

**Study Tour to Punjab  
on  
Settled Sewer/ Small Bore  
Sewer System**

**(28<sup>th</sup> – 29<sup>th</sup> May 2015)**

**Performance Assessment System  
In  
Gujarat**

**June 2015**

Funded by  
**Bill and Melinda Gates Foundation, USA**

Submitted to  
**CEPT University, Ahmedabad**

Submitted By  
  
**URBAN MANAGEMENT CENTRE**  
**Urban Management Centre**

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**STUDY TOUR TO PUNJAB**  
**ON**  
**SETTLED SEWER / SMALL BORE SEWER SYSTEMS**  
**IMPLEMENTED IN VILLAGES OF PUNJAB**  
**(28<sup>th</sup> and 29<sup>th</sup> May 2015)**

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## Acknowledgement

This study tour has been undertaken by the Urban Management Centre (UMC), under the Performance Assessment System (PAS) program.

We would like to thank Mr. D.K. Bhasin, Unit Coordinator, SPMU for sharing his experiences on small bore sewer system implemented in selected villages of Punjab .with support of World Bank. We would also like to extent our sincere thanks to officers from district and block offices of water and sanitation department of Punjab for providing their assistance and logistics during the field visits.

We wish to thank Mr. Nirmail Singh, President of Shiromani Gurudwara Prabandhak Samiti, for giving his valuable time and sharing his experiences. Our big thanks to Gram Panchayat Water & Sanitation Committee (GPWSC) members for showing us their projects on site and shared their experiences. Our sincere thanks to villagers for extending their whole- hearted support in villages where team visited.

UMC is also happy to have received financial and technical support from CEPT University under the Performance Assessment System (PAS) program. Special thanks to Prof. Meera Mehta and Prof. Dinesh Mehta from CEPT University for their advice and support for this study.

Lastly, we would like to appreciate the effort by the team working at UMC on PAS project including Arvind Singh, Anurag Anthony and Jay Shah for both on-site and off-site management of the study tour.

Manvita Baradi

Director

Urban Management Centre

## Abbreviation

<b>CEPT</b>	Centre for Environmental Planning and Technology
<b>GoG</b>	Government of Gujarat
<b>GoP</b>	Government of Punjab
<b>GPWSC</b>	Gram Panchayat Water and Sanitation Committee
<b>GUDC</b>	Gujarat Urban Development Company
<b>GWSSB</b>	Gujarat Water Supply and Sewerage Board
<b>LPCD</b>	Liter Per Capita Per Day
<b>O&amp;M</b>	Operation and Maintenance
<b>PAS</b>	Performance Assessment System
<b>PVC</b>	Polyvinyl Chloride
<b>SAS</b>	Sahib Ajit Singh
<b>SJMSVY</b>	Swarnim Jayanti Mukhyamantri Shahari Vikas Yojana
<b>SPMU</b>	State Project Management Unit
<b>STP</b>	Sewerage Treatment Plant
<b>UASB</b>	Upflow Anaerobic Sludge Blanket
<b>UMC</b>	Urban Management Centre

## 1.0 Background:

Urban Management Centre (UMC) with support of Centre for Environmental Planning and Technology (CEPT) University is implementing Performance Assessment System (PAS) project in Gujarat since 2009. PAS is a seven years' action research project funded by Bill & Melinda Gate Foundation through a grant to CEPT University. Under the project water supply and sanitation related services of all urban local bodies of Gujarat are being analysed and performance improvement activities are initiated in selected cities.

Government of Gujarat has initiated sewerage project in all 159 municipalities under Swarnim Jayaanti Mukhya Mantri Shahari Vikas Yojana (SJMSVY). GoG has made provision of Rs. 40,000 million in its initial budget in year 2009. As of March 2015, total 156 projects are approved and its estimated cost is Rs.68,740 million. These all projects are implemented by two agencies named Gujarat Water Supply and Sewerage Board (GWSSB) and Gujarat Urban Development Company (GUDC). Currently these implementing agencies are implementing conventional sewerage system projects in all the cities of Gujarat. As of March 2015, total 156 projects are approved and five projects are completed, 141 projects are in progress and rest is under tendering and approval stage. Therefore, it is good to have look for other options for waste water treatment and disposal system for cities of Gujarat, which is cost effective as compared to conventional sewerage system.

## 2.0 Objectives of the study:

Under the PAS project, UMC organized a two days study tour on 28<sup>th</sup> and 29<sup>th</sup> May 2015 for staff to have an exposure on settled sewer/ small bore sewerage systems being implemented in villages of Punjab to understand the suitability and replica ability of this system in small towns of Gujarat.

