

Environmental Safeguard Monitoring Report

Project No. 37378-013
Period Covering January to December 2017
May 2018

Sri Lanka: Jaffna and Kilinochchi Water Supply and Sanitation Project

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**JAFFNA KILINCHCHI WATER SUPPLY AND SANITATION
NATIONAL WATER SUPPLY & DRAINAGE BOARD**

**ANNUAL PROGRESS REPORT ON
ENVIRONMENTAL SAFEGUARDS
COMPLIANCE- 2017**

Project Management Coordination and Implementation Unit

Jaffna Kilinochchi Water Supply and Sanitation Project

National Water Supply & Drainage Board

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January 2018

NOTE

The annual environmental monitoring report for year 2017 is mainly based on the status of the progress of pipe laying work, water tower & sumps constructions and sea water desalination plant in Jaffna Kilinochchi Water Supply and Sanitation Project during the year 2017.

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ABBREVIATIONS

ADB	Asian Development Bank
CEA	Central Environmental Authority
EMP	Environmental Management Plan
GRC	Grievance Redress Committee
IEER	Initial Environmental Examination Reports
JMC	Jaffna Municipal Council
JKWSSP	Jaffna Kilinochchi Water Supply and Sanitation Project
NWSDB	National Water Supply & Drainage Board
PCP	Public Communications Policy
PMU	Project Management Unit
RP	Resettlement Plan
SPS	Safeguard Policy Statement
UDA	Urban Development Authority

I.INTRODUCTION

Jaffna and Kilinochchi Districts are located in the Northern Part of Sri Lanka. The water supply and sanitation facilities were destroyed in this part due to the Tsunami and the 30 years civil war. The people of Jaffna and Kilinochchi have been suffering from limited access to water supply services. To cope with current insufficient water supply and increasing demand, the Government of Sri Lanka planned to improve the water supply system with assistance from the Asian Development Bank and the Agencies of Française Development Bank.

The Jaffna Kilinochchi Water Supply and Sanitation Project (the project) will be benefitting to 60000 HHs for Water Supply and 16000 HHs for Sanitation Facility. This project were formulated as a project loan to be implemented over a 6-year period (2011 - 2017). The project will expand the access to water supply services by increasing 2 feet bund of Iranaimadu Reservoir and constructing water treatment plants, overhead tanks and expand the distribution network to cover the whole Jaffna Peninsula, Poonakary and Palai in Kilinochchi Districts and aims to improve the quality of life for all residents and businesses in Jaffna and Kilinochchi Districts.

Initially the project were formulated to share the water from Iranaimadu Tank and restructured due to the water sharing issue. At present the project decided to have the Sea Water Reverse Osmosis Plant in Thalaiyadi area as water source and feed the water to Jaffna Peninsula.

II. SCOPE OF THE PROJECT

Under the restricted Jaffna Kilinochchi Water Supply and Sanitation Project, the following packages are proposed

- ✓ Refurbishing the existing earth bund of Iranaimadu Tank and raising the bund by 0.61 meters (m) (which is implemented by Provincial Irrigation department, Northern)
- ✓ Sea water reverse osmosis plant 24MLD
- ✓ Treated water transmission mains -183 km
- ✓ Elevated water towers-20 Nos
- ✓ Distribution networks
- ✓ Pumping systems and SCADA

The sanitation subproject was to serve the high population density neighborhoods of the Jaffna Municipal Council (JMC) and University of Jaffna areas and will involve the following:

- ✓ 187 km of sewer pipes and pumping mains of 150-525 mm diameter uPVC/MDVC;

- ✓ Pumping stations, containing brick and concrete wells, pump-house, pumps, etc; and
- ✓ Sewage treatment plant (STP) at Kallundai, with RCC and earth-lined tanks, pumps, pipe-work and sea outfall for disposal of treated effluent.

Due to the water sharing issue and the project were restructured to desalination option, and sanitation component cancelled from the initial scope of the project.

