Annex 3.56
Action Plan 1 for O&M of Mechanical Equipment
in Fall 2016

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: Amir Tufail

Name of Organization: WASA Lahore

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Make a schedule of repair maintenance of the disposals&tubewells about machinery (Error) & check &balance the record on daily basis.

2. Normally maintenance manuals &the timing of operating machinery manuals all must be available on sites.

3. In relevant field like pumps,motors&different types of valves even chlorination &major thing is ultra-filtration plant which are the main thing of my department .Personally I learn above mention thing that how to create normally repair, their functions. Causes of their damaging much more.

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Burn out the motor with and cause.	S.E	30-12-2016	31-12-2016	Due to workshop
2	Finalize the created plan	Sub Engg &SDO	30-12-16	5-1-1017	Team not available
3					
4					

Please identify required resources to implement this plan.

1. Laptop where I make schedule of all machinery.
2. Log books at all for daily check and balance.
3. Manuals/Printed sheets at site must.
4. Department permission& funds.
5. Good team

Please identify any barriers or hindrances to the implement this plan.

1. Trained workers shortage.
2. Latest equipment which need but not avail abled.
3. Bad team

Other Comments or Notes:

Due to short time of training I learn more about my relevant field my responsibilities but main things remain which I will trying to gain the knowledge a lot by training.

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: Fayyaz Ahmed

Name of Organization: WASA Lahore

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Scheduling of repair, maintenance and cleanliness of installations(i.e tube wells, disposal stations, filtration plants)
2. Displaying Sop's, data sheets and schedule at all installations as well as maintain officials record
3. Monitoring, implementation and evaluation of schedules, SOP's, manuals and plans.

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Collecting manuals and SOP's from manufacturers.	SDO	7-1-2017	10-1-17	Delayed by manufacturer
2	Scheduling of O&M in accordance with the SOP's or manuals	SDO and Sub- Engg	12-1-17	12-1-17	
3	Reviewing of plans plans/drafts and displaying for implementation	SDO and Sub- Engg, Supervisor ,Operators	15-1-17	20-1-17	Team not available
4					

Please identify required resources to implement this plan.

1. Computer system/laptop

2. Departmental permission/funding

3.Work force

4.Printed sheets

5. Log books/work space etc.

Please identify any barriers or hindrances to the implement this plan.

1. Trained workers shortage.
2. Latest equipment's unavailability
3. Managements restriction/centralization of authorities
4.

Other Comments or Notes:

1. Action plan can suffer due to interference of political or management's.
2. Non availability of resources can also disturb plan.
3. Multitasking duties and overburden of work can also fail the action plan.

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: Souman Khalid

Name of Organization: WASA Lahore

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Implementation plans for Sop's, Record keeping, preventive maintenance and HSE.
2. Check for implementation of above mentioned plans on regular basis.
3. Always try to improve the plans and implement them.

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Provision of maintenance plan for pumps	SDO&SE	15-1-2017		
2	Implementation of the plan(Regular basis)	Operator	20-1-17 weekly		
3	Inspections for regular proper implementation	Sub- Engg	27-1-17 weekly		
4	Make a better plan or follow previous one.	SDO&SE	15-2-17 Every Month		

Please identify required resources to implement this plan.

1. Time

2. Manuals

3. Trainer

4.Funds(For prizes)

Please identify any barriers or hindrances to the implement this plan.

1. Frequent public complaints(Time)
2. Political involvements
3. Attitude of workers

Other Comments or Notes:

The plan can be implemented with some efforts and the support of high-ups to ensure the decrease in political pressure .If implemented this plan can reduce a lot of breakdown complaints and may give a huge relief to public as well as departments budget.

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: Waqas Liaqat

Name of Organization: WASA Lahore

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Preparation of maintenance history of every installation
2. Focus on problematic/weak areas and make improvement plan
3. Consultation with lower staff for important and then prepare plan for improvement with the consultation of higher ups.

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Identify low performance installation	SDO			
2	Checking needs repair/	SE			
3	Make proper/Estimate	SE			
4	Pursue until job done	SDO			

Please identify required resources to implement this plan.

1. Installation history, its useful life etc.

2. Strong justification for its improvement

3. Required specification

4.Funds

Please identify any barriers or hindrances to the implement this plan.

1. Funds availability
2. Management interest
3.

Other Comments or Notes:

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: M Shakeel Ahmed

Name of Organization: WASA Multan

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Keeping the all record that you need the time of maintenance.
2. Trained the supervisor and other staff to maintain the site.
3. Management is strong about the maintenance works.

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Contact KSB to request for provide gate valves	SDO	5-1-2017	10-1-2017	Installed the gate valve
2	Review draft to finalize the plan according the mothod	Sub- Engg	15-1-17	15-1-2017	
3	Visit the site with technical team	SDO and Sub- Engg	20-1-17	23-1-2017	Completed the visited
4					

Please identify required resources to implement this plan.

1. Financial support for the body.

2. Key plan is ready to do the work at site

3. Man power is available for work.

4. Technical experts are provided the instructions to team.

5. All the work is to be done in specification.

Please identify any barriers or hindrances to the implement this plan.

1. Technical Team
2. Funds
3. Required tools for maintenance and operation

Other Comments or Notes:

All the team is to need the training about the maintenance provided the all tools at the site. Management is also to strong .Responsible peoples are known about the site.

POST TRAINING ACTION PLAN

Training Title: O & M Module 1 and Module 4 Date of Training: Dec.26-Dec 30th, 2016

Name of Participant: Umair Ayub

Name of Organization: WASA Multan

Please list three important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on SOP, Record Keeping, Preventive maintenance and HSE)***

1. Importance of preventive maintenance
2. The need to train the tube wells and pumps operators
3. Importance of record keeping

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Requesting of O&M manuals from our vendors	SDO	7-1-2017		
2	Training the operators about standard SOP's	SDO and Sub- Engg	1-2-17		
3	Maintain and develop a sustainable inspection plan for pumps and motors	SDO and Sub- Engg	1-2-17		
4					

Please identify required resources to implement this plan.

1. O&M manuals for all pumps, motors, valves and filtration plants

2. Standard maintenance products of required quality

3. Most important thing would be continuous inspection and maintenance plans regardless of the changing personal charge of facilities.

4.

Please identify any barriers or hindrances to the implement this plan.

1. Most difficult barrier can be the intra departmental communication about following a common plan for inspection of pumps, valves and motors.
2.
3.

Other Comments or Notes:

Annex 3.57
Action Plan 2 for O&M of Mechanical Equipment
in Fall 2016

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Aamir Tufail

Name of Organization: WASA Lahore

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE
2. Understanding equipment components and their functions
3. Preventive maintenance plan
4. SOPs
5. Record keeping

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.
"Develop equipment maintenance log for Ichra Sub Division O& M"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Plan or discuss with SDO	SE	5-2-17	5-2-17	
2	Call a meeting to discuss detail	SDO	8-3-17	9-3-17	
3	Review draft list to finally list of vehicles driver	Computer operator/SE	15-3-17	16-3-17	
4	Meeting with team for discussion	SE/SDO	25-3-17	26-3-17	
5	Implementation	SE/SDO	2-4-17	2-4-17	

Please identify required resources to implement this plan.

1. Good team

2. Proper material

3. Effort of all team specially immediate boss

4.

5.

Please identify any barriers or hindrances to the implement this plan.

1.Bad team

2.Shoratge of time for planning

3.miner resources

Other Comments or Notes:

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Fayyaz Ahmed

Name of Organization: WASA Lahore

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.PPE
2. Understanding equipment components and their functions 2.Equipment Record
3. Preventive maintenance plan 3.Vehicles maintenance schedules
4. SOPs 4.store space management
5. Record keeping 5.Work time measurement

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.
"Develop equipment maintenance log for South Drainage Yard"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Meeting with staff	SDO	20-1-17		
2	Production of protective equipment lists from store	Sub Engineer	22-1-17		
3	Allocation of equipment's to staff as required	SE	24-1-17		
4	On job implementation distribution of equipment's	SE	26-1-17		
5	Finalizing of lists and reviews	SDO+SE	30-1-17		

Please identify required resources to implement this plan.

1. Stock register

2. Procured equipment's along with user manuals

3. Trained supervisor + workers

4. Office work place

5. Organizational SOP'S

Please identify any barriers or hindrances to the implement this plan.

1.Overloading of work

2.Multitasking job

3.Improper and non-maintained stocks/records

Other Comments or Notes:
The procurement of equipment's for safety is mostly carried out by the procurement and stores department, so the equipment's are most of the times are not procured as per requirements.

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Souman Khalid

Name of Organization: WASA Lahore

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE
2. Understanding equipment components and their functions
3. Preventive maintenance plan
4. SOPs
5. Record keeping

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.
"Develop equipment maintenance log for WASA workshop Lahore"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Record keeping	SE/SDO	7-2-17		
2	SOP's	SE/SDO	17-3-17		
3	HSE	SDO/SE/XEN	15-4-17		
4	Inspection	Operators/SE/SDO	31-5-17		
5					

Please identify required resources to implement this plan.

1. Time

2. Funds

3. Manpower

4. Management

5.

Please identify any barriers or hindrances to the implement this plan.

1.Lack of time because of urgent official works.

2.No implementation of HSE in WASA ,Previously

3.No regular SE available of the moment

Other Comments or Notes:

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Waqas Liaqat

Name of Organization: WASA Lahore

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE
2. Understanding equipment components and their functions
3. Preventive maintenance plan
4. SOPs
5. Record keeping

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

"Develop equipment maintenance log for water supply WASA liaqat Bagh Rawalpindi"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Compile vehicles drivers license etc.	SE	18-1-17		
2	Vehicles fitness certificates	SE	25-1-17		
3	Vehicles preventive maintenance schedule	SE	30-1-17		
4	Making SOP's for drivers	SE	30-1-17		
5	Display of SOP's and reduce fitness and driver's license on 5S board	SE	2-2-17		

Please identify required resources to implement this plan.

1. Management support

2.

3.

4.

5.

Please identify any barriers or hindrances to the implement this plan.

1. Funds shortage for preventive maintenance.

2. Audit observation for preventive maintenance.

3.No specific SOP's for preventive maintenance present

Other Comments or Notes:
The induction policy of heavy machinery drivers should be streamlined in terms of merit and education .The vehicle/machinery health depends upon its user. If the operator is well aware of its job then the machine needs less repair and less resource ultimately required.

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: M.Zain ul abdin

Name of Organization: WASA Faisalabad

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.5S Technique
2. Understanding equipment components and their functions 2.SOP of jetting machine/Sucker machine
3. Preventive maintenance plan 3.Safety arrangements before completion of jobs
4. SOPs 4.Computerized record
5. Record keeping 5.Schedule maintenance & preventive maintenance according to record to manual inspect

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

"Develop equipment maintenance log for South Drainage Yard"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Call a meeting to discuss 5S in XEN office with staff	XEN	17-1-17	17-1-17	
2	Completion of all items list and location specification	SDO and Sub Engineer	20-1-17	29-1-17	
3	Machinery ,Dumper, Excavator ,for smooth surface	SE	03-2-17	5-2-17	
4	Implementation technique of 5S at office	SE	8-2-17	9-2-17	
5	Implementation of 5S technique at O&M store	SDO+SE			

Please identify required resources to implement this plan.

1. Dumpers and excavators from JICA parking road.
2. Boards
3. Racks
4.
5.

Please identify any barriers or hindrances to the implement this plan.

1.Budget
2.
3.

Other Comments or Notes:

ALJAZARI ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: M Shakeel Ahmed

Name of Organization: WASA Multan

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.Checking the attendance the staff
2. Understanding equipment components and their functions 2.Check the work suction/jetting machine
3. Preventive maintenance plan 3.Desilting schedule of hasan parana sub division
4. SOPs 4.Safety equipment's are used in the field
5. Record keeping 5.Complete the log books and all old material

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

"Develop equipment maintenance log for South Drainage Yard"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Check the daily performance of staff	SE	14-1-17		
2	Checking the complaints register and resolve complaints	SE	14-1-17	17-1-17	
3	Desilting schedule in sub division	SDO/SE	14-1-17	25-1-17	
4					
5					

Please identify required resources to implement this plan.

1. Implement this plan in office

2. To manage the labor time table

3.

4.

5.

Please identify any barriers or hindrances to the implement this plan.

1.No hindrance

2.

3.

Other Comments or Notes:

ALJAZARI ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Umair Ayub

Name of Organization: WASA Multan

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.Creating maintenance schedule for jetting and sucker units
2. Understanding equipment components and their functions
3. Preventive maintenance plan
4. SOPs
5. Record keeping

Sewerage Division

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.

"Develop equipment maintenance log for South Drainage Yard"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Vehicle list with vehicle number	SDO/SE	20-1-17		
2	List of drivers with their license number	Sub Engineer	20-1-17		
3	Arranging maintenance manufacturer for all vehicles	SDO/SE	25-1-17		
4	Create a maintenance log for monthly inspection	SDO/SE	25-1-17		
5	Quarterly review of maintenance log	SDO+SE			

Please identify required resources to implement this plan.

1. Company maintenance manual’s for trucks and tractor and for the jetting and suction limits

2.

3.

4.

5.

Please identify any barriers or hindrances to the implement this plan.

1.Budget

2.

3.

Other Comments or Notes:

ALJAZARI
ACADEMY

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Aamir Hussain shah

Name of Organization: WASA Rawalpindi

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.Tube well
2. Understanding equipment components and their functions 2.Filtration plant
3. Preventive maintenance plan 3.Overhead reservoir
4. SOPs 4.Site office
5. Record keeping 5.Water meters

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.
"Develop equipment maintenance log for water supply WASA liaqat Bagh Rawalpindi"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Meeting held	SDO	18-1-17		
2	Tube well check	T.W inspector	21-1-17		
3	Filtration plant cleaning	T.W inspector	25-1-17		
4	OHR	Supervisor	28-1-17		
5	Site office	SE	30-1-17		

Please identify required resources to implement this plan.

1. Tube well log book
2. Safety material
3. Shoes
4. Gloves
5. Torch light

Please identify any barriers or hindrances to the implement this plan.

1.Acceptance by the staff

2.

3.

Other Comments or Notes:

POST TRAINING ACTION PLAN

Training Title: O & M Module 5 and Module 7 Date of Training: Jan 9th -Jan 13th , 2017

Name of Participant: Noshad Aslam

Name of Organization: WASA Rawalpindi

Please list five important concepts, ideas, or skills which you plan to take from the training and implement in your work ***(please focus on assembly components, preventive maintenance, operating procedures and HSE)***

1. HSE 1.Tube well
2. Understanding equipment components and their functions 2.Filter plant
3. Preventive maintenance plan 3.Overhead reservoir
4. SOPs 4.Ground storage tanks
5. Record keeping 5.Valve chamber

Please identify a specific plan (in sequential steps) that you will implement upon your return to WASA.
"Develop equipment maintenance log for ''Shamsabad water supply Rawalpindi"

Sr. No.	**Action Item (what)**	**Responsible (who)**	**Due Date (when)**	**Date Completed**	**Comments**
1	Check the tube wells	T.W inspector	17-1-17		
2	Check filter plants	T.W inspector	19-1-17		
3	Overhead reservoir	W/S Supervisor	22-1-17		
4	Valves chamber	W/S supervisor	24-1-17		
5	Ground storage tank	W/S Supervisor	28-1-17		

Please identify required resources to implement this plan.

1. Staff equipment’s
2. Helmet
3. Gloves
4. Shoes
5. Torch light

Please identify any barriers or hindrances to the implement this plan.

1.Acceptance by the office staff
2.
3.