## 3.0 Field visit:

### Day1: 28<sup>th</sup> May 2015:

#### **3.1 Visit to State Project Management Unit (SPMU), Water supply and Sewerage, Department, Government of Punjab**

The UMC team visited State Project Management Unit, of Water supply and sewerage department, GoP. Mr. D.K.Bhasin, Unit Coordinator – World Bank assisted Punjab Rural Water supply and Sanitation project, Mohali. He welcomed the team and briefed about the history of project. He emphasized that Punjab Government with support of World Bank implemented piped water supply scheme in around 1225 villages of Punjab. To set up new drinking water schemes with households tap connections through pipe water schemes. In addition to water supply project, World Bank also financed the construction of small bore sewer schemes on pilot basis in 100 villages which already have good household toilet coverage but release of septic tank effluent on the village streets and open drains, creates serious health hazard and environmental degradation. The estimated budget per village is around 3.86 million.



The key selection criteria of 100 villages for the installation of small bore sewerage system under pilot project is as mentioned below:

1. Villages who have successfully completed and self managed water supply project funded by World Bank.
2. At least 70% households in village must have functional intercepting chamber / septic tank and ready to opt for sewer connection.
3. Gram Panchayat has to provide 1 to 2 acre of land free of cost for the construction Sewerage Treatment Plant

### **3.2 Field visit to Bhagsi village**

Team first visited to Bhagsi village which is located in Block Derabassi at distance of 40Km from Sahib Ajit Singh (SAS) Nagar District head quarter. It is a small village with 1062 population and 154 households. Mr. Shahil Sharma, Sub Divisional Engineer along with Mr. Satnam Singh, Assistant Engineer accompanied us to the site of Sewerage treatment Plant and briefed about the scheme in detail. Mr. Sharma also briefed about the formation of Gram Panchayat Water Supply Committee (GPWSC) who have played a very important role in convincing community for small bore sewer scheme. Thereafter, the contractor explained the technical aspects of small bore system. After commissioning of the scheme, contractor has to operate and maintain the entire system for five years. The scheme was commissioned in month of October 2014 and currently community have no burden on O& M of sewerage system. Community, especially GPWSC is very positive and ready to manage the project in future, five year down the line. However, presently they have not prepared O&M plan for sewerage project, but on the line of water supply scheme they are very confident to manage the project in future.



### **3.3 Field visit to Joulan Kalan village**

Village Joulan Kalan is also located in Block Derabassi at a distance of 14 kms from Chandigarh – Ambala Road. It has population of 1832 and 300 households. This village has a very active GPWSC. Team first visited to Sewerage Treatment Plant where GPWSC members were waiting for the arrival of team. Mr.



Sharma, briefed about the construction work of plant, functions of STP. Thereafter the team visited to few households and streets of village to understand in detail about the inception chamber/soak-pit and manholes, The village streets are concrete, very clean without any garbage on sides. The sewerage line flows through the village with concrete cover on it. Each house has a toilet and a septic tank with outlet connected with sewer line. The waste water flows through the gravity, with sewer designed with sufficient gradient.

Manholes have been provided at suitable distance, which permit access to sewer line for inspection, cleaning and repair. The waste water treated in STP to re-use this treated water for irrigation. Initial five years, after commissioning of STP, the entire sewer system will be managed by the contractor including operation and maintenance cost. After the five years of successfully implementation of project, it will be handed over to Gram Panchayat and the income generated by selling of treated water will be given to the panchayat

After the walk through streets, team gathered at Saprapnch house, he is also Chairman of GPWSC to interact with community and to learn about the



community participation and their involvement in project. Mr. Nirmail Singh, President of Shiromani Gurudwara Prabandhan Samiti was also present during the meeting. He is very respectable person in village. A detailed in-depth discussion took place regarding the functionality of the project and community involvement since planning to implementation stage. Mr. Nirmail Singh, explained in detail, how he and Sarpanch Saheb convinced community to have this project in their village for the benefit of the villagers. They have conducted several meetings with villagers where staff of Support Organisation and block /district level government staff were also present to share the detail about the project. He also shared that prior to sewerage scheme, the waste water generated from households and village, overflows into open drains and is ultimately disposed of into village ponds, creates health hazards and deteriorate quality of life. Community involved since right from planning stage to selection of land for construction of STP. Before inviting tenders for construction work, community contribution was collected and land for STP was identified by the GPWSC..



Thereafter, the team also visited to Gurudwara where community hall and kitchen is being constructed with village own contribution of Rs 30 Lac.