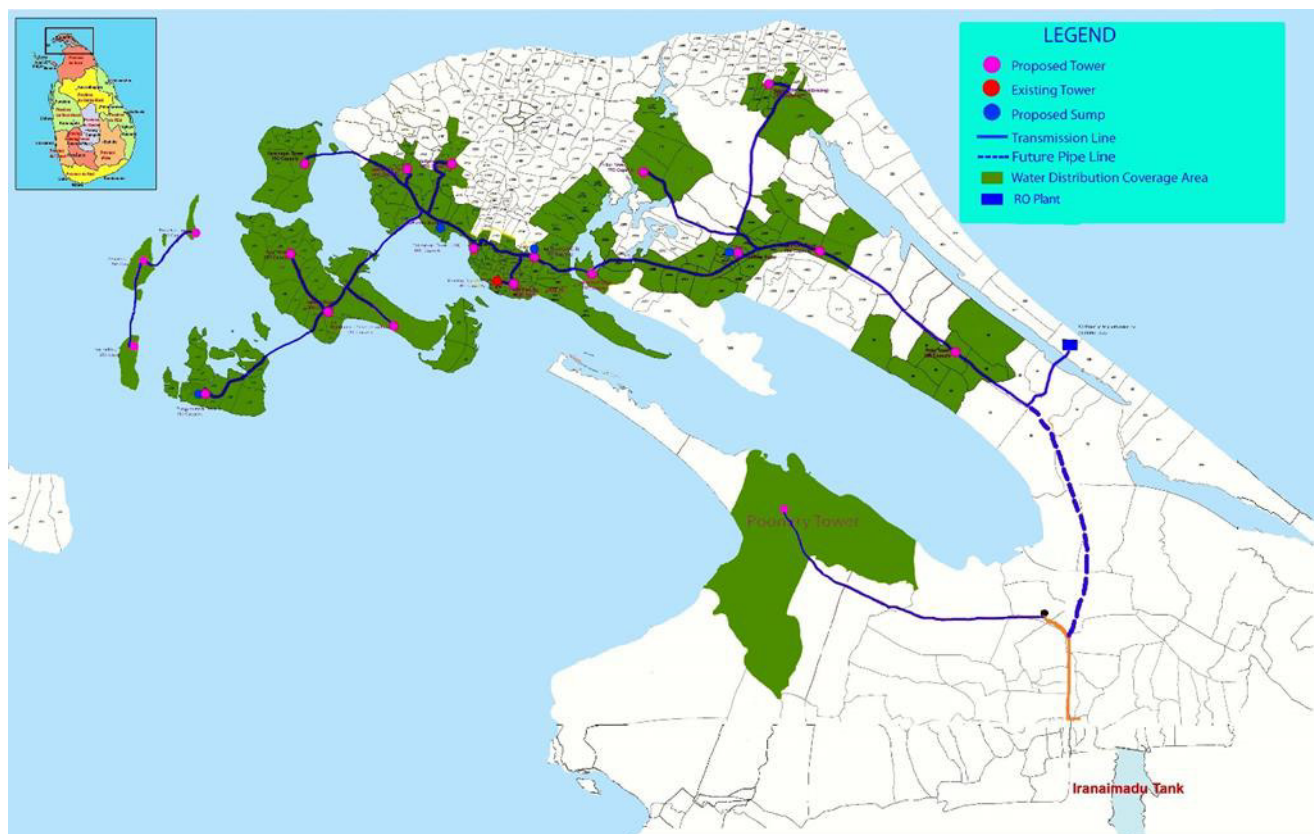


Fig 1.1: Project implementing area

III. PURPOSE OF THE REPORT

This report presents the status of environmental safeguards compliance with respect to each packages, for the period from January to December 2017. Information presented in this report is mainly based on the observations made during monthly field inspections jointly carried out by the Employer, the Engineer and the Contractor, and information provided by the Contractor through the Engineer. Most of the proposed locations were inspected during the feasibility study and observations were made on use and occupation of the land, infrastructure, and environmental factor as Flore, Fauna, All sites were re-visited by ADB and NWSDB staff and consultants in December 2009– Dec 2016, to determine whether there had been any significant changes and to confirm that there were no constraints to the proposed civil works.

IV. ENVIRONMENTAL APPROVALS, LICENSES AND PERMITS

The Initial Environmental Examinations (IEEs) had been carried out for project for getting environmental approval of Central Environmental Authority (CEA) and as well as funding agency.

The impacts identified and mitigating measures suggested under the section Screening of Potential Impacts and Mitigation Measures of each Initial Environmental Examination Reports (IEER) were summarized in to an Environmental Management Plan (EMP).

An Environmental Monitoring Plan (EMoP) had also been prepared for each sub packages that includes information on environmental parameters to be monitored, Location, time and frequency, cost for sampling and stage of subproject on which the monitoring should be conducted. The EMoP is considered to be a useful tool to monitor the implementation of mitigation measures and EMP.