Other Comments or Notes:

Annex 3.58
OJT Implementation Procedure for Leakage Detection
in Fall 2016 - Spring 2018

Procedure of On the Job Training

JICA Expert of Leak Detection

1 Leakage Detection

No.	Items	Check
1.	Preparation of the pipeline map (based on GIS data)	
2.	Preparation of the pipeline map of the leak detection site	
3.	Confirmation of the start and end point of leak detection	
4.	Confirmation of the leakage repair history/record near detection site	
5.	Information of the pipe (location, depth, material, diameter and lying age)	
6.	Information of the valve chamber, fire hydrant, and mother meter	
7.	Information of the kind of pavement (Co/As/None) and thickness	
8.	Preparation of the transportation	
9.	Confirmation of the leak detection team member's role	
10.	Confirmation of the departure time	
11.	Check of the traffic condition and the event near the detection site	
12.	Preparation of the working shoes, reflection vest and headlight	
13.	Check and charging of the battery of leak detector and equipment	
14.	Reporting of the result of leak detection (Survey length, No. of leak found)	

Checked by _____, Date _____

Approved by _____, Date _____

Approved by _____, Date _____

Procedure of On the Job Training

JICA Expert of Leak Detection

2 Leakage repairing

No.	Items	Check
1.	Confirmation of the leakage occurrence contact receiving date and time	
2.	Confirmation of the location/address of the leakage repairing site	
3.	Confirmation of the visible scale of leakage (Large/Moderate/Small)	
4.	Confirmation of the road condition (Spouting/Submergence/Subsidence)	
5.	Preparation of the pipeline map of the leakage site	
6.	Confirmation of the shutdown valves location	
7.	Confirmation of the non-passage road area and detour (bypass) route	
8.	Confirmation of the leakage repair equipment, material and quantity	
9.	Confirmation of the leakage repair team member's role	
10.	Check of the traffic condition and the event near the leakage point	
11.	Preparation of the transportation	
12.	Confirmation of the departure time	
13.	Preparation of the working shoes, reflection vest and headlight	
14.	Information of the pipe (location, depth, material, diameter and lying age)	
15.	Information of the valve chamber, fire hydrant, and mother meter	
16.	Information of the kind of pavement (Co/As/None) and thickness	
17.	Contact to the Police and relative traffic organization	
18.	Reporting of the repair work result (Consumption material, quantity)	

Checked by _____, Date _____

Approved by _____, Date _____

Approved by _____, Date _____

Annex 3.59
OJT Implementation Procedure 1
for O&M of Electrical Equipment in Fall 2016

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

WASA : Lahore Division : Gulshan-e-Ravi (XEN (OCM-I) GBT) Sub Division: Gulshan-e-Ravi SIDiv

Approved by

Prepared by SAEED AHMAD KHAN LAHORE WASA

Site No.	Administrative Information						Contents of Activity	2016				2017					
	Location		Name of the Persons in Charge					Nov		Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	Gulshan e-Ravi	G-Block Gulshan e Ravi	Shohail Aslam Sindhu	Shokat Ali	Saeed Ahmad Khan		Daily Operation Record	29/11/2016	O								
							SOP Check List		O								
							Preventive Maintenance Record		O*								
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

* insulation resistance couldnt be performed.

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

M. Zaheer Rana
WASA L HR

Approved by

Prepared by

WASA : Lahore Division : Iqbal Town Sub Division: Johar Town

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	Johar Town	A-Block T/W	Sohail Qadir Cheema	Salman Nisar	Hassan	Imran Ali	Daily Operation Record	29th									
							SOP Check List										
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by Rafique Ch

Prepared by Anum Javed

WASA : Lahore Division : Gulberg Sub Division: Gulberg

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	Gulberg	A-3	Danish	Amjad	–	–	Daily Operation Record	28-11-2016									
							SOP Check List										
							Preventive Maintenance Record										
2.	Gulberg	A-1	Danish	Amjad	—	–	Daily Operation Record	29-11-2016									
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

UMAIR ASGHAR.

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by

Prepared by

WASA : MULTAN Division : P&D Sub Division: —

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	Faroopura SOUTH	Faroopura	Ishtiaq	Aijum	Arshad	Ahsan	Daily Operation Record	29	O								
							SOP Check List		O								
							Preventive Maintenance Record		—								
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

WASA : GRW Division : III (Model Town) Sub Division: B. (Alam chowk)

Approved by

Prepared by Shakeel Ahmad.

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location: Sub Division	Location: Site Name	Name of the Persons in Charge: XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	III	Camp No.2	Kashan	M. Iqbal	Shakeel Ahmad.	Salman	Daily Operation Record	29 NOV									
							SOP Check List										
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

WASA : LHR Division : Nishter Town-I Sub Division: GREEN TOWN

Approved by SHAMAS AYOUB

Prepared by H.M. RAHEEL

Site No.	Administrative Information						Contents of Activity	2016				2017					
	Location		Name of the Persons in Charge					Nov		Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	GreenTown	Ameer Chowk	Ishfaq Tiwana	Shamas Ayub	Imran		Daily Operation Record	29th Nov									
							SOP Check List										
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by

WASA : Lahore. Division : Nishter town (Opn-I). Sub Division: Green Town. Prepared by ADEEL SHARIF

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	Green Town.	Bmaer chowk	Tirmizi Sha.	Shams Ajob.			Daily Operation Record	29 - N - 2016									
							SOP Check List										
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

ARSHAD LATIF.

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by

Prepared by

WASA : Multan Division : Disposal Div. Sub Division: South.

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	South	Qaim bela	Mr. Ishtiaq	Mr. Anjum Zaman	Arshad Latif.	Ghulam Rasool.	Daily Operation Record	24									
							SOP Check List										
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by SHAFQAT MALIK

WASA : RAWALPINDI Division : BULK W/SUPPLY Sub Division: FILTRATION PLANT

Prepared by SHAFQAT MALIK

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location: Sub Division	Location: Site Name	Name of the Persons in Charge: XEN	Name of the Persons in Charge: SDO	Name of the Persons in Charge: Sub Engineer	Name of the Persons in Charge: Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	Filtration plant	RAWAL LAKE FILTRATION PLANT RAWAL DAM	AHMED MANZOOR	SHAFQAT MALIK	MUHAMMAD ALI	MUHAMMAD KHALID	Daily Operation Record	NOV		~~JAN~~		JAN				Mar	
							SOP Check List	29		~~31~~		31				10	
							Preventive Maintenance Record										
2.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

M. Ramzan.

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by Director Water Supply

Prepared by Executive Engineer Zargh

WASA : Quetta Division : Zarghoon Sub Division: MaliBagh.

Site No.	Administrative Information						Contents of Activity	2016				2017					
	Location		Name of the Persons in Charge					Nov		Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	MaliBagh	VES-8	Rayan	ihsan	Qadir	Ali Ahmed	Daily Operation Record	15 dec.									
							SOP Check List			20 dec							
							Preventive Maintenance Record										
2.	"	VES-II	"	"	"	M. Ali	Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

WASA : Quetta Division : Zarghoon Sub Division: Malibagh

Approved by X EN

Prepared by S.D.O Ahsan Kajeer

Site No.	Administrative Information						Contents of Activity	2016				2017					
	Location		Name of the Persons in Charge					Nov		Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	Malibagh	VS-11	Ramzan Achakzai	Ahsan Kajeer	Qadir Shawani	Shaib	Daily Operation Record										
							SOP Check List			15 Dec							
							Preventive Maintenance Record										
2.	Pashtoonabad	Abdul Wali	Ramzan Achakzai	Shaib Badini	—	Shakoor	Daily Operation Record										
							SOP Check List			18 Dec							
							Preventive Maintenance Record										
3.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

OJT Implementation Plan for Record Keeping, SOP & Preventive Maintenance Activity of Electrical Panel

Approved by Javaid Iqbal Jadan (XE.

Prepared by H. Faraz Ali

WASA : TMA Sialkot Division : Sub Division:

Administrative Information							Contents of Activity	2016				2017					
								Nov		Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator											
1.	TMA Sialkot	Khatla water work's	Javaid Iqbal Chadar	Mohammad Ashraf Bajwa	Faraz Ali	Zulfiqar	Daily Operation Record		0				0				0
							SOP Check List	Nov	0			Jan	0			Mar	0
							Preventive Maintenance Record	29	0			31	0			8	0
2.	11	Tube well Shah Khati Ghali Rangpura					Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
3.	11	Tube well Lambiyan Baiyan Rangpura					Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
4.	11						Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
5.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										
6.							Daily Operation Record										
							SOP Check List										
							Preventive Maintenance Record										

Annex 3.60
OJT Implementation Procedure 2
for O&M of Electrical Equipment in Fall 2016

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

WASA FAISALABAD

Division : WASTE WATER MANAGEMENT (EAST)

Approved by

Prepared by

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	EAST	PS-31	KAMRAN RAZA	SALMAN HASHMI	TAHIR SHABBIR	ASGHAR	1. O&M Manual	20-12-16	
							2. Basic Specification ➡Vender, Type, Capacity	20-12-16	
							3. Daily O&M Record	20-12-16	
							4. Preventive Maintenance Plan	20-12-16	
2.	EAST	MANSOORA-BAD	KAMRAN RAZA	SALMAN HASHMI	TAHIR SHABBIR	ADNAN	1. O&M Manual	30-12-16	
							2. Basic Specification ➡Vender, Type, Capacity	30-12-16	
							3. Daily O&M Record	25-12-16	
							4. Preventive Maintenance Plan	25-12-16	
3.	EAST	ABDULLAHPUR	KAMRAN RAZA	SALMAN HASHMI	TAHIR SHABBIR	ADNAN	1. O&M Manual	05-01-17	
							2. Basic Specification ➡Vender, Type, Capacity	05-01-17	
							3. Daily O&M Record	25-12-16	
							4. Preventive Maintenance Plan	25-12-16	

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

Approved by

WASA Division : Prepared by SHAFQAT MEHMOOD MALIK

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Filtration Plant	RAWAL LAKE FILTRATION PLANT RAWAL DAM ISBD	M. AHMED MANZOOR	SHAFQAT MEHMOOD	MUHAMMAD ALI	MUHAMMAD YAMEEN	1. O&M Manual	16-01-2017	
							2. Basic Specification ➡Vender, Type, Capacity	20-01-2017	
							3. Daily O&M Record	07-02-2017	
							4. Preventive Maintenance Plan	06-03-2017	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

WASA GRW. Division : III (B)

Approved by

Prepared by SHAKEEL AHMAD.

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Alam Chowk III (B)	Tube Well Camp No.2	Kashan Hafeez	M. Iqbal	Shakeel Ahmad	M. Salman	1. O&M Manual	03 Dec	
							2. Basic Specification ➡Vender, Type, Capacity	03 Dec	
							3. Daily O&M Record	03 Dec	
							4. Preventive Maintenance Plan	03 Dec	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

WASA Quetta Division : Malibagh

Approved by XEN Zarghoon

Prepared by S.D.O

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Malibagh	VS-II	Zarghoon	Ahsan Kjan	Qadir	Nabi	1. O&M Manual	15 Jan	
							2. Basic Specification ➡Vender, Type, Capacity	15 Jan	
							3. Daily O&M Record	20 Jan	
							4. Preventive Maintenance Plan	23 Jan	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "○" when you complete the activity

WASA Lahore. Division : Iqbal Town

Approved by XEN

Prepared by M. Zaheer Rana

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Johar Town	Sakhi Chowk T/W	Sohail Qadir	Salman Nisar	Hassan	Imtiaz	1. O&M Manual	06-12-16	
							2. Basic Specification ➡Vender, Type, Capacity	07-12-16	
							3. Daily O&M Record	08-12-16	
							4. Preventive Maintenance Plan	10-12-16	
2.	~~Director~~ Drainage (centre) OFF.	Director Drainage OFF	Adeel Sharif	M. Zaheer Rana	Ayaz Hanif	Abdullah	1. O&M Manual	08-12-16	
							2. Basic Specification ➡Vender, Type, Capacity	08-12-16	
							3. Daily O&M Record	08-12-16	
							4. Preventive Maintenance Plan	10-12-16	
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you complete the activity

WASA LAHORE Division : XEN(O&M-I)GBT

Approved by SAEED AHMAD KHAN

Prepared by Nawaz - Abdul Aziz

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Gulshan e-Ravi	Gulshan e-Ravi Disposal Station	Shohail Aslam Sindhu	Shoukat Ali	Saeed Ahmad Khan	Nawaz	1. O&M Manual	05DEC	
							2. Basic Specification ➡Vender, Type, Capacity	05DEC	
							3. Daily O&M Record	05 DEC	
							4. Preventive Maintenance Plan	10 DEC	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

Approved by Rafique Ch

Prepared by Anum Javed

WASA Lahore Division : Gulberg

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Gulberg	G-5	Danish	Amjad			1. O&M Manual	5-12-16	
							2. Basic Specification ➡Vender, Type, Capacity	7-12-16	
							3. Daily O&M Record	8-12-16	
							4. Preventive Maintenance Plan	10-12-16	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

WASA Multan Division : Disposal

Approved by S. D. O.

Prepared by Muhammad Arshad Lathi.

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	South	Qasim bella	Mr. Ishtiq	Anjam Zaman	Arshad Lathi.	Ghulam Rasool.	1. O&M Manual	13 Dec.	
							2. Basic Specification ➡Vender, Type, Capacity	13 Dec.	
							3. Daily O&M Record	13 Dec.	
							4. Preventive Maintenance Plan	13 Dec.	
2.	South	Garden Town	Mr. Istiaq	Anjam Zaman	Arshad Lathi.	Amar Iqbal	1. O&M Manual	14 Dec.	
							2. Basic Specification ➡Vender, Type, Capacity	14 Dec	
							3. Daily O&M Record	14 Dec.	
							4. Preventive Maintenance Plan	14 De.	
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

OJT Implementation Procedure for O&M Manual, Record Keeping & Preventive Maintenance Activity of Generator

Put "O" when you conplete the activity

Approved by XEN Disposal

Prepared by UMAIR ASGHAR.