### **Day2: 29<sup>th</sup> May 2015:**

#### **3.4 Field visit to Manhera Jattan village**

Manhera Jattan village is located in Block Khera, at distance of 25 Km from Fatehgarh district. This village has population of 750 persons and 124 households. Team has first visited to STP site to understand the



functionality of the system. Project is well functioning since last one year. Team also observed that there is no foul odour or bad smell on site and it was very clean. The STP of this village is similar to the other villages. The designed and the capacity of the STP is marginal different from others.

Thereafter team visited to village habitation and met the villagers at Gurudwara. Sarpanch of the village welcomed the team and shared the GPWSC records and registers, including ledger maintained for water supply project. Similarly

they are going to maintain the records of sewerage project too. GPWSC members are very active and providing voluntary services such as collection of water user charges on monthly basis. All the households are having meter connections. Hear also village internal streets are concrete and very clean free from garbage or solid waste. In this village every households have a pit at the backyard of their house where they dump solid waste and later take it to the field.



#### **3.5 Field visit to Kahanpur village**

Kahanpur village is located in block Amloh at a distance of 30Kms from Fatehgarh Sahib district. The village has a population of 876 persons living in 115 households. This village has 100% meter tap connection. Sewerage system of this village is similar to Manhera village and there is no difference in project design. Mr. Butta Singh, Sarpanch of the village has welcomed the team in his village and shared



the process adopted for implementation of small bore sewer project in his village. Team visited few households and looked at the inception chambers/septic tanks with outlet connected with sewer line.

On the way back to Chandigarh, team visited to Madhopur village where sewerage scheme was laid five years ago and running successfully. Team tried to interact with few households and looked for GPWC members but not met due to they were in field.

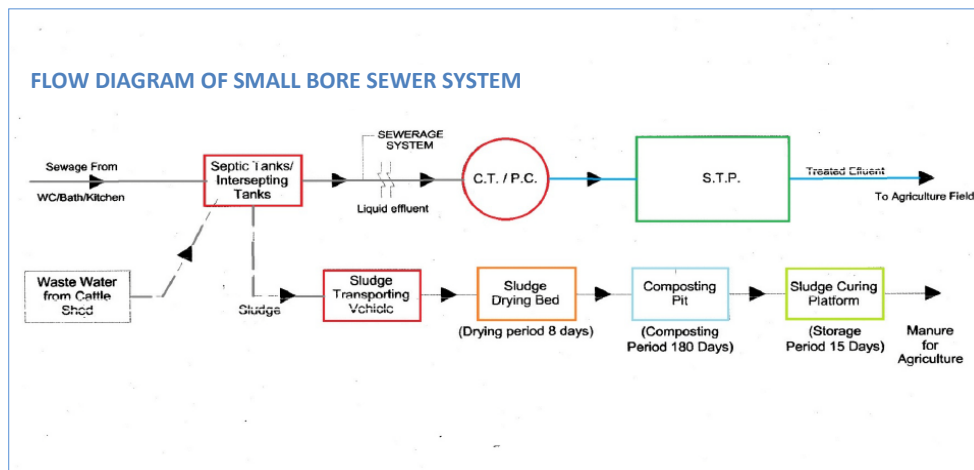
The team received wholehearted support and co-operation from Mr. D. K.Bhasin and his district and block level representatives who have accompanied us during the field visit in villages.

Salient features of the schemes of four villages where team has visited are as mentioned below:

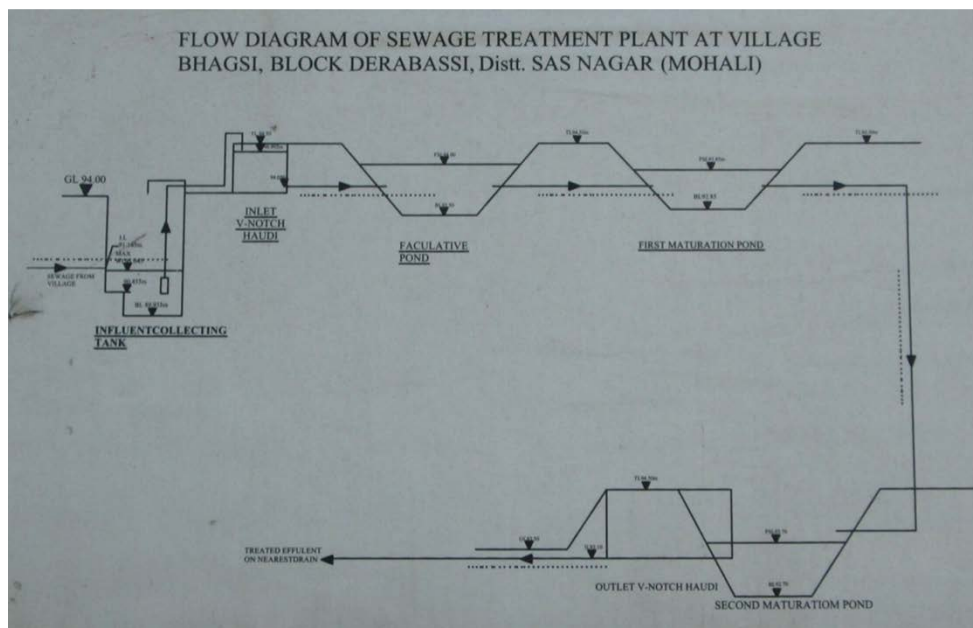
Description	Bhagsi	Joulan Kalan	Manhera Jattan	Kahanpur
<b>No. of Households (Yr 2013)</b>	154	300	124	115
<b>Population (Yr 2013)</b>	1062	1852	750	876
<b>Design population (Yr 2043)</b>	1434	2501	1312	1533
<b>Household connections</b>	130 (85%)	120 ((92%)	88 (71%)	115 (100%)
<b>Total capital cost including STP</b>	Rs. 121.48 Lacs	Rs. 161.96 Lacs	Rs. 103.89 Lacs	Rs. 111.67 Lacs
<b>Total Share of World Bank @85% of Capital Cost = 121.49 X 85%</b>	Rs. 103.27 Lacs	Rs. 137.67 Lacs	Rs. 88.30 Lacs	Rs. 94.92 Lacs
<b>State Govt. share @10% of Capital Cost = 121.49 X 10%</b>	Rs. 12.15 Lacs	Rs. 16.20 Lacs	Rs. 10.40 Lacs	Rs. 11.17 Lacs
<b>Beneficiary Share of Village @5% of Estimated Cost = 121.49 X 5%</b>	Rs. 6.07 Lacs	Rs. 8.10 Lacs	Rs. 5.19 Lacs	Rs. 5.58 Lacs
<b>Operation Maintenance Cost of STP &amp; Sewerage System &amp; Tree plantation for 5 Years in Rs.</b>	Rs. 9.12 Lacs	Rs. 7.44 Lacs	Rs.6.70 Lacs	Rs. 6.21 Lacs
<b>Per household per month cost of O&amp;M</b>	Rs.80	Rs. 50	Rs.90	Rs.90

## 4.0 Settled Sewer/Small Bore sewer system

Settled sewerage or small bore sewer system, designed to receive only liquid portion of households waste water. Grit, grease and other solid matters which might cause obstructions in the sewers are separated in interceptor/septic tanks installed at household level with outlet, connected to sewer line which is shallow and small-diameter flow through gravity. It is also considered as low-cost sewerage system. Settled sewerage is most suitable for areas where toilets are already connected with septic tanks and assuming the soil can no longer accept the septic tank effluent, It will be cheaper as compare to conventional sewerage system. The following is the lay out plan of the small bore sewer system.



Flow Diagram of Sewerage Treatment Plant – Village Bhagsi



# Service Chain of Small Bore Sewerage System of Village – Joulan Kalan



**Toilet (WC)**



**Intersection Chamber/  
Septic Tank**



**Inlet V-Nouch  
Haudi**



**Influent Tank**



**Facultative Pond**



**Maturation Pond**



**Sludge Drying Bed**

## 5.0 Comparative analysis of sewer systems

Every technology has its own advantages and limitations. Scheme can be designed looking at the availability of water, land and funds. The comparison between small bore sewer and conventional sewer is illustrated in table given below.

Parameter	Small Bore (Solids free) sewer	Conventional sewer
Characteristics of sewer line	Household waste water is settled in a solids interceptors/septic tank. Only effluent discharge into small diameter PVC pipes laid at shallow depth flows through gravity.	Household's toilet (Water Closet) directly connected with sewer line. Septic tank is not required
Treatment	Waste water treated in facultative and maturation ponds.	UASB and others
Suitability criteria	Most suitable in areas with existing septic tanks	
Water requirement	Less water supply (40-50 LPCD) required	More water supply (above 100 LPCD) required
Cleaning of septic tanks	Regular annual or bi-annual emptying of solid interceptors / septic tanks required and ensure that only solid free waste water discharge into sewer line	Septic tanks not required
Operation and Maintenance	Very low	Very High
Capital cost	Low It requires shallow excavation and PVC pipes laid at shallow depth	Very high Deeper excavation is required and
People's perception	Less preferred Due to the burden of cleaning/emptying of solid interceptors / septic tanks	Most preferred No burden at household level

