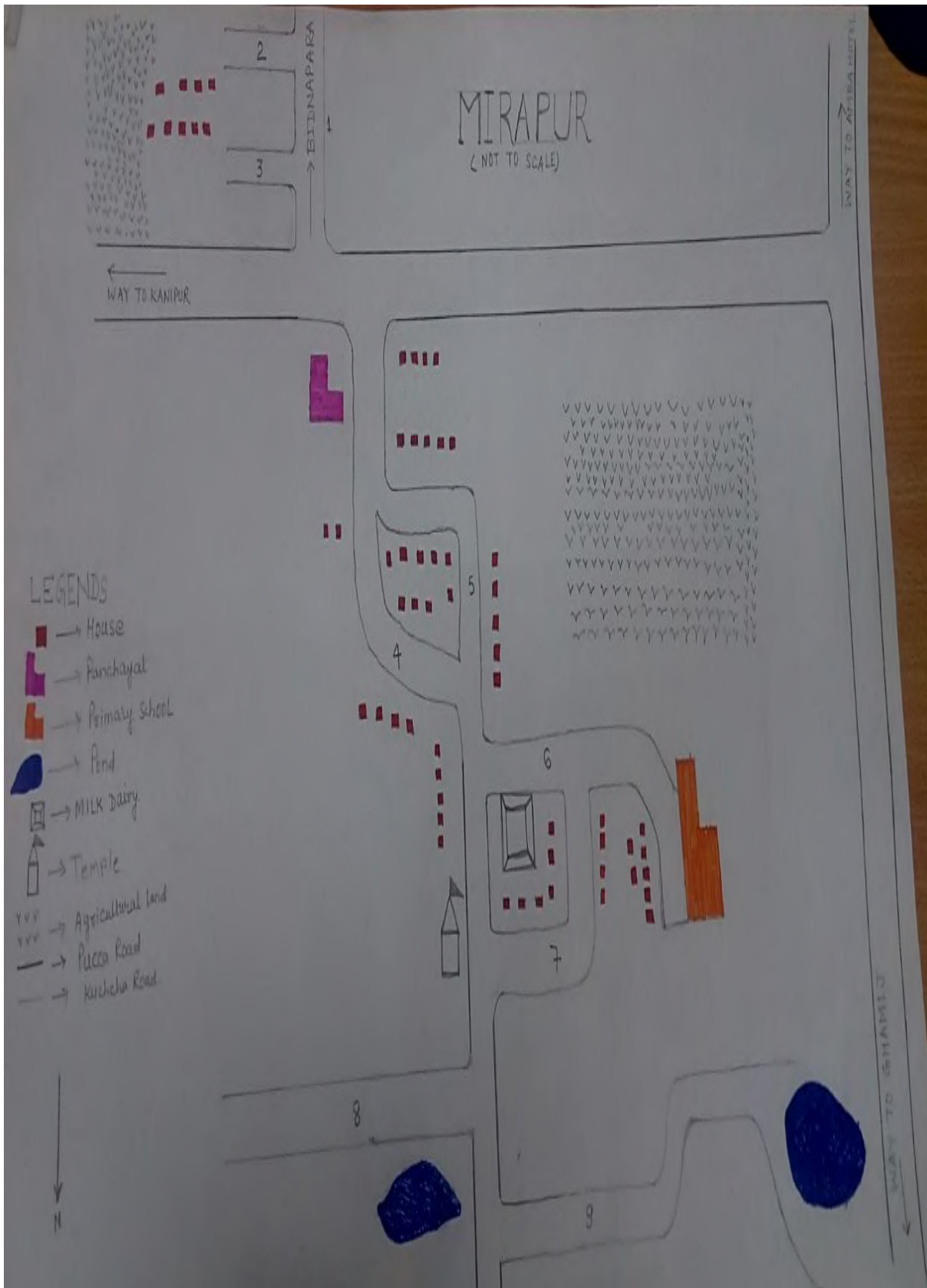


Figure 1: Map showing connectivity within the Gamtal of Mirapur
(Number shown in the map is the Serial no. in Table 2.)

5.4 Energy Needs

These include electricity needs as well as the thermal needs. First, we will talk about the electricity needs.

5.4.1 Solar Street Lights

It is proposed to have solar PV based street lights with automatic off and on system. Survey done by IITGn team suggest that around fifty solar street lights are needed. SUKAM company is manufacturing these lights.

Action Plan:

1. To identify the locations where the street lights are required.
2. Prioritize the locations so that depending upon the availability of funds, street lights can be installed in a phased manner.

Cost Estimates: Each street light will cost about Rs 15,000. If 50 street lights are required for the village, they will cost Rs 7,50,000 lakhs.

5.4.2 Solar Power Station for Village

Roof tops of school building can be used to install the solar panel. Other location may also be identified to install such panels.

Using these panels, charging stations can be set up for solar lanterns, battery operated DC fans and even for e-rickshaws. It is proposed to promote operation of e-rickshaws by some of the villagers to provide paid transport between Dehgam and the nearby villages.