V. STATUS OF THE CONTRACT PACKAGES

1. COMPLETED PACKAGES

1.1 Advance Pipe crossing & Surveying and Geotechnical Investigations

The project has been completed on 06th August 2014.

1.2 Consultancy Services of Architectural Design and Supervision and Construction of new building for AGM(N), RM(J).

This contract was awarded to Link Engineering (Pvt.) Ltd on 15th February 2013 and work has been completed on 15th June 2015.

1.3 Construction of Quarters at Meesalai.

This contract was awarded to M/s. Visvakarma (Pvt.) Ltd. on 12th February 2012 and work has been completed on 15th February 2013.

1.4 Distribution Network -1- PEIC/JKWSSP/NETWORK/2013/01

This contract was awarded to M/s Squire Mech Engineering (Pvt.) Ltd. Supplying and laying of water distribution network in Kayts, Velanai and Mandaitivu which is substantially completed by 31st May 2017.

2. ONGOING CONTRACT

2.1 Iranaimadu Bund Raising

This component works ongoing under the Irrigation Department of the Northern Provincial Council. 15Mn USD has been allocated for the improvement of head works of the Iranaimadu Tank and the

other related civil works. 85% of the works has been completed and pro the rest of the progress will be end of the December 2017.

2.2.Treated Water Transmission Mains and the Construction of Clear Water Sumps

There are two packages ongoing under this component such as TWTM-1 & TWTM-2.

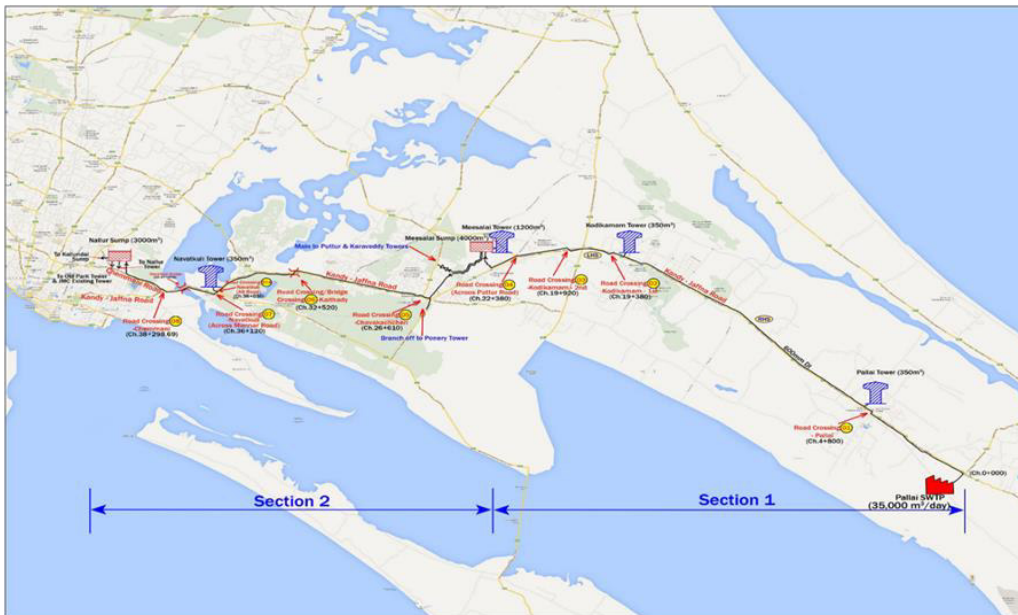
2.2.1 TWTM – 1- PEIC/JKWSSP/TWTM/2013/01

Supply and laying of treated water transmission mains from Palai water treatment plant and construction of two treated water sumps at Nallur and Meesalai only.

2.2.1.1Scope of Work of TWTM- 1

This Contract awarded to M/s JMC Projects (India) Ltd. To the contract value of Rs.2646.18 million. The contractor mobilized to the sites and the construction work is ongoing. 44km pipe line work to be done under this contract and 02 No of clear water sumps to be constructed. 35% of the works completed by end of the December 2017. Before the construction commenced, contractor submitted by the EMP and implemented accordingly. Pipelines are being laid along the road by taking precautions to avoid large tree cuttings, necessary approvals were obtained from Forest department, Coconut development Board to cut the tree.