## 6.0 Lesson learnt

- Small bore sewer system is designed to receive only the liquid part of household waste water. The solid component of the waste water is set aside in an solid interceptor tank or septic tank. It means, cleaning and maintenance of the tanks are solely responsibility of individual households. If households fail to maintain/clean the tank regularly. The system will not work.
- Household/community has to accept and own the responsibility that there is no direct connection of toilet with sewer line. It is possible in villages due to homogeneous characteristics and the people know each other and value to their words (give respect).
- It is suitable for the rural areas or outgrowth area of the towns where less number of households between 100 to 500.
- It is most suitable for places where already septic tanks are existing.
- It will reduce the capital cost 20% to 50% as compared to conventional sewer system

Annexures:

**1. Agenda of Study tour:**

Date	Time	Sr. No.	Scheme	Block	District
28.5.2015	9.00 AM	Meeting with Mr. D.K. Bhasin, Unit Coordinator, State Project Management Unit, Dept of Water supply and Sanitation, GoP, Mohali.			
28.5.2015	10.00 AM from SPMC office Chandigarh	1.	Jolan Kalan	Derabassi	Mohali
		2.	Bhagsi	Derabassi	Mohali
29.5.2015	9.00 AM from SPMC office Chandigarh	3.	Kahnpur	Fatehgarh Sahib	Fatehgarh Sahib
		4.	Manhera Jattan	Fatehgarh Sahib	Fatehgarh Sahib

**2. Technical details of Small Bore Sewer project**

**i. Village- Bhagsi:**

Sr. No.	Description	Remarks
1	Population 2001 census	926
2	Population 2013	1062
3	Design population 2028	1275
4	Design population 2043	1434
5	Total No. of Houses as per IEC SURVEY (43SC & 111GC )	154
6	Length of Sewer 200 mm SW pipe in m	0
7	Length of Sewer 160 mm uPVC pipe in m	3815 Mtr.
8	Length of Sewer for House connection 110 mm uPVC pipes in m	616 Mtr.
9	Length of Raising Main 110 mm uPVC pipe in m	69 Mtr.
10	Number of manholes	75
11	Number of Inspection Chambers	2
12	Number of Clean outs	31
13	2 No. Collecting Tank	3.0m Diameter
14	Facultative pond Mid-size depth	33.00m X 16.40m x 1.5m
15	Maturation pond-I mid-size depth	33.20m X 10.00m x 1.0m
16	Maturation pond-II mid-size depth	32.90m X 10.00m x 1.0m
17	Dimension of Sludge Drying bed(4 Nos)	4m x 4m x 0.3m
18	Dimension of Composting Pit(2 Nos)	3.8m x 7.6m x 1.5m
19	Dimension of Sludge Curing Platform(1 No)	1.4 m x 2.8 m
20	G.L. at STP site	96 mtr
21	Minimum depth of sewer upper end	102.44 G.L. 101.394
22	Minimum depth of sewer lower end	96 G.L. 91.361
23	Minimum depth of sewer upper end	97.338 G.L. 5.974
24	Minimum depth of sewer lower end	98.897 G.L. 1.002

25	Pumping machinery For outlet collecting tank Submersible pumping set	220 LPM 9 MTR
26	Rest room cm Gen. Set.	3x 5 Mtr
27	Disposal pond size	
28	Total No. of septic tank existing	
29	Cost of Sewerage System in Rs.	7905346
30	Cost of Pumping Station in Rs.	1161731
31	Cost of Disposal Work in Rs.	1697292
32	Cost of Sludge Disposal in Rs.	913,680
33	Total Cost of environmental Management in Rs.	116780
34	3% contingency, Petty Establishment charges, advertisement, miscellaneous & unforeseen expenses in Rs.	353845
35	Total Capital Cost in Rs.	12,148,674
36	Total Share of World Bank @85% of Capital Cost = 121.49 X 85%	Rs. 103.27 Lacs
37	State Govt. share @10% of Capital Cost = 121.49 X 10%	Rs. 12.15 Lacs
38	Beneficiary Share of Village @5% of Estimated Cost = 121.49 X 5%	Rs. 6.07 Lacs