WASA MULTAN Division :

Administrative Information							Contents of Activity	Planning Date	Completed
Site No.	Location		Name of the Persons in Charge						
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator			
1.	Disposal (North)	Changi # 9.	Ishtiaq	Hafiz Muhammad Waqas			1. O&M Manual	13/DEC/16	
							2. Basic Specification ➡Vender, Type, Capacity	13/DEC/16	
							3. Daily O&M Record	13/DEC/16	
							4. Preventive Maintenance Plan	20/DEC/16	
2.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		
3.							1. O&M Manual		
							2. Basic Specification ➡Vender, Type, Capacity		
							3. Daily O&M Record		
							4. Preventive Maintenance Plan		

Annex 3.61
OJT Implementation Procedure 3
for O&M of Electrical Equipment in Fall 2016

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by SHAFQAT MEHMOOD MALIK

WASA : RAWALPINDI Division : Filtration Plant Prepared by "

Administrative Information							Contents of Activity	2016		2017					
								Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator									
1.	F/PLANT	RAWAL LAKE F/PLANT	Ahmed MANZOOR	SHAFQAT MEHMOOD	MUHAMMAD ALI	Khalid Mehmood	1. 5S Activity								
							2. Improve PPE/First Aid Kit			25					
							3. Job Safety Analysis			25					
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by Ch Rafique

WASA : Lahore Division : Gulberg Prepared by Anum Javed

Administrative Information							Contents of Activity	2016		2017					
								Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator									
1.	Gulberg	G-5	Danish Amjad	—	-		1. 5S Activity	15-12-16							
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis	15-12-16							
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

SALMAN AHMED HASHMI

Approved by

WASA : FAISALABAD Division : EAST - WWM

Prepared by

Site No.	Location		Name of the Persons in Charge				Contents of Activity	2016 Dec		2017 Jan		2017 Feb		2017 Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	East	PS-31	Kamran Raza	Salman Hashmi	Tahir Shabbir	Asghar	1. 5S Activity	17		05		05		05	
							2. Improve PPE/First Aid Kit	28		10		10		10	
							3. Job Safety Analysis	23		10		10		10	
2.	East	Elahiabad	Kamran Raza	Salman Hashmi	Tahir Shabbir	Shaukat	1. 5S Activity	20		05		05		05	
							2. Improve PPE/First Aid Kit	23		10		10		10	
							3. Job Safety Analysis	23		10		10		10	
3.	East	Abdulhpur	Kamran Raza	Salman Hashmi	Tahir Shabbir	Iftikhar	1. 5S Activity	22		05		05		05	
							2. Improve PPE/First Aid Kit	26		10		10		10	
							3. Job Safety Analysis	28		10		10		10	
4.	East	PS-42	Kamran Raza	Salman Hashmi	Tahir Shabbir	Husain Shah	1. 5S Activity	22		05		05		05	
							2. Improve PPE/First Aid Kit	26		10		10		10	
							3. Job Safety Analysis	28		10		10		10	

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by Sohail Aslam Sindhu

WASA: LAHORE Division: XEN (O&M-I) GBT

Prepared by SAEED AHMAD KHAN

Site No.	Administrative Information						Contents of Activity	2016		2017					
	Location		Name of the Persons in Charge					Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	Gulshan e-Ravi	Skandra Colony T/w	Sohail Aslam Sindhu	Shokat Ali	Saeed Ahmad Khan	NAWAZ	1. 5S Activity	15, Decber							
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by M. Zaheer Rana

Prepared by

WASA : Lahore Division : XEN (OSM-II) N. Town.

Administrative Information							Contents of Activity	2016		2017					
								Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator									
1.	Green Town	C/I T/W	Shams Ayub	Shams Ayub	Imran Qamar	Nadeem	1. 5S Activity	15th							
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by

Prepared by Shakeel Ahmad.

WASA : Gujranwala Division : III

Site No.	Administrative Information: Location: Sub Division	Location: Site Name	Name of the Persons in Charge: XEN	SDO	Sub Engineer	Operator	Contents of Activity	2016 Dec: Planning Date	2016 Dec: Completed	2017 Jan: Planning Date	2017 Jan: Completed	2017 Feb: Planning Date	2017 Feb: Completed	2017 Mar: Planning Date	2017 Mar: Completed
1.	III	Model Town	Kashan Hafeez	M. Iqbal	Shakeel Ahmad	Liaqat Ali	1. 5S Activity	to		Jan.10					
							2. Improve PPE/First Aid Kit	Jan		Ja. 15					
							3. Job Safety Analysis			Ja. 15					
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by H.M. RAHEEL

Prepared by

WASA : LHR Division : Nishtar Town

Administrative Information						Contents of Activity	2016		2017					
							Dec		Jan		Feb		Mar	
Site No.	Location		Name of the Persons in Charge				Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator								
1.	GREEN Town	C-II T/w	ISHFAQ TIRMBI	SHAMAS AYOUB	QAMAR	XYZ	12/12/16	01/01/17						
2.														
3.														
4.														

1. 5S Activity
2. Improve PPE/First Aid Kit
3. Job Safety Analysis

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by

WASA : MULTAN. Division : Disposal Division. Prepared by UMAIR ASGHAR.

Site No.	Administrative Information: Location – Sub Division	Location – Site Name	Name of the Persons in Charge – XEN	SDO	Sub Engineer	Operator	Contents of Activity	2016 Dec – Planning Date	2016 Dec – Completed	2017 Jan – Planning Date	2017 Jan – Completed	2017 Feb – Planning Date	2017 Feb – Completed	2017 Mar – Planning Date	2017 Mar – Completed
1.	NORTH	Chungi # 9	Ishtiaq	Hafiz Waqas	[illegible] Tariq		1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis	15							
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by

Prepared by. ARSHAD LATIF.

WASA : Multan Division : Disposal Stations

Site No.	Administrative Information						Contents of Activity	2016		2017					
	Location		Name of the Persons in Charge					Dec		Jan		Feb		Mar	
	Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator		Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
1.	South	Qasim bela	Mr. Ishtiaq	Mr. Anjam Zaman	Arshad Latif	Gulam Rasool	1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
2.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
3.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								
4.							1. 5S Activity								
							2. Improve PPE/First Aid Kit								
							3. Job Safety Analysis								

OJT Implementation Procedure of 5S and HSE activity for Electrical Facility

Approved by

Prepared by ADEEL SHARIF.

WASA :

Division :

Site No.	Administrative Information: Location – Sub Division	Location – Site Name	Name of the Persons in Charge – XEN	SDO	Sub Engineer	Operator	Contents of Activity	2016 Dec – Planning Date	2016 Dec – Completed	2017 Jan – Planning Date	2017 Jan – Completed	2017 Feb – Planning Date	2017 Feb – Completed	2017 Mar – Planning Date	2017 Mar – Completed
1.	Drainage South I	Township Drainage Office	Adeel Sharif	Rahul Ashraf	Thapar.		1. 5S Activity	25	25.						
							2. Improve PPE/First Aid Kit			10	12.				
							3. Job Safety Analysis			11-	15				
2.							1. 5S Activity			25.	30				
							2. Improve PPE/First Aid Kit					5	8		
							3. Job Safety Analysis					8.	9		
3.							1. 5S Activity					9-	10		
							2. Improve PPE/First Aid Kit					11	12		
							3. Job Safety Analysis					13	14.		
4.							1. 5S Activity					15	16		
							2. Improve PPE/First Aid Kit					17.	18		
							3. Job Safety Analysis					19	20		

Annex 3.62
OJT Implementation Procedure
for O&M of Mechanical Equipment in Fall 2016 - Fall 2017

OJT Implementation plan for Record Keeping,SOP &Preventive Maintenance Activity of Pump,Motor and Valves

Course: WSD 5231 modules 1, 4

Team and Site Information								Parameters to check	2017													
									Jan		Feb		March		April		May		June	
Site No.	Site Iformation			Detailed Team Information					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Participant Name	WASA/Division/Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator													
1.	Amir Tufail	Lahore/Allama Iqbal Town/Ichra	LOS Tube well	Sohail Qadir Cheema	Saif Ch.	Amir Tufail	Ashfaq	Daily operations record	15-Jan											
								Facility inspection sheet												
								Maintenance plan												
								O&M Manuals for Equipment												
2.	Souman Khalid	Lahore/Ravi Town/Main Outfall	Out fall Dewatering workshop	Saleem Ashraf	Souman Khalid	Atif	Adnan Javed	Daily operations record	15th											
								Facility inspection sheet	25th											
								Maintenance plan			5th									
								O&M Manuals for Equipment			15th									
3.	Fayyaz	Lahore/Drainage south/Drainage South-1	Tank # 3 Township	Adeel Shareef	Hafiz Raheel Asraf	Fayyaz Ahmed Ch.	Muhammad Arif	Daily operations record	16th											
								Facility inspection sheet												
								Maintenance plan												
								O&M Manuals for Equipment												
4.	Waqas Liaqat	Lahore/Drainage south/Drainage South-1	Tank # 3 Township Komatsu Excuvator	Adeel Shareef	Waqas	Ghaffar	Ilyas	Daily operations record	1st	30th	1st	28th	1st	30th						
								Facility inspection sheet		30th		28th		30th						
								Maintenance plan		15th		15th		15th						
								O&M Manuals for equipment		1st		1st		1st						
5.	Umair Ayub	Multan/Sewerage south/Hassan Parwana	Sewerage (Hassan Parwana South)	Irfan Ali	Umair Ayub	shakeel Ahmad		Daily operations record	15th											
								Facility inspection sheet												
								Maintenance plan												
								O&M Manuals for Equipment												

OJT Implementation plan for Record Keeping,SOP &Preventive Maintenance Activity of Pump,Motor and Valves

Course: WSD 5231 modules 1, 4

Team and Site Information								Parameters to check	2017													
									Jan		Feb		March		April		May		June	
Site No.	Site Iformation			Detailed Team Information					Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed	Planning Date	Completed
	Participant Name	WASA/Division/Sub Division	Site Name	XEN	SDO	Sub Engineer	Operator													
6.	Shakeel Ahmad	Multan/Sewerage south/Hassan Parwana	Sewerage (Hassan Parwana South)	Irfan Ali	Irfan Ali	shakeel Ahmad	Ismaeel	Daily operations record	1st to											
								Facility inspection sheet	15th											
								Maintenance plan												
								O&M Manuals for Equipment												

WASA Lahore

WASA Multan

Annex 3.63
OJT Implementation Procedure for Asset Management
in Fall 2016

04-Sohail Cheema & 06-Abdul Rehman

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly		
	in charge	O & M department (Division Level)		
	Number of staffs	04 Number (01 Person each Sub division)	08 Number (02 Person each Sub division)	(02 Person for field work in each sub division).
	Training	NIL	Quarterly Basis	Capacity Building.
	Budget	52,000/- (PKR)	220,000/- (PKR)	
	Computers	NIL	NIL	
	Others	-	08 Numbers (Android Phones)	01 Number for each monitoring Official.
Task 2: Recording	what to do	Keeping records of the monitoring results		
	in charge	O & M department (Division Level)		

	Number of staffs	**04 Number (01 Person each Sub division)**	**08 (02 Person each Sub division)**	**02 Persons each sub division.**

Task 2: Recording	**Training**	**-**	**Quarterly Basis**	**Capacity Building.**
	Budget	**72,000/- (PKR)**	**244,000/- (PKR)**	
	Computers	**04 Number**	**09 Number**	**01 Number for each data entry operator, 01 Number for each SDO, and 01 Number for XEN.**
	Others	**-**	**-**	
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**		
	in charge	**Director P&E**		
	Number of staffs	**03 Numbers**	**09 Numbers**	**03 Numbers in Head Office, 01 Number in each town.**
	Training	**-**	**Quarterly Basis**	
	Budget	**150,000/-**	**450,000/-**	

	Computers	**03 Numbers**	**09 Numbers**	
	Others	**-**	**-**	

Task 4: New asset register	**what to do**	**New asset register/ database updating**		
	in charge	**Sub Division Officer**		
	Number of staffs	**04 Number**	**08 Number**	**02 Person each Sub Division**
	Training	**NIL**	**Quarterly basis**	**How to evaluate conditions of assets, how to maintain the asset record/history.**
	Budget	**100,000/- (PKR)**	**400,000/- (PKR)**	
	Computers	**NIL**	**04 Number**	**01 Number in each sub division.**
	Others	**-**	**-**	

Sohail Sindhu & Waqas

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly		
	in charge	O & M department		
	Number of staffs	03	03	1- 1 no. Installations montoring 2- 1 no water supply system montoring. 3- 1 no sewerage system monitoring.
	Training	no	yes	
	Budget(PKR)	No particular budget for asset monitoring	5 lacs for 1st year 1.6lac yearly onwards	3 bikes and 3 mobiles. 3 bikes with fuel 60 lit/bike/month.
	Computers	no	no	
	Others	No other facility	Need bikes with fueling. Android Mobile phones.	
Task 2:	what to do	Keeping records of the monitoring results		

Recording	**in charge**	**O & M department**		
	Number of staffs	**2**	**3**	

Task 2: Recording	**Training**	**no**	**Need training**	
	Budget	**exists**	**Needs upgradation**	
	Computers	**1**	**1**	
	Others	**nil**	**nil**	
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**		
	in charge	**sdo**	**sdo**	
	Number of staffs	**0**	**1**	**GIS Trained staff is required**
	Training	**nil**	**Required**	
	Budget	**nil**	**3.5 lacs/annum**	

	Computers	**0**	**1**	
	Others	**nil**	**GIS equipment.**	

Task 4: New asset register	**what to do**	**New asset register/ database updating**		
	in charge	**GIS / Asset database sections and procurement sections**		
	Number of staffs	**1 sub engr**	**1 sub engr**	
	Training	**nil**	**Required**	
	Budget	**exist**	**50,000/-**	
	Computers	**0**	**1**	
	Others	**nil**	**nil**	

15-Ms Burrira & 16-Ms Zoya WASA Faisalabad

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly	There must be written schedule and constant check on these proceedings	
	in charge	WWM department (SDOs)		
	Number of staffs	Disposals: SE=3, Electrician=4, Mechanic=4 Vehicle/Machinery: SE=1, Supervisor=1, Mechanic=1	Number of staff is sufficient	
	Training	Nil	Technical trainings should be given in specific fields	
	Budget	No specific budget for monitoring, managed using O&M budget	Specific head should be there for monitoring	
	Computers	Nil	Min=3	
	Others	Level sensors, vehicle tracking system	Sufficient	
Task 2:	what to do	Keeping records of the monitoring results		

Recording	**in charge**	**WWM department (SDOs)**		
	Number of staffs	**Computer Operator=3 Data collection=4**	**Operators=4 min**	

Task 2: Recording	**Training**	**No formal training. AD(s) guide staff as per requirement**	**MS office training should be compulsory**	
	Budget	**No specific budget. O&M budget is used for recording results**	**Specific head should be there for recording**	
	Computers	**3**	**4 min**	
	Others	**-**	**-**	
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**		
	in charge	**GIS Analyst(s)**	**3 GIS Analyst (minimum) must be there**	
	Number of staffs	**AD=2 Work charge/Surveyors=10**	**For surveys and ground truthing minimum 10 people are required in each project**	
	Training	**No formal training executed**	**Formal trainings and workshops specially for lower staff must be arranged specially to handle equipment**	

	Budget	**Budget is not allocated specifically for GIS section; GIS work is completed in respective project individually**	**-**	
	Computers	**2**	**Central repository/server required Arcpad/GPS devices Android Phones**	
	Others	**-**	**-**	

Task 4: New asset register	**what to do**	**New asset register/ database updating**		
	in charge	**GIS / Asset database sections and procurement sections**		
	Number of staffs	**0 for DB records** **Manual recording=1 SE in each subdivision**	**Present staff must take responsibility of DB updates regarding Assets. other department's cooperation would be required for that task to complete systematically**	
	Training	**1**	**some formal trainings and workshops required specifically on Faisalabad's system and data type**	
	Budget	**Nil**	**A specific amount of budget solely dedicated for making and timely updates of assets must be considered**	
	Computers	**0**	**Min 3 with central server**	
	Others			

Muhammad Tauseef

Assistant Director Engineering

WASA (GDA)

Gujranwala

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly		
	in charge	Assistant Director Engineering	Assistant Director Engineering	Regular Visits
	Number of staffs	1(One sub engineer for each subdivision) 3(One team for 2 subdivisions)	2(Two sub engineers for each subdivision) 3(One team for each subdivision)	Monitoring will be more efficient
	Training	No Training	Trainings for each level of staff	Technical skills will improve
	Budget	No Budget Allocation	Allocation of Budget for procurement of Monitoring Equipment's	Quality of Monitoring will be Accurate
	Computers	No Computers	3 Computers for each subdivision	ADE can analyze instantly

	Others	**No Vehicles**	**Vehicles for each level staff**	**Response time of staff will improve**
Task 2: Recording	**what to do**	**Keeping records of the monitoring results**		
	in charge	**Sub Engineer**	**Sub Engineer**	**Regular Visits**
	Number of staffs	**3(One team for 2 subdivisions) (Electrician, mechanical supervisor & a helper)**	**3(One team for each subdivision)**	**Monitoring will be more efficient**