5.4.3 Solar-based Home Electric Systems

With the advancement in technology, the solar PV panels are available at the rate of Rs 60,000 to Rs 1 lakh for 1 kW. If DC appliances are used, the requirement per household for one fan and a few lights will be less than 100 W. The cost of installation per household will be Rs 10,000 for each household and the cost of DC appliances.

It is also proposed that the assembly of solar based home lighting system can be done locally by women with appropriate training. This is being used in several rural areas in the country and can also be tried here. This can become an income generating activity for some women in the village.

5.4.3 Improved Cookstoves (Chulha)

Most of the households do not have LPG connection. They use woods for food making. Government ambitious scheme 'UJJALA YOJNA' can bring the benefit for the villagers. There is a scope for introducing improved cookstoves. IITGn can play a role in the same at two levels: (i) spreading awareness about commercially available cookstoves (ii) introducing them to low

cost technologies which can be retrofitted in the existing stoves with substantial improvement in performance. Particularly introduction of a grate can help in reducing the emissions substantially.

5.5 Health Services

The survey clearly brought out that the families which are poor and do not get good nutrition have many instances of frequent illness. Due to no health facilities in the village, they have to go to Ghamij/Dehgam or even to Gandhinagar if any specialised treatment is involved. Many a times, a small illness can get aggravated if they do not get the treatment in time.

In view of the above, and considering the holistic approach of systems of medicine other than allopathy, it is proposed that in the long run if an AYUSH clinic can be set-up with the help of Ministry of AYUSH, it will be of great help to the villagers. To start with, even weekly visits of a physician from alternative system of medicines can be a very positive step. It is strongly recommended that a first aid health centre must be set up in the village.

5.6 Education

The school in Mirapur is only till primary. Primary school building is damaged and there is shortage of class rooms. Headmaster of the school has requested for repairing the school building and construction of class rooms. School also needs a playground. There is no faculty for Maths, Science and computer education. For computer education, IITGn team will help by giving training to the teacher so that they can guide the students. School building needs to be expanded as told by the headmaster. He further added that they have consulted a civil engineer for this. Presently, some classes are running in the Panchayat hall. When our IITGn team visited that hall, they found it in dilapidated situation. The headmaster further added that they had the permission to destruct the panchayat hall. Until new class-rooms are not built they cannot demolish it. However, headmaster and sarpanch are putting their effort for the above. It is proposed that a school development plan be prepared to identify the desirable intervention for making the school education much more effective. The government approved plan would be used for that purpose. A school library is recommended. Similarly, it is proposed to develop the already established anganwadi for holistic development of the child. We are in touch with experts who have a lot of experience in developing schools and anaganwadis at a low cost.

Part B: Employment

6.0 Skill Development and Entrepreneurship

6.1 Self-help Groups

IITGn team also help the villagers to form the self-help group (SHG). IITGn may take help from some NGO in this regard. IITGn will motivate the women of the village to come forward to form groups and manage them well by getting training in management of SHGs. IITGn team hopes to take this initiative forward by organising training of SHG leaders. IITGN itself may invite some youth from the village for the special training and workshop to develop the specific

skill so that they can earn some money. Various need-based skill development training will be imparted to youth and women of the village. Our IITGn team are constantly contemplating on this. We have had talks with the sarpanch and villagers regarding this. They seemed very positive and said that they were ready for such training. We are in frequent contact with concerned authorities for the above.

6.2 Computer Education

There is no need of mentioning that how important the computer education is for everyone. This is also very ambitious plan of the Indian Government to make youth of the nation equipped with computer education. IITGn team, in this regard also took initiative. Our team got to know that there are some students in the village who are taking coaching for this. We are developing a plan to introduce computer education for school pass-out boys and girls. For this project also, villagers and sarpanch have shown their interest. Soon we will come out with the concrete plan for the same.

Part C: Governance

7.0 IT-enabled Governance

IITGn team can play an important role in enabling IT platforms for effective governance of the village. However, this has to be done in close association with the district administration, particularly under the DIGI-India initiative. That is why no details are being mentioned here.

Water Quality assessment

Testing of water: - The water quality report for 3 samples from **Behola** pond has been carried out as per the Table 3. Other pond is highly contaminated and by visual inspection it is concluded that it is beyond the scope of any water treatment. Hence, it has not been assessed by our team.

Table 3: Water quality analysis for village pond

S. No.	Parameters	Sample-1	Sample-2	Sample-3
1	pH	9.2	9.2	9.1
2	Conductivity ($\mu S/cm$)	1920	1915	1920
3	Turbidity (NTU)	8.1	8.1	8.2
4	Total Solids (mg/L)			
5	Total Dissolved Solids (mg/L)	1345	1342	1345
6	Total Suspended Solids (mg/L)			
7	Hardness (mg/L)	249	249.2	249.2
8	Chloride (mg/L)	319.7	319.7	319.6
9	Alkalinity (mg/L)	205	205	204.5
10	COD (mg/L)	141	141.1	141.2
11	BOD (mg/L)	71.9	71.8	72

Samples 1, 2, 3: Behola Pond

Appendix

Village data obtained from the Sarpanch and Talhati (Mehul Bhai).