2.2.1.2Project Location Map of TWTM-1



As a mitigation measure, Most of the pipe laying works carrying out with the proper traffic control and the safety boards were displayed. Photographs of the ongoing construction are given Appendix:1

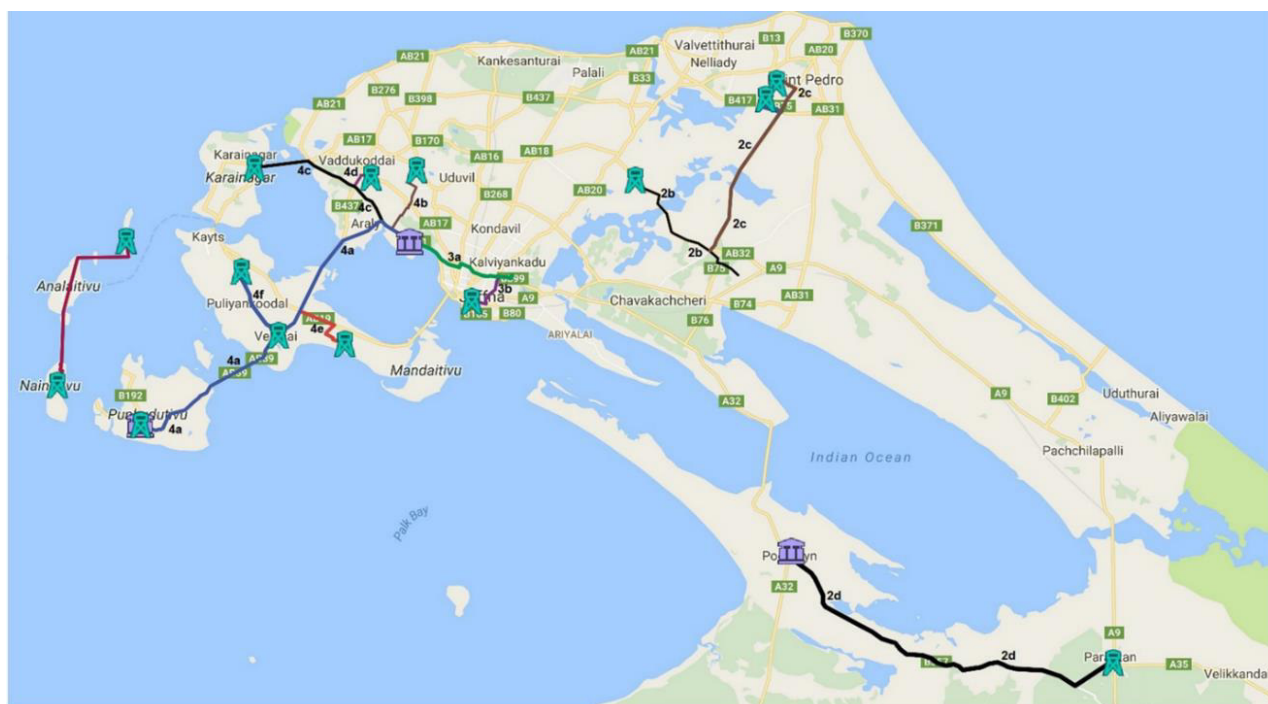
2.2.2 TWTM -2 - PEIC/JKWSSP/TWTM/2014/02

Supply and Laying of Treated Water Transmission Main (Part 2) Inclusive of 144km of TWTM sub main, four water reservoirs and ten boost(PS).

2.2.2.1 Scope of Work of TWTM-2

Under the title of Treated Water Transmission Main part 2 also is an integral part and the project of JKWSSP funded by the Asian Development Bank (ADB) and the Government of Sri Lanka and it is expected to lay the pipe line network for treated water supply from the Nallur Sump. The Contract awarded to M/s CMEC – BPP – JV Pvt Ltd and bid amount is Rs.2890.39 million. The contractor mobilized the sites and the construction work is ongoing. 140 km pipe line work to be done under this contract and 03 No of clear water sumps to be constructed. 50% of the works completed so far. Before the construction house hold visit and awareness program at DS, school respectively conducted by PMCIU Sociologist and the Contractor. Consent letter obtained from each and every household along the pipeline route.