Task 2: Recording	**Training**	**No Training**	**Trainings for each level of staff**	**Technical skills will improve**
	Budget	**No Budget Allocation**	**Allocation of Budget for procurement of Recording Equipment's**	**Quality of Recording will be Accurate**
	Computers	**No Computers**	**3 Computers for each subdivision**	**ADE can analyze Recording practice instantly**
	Others	**No Vehicles**	**Vehicles for each level staff**	**Response time of staff will improve**
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**		
	in charge	**No One**	**GIS Expert is required**	**Overall Monitoring of Updating**
	Number of staffs	**No staff**	**2 Assistants for GIS Expert**	**Record will be updated on AIMS**

	Training	**No Training**	**Trainings for both level of staff**	**Technical skills will improve**
	Budget	**No Budget Allocation**	**Allocation of Budget for Establishment of GIS / Asset database**	**Assets will be evaluated and located**
	Computers	**No Computers**	**3 Computers for each subdivision**	**Asset database will be saved in Computers**
	Others	**No Phones**	**Android Phones should be given to staff**	**Very necessary for Asset database in field**

Task 4: New asset register	**what to do**	**New asset register/ database updating**		
	in charge	**Assistant Director Engineering**	**Assistant Director Engineering**	
	Number of staffs	**1(One sub engineer)**	**1 store keeper 2 helpers**	**Asset Register will be updated**
	Training	**No Training**	**Trainings for both level of staff**	**Technical skills will improve**
	Budget	**No Budget Allocation**	**Allocation of budget**	
	Computers	**No Computers**	**1 Computer**	**Balance Assets**
	Others	**No vehicles**	**2 vehicles**	**To provide in field**

Waqas & Sajid WASA Multan

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly	Categorization of assets on monitoring period basis and device specific SOPs. Deployment of skilled person for monitoring	At each sub-division level
	in charge	Concerned Sub-divisions	Concerned Sub-divisional staff	Capacity development of the sub divisions is necessary.
	Number of staffs	Operators and supervisors	Mechanic, electrician supervisors at each sub-division level	
	Training	Nil	Concerned sub-divisional staff must be trained and fully equipped in their own capacity.	Specific training how to monitor and judge the condition of the assets
	Budget	Nil	A specific budget must be allocated.	
	Computers	Nil	1x Laptop and 1x computer must be provided at each sub-division	If computerized SCADA system is installed
	Others	Nil	Vehicles & digital cameras, android mobile phones	For communication & monitoring
Task 2:	what to do	Keeping records of the monitoring results	Record must be computerized at each sub-division level	

Recording	**in charge**	**Concerned Sub-divisions**	**Concerned Sub-divisions**	**SDO, S/E & skilled persons.**
	Number of staffs	**Nil**	**Computer & data entry operators**	**1 each to prepare and update the database.**

Task 2: Recording	**Training**	**Nil**	**Concerned sub-divisional staff must be trained and fully equipped in their own capacity.**	**Asset recording & updating Training**
	Budget	**Nil**	**Specific budget**	
	Computers	**Nil**	**1x Laptop and 1x computer must be provided at each sub-division**	**For recording, updating and keeping the data base**
	Others	**Nil**	**Printers, scanners**	
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**	**Yes**	
	in charge	**Nil**	**A Separate GIS Cell**	**P & D Directorate**
	Number of staffs	**Nil**	**2 x GIS analysts, 1 x Assistant Director Engineering and assistant staff.**	**GIS Posts must be created.**
	Training	**Nil**	**How how to input and update data into assets database.**	**In Aljazari Academy Lahor.**
	Budget	**Nil**	**Specific Budget**	

	Computers	**Nil**	**3 x Laptops and 3 x Computers**	
	Others	**Nil**	**Nil**	

Task 4: New asset register	**what to do**	**New asset register/ database updating**	**Yes**	**Especially an asset with worth 1 million and service life more than 1 year should be register immediately.**
	in charge	**Nil**	**Register a new assert in separate GIS Cell/ Asset database section**	**Assistant Director**
	Number of staffs	**Nil**	**2 x GIS analysts, 1 x Assistant Director Engineering and assistant staff.**	**Total 5 No. of staff (including assistants)**
	Training	**Nil**	**How to evaluate conditions of assets, how to input and update data into assets database.**	**How to update new asset register/ database**
	Budget	**Nil**	**Specific budget**	
	Computers	**Nil**	**3 x Laptops and 3 x Computers**	
	Others	**Nil**		

1. **Hafiz Muhammad Waqas**
2. **Muhammad Sajid**

(WASA Multan)

11&12 Asim & WASA Rawalpindi

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	There is no proper monitoring system is working in R WASA. However, some assets are being monitored on daily or whenever visited by the in charge or any higher authority.	It is proposed that there must be a separate Assets Management Directorate, which have sufficient staff tools and budget for monitoring, recording of assets on GIS basis.	Will ensure the assets recording and updating GIS data base
	in charge	Two, supervisors or higher officer	Director Assets Management	
	Number of staffs	No proper staff is being engaged for monitoring purpose.	Director, Deputy Director, 2 Assistant Director, 4 sub engineer with office and field staff. (20 no)	From existing staff
	Training	nil	All staff must be trained at their own levels	
	Budget	No specific budget is allocated. The O&M budget is used	5 millions / annum	
	Computers	nil	4 laptop and 2 no's desk top	
	Others	nil	Transport (4 small vehicles and 6 no's motor bikes	

Task 2: Recording	**what to do**	**Yes there is a property register, stock register are using for this purpose**	**There should be a proper recording and updating system using GIS data base**	
	in charge	**Accounts department and store in charge**	**Director assets management**	
	Number of staffs	**4 no's**	**1 assistant director with 2 sub engineers and GIS specialist**	

Task 2: Recording	**Training**	**nil**	**Must be trained at their own level**	**Capacity building**
	Budget	**nil**	**As above**	
	Computers	**nil**	**1 no lap top and 1 desk top**	
	Others	**nil**	**1 small vehicle and 2 motor bike**	
Task 3: Updating GIS/Asset Database	**what to do**	**No GIS system**	**There must be GIS based assets data base system**	
	in charge	**nil**	**Director Assets management**	
	Number of staffs	**nil**	**1 GIS specialist with1 assistant**	**May be engaged from market**
	Training	**nil**	**Must be trained with up to date knowledge and latest technology**	

	Budget	**nil**	**1.5 million**	
	Computers	**Nil**	**1 lap top**	
	Others	**nil**	**1 motor bike**	

Task 4: New asset register	**what to do**	**No asset register is maintaining**	**There must be assets register maintained**	
	in charge	**nil**	**Director assets management**	
	Number of staffs	**nil**	**1 accountant with 1 assistant**	**From existing staff**
	Training	**nil**	**Must be trained**	**Capacity building**
	Budget	**nil**	**0.1 million**	
	Computers	**nil**	**1 desk top**	
	Others	**nil**	**nil**	

M Ali - NSUSC

Assignment 1: OJT Implementation Procedure (asset monitoring, Asset register/ database updating)

		Current	Future Requirement	Remarks
Task 1: Monitoring	what to do	Monitoring the existing assets: daily, weekly, monthly, quarterly		
	in charge	O & M department (Assistant Director)	Assistant Director(AM)	Regular visit and log signed at station
	Number of staffs	Junior Engineer's at their sector with their foreman's (3) as per assets requirment	SAME AS CURRENT Urgent Replacement required of retired person	
	Training	No training	Quarterly training program	
	Budget	Not define	Should be prepare with the help of AM	
	Computers	3 computers have in region	Laptop required for AM	
	Others	No vehicles	Vehicles Required for AM and junior Engineers	800 cc for AM & Bikes for Junior Engineers
Task 2: Recording	what to do	Keeping records of the monitoring results		
	in charge	O & M department (Junior Engineers)	Junior Engineers	

	Number of staffs	**03 (JEs)**	**03**	

Task 2: Recording	**Training**	**No training**	**Quarterly Training Required for Fresh their brains**	
	Budget	**No define**	**Should be prepared with the help of AM**	
	Computers	**No Computer**	**01 system Required for recording**	
	Others		**Vehicles required**	
Task 3: Updating GIS/Asset Database	**what to do**	**Updating GIS/ Asset database with the monitoring results**		
	in charge	**No Any**	**Separate Engineer required for record the all GIS ,Assets coding,**	
	Number of staffs	**No any**	**1 Engineer only**	
	Training	**No any**	**Quarterly**	
	Budget	**No any**	**Arrange for Engineer**	
	Computers	**No**	**Laptop or system**	

	Others			

Task 4: New asset register	**what to do**	**New asset register/ database updating**		
	in charge	**GIS / Asset database sections and procurement sections (GM capital works)**	**Engineer**	
	Number of staffs	**01**	**1 Engineer required for Operation and Services** **2 which already mentioned in Task 3**	
	Training	**No**	**Quarterly required**	
	Budget	**No**	**For Engineer facilitation**	
	Computers	**1 system**	**Laptop or system for O&S**	
	Others	**No**	**At least bike for visiting the sites for recording of New Assets**	

Muhammad Ali

NSUSC

Annex 3.64
Action Plan for O&M of Tube Well and Pump Facility
in Spring 2017

O&M Action Plan of Water Supply

Participant Name: M Tahir Rehman
Designation: Sub Engineer (WASA Lahore)

Sr. No	Issue	Cause	Mitigation Measure
1	Leakage of Water Supply Lines	Contamination of clean drinking water	Repair of Lines
2	Low Pressure of water supply network		New reservoir / new t/w is operation
3	Connected Water Supply Lines to sewer line	Contamination of clean drink	New Water Supply line opposite site
4	Leaking of poor valve, jointing material	Poor water drinking	Replacent of good quality of valve jointing materi
5	Contamination of source point/ distribution lines		Chlorination
6	Laying of old cast iron pipe lines	Cause of contamination	New water supply line for good product

Participant Nam: Lal Tab
Designation: Tube Well Incharge (WSSC Mardan)

1. Separation of sewerage line to water supply line

2. No chlorination

Participant Nam: Aamir Hussain Shah
Designation: Sub Engineer RWP WASA

Sr. No	Issue	Cause	Mitigation Measure
1	Shortage of water	Ground water depletion problem	New Tube well Surface Water
2	Low Pressure	Shortage of water	Repair of OHR
3	Biological Contamination		
4	Leakage	Old rusty	Repair of pipe/ Change the pipe line

Participant Name: Shafiq ur Rehman
Designation: Field Supervisor (WSSC Kohat)

Sr. No	Issue	Cause	Mitigation Measure
1	Paip lieking		
2	Olds paip		

Participant Name:	Waqar Anjum
Designation:	Pipe Fitter WSSC Kohat KDA

Left blank chart

Participant Name:	Asim Nazir
Designation:	Deputy Director M&E WASA/RWP

Sr. No	Issue	Cause	Mitigation Measure
1	Shortage of water	Ground water depletion population	New tube well surface water
2	Low Pressure	Shortage of water/ OHR	Provision of OHR New Machinery

3	Biological Contamination	Mixing of water with sewage / leakage	Chlorination
4	Contamination in distribution	Old rusting network and mixing issue	F/plants
5	Leakages	Old network/ incidents	Repair/ replacement of lines
6	Wastage of water	Lack of awareness	Public awareness
7	Political / Social Influence	Political system	Better management
8	Line Breakage	Old line	Replacement of old line
9	Ground treatment	Surface water contaminated	Treatment plant
10	Electricity Failure	Load Shedding	Generators

Annex 3.65
Action Plan for Leakage Detection in Spring 2017

Leakage Prevention Plan

WASA Multan

M. Waqas (Assistant Director)
Amir Hussain Bukhari (Sub-Engineer)

- Leakage detection team at WASA Multan consists of 2 plumbers, 4 linemen and they are reported to Sub- Engineer who is reporting to SDO.
- Water distribution maps and drawings must be available at sub-division level for efficient working of leak detection team.
- Latest Leak detection equipment must be provided.
- Leak Detection team will visit the area on daily basis and provide the gathered information for record maintaining and necessary action.
- Pressure gauges and flow meters should be installed at each tube well as well as each distribution.
- Analysis will be performed on pipe design life, quality of pipe on quarterly basis for better planning future.
- By establishing the leak detection teams, leakage losses could be reduced up to 5-10 % during the current year.
- Patrolling survey method is usually feasible for data collection of leakage.
- The SDO and Sub-Engineer will quickly move their repair team to repair the observed leakages.
- After field counter measures, analysis will be done under the supervision of SDO and Sub-Engineer to determine the causes of leakage.
- Following the mentioned action plan, N.R. W's would be reviewed so that comparison could be done.
- Thus a system could be established for smooth operation and maintenance of water supply network.

WASA Gujranwala

Ali Qumain (RA)
Urban Unit

Preparation

1. Formation of Leak Detection Team.
2. Select one zone and conduct this plan on one zone.
3. Prepare GIS maps which shows the condition of pipelines of each zone.
4. Calculate the discharges at regular intervals in selected area.
5. Select the exact leakage points in survey.
6. Repair the leakages with most feasible practices available.

Equipment

1. Pressure Recorder
2. Acoustic Leak Detector
3. Metal Pipe Locator
4. Non Metal Pipe Locator
5. Ultrasonic Flow Meter

Plan

1. Current NRW is 50 % and the target is to reduce it each year by 10 %
2. Repeat the similar plan in all the zones.

Evaluations

1. Conduct the surveys at regular intervals to evaluate the results.
2. Compare the current results with the past result so that improvement can be made in plan.

WASA Rawalpindi

Samran Zahid (Sub Engineer)
Noushad Aslam (Sub Engineer)

- **Preparation**

1. We already have leakage detection cell which consists of 1 supervisor, 1 pipe fitter and 2 helpers.
2. We already have GIS maps.
3. Leak Detection equipment are needed for better results.

- **Basic Survey**

1. We will analyze the water supply pressure and flow by using the equipment.
2. We already have separate maps of each area and pipe lines.

- **Plan**

1. NRW is 40% and the target is to reduce every year by 10 %.
2. We will choose survey method according to the area.

- **Action/Implementation**

1. We will repair the pipelines immediately and also calculate the volume of leakages.

Water and Sanitation Services Peshawar

Engr. Amir Khattak

- **Preparation**

1. Establishment of Leakage detection cell and team which already consists of plumbers, pipe fitters and helpers.
2. Preparation of water distribution network maps and drawings which is under preparation.
3. Procurement of leak detection equipment which depends upon the availability of funds.

- **Basic Survey**

1. Analysis of water supply (pressure and flow measurements), which has yet to be planned**.**
2. Divide the city into the Blocks, city is divided in 4 blocks which is further divided into small units.
3. Study and analysis of pipe's design life and material quality.

- **Action Implementation**

1. Counter measures for leakage are under process which would be more effective if the equipment are available.
2. Leakage detection cell will organize the survey for leak detection which would focus particularly on conditions of pipe, workmanship and causes of leakage.
3. Leakage volume will be calculated provided that the equipment is available.
4. For surface leakages quick repairs are being done but for underground leakages more funds and equipment is needed.

- **Evaluation**

1. Analysis of the results will be done by calculation of discharges at various locations, also the metering system will be upgraded.
2. Plan vs Action will be reviewed keeping in view the reduction in NRW %.

Water and Sanitation Services Mardan

Muhammad Khalil Akbar
Manager Municipal Services

- We will establish the leakage detection cell which will be consists of Assistant Manager (Water Supply), pipe line supervisor and plumbers.
- We will develop GIS maps of distribution network.
- We will procure Acoustic Leak Detector, Metal Pipe Locator and non-metal pipe locator.
- We will analyze one tube well network for 3 days and collect the previous data about pipe laying (year, type etc.)
- We will conduct walk through survey throughout the length of distribution pipe.
- Leakage will be find out by using Acoustic Leak Detector.
- As most of the pipes in Mardan are GI so we will analyze the causes of leakage and also prepare the GIS maps of pipe network.
- We have 22 tube wells in Mardan, so the survey will take 66 days.