## ii. Village- Joulan Kalan:

Sr. No.	Description	Remarks
1	Population 2001 census	1632
2	Population 2013	1852
3	Design population 2028	2223
4	Design population 2043	2501
5	Total No. of Houses as per IEC SURVEY (70SC & 230GC	300
6	Length of Sewer 200 mm SW pipe in m	594 Mtr.
7	Length of Sewer 160 mm uPVC pipe in m	6348 Mtr.
8	Length of Sewer for House connection 110 mm uPVC pipes in m	1200 Mtr.
9	Length of Raising Main 110 mm uPVC pipe in m	300 Mtr.
10	Number of manholes	66
11	Number of Inspection Chambers	16
12	Number of Clean outs	55
13	2 No. Collecting Tank	3.0m Diameter
14	Facultative pond mid-size depth	37.7m X 25.20m
15	Maturation pond-I mid-size depth	32.00m X 21.30m
16	Maturation pond-II mid-size depth	32.00m X 17.9m
17	G.L. at STP site	96.40 mtr
18	Minimum depth of sewer upper end	
19	Minimum depth of sewer lower end	96.40/95.53 mtr
20	Minimum depth of sewer upper end	99.62/96.40 mtr
21	Minimum depth of sewer lower end	99.12/99.62 mtr
22	Pumping machinery For outlet collecting tank Submersible pumping set	60 LPM 120 LPM 6 Mtr 3 Nos. 240 LPM
23	Rest room cm Gen. Set.	3 x 5 mtr
24	Disposal pond size	
25	Total No. of septic tank existing	

Sr. No.	Description	Remarks
26	Cost of Sewerage System in Rs.	10913636
27	Cost of Pumping Station in Rs.	1437594
28	Cost of Disposal Work in Rs.	2583632
29	Cost of Sludge Disposal in Rs.	9442525
30	Total Cost of environmental Management in Rs.	158791
31	1% contingency, Petty Establishment charges, advertisement, miscellaneous & unforeseen expenses in Rs.	158791
32	Total Capital Cost in Rs.	16196696
33	Total Share of World Bank @85% of Capital Cost = 161.97 X 85%	Rs. 137.67 Lacs
34	State Govt. share @10% of Capital Cost	Rs. 16.20 Lacs
35	Beneficiary Share of Village @5% of Estimated Cost =	Rs. 8.10 Lacs
36	Beneficiary Share Due	Rs. 1.06 Lacs
37	Beneficiary Share Mobilized	Rs. 1.07 Lacs
38	Balance Beneficiary Share to be met through as per modified cost sharing rules =8.10 - 1.06	Rs. 7.04 Lacs
39	Operation Maintenance Cost of STP & Sewerage System & Tree plantation for 5 Years in Rs.	1144217
40	Total Capital and Operation Maintenance Cost in Rs.	17340913
41	Per household per month cost of O&M	Rs.50 Rs. 55
42	Per Capita cost on present population (2013) in Rs.	8917
43	Per Capita cost on future population (2028) in Rs.	7431

### iii. Village – Manhera Jattan:

#### **Brief Note- ManheraJattan Sewerage**

**Name of Scheme:-** Providing Sewerage Scheme ManheraJattan, Block KheraDistt. Fatehgarh Sahib(Under World Bank)

**Admn. Approval:-** Punjab govt. Memo no 40 dt. 01-01-2013 for  
Rs. 103.89 lacs

**Technical Sanction:-**CE (S) No. 5646 dt. 30-01-2013 for Rs. 103.53 lacs

**Tender Award** EE No. 8180 Dt. 22-03-2013 for Part A- 109.01 lacs & Part B-9.70 lacs

#### **Beneficiary Share**

#### **Scope of work**

**Influent Collection Tank :-** 3.0  
mtrdia

**Effluent Collection Tank :-** 3.0 mtrdia

#### **Pumping Machinery:-**

**For Influent Collection Tank** Discharge 30 LPM,60 LPM, 170 LPM at 9 m head

General	SC	Total
0.30	0.37	0.68

(3 Nos.)

**For Effluent Collection Tank** Discharge 30 LPM,60 LPM, 160 LPM at 8 m head

(3 Nos.)

**Gen. Set.** 7.50 KVA (1 No)

**Gen. Set. Room** Size 3m x 5m

**Sewerage Treatment Plant**

**Facultative Pond = 1 No.** Top size =35.20x15.30mtr

Bottom size = 31.20x11.30mtr

Depth = 1.50 mtr

**Maturation Pond -1.** Top size =34.30x10.30mtr

Bottom size = 31.00x7.00mtr

Depth = 1.00 mtr

**Maturation Pond -2.** Top size =34.30x10.60mtr

Bottom size = 30.70x7.00mtr

Depth = 1.00 mtr

**Disposal Pond :-** Size 43.00 m x 30.30 m with 3.0 m meter working depth

**Sewerage Pipe Line:-** 160mm o/d PVC pipe = 3255 mtr

110 mm o/d PVC pipe = 524mtr

**Sewerage Connections**

House Holds	Connections	Total
124	88	71%



#### iv. Village – Kahanpur:

### Brief Note- Kahanpur Sewerage

Name of Scheme:- Providing Sewerage Scheme Kahanpur, Block Amloh Distt. Fatehgarh Sahib (Under World Bank)