Evaluation

- The analysis of leak prevention plan will enable us to decide whether the pipe needs repair or it should be replaced with a better quality.
- Our action plan will help us to improve the quality of water by reducing the contaminations.

Water and Sanitation Services Kohat

Azmat Ali
Ibrar Ali

- **Formation of Teams**

1. There are 30000 number of connections and 150 tube wells.
2. Total pipe Length is 10000 meters.
3. Blocks = 6, Helpers = 12, Pipe Fitters = 6, Supervisors = 6, Engineers = 2 and Manager = 1
4. There is one leak detection team and 6 sub teams.
5. Preparation of drawings and maps will be done.

- **Basic Survey**

1. Use of pressure recorders and flow meters to determine the flow and losses in network.
2. Use of the leakage detectors to pinpoint the leaks.

- **Plan**

1. Number of leakages to repair
2. Pipe length to be replaced.

- **Action**

1. Set the teams along with their targets and equipment.
2. Teams will be divided by the types of pipes e.g. AC pipes, GI pipes and HDPE pipes etc.

- **Evaluation**

1. Check the flow meters and pressure recorders in pipe networks at night to identify the results and compare them with the past results.

Annex 3.66
Action Plan for O&M of Sewer and Storm Water Drainage in Spring 2017

HSE Action Plan
Module 01

Khalid Bin Rasheed-WASA Lahore

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	**Description of Problem**	Desilting of drain				
	Date 15-02-17					
2	**Type / Rating of Hazard**	**Major**		**Probable Outcomes**	Death	
		Moderate			Drowning	
		Minor				
3	**Hazard Discovered Through**	**Inspection**	Near Miss	Accident	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	
			Isolate Hazard	How?	
	Date of Response	15-02-17	Restrict the Access	How?	
			Erect Signage	How?	By using orange cones and PPEs
			Any Other	How?	
2	Finding Root Cause		Apply "5Whys" Methodology	Because of the lack of indicators or boards	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	**Improper Maintenance**	Any Other

C - Action Plan Template

1	2	3	4	5	6	7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Use orange cones	Cones are apply around	Before the O&M work start	A field of manager to this work		Sign boards		By visiting the area	Field in charge
2	Using sign boards	Sign boars apply before or after the O&M area		Manager give a proper lecture to workers before works start and tell them the hazard and risk of field					

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	15-02-17	15-02-17	16-02-17		No

D- SIGNATURES			
Implementer Name	Khalid Bin Rasheed	**Signature**	
Authority Title	WASA, Lahore	**Signature**	

HSE Action Plan
Module 01

Waqas Ali-(WASA Lahore)

ACTION PLAN

A	**DESCRIPTION OF PROBLEM**					
1	**Description of Problem**	Desilting of manhole				
	Date 15/02/-17					
2	**Type / Rating of Hazard**	**Major**	Death	**Probable Outcomes**	Death of sewer manhole	
		Moderate				
		Minor				
3	**Hazard Discovered Through**	Inspection	Near Miss	Accident	**Any Other**	Inspection
						Ignorance

B	IMMEDIATE ACTION			
1	Take Immediate Action	Remove Hazard	How?	
		Isolate Hazard	How?	
	Date of Response	Restrict the Access	How?	
		Erect Signage	How?	Warning signs, orange cones, tape for highlighting the working area
		Any Other	How?	
2	Finding Root Cause	Apply "5Whys" Methodology	Use safe O&M methods, proper concentration in job , use PPEs , training to all staff before work start at filed, provide proper tools	
3	Contributing Reasons / Causes	Lack of Training	Un-Safe O&M Method	Ignorance
		No Use of PPE	Lack of Proper Tools	Willful Misconduct
		Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1	2	3	4	5	6	7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Training	Use the orange cones	Before the work start		Workers		Tools/ Equip.	By visit before start work	Authorized person
2	Lack of proper tools	Wait for release the hazard gases							
3	Provide PPEs	Impose the PPEs							

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	15/02/2017	15/02/2017	15/02/2017	No	

D- SIGNATURES			
Implementer Name	Waqas Ali	**Signature**	
Authority Title	WASA Lahore	**Signature**	

HSE Action Plan
Module 01

Sana Fatima (WASA, Lahore)

ACTION PLAN

A	**DESCRIPTION OF PROBLEM**					
1	**Description of Problem**		Damage to gas pipelines during Drain dredging			
	Date	**15-02-2017**				
2	**Type / Rating of Hazard**	Major		**Probable Outcomes**	Leakage of Gas	
		Moderate				
		Minor				
3	**Hazard Discovered Through**	Inspection	Near Miss	**Accident**	Any Other	

B	IMMEDIATE ACTION			
1	Take Immediate Action	Remove Hazard	How?	By repairing gas pipelines
		Isolate Hazard	How?	By cutting off gas supply
	Date of Response	Restrict the Access	How?	By using barriers
		Erect Signage	How?	
		Any Other	How?	
2	Finding Root Cause	Apply "5Whys" Methodology	Why operator did not operate machine carefully?	
			Why unsafe O&M method was used?	
			Why the operator was not trained?	
3	Contributing Reasons / Causes	Lack of Training	Un-Safe O&M Method	Ignorance
		No Use of PPE	Lack of Proper Tools	Willful Misconduct
		Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
	Training of machine operator	1. Visit the site before dredging	Train the operator at least twice a month				PPEs	Sudden checking	
		2. Prepare proper site plan before starting							
		3. Hand over plan to operator and instruct him if there is any pipeline exist							

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	

D- SIGNATURES			
Implementer Name	Sana Fatima	**Signature**	
Authority Title	Assistant Director P&D (WASA, Lahore)	**Signature**	

HSE Action Plan
Module 01

Samina Asif (WASA, Lahore)

ACTION PLAN

A	**DESCRIPTION OF PROBLEM**					
1	**Description of Problem**	Damage to gas pipelines during Drain dredging				
	Date 15-02-2017					
2	**Type / Rating of Hazard**	Major		**Probable Outcomes**	Leakage of Gas	
		Moderate				
		Minor				
3	**Hazard Discovered Through**	Inspection	Near Miss	**Accident**	Any Other	

B	IMMEDIATE ACTION			
1	Take Immediate Action	Remove Hazard	How?	By repairing gas pipelines
		Isolate Hazard	How?	By cutting off gas supply
	Date of Response	Restrict the Access	How?	By using barriers
		Erect Signage	How?	
		Any Other	How?	
2	Finding Root Cause	Apply "5Whys" Methodology	Why operator did not operate machine carefully?	
			Why unsafe O&M method was used?	
			Why the operator was not trained?	
3	Contributing Reasons / Causes	Lack of Training	Un-Safe O&M Method	Ignorance
		No Use of PPE	Lack of Proper Tools	Willful Misconduct
		Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1	2	3	4	5	6	7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
	Training of machine operator	1. Visit the site before dredging	Train the operator at least twice a month					Sudden checking	
		2. Prepare proper site plan before starting							
		3. Hand over plan to operator and instruct him if there is any pipeline exist							

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	

D- SIGNATURES			
Implementer Name	Samina Asif	**Signature**	
Authority Title	Assistant Director (WASA, Lahore)	**Signature**	

HSE Action Plan
Module 01

Waseem Iqbal-WASA Gujranwala

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	Description of Problem	While desilt the M.H. We have not any precaution measures, hazards & risk are there				
	Date 15-02-17					
2	Type / Rating of Hazard	Major	Cause death	Probable Outcomes	We have not any arrangement as soon as possible	
		Moderate				
		Minor				
3	Hazard Discovered Through	Inspection	Near Miss	Accident	Any Other	Accidents

B	IMMEDIATE ACTION				
1	Take Immediate Action	Remove Hazard	How?	To make sure precaution measures (Proper PPEs used)	
		Isolate Hazard	How?		
	Date of Response	Restrict the Access	How?		
		Erect Signage	How?		
		Any Other	How?		
2	Finding Root Cause	Apply "5Whys" Methodology			
			Not properly managed		
3	Contributing Reasons / Causes	Lack of Training	Un-Safe O&M Method	Ignorance	
		No Use of PPE	Lack of Proper Tools	Willful Misconduct	
		Improper House Keeping	Improper Maintenance	Any Other	

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	PPEs necessary	Step by step	Every week		Sub Engineer	Equipment	Tools may be	During work check	Senior officials
2	Safety measures	Very important	Every week		Sub Engineer	Awareness	Coordinate	During working	Head officials

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
1	That date			May be	
2			By head		
3					

D- SIGNATURES			
Implementer Name		Signature	
Authority Title		Signature	

HSE Action Plan
Module 01

Muhammad Kamran Zafar-(WASA Fasialabad)

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	Description of Problem	Remodeling of storm channel, as storm channel is damaged				
	Date 5-3-16					
2	Type / Rating of Hazard	Major		Probable Outcomes	Accident related to traffic	
		Moderate			Workers causalities	
		Minor			Distresses	
3	Hazard Discovered Through	Inspection	Near Miss	Accident	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	Remodeling is required
			Isolate Hazard	How?	
	Date of Response	14-4-16 Immediate	Restrict the Access	How?	
			Erect Signage	How?	
			Any Other	How?	
2	Finding Root Cause		Apply "5Whys" Methodology	Concrete channel is needed	
				It will be tolerant to discharge	
				It is broken badly	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	**Ignorance**
			No Use of PPE	**Lack of Proper Tools**	Willful Misconduct
			Improper House Keeping	**Improper Maintenance**	Any Other

C - Action Plan Template

	1	2	3	4		5		6	7
Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Remodeling	Make concrete channel (RCC)	Immediate	Engineering department	Civil related work	Steel bars, cement, sand coarse aggregate	Civil Engg. tools	Properly site visit, material testing	Engineers, Govt. Department
2	Site visit	Regularly	Regularly	Civil related	Civil related	Man power	Follow monitoring	Different WASA equipment	Govt. Department
3	Channel monitoring	Professional staff	Immediate	Civil related	Workers	Man power	Follow monitoring	Different WASA equipment	Govt. Department

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	5-3-17	6-4-17	7-4-17	No	No

D- SIGNATURES			
Implementer Name	Kamran	**Signature**	
Authority Title	WASA Fasialabad	**Signature**	

HSE Action Plan
Module 01

Salman Ahmed Hashmi (WASA, Fasialabad)

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	**Description of Problem**	Sewer pipe damaged and sewer man working to repair the pipe and traffic management during the repair work				
	Date 15-02-17					
2	**Type / Rating of Hazard**	**Major**		**Probable Outcomes**	Death may occur if traffic not manage well, If sewer man not use proper PPEs during repair work	
		Moderate				
		Minor				
3	**Hazard Discovered Through**	**Inspection**	Near Miss	Accident	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	By plugging the pipe to avoid over flow from damaged pipe
			Isolate Hazard	How?	By restricting public access to area
	Date of Response	15-02-17	Restrict the Access	How?	By using barricaded tape and orange cones
			Erect Signage	How?	Work ahead signs and speed limit signs
			Any Other	How?	
2	Finding Root Cause		Apply "5Whys" Methodology	Pipe may be damaging due to ageing	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

	1	2	3	4		5		6	7
Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Collect all PPEs before starting the repair work	Enroute/divert the traffic	For Generators/ Vehicles, refer to owner manual for when to do preventive maintenance	Generator operator		As desired by the machine	As desired	By maintaining a record, checking log book having a record when the pipe were laid	Engineer in-charge
2	Site visit	Using safety harness while lower the sewer man for starting repair work	Shelf life of pipe should be calculated by taking average and checking design age of pipe	Sewer supervisor					
3	Maintaining the record and cross checking	He must be in proper safety dress with SCBA		Sub-Engineer					

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	15-03-2017	17-03-2017	18-03-2017	N/A	

D- SIGNATURES			
Implementer Name	Salman Ahmed Hashmi	**Signature**	
Authority Title	Deputy Director WASA, Faisalabad	**Signature**	

HSE Action Plan
Module 01

Shakeel Ahmed-(WASA Multan)

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	Description of Problem		Sewage blockage in loha market dia of 36”			
	Date	03-02-2017				
2	Type / Rating of Hazard	Major		Probable Outcomes	Stay out water is over buried in different Areas/ People facing problems	
		Moderate				
		Minor				
3	Hazard Discovered Through	Inspection	Near Miss	Accident	Any Other	Of proper desilting of sewer lines then no chance of blockage occurred

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	To plan the desilting schedule of sewers
			Isolate Hazard	How?	To manage the other way stagnant water
	Date of Response	05-01-2017	Restrict the Access	How?	To provides the pumps
			Erect Signage	How?	Use the warning where labour are working and stagnant water ahead
			Any Other	How?	Pump are install to pump out water
2	Finding Root Cause		Apply "5Whys" Methodology	Skilled labour are working at site	
				All the apparatus are available at site	
				To maintain machinery at site	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	**Improper Maintenance**	Any Other

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Desilting schedule	Provide the all safety equipment	Daily team moved to desilt	Desilting of sewer	Sewer man	Buckets etc.	Self breathing apparatus	When labour start work , visit the site	A.D and Sub -Engineer
2	Desilting team check time	all safety apparatus available	Tea working hours checked	How much sewer line desilted	No of sewer man				Sub-Engineer

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	03-01-2017	20-01-2017	17-01-2017	Sewer blockage	
	21-01-2017	13-01-2017	11-01-2017	Action Completed	

D- SIGNATURES			
Implementer Name	Shakeel Ahmed (S.E)	**Signature**	
Authority Title	WASA Multan	**Signature**	

HSE Action Plan
Module 01

Zia Ur Rehman-WASA Multan

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	**Description of Problem**		Desilting of manhole (Manhole is a silted and my team have to desilt it)			
	Date	15-2-17				
2	**Type / Rating of Hazard**		**Major**		**Probable Outcomes**	Sewer man may affected with gases
			Moderate			Sewer man may fall into the manhole
			Minor			An accident may occur if traffic not controlled
3	**Hazard Discovered Through**		**Inspection**	Near Miss	Accident	Any Other

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	Traffic are removed and traffic is controlled
			Isolate Hazard	How?	Gases are detected with gas detector
	Date of Response	17-2-17	Restrict the Access	How?	
			Erect Signage	How?	
			Any Other	How?	
2	Finding Root Cause		Apply "5Whys" Methodology	Many gases occur before these hazard are present every time and is considered as major problems	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Design should be so that desilting may be minimum	We should design sewer line as self cleaning velocity should be obtain	Before laying sewer line	√		Engineering		Desilting should be minimum	By Engr.
2	Training should given to the workers	By helding training session	At start of employment and every years	√				Interview should be done	Managers
3	PPEs and equipment should be available	Should manage the PPEs	Each and every time should be available	√	√		√	Check the equipment and PPEs	Supervisor

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	16-02-17	17-02-17	17-02-17	No	

D- SIGNATURES			
Implementer Name	Zia Ur Rehman	**Signature**	
Authority Title		**Signature**	

HSE Action Plan
Module 01

Mian Mohsin-WSSC kohat

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	Description of Problem		**Problem:** Desilting of sewer			
	Date	15-02-17				
2	Type / Rating of Hazard		Major		Probable Outcomes	Head injury
			Moderate			Unconscious
			Minor			Brain damaged/death
3	Hazard Discovered Through		Inspection	Near Miss	Accident	Any Other

B	IMMEDIATE ACTION				
1	Take Immediate Action	Remove Hazard	How?	Remove al the covers of sewers providing oxygen from outside	
		Isolate Hazard	How?		
	Date of Response	Restrict the Access	How?	Starting permit to work system	
		Erect Signage	How?		
		Any Other	How?		
2	Finding Root Cause	Apply "5Whys" Methodology	1) Not used PPEs 2) not providing by manager		
			3) Not available at store 4) budget not available		
			5) Applied for budget		
3	Contributing Reasons / Causes	Lack of Training	Un-Safe O&M Method	Ignorance	
		No Use of PPE	Lack of Proper Tools	Willful Misconduct	
		Improper House Keeping	Improper Maintenance	Any Other	

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Providing oxygen to patient	Where is oxygen muff	Time of accident		workers	Gas detector	Oxygen mask	supervisor	Manager and HSE officers
2	Calling 1122			Concern Manager			PPEs		Supervisor
3	Shifted to hospital			HSE Officers, Concern Manager					

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	15/2/17	15/2/17	15/2/17	Insects infection etc.	

D- SIGNATURES			
Implementer Name	Mian Mohsin Gul	**Signature**	
Authority Title		**Signature**	

HSE Action Plan
Module 01

Naeem Ahmad-WSSC, kohat)

ACTION PLAN

A	**DESCRIPTION OF PROBLEM**					
1	**Description of Problem**	Confined space (sewerage system) Problem: "Suffocation"				
	Date 15-2-2017					
2	**Type / Rating of Hazard**	**Major**		**Probable Outcomes**	Unconscious	
		Moderate			Head injury	
		Minor			Brain hemorage/Death	
3	**Hazard Discovered Through**	Inspection	**Near Miss**	Accident	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	Removal of manhole covering, purging
			Isolate Hazard	How?	
	Date of Response	Immediate 15-02-2017	Restrict the Access	How?	Introduce permit to work system
			Erect Signage	How?	Well before execution work
			Any Other	How?	Testing etc.
2	Finding Root Cause		Apply "5Whys" Methodology	Because of engineering failures	
				Administration failures	
				PPEs	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/ Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Inspection	Staff training	Before operation	Concerned manager		Gas detected	PPEs	HSE officers	Manager concern
2	Purging	Safety drills etc.	Gas monitoring after some time depends on case	HSE officers				supervisor	HSE officers
3	Use of suitable tools			Supervisor					
4	PPEs								

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
1	Nearly miss 15-2-2017			Fall hazard	
				More causality	

D- SIGNATURES			
Implementer Name	Naeem Ahmad	**Signature**	
Authority Title		**Signature**	

HSE Action Plan
Module 01

Muhammad Kamal Afridi-(WSSP)

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	**Description of Problem**	While lowering into the manhole, the sewer man got suffocated & fainted.				
	Date 15/2/2017					
2	**Type / Rating of Hazard**	Major		**Probable Outcomes**	Such an Accidents may lead to the death of the sewer man	
		Moderate				
		Minor				
3	**Hazard Discovered Through**	Inspection	Near Miss	**Accident**	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	By following SOPs regarding PPEs
			Isolate Hazard	How?	Line Manager to play vigilant role
	Date of Response	16/2/2017	Restrict the Access	How?	Sewer men not following SOPs, should be educated
			Erect Signage	How?	Informative pamphlets & stickers should be produced for awareness raising
			Any Other	How?	
2	Finding Root Cause		Apply "5Whys" Methodology	PPEs ----- not followed	
				Line manager casual about the SOPs/PPEs	
				Lack of ignorance of hazardous effects	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1	2	3	4	5	6	7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?	CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials & Tools/Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker			
1.	Use of PPEs should be made mandatory	1) Supervisor, line manager to ensure adherence to the SOPs 2) Testing of gases 3) Wearing PPEs	Each time when sewer man enter the manhole	Technician to check gases ratio	Sewer man follow the instruction of the supervisor accordingly	1. Gases testing machine 2. PPEs (Goggles, cylinder etc.	Supervisors will ensure the fulfilments of the SOPs, Line Manager will check through random spot checking	Data base will shoe the happening of the such event like sewer man suffocation. This will show that the SOPs & checks are not being followed

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
	28/2/2017				

D- SIGNATURES			
Implementer Name	Kamal Afridi	**Signature**	
Authority Title	Zonal Manager	**Signature**	

HSE Action Plan
Module 01

Muhammad Khalil Akber-(WSSCM)

ACTION PLAN

A	DESCRIPTION OF PROBLEM					
1	**Description of Problem**		Desilting Manhole 6 ft. deep			
	Date	15-02-17				
2	**Type / Rating of Hazard**	Major		**Probable Outcomes**		
		Moderate			Become Injured	
		Minor				
3	**Hazard Discovered Through**	Inspection	Near Miss	**Accident**	Any Other	

B	IMMEDIATE ACTION				
1	Take Immediate Action		Remove Hazard	How?	Give PPEs
			Isolate Hazard	How?	Stop workers for taking PPEs
	Date of Response	15-02-17	Restrict the Access	How?	
			Erect Signage	How?	
			Any Other	How?	Treatment to the workers
2	Finding Root Cause		Apply "5Whys" Methodology	1) Not taking PPEs 2) Ignorance 3) Lack of training	
				4) Pressure from supervisor	
				5) Improper supervisor at higher level	
3	Contributing Reasons / Causes		Lack of Training	Un-Safe O&M Method	Ignorance
			No Use of PPE	Lack of Proper Tools	Willful Misconduct
			Improper House Keeping	Improper Maintenance	Any Other

C - Action Plan Template

1 2 3 4 5 6 7

Sr. No.	WHAT TO DO?	HOW TO DO?	WHEN TO DO?	WHO TO DO?		DO WITH WHAT?		CHECK DONE?	WHO TO CHECK?
	Preventive Action	(Follow SOP)	(Frequency)	(Carried out By)		Materials	Tools/Equip.	How to Check?	Effectiveness to be Checked By?
				Class of Work	Worker				
1	Providing HSE	Yes	Every time before work		Workers		Tools/ Equipment	Site visit	Manger

C- Action Plan Template

Sr. No.	Due Date	Date Complete	Date Verified	Any New Risk / Hazard Developed	
1	15-02-17	15-02-17	15-02-17	Slow progress	

D- SIGNATURES			
Implementer Name	M. Khalil Akbar	**Signature**	
Authority Title		**Signature**	

Name	Khalid Bin Rasheed
Designation	Sub Engineer
Organization	WASA, Lahore
Description	Drain Dredging
Area	Drainage Directorate South

Planning:

First we a planning to perform the process in which machinery, labor and other safety equipment are used.

Machinery:

- Excavator
- Dumper

The qualities of machinery depend upon the area of O&M.

Safety Measures:

To control the traffic problem we need safety measures such as orange cones, warning tapes etc. and PPEs to prevent our labor from any incident.

Working:

Now we start the work of dredging to drain with the help of our machinery. First the excavator operator will be prepare for working and use PPEs then start the work. Excavator bucket capacity is 1 Ton dumper capacity of loading is 8 Ton. So, maximum 8 buckets are loaded in the dumper. Excavator bucket is a back hoe type usually a solid waste a present at the drain in Tons and this waste is present at the culvert. First of all we make boundary with orange cones arrange the O&M to prevent from hazardous as a serious accidents. Excavator after collect a bucket of sludge or solid waste, water release from the bucket. We do this action because we loaded more waste into the dumper.

After loading the dumper we have to dump the waste at dumping site, the dumping site of Lahore is at Gujjar Colony before move a dumper a driver or a labor person check the clamp of the truck. So on the way the back door of the dumper open and hazard is happened.

Dumping Site:

The dumping site of Lahore is at Gujjar Colony, but this site is not permanent dumping site. Their dumper can dump the waste. This waste is far away from the city. So that this site chosen for solid waste dump.

Name	Waqas Ali
Designation	Sub Engineer
Organization	WASA, Lahore

Description: Drain Dredging

Area: drainage South, Length 5Km

Planning:

First of all we need to plan how to perform the process. We need machinery, Labour, money and resources etc.

Machinery:

Machinery	Quantity	Capacity	Fuel consumption
Excavator	02	1.00 Tons	14 liter
Tractor trolley	02		5 Km
Dump truck	02	8 Ton	8 Km/l

Labour:

Machine operator = 06

Sewer man = 04

Supervisors = 01

Engineers = 01

First of all we need a visit the site and calculate the value of sludge in drain. Our survey team visits the drain and gives us some value of sludge in drain. Suppose the value of sludge is 650 m^3.

Now we are calculate the machinery required and we use the two excavator, two dumper and two tractor trolleys. The excavator is back hoe type and use of this machinery to remove the solid waste and sludge. Excavator put the solid waste and from the drain and put into the dump trucks. After the cleaning the drain our team transported the solid waste and sludge on the open area.

Many of hazardous are we can free during this process that why we planned the hazardous remove policy.

All the drivers are experienced holder and staff must use the PPEs like life line attentions, gloves, safety shoes, proper tools (SCBA), masks and proper guide line etc.

All the step perform the duty are fully and honesty with maximum safety factors. We get the permissions before the start of the work and signed on the worksheet like engineers and supervisors.

Name	Sana Fatima
Designation	Assistant Director
Activity	Process of Drain Dragging

Planning Phase:

- Selection of site
- Nominate staff members for performing the subject activity
- Select the proper machinery required for dredging (Excavators, Dumping Trucks)
- Instruct the staff members to wear PPEs (Helmets, Safety shoes, gloves)
- Take traffic control equipment to avoid traffic hazard
- All the machinery capacity and staff requirement should be according to sludge volume. (calculation are explained at the end) then more toward site related for dredging.

Implementing phase:

- First to void traffic hazards, segregates the work areas by isolating it with the help of traffic cones arrangement.
- Hydraulic man starts working
- Excavator will remove the solid waste wetted (sludge) into the trucks.
- When the truck is fully loaded with sludge, stop the working of excavator.
- Then instruct the driver to move toward the dumping site.

Closing Phase:

- Select proper dumping site (Sludge) to avoid all type of hazards i.e. environmental, biological etc.
- Then instruct the truck driver to remove sludge carefully
- Then instruct the truck driver to move toward office

Sludge Volume Calculation:

Sludge volume is calculated before drain dredging to estimate staff and machinery requirement. It is calculated by selected two locations (Foot Bridge) and by taking x-section of the drain at these two site. This activity is performed by taking these equipment:

- Staff disk arrangement (rod)
- Metallic tape
- Meter for distance measuring

The PPEs require for the sludge measurement are:

- Gloves
- Helmets
- Goggles
- Safety shoes

Staff member required: almost 2 members are required

Procedures:

1. First avoid traffic hazard
2. Select avoid foot bridge-1 (for measuring depth of sludge width)
3. With the help of meter rod, measure total depth, then take depth of the drain at location-3 so that after subtracting it from the total depth of sludge may be taken.
4. Take width (B_1) at foot bridge-1
5. Then move toward the foot bridge-2 by taking wheel meter along with to measure distance between wo bridges(Li).
6. Then at foot bridge-2 measure the total depth of the drain, then perform same procedure to measure average depth at this section S'.
7. Then take average of S & S', which gives avg. depth
8. Measure width at location B_2
9. Take avg. of B_1 & B_2 for ant width
10. Then measure length along other bank of drain (Lo)
11. Take avg. of Li & Lo, avg. length will be obtained

Then by using following formula:

$$\textbf{Sludge Volume} = D_{(avg)} * B_{(avg)} * L_{(avg)}$$

D(avg) = Depth of sludge

B(avg)= Width of sludge

L(avg)= Length of sludge

Name	Samina Asif
Designation	Assistant Director
Organization	WASA, Lahore

Process of Drain Dredging:

1 **Planning Phase:**

In planning phase length of drain should be decided where dredging is required

i. **Site Survey:**

After deciding the length of the drain a site survey must be carried out to examine the existing condition at site. This survey will give an idea about traffic and population around the drain which will help in efficient development of machinery and staff.

ii. **Sludge Estimation:**

Sludge estimation will be carried out before commencement of maintenance work.

For sludge estimation, equipment related to measuring depth & width must be arranged. Ranging Rods, safety shoes, gloves, mask and distance meter required.

After arriving at site, person responsible for sludge estimation must wear PPEs mentioned above. A proper plan for traffic management must also be adopted for safety purposes.

Traffic cones and Barrication tapes must be used to aware traffic about maintenance activity.

After ranging rod must be used to measure the sludge at center and both sides of the drain, and also to measure total depth of the drain.

The Average depth of sludge & width & length where cleaning is required, will give us sludge volume.

iii. **Machinery:**

On the basis of estimation of sludge volume, we will have an idea that how much machinery is required at site & how many trucks are required to transport the sludge from site to disposal point. Staff operation is also depending upon sludge volume,

2 **Implementation Phase:**

After planning we are clear about site, sludge which we are going to handle. So, on the maintenance day, arrive at site with trained staff and proper machinery.

Divert the traffic any way from drain working area by using cones & flaggers. Deploy the machinery mainly excavator & start the operation.

3 Handling/Disposal:

After collecting all the material from drain, remove the traffic diversions & move the vehicles to the to the Disposal point.

After reaching point, unload the truck safely. Make sure that no person is standing over there to avoid hazards from splashing.

After unloading, vehicles must return to the office for operational activity.

Name	**Mirza Waseem Iqbal**
Organization	**WASA Gujranwala**
Designation	**Sub-Engineer**
Date	**17-02-2017**

Drain Dredging:

Step 1:

First we have to know where we have to decide the area and its length of reach.

Step 2:

We manage the drain dredging with accessories like dump truck with man power immediately and before moving to site check the everything light and also the fuel as well.

Step 3:

We reach the site for dredging for and put in use the machinery.

Step 4:

As first we check the traffic flow at our site. Now we use cones in alignment and Barrication tape properly traffic. We should at least complete uniforms and PPEs

Step 5:

Now we placed our dragging at work area so that nobody will disturb you. put the dump truck nearest to the machine then is not only garbage thrown at the road.

Step 6:

Immediate work start and the dump ready to away this garbage to dispose outside the city.

Step 7:

The disposal material must be thrown to the site burnt and dig into the mud.

Step 8:

This wastage must inside the mud because it will not cause to disturb the water table underground.

Step 9:

Most important the water table is now disturbing at least 9 m water table deficient under the ground. So we face water loss at least 9 m.

Step 10:

After completion our assignment at site of work properly assemble the whole activity and safety things.

Remarks:

1. Safe of time
2. Safe of economy
3. Safe of fuel
4. Safe of more use of man power
5. Also the drain flow will proper after the desilted
6. It also the help of the budget of the concern WASA authority
7. It will increase our efficiency

Name	Shakeel Ahmed
Designation	Sub Engineer
Organization	WASA, Multan

Drain Dredging:

The dredging of the drain of Bohar Gate Shah Gervais is require. For this purpose, first we manage the machinery and helpers, and also make a time estimation plan to check in how many days this dredging work will be completed. After that we use following safety equipment to control the interference of the public:

- Safety cones
- Safety warning tape
- Signal board etc.

After completed the safety precautions, machinery and workers will send to the site. Before starting work, wear safety helmets and safety shoes. Sludge will lift with the help of excavator and dragger machine. The truck will lift in proper manner, avoid overloading. otherwise it will be falling on road during the movement of truck. And it is painful for public.

After loaded the truck, sludge removed on dumping site. During work, take care of the parts of machinery.

Where machinery or labours are working, site in charge must be at there and also first aid box should be there. In case of any emergency, initial treatment could provide to worker.

After completion, worker collect all the safety equipment and clear the area for public.

Before reaching the truck at office, its washing compulsory. The report of this activity will submitted to the concern Engineer.