Admn. Approval:- Punjab govt. Memo no 40 dt. 01-01-2013 for Rs. 111.67 lacs

Technical Sanction:- CE (S) No. 5649 dt. 30-01-2013 for Rs. 111.32 lacs

Tender Award EE No. 8190 Dt. 22-03-2013 for Part A- 113.26 lacs & Part B-9.70 lacs

Beneficiary Share

General	SC	Total
0.66	0.16	0.82

#### Scope of work

Influent Collection Tank :- 3.0 mtr dia

Effluent Collection Tank :- 3.0 mtr dia

#### Pumping Machinery:-

For Influent Collection Tank Discharge 50 LPM, 90 LPM, 250 LPM at 9 m head  
(3 Nos.)

For Effluent Collection Tank Discharge 40 LPM, 80 LPM, 240 LPM at 8 m head  
(3 Nos.)

Gen. Set. 5.00 KVA (1 No)

Gen. Set. Room Size 3m x 5m

#### Sewerage Treatment Plant

Facultative Pond = 1 No.  
Top size = 37.50x20.40mtr  
Bottom size = 33.50x16.40mtr  
Depth = 1.50 mtr

Maturation Pond -1.  
Top size = 43.60x11.60mtr  
Bottom size = 40.30x8.30mtr  
Depth = 1.00 mtr

Maturation Pond -2.  
Top size = 43.60x11.90mtr  
Bottom size = 40.00x8.30mtr  
Depth = 1.00 mtr

Disposal Pond :- Size 33.30 m x 30.70 m with 3.0 m meter working depth

Sewerage Pipe Line:-  
160mm o/d PVC pipe = 3864mtr  
110 mm o/d PVC pipe = 492mtr

Sewerage Connections

House Holds	Connections	Total
115	115	100%

### **3. List of people met during the Study tour:**

<b>Sr. No</b>	<b>Name</b>	<b>Designation</b>	<b>Place</b>
	Government Officers (Department of Water supply and Sanitation)		
1	Mr. D.K. Bhasin	Unit Coordinator, SPMU	Mohali
2.	Mr. Sahil Sharma	Sub Divisional Engineer	Sahib Ajit Singh Nagar
3.	Mr. Satnam Singh	Assistant Engineer	Derabassi, SAS Nagar
4	Mr. Ved Bhushan	Sub Divisional Engineer	Amloh, Fatehgarh Sahib
5	Mr. Azaib Singh	Assistant Engineer	Khera, Fatehgarh Sahib
6	Mr. Jasbir Singh	Assistant Engineer	Khera, Fatehgarh Sahib
7	Mr. Nirmail Singh	President, SGPS	Joulan Kalan Village
8	Mr. Nirmal Singh	Sarpanch	Joulan Kalan Village
9	Mr. Balvinder Singh	GPWSC member	Joulan Kalan Village
10	Mr. Mohinder Singh	GPWSC member	Joulan Kalan Village
11	Mr. Harjit Singh	GPWSC member	Bhagsi Village
12	Mr. Gurmeet Singh	GPWSC member	Bhagsi village
13	Mr. Jasbir Singh	GPWSC member	Manhera Jattan
14	Mr. Jasvinder Singh	GPWSC member	Manhera Jattan
15	Mr. Butta Singh	Sarpanch	Kahanpur Village
16	Mr. Harpreet Singh	GPWSC member	Kahanpur Village
17	Mr. Surjit Singh	Press reporter, Daily Pehredar	Mohali