If work not complete in one day, then mark the area and start the work from there on second day. It is easy way to complete the work as soon as possible.

Name	Zia Ur Rehman
Designation	Sub Engineer
Organization	WASA, Multan

Title: Dredging of Drain

Objectives:

The objective of this step to safe desuldging of drain and disposing the sludge in proper and safe way including its safe transportation.

Planning:

For dredging the drain we have to remove measures the sludge volume, by determining the sludge depth, X sectional depth of drain and length. And then machinery, labour, and safety equipment and fuel and then a place for safe disposal of sludge.

1. **Sludge Volume:**

We have to dredge a drain of length 116.55 m and having X section (Width=2.4 m) and depth of sludge 0.2933 m by taking measurement on site.

Sludge volume = 116.55* 2.4*0.2933 = 82.046 m^3

2. **Machinery required:**

We required an excavator with four dump trucks. For this purpose

3. **Fuel required:**

For dump trucks = 0.33*4*(7*2)*3 = 56 liters

For Excavator = 14 * 2 hrs.= 28 liters

Add 10 L for reaching at site = 28 +10 = 38 L

Total fuel consumption = 94 L

4. **Labour Required:**

For dump truck:

(Driver + Helpers)*4

So four drivers with four helpers are required for this dump trucks.

For Excavator= operator + helper

Safety Equipment:

Nearly 12 safety cones and warning tapes and traffic reflections are required.

PPEs:

Helmets, goggles, gloves and safety shoes etc.

Procedures:

First of all sludge is measured and then planning for machinery and labour & equipment is done. After machinery is arranged. They are shifted to a site. On site first of all safety cones are placed for traffic control.

The dump truck is stopped in line on the side of road and excavator on starting point of site. The dredging is starting and dump truck are filled, when first is shifted it move toward disposing point which is 7 Km away from the site.

Nearly four turns of each dump truck is completed, after this completing dredging the excavator is shifted to the office and our task is completed.

The disposing is done by safe way in trucks and they are covered with sand or soil.

Remarks:

The task is completed in safe way and precautions have been followed.

Name	Muhammad Kamran Zafar
Designation	Assistant Director
WASA	Faisalabad

Drain dredging:

For the purpose of drain dredging, we required some machinery and staff. They are estimated as follow:

1) Staff
2) Gloves
3) Distance measuring wheel
4) Goggles
5) Orange cones
6) Barricaded tape
7) Dumping truck
8) Excavator (back hoe/front hoe)

First of all, we take a total depth of the channel by inserting staff deep inside the channel as its center by forcefully. Then we calculate a depth at which sludge start. It can be calculated very easily when a slight friction come on its way. Suppose full depth of the channel is 94 cm and depth at which a sludge start is 54 cm. Then we have total depth of the sludge 94-54=40 cm. similarly we shall calculate sludge start level at the end of channel width too. One support it is 60 and other end it is 64. So we shall have sludge level at ends

94-60=34 cm

94-64=30 cm

So we have three sludge level,

One end=34 cm

Middle=40 cm

Other end=30 cm

Average=34.66 cm

We shall also measure a width of the channel. Suppose that comes to be 220 cm. this whole calculation is for when you standing taking calculation from one bridge. Now move toward the other bridge and measure distance by measuring wheels. Distance must be taken from both side of the channel and take average of it

Distance between two footsteps (bridge) =100 m

=110 m

Average = $\frac{100+110}{2}$ = 105 m

Also repeat the methods for sludge thickness at 2nd foot too. Suppose sludge thickness at 2nd foot step is

One end= 35 m

Middle= 45 m

Other end =45 m

Average= 38.33

Width of foot 2= 230 m

Taking avg. of width of two foots= $\frac{220+230}{2}$ = 225 cm

Now perform calculation is in meters.

Calculate sludge volume= 2.25*105*0.3649

= 86.2 m_3

So we have calculated the volume of the sludge. Now we shall transport this volume to dump site by dump trucks. Suppose capacity of the dump truck is 10 m_3. Sludge to dump site in nine goes

$\frac{86.2}{10}$ = 8.62

So take it is nine.

Name	Salman Ahmed Hashmi
Designation	Assistant Director Technical
Organization	WASA, Faisalabad

Title: Drain Dredging

Action plan for drain dredging:

Machinery required:

1. Excavator or dredger machine
2. Dumper
3. PPEs
4. Manpower

First step for commencing the drain dredging is to make a traffic management plan. Normally drains are along road sides so traffic management plan is necessary. We use many orange cones, barricaded tapes and flaggers for controlling the traffic. Persons working at site must be in proper PPEs. It may include reflecting jackets, safety helmets, safety gloves and safety shoes. Next steps are as follow:

i. Calculate the volume of sludge in the drain by measuring the length, width and depth using different instrument. Length and width of drain can measuring by using distance measuring wheel and depth can measure by using staff/measuring rod having pointed bottom. The surface of sludge in the drain can be felt by the measuring rod and it should be subtracted from total depth of the drain. Following formula is to be used for calculating the volume of sludge

$$V = l*w*h$$

Where $l = \frac{li+lo}{2}$

w= width of the drain

h= depth of the drain

Let's take a complete of a drain having the following

L= 115 m (length of drain to be desilted) Select two point

W= 2.5 m (width of the drain to be desilted)

H= 0.28 m (depth of sludge)

V= 80.5 m3 (total sludge)

V= 193.73 metric tons

$\frac{193.73}{8}$ = 24 approx.

A truck has a capacity to carrying 8 tons. We will need about 24 dump truck to carry sludge from drain to dumping site. Suppose the distance is 10 Km from the drain to dumping site and the fuel consumption of dump truck is 2 km/l, so 10 Km (going)+ 10 Km (come back)=20 Km

Each dump truck will need 10 liter. So, 24 dump truck will need 10 * 24 = 240 liters

Working capacity of excavator= 1 ton

Fuel consumption of excavator/backhoe= 10 L/h

Suppose it will take 50 hours, so it will consume 500 L fuel.

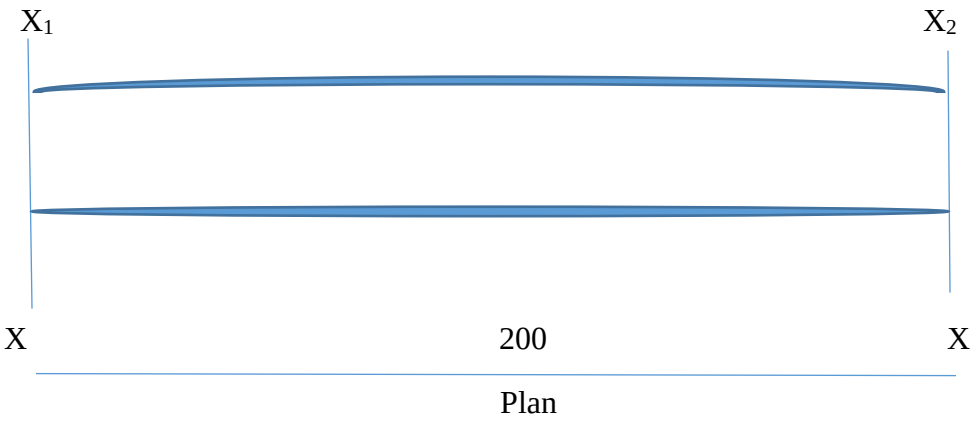
Name	Kamran Afridi
Designation	Zonal Manager (WSSP)
Activity	Drain Dragging

1. **Planning:**

Before start the activity we need to correlate the various activities involved in the whole dredging process. Manager & in charge should make out the various requirement for the activity in term of manpower, machinery, expense foe POL, coordination with the line department like traffic police etc. after that chronological activities should be laid down on a paper.

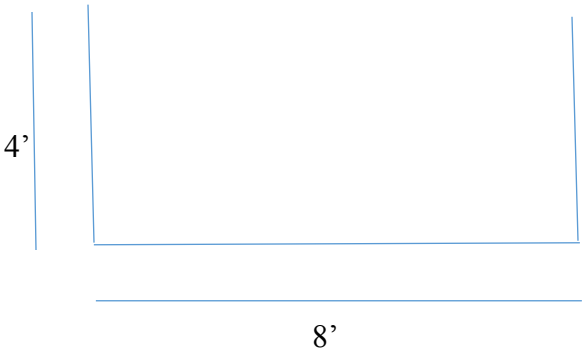
i. Activities:

a) Dredging of 200 ft. drain with the cross section 8'* 4"
b) Plan of the drain



Plan

c) Cross section:



ii. **Man power:** helper = 4 Nos
Driver = 1 Nos

iii. **Fuel requirement**: 100 liters

iv. Coordination:

Inform traffic police about activity with date and time.

v. Equipment:

Ranging rod, distance meter, measuring tape and excavator with back hoe bucket. Helmets for works and gloves.

2. <u>Dredging Activity:</u>

Upon reaching the dredging site, first of all traffic cones should be placed following the SOPs like traffic approach zones transition zone make area end zone and showing mark area work zone. After securing the work area with respect to the all sort of hazards like traffic etc. actual work should be started by following the steps as mentioned below.

- At X-Section I take measurement for overall depth of flow and depth of sludge at around three locations

At poin-1:

- Overall depth of flow =3.5'
- Depth of water from surface up to sludge surface = 2.5'
- Depth of sludge = 1'

At point-2:

- Overall depth of flow =3.5'
- Depth of water from surface up to sludge surface = 2.0'
- Depth of sludge = 1.5'

At point-3:

- Overall depth of flow =3.5'
- Depth of water from surface up to sludge surface = 2.25'
- Depth of sludge = 1.25'
- Average depth of sludge = 1.25'

Now repeat the same procedure for XX_2

After taking depth of sludge at both the section average of average should be calculated say (X ft.)

Now measure the length of the drain by using measuring meter. As the drain is in a curve, therefor reading should be taken along both banks of the drain. Centre line should be calculated by averaging both the measurement.

Now we have

Average depth of the drain = X_{ft}

Average length of drain= 200 ft.

X- Section of the sludge = 8*4

Volume of sludge = X *200*8'

= Y cf^3

We will use tractor trolley having carrying capacity of 300 cft.

No of trolleys require = $\frac{Y\ cf^3}{300}$

Z number of trolleys will be required to clear the sludge.

Name	**Mian Mohsin Gul**
WSSC Kohat	

⇨ **Activity** = Drain Dredging

⇨ **Planning:**

1) Identify the 5000 ft. length of dredging
2) Arrangement of tractor trolley an excavator for carrying the sludge
3) Arrangement for man power
4) Taking traffic control measures
5) Providing of PPEs

⇨ **Procedures:**

We have already calculated the volume of sludge in 500 ft. length and find out the 20 number of tractors of volume 2.5/100 cft. will which have needed for operation.

We arrange five number of trolley of 2.5/100 cft. volume to carry 4 Nos. Tripp site of sludge disposal site.

⇨ PPEs used in this operation are Helmets, Goggles, Jackets, Boots, Traffic control equipment e.g. safety cones, signs etc.

⇨ Equipment for measuring volume are:

1) Tape
2) Ranging rod
3) Goggles
4) Larger tap for measuring distance between selected points.

Conclusion Remarks:

Operation accomplished in 10 hours, all the PPEs & traffic Control equipment are submitted to store room, the trolley has been washed and placed safely.

Name	Naeem Ahmed
Company	WSSC, Kohat
Activity	Drain Dragging

Planning:

A. Inspection:

To calculate the silt in the existing drain to be clean. i.e. 5000 CFT in 1 Km drain.

B. Allocation of fleet:

- Excavation 1 Nos.
- Tractor trolley 5 Nos.

C. Man power:

- 5 Nos. of tractor drivers
- 1 Nos. of Excavator driver
- 2 Nos. of helpers with Excavator
- 2 Nos. of supervisors

D. Fuel consumption

Depend upon the distance to be covered but normal layers such as 5 lit/trip.

20*5= 100 liters for tractor trolley

15*6= 90 liters for Excavators

Procedures for Excavation:

- Direct all of the planner's staff to reach the site on time with following arrangement
- The following PPEs must be wear by each official.

Supervisor:

- Normal uniform of WSSC Kohat
- Safety boots with steel protection
- Safety jackets
- Safety helmets (In case of normal operational cap)

Drivers:

- Uniform

- Safety boots with steel protection
- Safety helmets
- Safety jackets

Helpers:

- Uniform
- Safety boots (rubber boots are in case he may work in water)
- Wader
- Safety protection gloves
- Safety jackets
- Full water proof clothing
- Self-Control Breathing Apparatus (SCBA) in case of usage in culnets etc.

Other safety equipment for road safety:

- Safety cones
- Signal Stick
- Road safety slogans
- Tape etc.

The work will start as per approved. Standards operating procedures (SOPs), that will ensure to the safety of the staff as the General public.

Completion/Ending of Activity:

After completion of work as per approved SOPs. All of the equipment be washed with proper caution for ensuring the long term usage and durability of tools and equipment.

Name	Sana Fatima
Designation	Manager Municipal Services
Organization	WSSCM

Description of Activity:

Name of work: Desilting of main drain at Mardan Bazar

Planning:

We will select a day on which traffic flow is minimum and general public entry is minimum.at Friday shops observe holidays so we will do the activity on Friday.

Resources:

HSE, Tools, vehicles, machinery, workers

Execution:

The drain is 4 km long, 3 ft. wide and 4 f. deep.

First of all, we provide personal protection equipment to the workers that will includes Gum Boots, Gloves, Helmets, uniform for the specialized work and worker. The sludge measured is 3 ft. in depth, 3 feet wide, and 4 Km.

Volume of sludge=4000*0.91*0.91

= 3312 m_3

= 116963 ft_3

We have 8 tractor trollies of 300 cft. each

So number of trips= 49 per day

We will need 2 excavators each of 1-ton capacity to fill the tractor trollies. As excavator will not cleaned/desilted the drain along the sides of the drain so the remaining sludge will be lifted by workers with the help of spades.

The dumping site is 5 Km away. The fuel consumption of each trolley is 5 Km/liter. No of trips are 49.

The kilometer covered will be 49*2= 490

Fuel requirement= $\frac{490}{}$ = 98 liters

So excavation will work for 8 hours. So fuel consumption is 14 liters/hours

=14*8*2= 224 liters required for excavation

One blade is also required at dumping site fuel consumption of tractor blade is 8 liters/hrs.

8*8= 64 liters'/day consumption

The activity will be started at 7:00 am and will be finished at 3:00 pm.

No of workers required.

Supervisor 2 Nos at site and 1 Nos at dumping ground.

Drivers:

- 8 for tractor trollies
- 2 for Excavators
- 1 for tractor blade

I labour will also be required with tractor trolley. So number of labors with tractor trolley= 8 Nos

Number of workers require for desilting we will need 1 worker per 100 m. so the number of worker will be 40.

After cleaning the drain, the sides will be washed with water with the help of shrinking Lori that will require four sanitary workers to sweep.

Fuel consumption of sprinkling Lori is 4 liters/Km. so it will be 4*4=16 liters

Action Plan for operation & Maintenance of Sewerage System at Millat Chowk Sub-Division and Adjoining Areas

Muhammad Kamran Zafar
Assistant Director
P&D WASA Faisalabad

Area Description:

Total area to be served	4 Km2
Total population of area	12800
Topography	Uniform
Sewerage system Description	
Length of sewer	8000 ft
Total discharge	4.0 cusec
Diameter of sewer lines	18”and 24”
Material of pipes	RCC
Number of manhole	80
Upstream points	8 ft
Downstream points	24 ft

Tools and Material:

- Sucker and Jetter machine
- Bamboo Cane
- Steel Rods
- Dewatering Sets
- One dumping trucks
- Traffic control equipment
- Gas Detector

Man power:

Supervisor	3
Sewer men	20
Drivers	5

Planning:

- Sewerage layout plan of the area
- GIS based sewerage layout
- Three teams with equal manpower

- PPEs must be provided
- Sewer line and manhole inspection checklist must be prepared
- Inspection team will prepare preliminary inspection report and will submit report with 15 days to Sub- Divisional Offices.

Problems highlighted in meeting while discussing report.

1) Desilting of sewer line
2) Replacement of manhole cover
3) Blockages

Strategy:

Three teams will employed on sewer desilting and replacement of damaged manhole covers.

Execution:

Time period for execution = 3 months

- First of all, PPEs to the workers must be prepared allocate suitable equipment for highlighted problems.
- Traffic hazards must be availed by proper regulating the traffic
- Submit weekly report to supervisor
- Gas detection must be done before entering the manhole
- Perform the desilting and manhole cover replacement activities
- The work should be completed in three months
- After completion of the work supervisor submit the completion report
- SDO will finally give completion report after himself checking the site to higher authorities.
- After execution sucker and Jetter machine will be send to maintenance depart for its repairing and maintenance

ACTION PLAN FOR OPERTION AND MAINTENANCE OFMILLAT CHOWK SUB-DIVISION FASIALABAD

Salman Ahmed Hashmi
Assistant Director
WASA Faisalabad

1. Area Description:

Total area to be served	4 Km2
Total population of area	12800
Topography	Uniform

2. Sewerage system Description:

Length of sewer	8000 ft
Total discharge	4.0 cusec
Diameter of sewer lines	18”and 24”
Material of pipes	RCC
Upstream points	8 ft
Downstream points	24 ft

3. Tools and Machines:

a)	Jetter Machine	01 Nos.
b)	Sucker Machines	01 Nos.
c)	Bamboo Canes	20 Nos.
d)	Steel rods	5 Nos.
e)	Dewatering sets	1
f)	Dump Trucks	1
g)	PPEs	
h)	Orange Cones, Flaggers	

4. Manpower

Supervisor	3
Sewer men	20
Drivers	5

Action Plan:

For a preventive maintenance of sewerage line, we should obtain a GIS map showing all the sewerage infrastructure detail of all the area 8000 ft line should be inspected after every 2 months. Three comprises of one supervisor and six should inspected and examine the 8000 ft pipeline. Teams should have the inspection checklist of sewer line and manhole. By inspecting the site, team should fill in the checklist carefully and supervisor will submit the checklist to sub –engineer and he will submit to Sub- Divisional Offices after counter checking the site problems. Team should examine visual, structure and hydraulic infrastructure.

Problems highlighted in the checklist should be discussed in the meeting between SDO and higher officials. Upon getting the approval to start work, three teams comprising supervisor and sewer men should be assigned duty to resolve the highlighted problem with proper strategy.

Major problems:

a) Blockage of sewer lines
b) Crown failure
c) Replacement of damaged manhole cover
d) Repair of damaged surround

Time period for execution: 3 Months

Execution:

- Before starting any repair work or desilting process, provide PPEs to the workers. Allocate suitable equipment to the workers.
- Deploy proper machinery and staff according to the requirement at site.
- Avoid traffic hazard at site by using flaggers and traffic cones to maintain the traffic flow
- After opening a manhole, gas detector should be used to check for any harmful gases and if there are any harmful gases
- Perform the desilting and manhole cover replacement activity as per site requirement
- All the problem identified during inspection phase be completed within three months
- After completion of the activity, supervisor will provide report to SDO
- SDO will visit the site on and off.
- After completion of the work and report it will be submitted to higher officials
- Overall, this activity should be performed after every six months

ACTION PLAN FOR OPERTION AND MAINTENANCE OF SEWERAGE SYSTEM (TRUNK SEWERS & MANHOLE) MILLAT CHOWK SUB-DIVISION FASIALABAD

Samina Asif
Assistant Director
WASA Lahore

1. Area Description:

i.	Total area to be served	4 Km2
ii.	Total population of area	12,800
iii.	Topography	Flat

2. Sewerage system Description:

i.	Length of sewer	8000 ft
ii.	Total waste water flow	4.0 cusec
iii.	Diameter of sewer lines	18”and 24”
iv.	Number of Manhole	80
v.	Material of pipes	RCC
vi.	Upstream level	8 ft
vii.	Downstream level	24 ft

3. Tools and Machines:

i.	Jetter Machine	01 Nos.
ii.	Sucker Machines	01 Nos.
iii.	Bamboo Canes	20 Nos.
iv.	Steel rods	5 Nos.
v.	Dewatering sets	1
vi.	Dump Trucks	1
vii.	PPEs, Flaggers, traffic Control Equipment/barriers	

4. Manpower

i.	Supervisor	3
ii.	Sewer men	20
iii.	Drivers	5

Planning: (Time line 1 Month)

Obtain a comprehensive GIS based map showing all the sewerage infrastructure in the area. Prepare a detailed checklist for sewers & Manhole Inspection. Constitute different Team should examine visual, structure and hydraulic inspection of sewerage infrastructure and handed over them the checklist.

After inspection, supervisor will submit the filled checklist along with "inspection report" to the SDO within 15 days.

After getting the "inspection report" a meeting must be held between SDO of the area and other higher officials of the Sub –Division.

Develop a proper strategy to resolve the issues highlighted/identified during field inspection.

Major problems:

a) Blockage of sewer lines
b) Crown failure
c) Replacement of damaged manhole cover
d) Repair of damaged surround

Time period for execution: 3 Months

Execution:

- First of all, provide PPEs to the workers & also proper gadgets for traffic management before commencement of ant desilting operation. Deploy proper machinery and staff according to the requirement at site.
- Deploy proper machinery & staff according to the requirement of the site.
- Supervisor must have submitted weekly report to the SDO
- Supervisor is responsible to ensure the use of PPEs, Gas Detector and all other gadgets at site.
- Perform the desilting activity and replace damaged manhole covers within the specified time
- SDO will visit the site on and off.
- After completion of the activity, supervisor will provide report to SDO
- Complete report will be submitted to higher officials of the department
- Again the final meeting will be arranged between SDO & other higher officials of the Department to receive the result of all activities.
- Thus must arranged within one month after the completion of the execution phase.

ACTION PLAN FOR OPERTION AND MAINTENANCE OF SEWERAGE SYSTEM (TRUNK SEWERS & MANHOLE) MILLAT CHOWK SUB-DIVISION FASIALABAD

Sana Fatima
Assistant Director
WASA, Lahore

Project Area Description:

i.	Served Area	4 Km2
ii.	Total population of served area	12,800
iii.	Topography	Flat

Description of Sewerage system:

Length of sewer	8000 ft
Total waste water flow	4.0 cusec
Diameter of sewer lines	18”and 24”
Number of Manhole	80
Material of pipes	RCC
Upstream level	8 ft
Downstream level	24 ft

1. **Tools and Machines:**

1.	Jetter & Sucker Machine	01 Nos.
2.	Bamboo Canes	20 Nos.
3.	Steel rods	5 Nos.
4.	Dewatering sets	1
5.	Dump Trucks	1
6.	PPEs, Flaggers, traffic Control Equipment/barriers	

2. **Manpower**

i.	Supervisor	3
ii.	Sewer men	20
iii.	Operators/Drivers	5
iv.	Flag man	

Planning phase:

Obtain a comprehensive GIS based map showing all the sewerage layout plan of the project area showing all infrastructure detailed in the area.

Prepare a detailed checklist relating to visual, structure and hydraulic inspection of Manhole sewer lines.

Constitute different Team for inspection purpose and handed over the checklist to the members.

At the end, supervisor will submit the inspection report to the SDO within 15 days.

After getting the "inspection report" SDO will discuss the problem with the responsible authorities (within 15 days)

Develop a proper strategy to resolve the issues highlighted/identified during inspection & testing of sewerage system of project.

Major problems:

a) Blockage of sewer lines
b) Crown failure
c) Replacement of damaged manhole cover
d) Repair of damaged surround

O&M Task:

a) Desilting
b) Damaged manhole cover
c) Damaged surround

Time period for execution: 3 Months

Execution:

i. Before starting the activity, provide PPEs to the workers
ii. Allocate suitable equipment/machinery highlighted problems
iii. Avoid traffic hazard after reaching aa site according to requirement
iv. Gas detection test must be performed before starting work
v. Perform desilting & manhole cover/ surround replacement as per requirement
vi. After completion of activity, Supervisor must have submitted weekly report to Authority within 3 month
vii. SDO will visit the site on and off during maintenance activity.
viii. Complete report will be submitted to higher officials
ix. Repair and maintenance should be performed as & when require
x. Again the final meeting will be arranged between SDO & other higher officials of the Department to receive the result of all activities.

ACTION PLAN FOR DESILTING OF SEWER LINE BEFORE MONSOON SEASON

Team Members:

Name	Designation	WASA
Zia Ur Rehman	Sub- Engineer	Multan
M. Shakeel Ahmed	Sub- Engineer	Multan
Waqas Ali	Sub- Engineer	Lahore

1 Planning and Execution:

a) Objective:

Desilting of sewer lines in different areas of different sizes, from 42" dia to 12" dia in almost six months.

b) Catchment Area:

The catchment area is 20 sq. Km with population of 30 Lac persons.

c) Sewer Length:

We have to clean the following sewer lines:

Diameters	Length
42"	10 Km
36"	20 Km
24"	25 Km
12"to 18"	50 Km

d) Duration:

We divided our jobs into two parts one is trunk sewer desilting and other is branch sewer desilting and we require six months to perform our complete jobs.

e) Labour:

We have required five teams having five members each and every team has a supervisor and a person for traffic control. Driver and helpers are also required for respective machinery which are required.

f) Machinery:

We require following machinery

- Sucker Machines
- Jetter Machines
- Winch Machines
- Tractor trolley
- Dumpers

g) Tools:

- Desilting Bucket
- Tripod with Attachment
- Steel rod
- Kassi etc.

h) Personal Protective Equipment:

For execution of work at site following safety equipment are required.

1) Breathing Apparatus
2) Gas Detector
3) Safety Vests
4) Horneces
5) Life Lines
6) Safety Helmets
7) Goggles
8) Safety Shoes
9) Emergency lights

i) Traffic Control:

At site for safety of labour and machineries following tools are required

1) Diversion Board
2) Safety cones
3) Warning tapes
4) Traffic warden rod (light)

2 Execution:

A. Desilting of Trunk Sewer:

1) Length:

The trunk sewer having length 42" dia sewer line is 10 Km and 36" dia has 20 Km. So, total length of trunk sewer for Desilting purpose is 30 Km.

2) **Time for Execution:**

The sewer line of 30 Km can be desilted in 2.5 months.

3) **Team Required:**

We have five teams and each and every team has a supervisor and five sewer men and a person for traffic control.

4) **Machinery:**

One number of pick up for transportation and a dumper for sludge carrying purpose.

B. Branch Sewer Line

1) **Length:**

Diameter	**Length**
24”	25 Km
12”-18”	50 Km
Total length	75 Km

2) **Time for Execution:**

Three months required for execution the job.

3) **Team Required:**

We have same team (5) as in trunk sewer.

4) **Machineries:**

- Winch machine
- Sucker Machine
- Jetter Machine

In a week total 7.5 Km sewer line is desilting by all team.

5) **Re-Desilting:**

Trunk sewer line is desilted of desilting is completed and system is ready for Monsoon.

3 <u>Inspection:</u>

a) **Daily Inspection:**

Daily inspection is done by supervisor with the help of performance, pictures and videos.

b) Weekly & Monthly Inspection:

Such inspection is done by Sub-Engineer and Assistant Director inspect site visually and collected data submitted by supervisor.

c) Final Inspection:

Final inspection is done by deputy Director and Director works, visually and collected data submitted by Sub- Engineer and Assistant Director and finally report is submitted to Managing Director.

ACTION PLAN OF ZONE-B, WSSP

Team Members:

1 Ahmed Khalil	2 Khalid Bin Rasheed
3 Naeem Ahmed	4 Zafar Ullah

1 Task:

Preparation of Operation and Maintenance (O&M) Action Plan of Sewerage System of the Zone-B, Peshawar which consist of 21 unions councils of Peshawar City.

2 Current Status:

a) Length of the Sewer	60 Km
b) Type of the Sewer material	R.C.C.
c) Diameter of the Sewer pipe	9" to 3'
d) Resource available	• Jetter & Sucker Machine • Steel Rods • Bamboo Rods • PPEs • Barricades tools
e) Staff available	• Chief supervisor • Supervisor • Sewer Men • Drivers • Helpers

3 Planning & Scheduling:

As Zone –B consist of 21 UCs having Sewer pipe of different diameters 9" to 3'. The steps will be followed before the start of execution.

a) Composition of Groups:

Different groups of supervisors, sewer men will be created for cleaning of sewer lines at different location for effective cleaning activities.

b) Fleet Management:

A team of supervisors, helpers and drivers will be deployed to keep the vehicles in running condition and will be utilized on demand from the supervisor of different groups.

c) Tools:

The following different tools will be utilized by the groups:

- Steel rods
- Bamboo Stick
- PPEs
- Traffic control Supervisors

d) Schedule:

A timeline will be provided to the supervisors for effective utilization of resources and staff.

4 Executive Plan:

During execution, the following steps will be followed:

a) SOPs:

The SOPs developed will be followed during execution.

Sr. No.	Location	Tasks	Resources	Time	Assigned To
1	Gulbahar	Sewer Cleaning	• Staff • Jetter & Sucker • Steel Rods	No. of days	Supervisors

b) Timeline:

The supervisor will work hardtop achieve the timeline provided which is assumed a 3 days for cleaning 1 Km length of Sewer.

c) Team Role:

The following personnel has assigned for the execution of work:

Chief Supervisor	Will supervise overall condition
Supervisor	Will be responsible for the group activities
Drivers	Will be responsible to keep the vehicles in good condition
Helpers	Will assist the driver

d) Execution of work:

The Following different steps will be followed during execution of work:

i. Barricade of Area:

Before the start of work, the area must be barricaded to avoid of accidents.

ii. Traffic Control:

The members of groups will be deployed to control traffic in working place.

iii. Machinery Usage:

Machinery will be deployed as per SOPs.

iv. Safety Control:

Supervisor will check all the safety tools (PPEs) provided to the Sewer men and ensure its usage.

v. Checking the Area:

The area ( ) the manhole before the start of work to avoid any dangerous.

5 Data Collection and Record:

The Supervisor will keep the record of the resources assigned and check the work executed as per approved checklist.

- **Verification:**

The data provided by the supervisors will checked by the supervised. The data handed over to the Assistant Manager before verification by the chief supervisor. He assistant Manager will analyze the data and access the progress, defects, incidents occurred and recommended. The deficiency arises during the work to the higher-ups for the remedial measures.

Sr. No.	**What To Do**	**How To Do**	**When To Do**	**Who To Do (Carried out By)**		**Do with What**		**Check Done (How To check)**	**Who to Check (To Be Checked By)**
	Define O&M Task	Followed SOPs	(Frequency)	Class of work	Workers	Material	Tools/ Equipment		
1	Sewerage System Cleaning operation	Followed approved SOPs mentioned in Action Plan	Preventive Operation, Regularly cleaning of Sewer System, Emergency (plans & SOPs)	Supervisors	Drivers, Helpers, Drain Cleaners	PPEs, Sign Board, Bamboo Stick	Sucking & Jetting machine, Cleaning Rods, Bamboo Stick	Inspection , Record keeping	Concern Supervisor, AM/AD etc.