#### 4. Media Coverage – Field visit to village - Joulan Kalam

### ਗੁਜਰਾਤ ਦੀ ਐਨ.ਜੀ.ਓ ਦੀ ਟੀਮ ਵੱਲੋਂ ਪਿੰਡ 'ਚ ਲੱਗੇ ਵਾਟਰ ਟਰੀਟਮੈਂਟ ਸੀਵਰੇਜ ਪਲਾਂਟਾਂ ਦਾ ਕੀਤਾ ਦੌਰਾ



ਲਾਲਕੁ, 28 ਮਈ | ਸੁਰਜੀਤ ਸਿੰਘ) : ਅਰਬਨ ਮੈਨੇਜਮੈਂਟ ਸੈਕਟਰ ਗੁਜਰਾਤ ਦੀ ਐਨ.ਜੀ.ਓ ਦੇ ਮੈਂਬਰਾਂ ਵੱਲੋਂ ਇਥੋਂ ਨੇੜਲੇ ਪਿੰਡਾਂ ਜੋਲਾ ਕਲਾ ਅਤੇ ਭਾਗਸੀ 'ਚ ਚੱਲ ਰਹੇ ਵਾਟਰ ਟਰੀਟਮੈਂਟ ਸੀਵਰੇਜ ਪਲਾਂਟ ਦਾ ਦੌਰਾ ਕਰਕੇ ਇਸ ਪਲਾਂਟ ਦੀਆਂ ਬਾਰੀਕੀਆਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਹਾਸਿਲ ਕੀਤੀ ਗਈ। ਟੀਮ ਵਿਚ ਸਾਮਿਲ ਸੀਨੀਅਰ ਪ੍ਰੋਗਰਾਮ ਮੈਨੇਜਰ ਅਰਵਿੰਦ ਸਿੰਘ ਨੇ ਦੱਸਿਆ ਕਿ ਗੁਜਰਾਤ ਵਿਚ ਇਹ ਐਨ.ਜੀ.ਓ ਸਰਕਾਰ ਨਾਲ ਮਿਲ ਕੇ ਤਕਨੀਕੀ ਕੰਮਾਂ ਵਿਚ ਹੱਥ ਵਟਾਉਂਦੀ ਹੈ। ਉਨ੍ਹਾਂ ਕਿਹਾ ਕਿ ਸਾਡਾ ਮੁੱਖ ਮੁਕਸਦ ਪਿੰਡਾਂ ਵਿਚ ਚੱਲ ਰਹੇ ਇਹ ਸਿਸਟਮ ਪਿੰਡ ਵਾਸੀਆਂ ਲਈ ਕਿੰਨੇ ਕੁ ਲਾਹੇਵੰਦ ਹਨ ਅਤੇ ਲੋਕਾਂ ਵੱਲੋਂ ਕਿਸ ਪ੍ਰਕਾਰ ਇਸ ਨੂੰ ਅਪਣਾਇਆ ਗਿਆ ਹੈ ਬਾਰੇ ਜਾਣਕਾਰੀ ਹਾਸਿਲ ਕਰਨਾ ਹੈ। ਉਨ੍ਹਾਂ ਇਸ ਸਿਸਟਮ ਦੀ ਸਫਲਤਾ 'ਤੇ ਤਸੱਲੀ ਪ੍ਰਗਟ ਕਰਦਿਆਂ ਕਿਹਾ ਕਿ ਇਹ ਸਿਸਟਮ ਵਾਕਿਆ ਹੀ ਲੋਕਾਂ ਲਈ ਲਾਹੇਵੰਦ ਸਿੱਧ ਹੋ ਰਹੇ ਹਨ ਅਤੇ ਇਸ ਨਾਲ ਪਿੰਡ ਵਾਸੀਆਂ ਨੂੰ ਗੈਦਰੀ ਤੋਂ ਵੀ ਛੁਟਕਾਰਾ ਮਿਲਿਆ ਹੈ। ਇਸ ਮੌਕੇ ਉਕਤ ਟੀਮ ਦੇ ਮੈਂਬਰ ਅਨੁਰਾਗ ਐਨਥੋਨੀ ਮੁੱਖ ਤਕਨੀਕੀ ਅਫਸਰ, ਜੇ ਸਾਹ ਸਮੰਤ ਪਿੰਡ ਨਿਵਾਸੀ ਅਤੇ ਸੁਮਣੀ ਕਮੇਟੀ ਦੇ ਕਾਰਜਕਾਰਨੀ ਮੈਂਬਰ ਨਿਰਮਲ ਸਿੰਘ ਜੋਲਾਕਲਾ, ਮਹਿੰਦਰ ਸਿੰਘ, ਹਰਜੀਤ ਸਿੰਘ, ਬਲਵਿੰਦਰ ਸਿੰਘ, ਨਿਰਮਲ ਸਿੰਘ, ਬਲਵਿੰਦਰ ਸਿੰਘ, ਗੁਰਮੀਤ ਪੰਚ, ਹਰਜੀਤ ਸਿੰਘ ਅਤੇ ਜਸਵਿੰਦਰ ਸਿੰਘ ਧੀਰਮਾਜਰਾ ਵੀ ਹਾਜ਼ਰ ਸਨ।

\*\*\*\*\*End of the Document\*\*\*\*\*