2.2.2.2 Project Location Map



As a mitigation measure, Most of the pipe laying works carrying out with the proper traffic control and the safety boards were displayed. As explained above, water distribution pipes located in road ROWs, which can accommodate construction activities and should therefore not affect people, considering that the project area in general is not densely populated nor highly-built up. Consultations with the business community show no anticipated losses in business due to laying of treated water pipes. Prior notice has been provided to all business persons and laid the pipes during Sundays in order to avoid the

disturbances. In some traffic congested area, contractor did the laying works in night time to minimize this. Proper lighting facilities arranged by contractor and the traffic control also were used.

2.3 Elevated Water Towers Package 1 & 2

02 Contract packages awarded to M/s SIERRA Construction (Pvt) Ltd for the construction of 15 No's of Elevated water towers. The details of Water Towers is as follow.

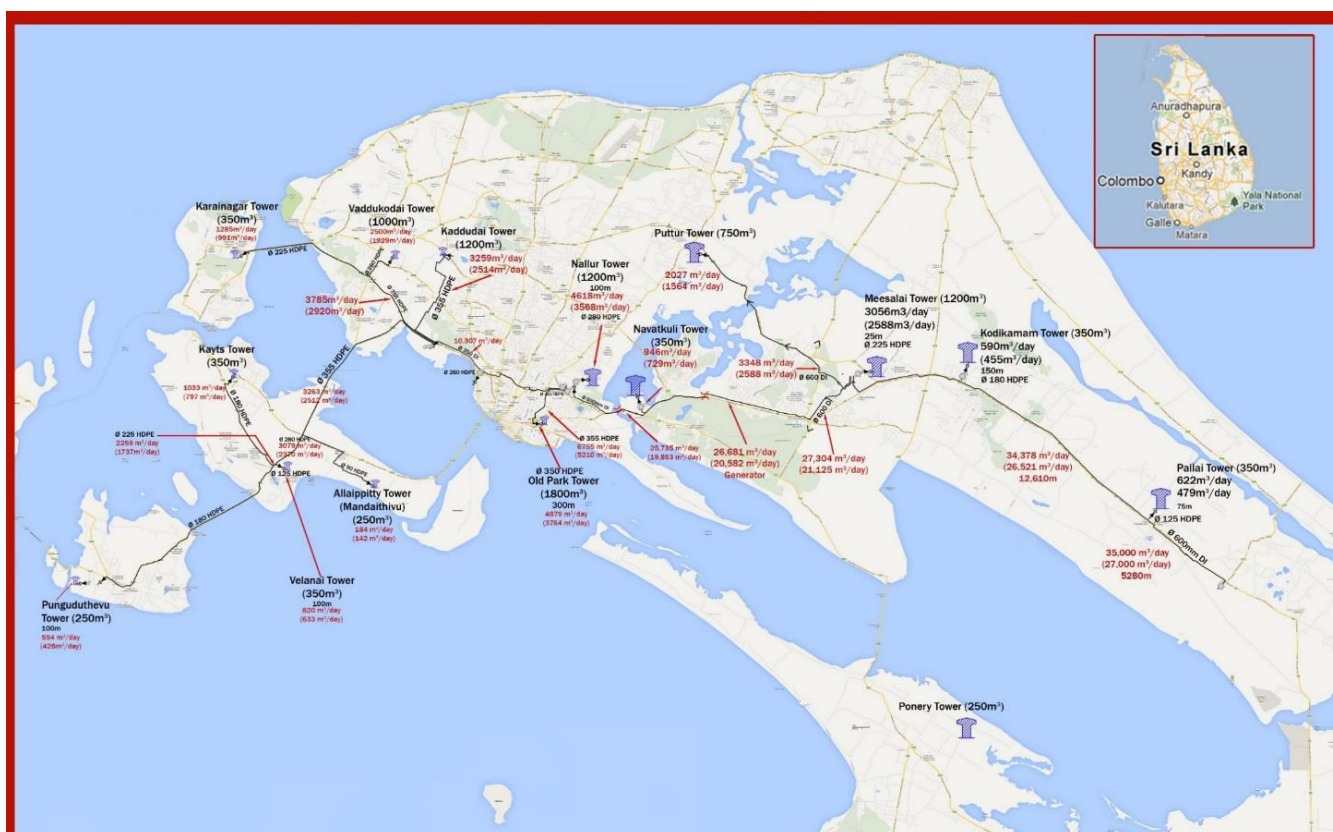
2.3.1 Under Package - 1

Capacity m ³	Tower Sites	Progress
1200	Kaddudai, Meesalai	Kaddudai – Conical part of tank ongoing Meesalai – Shaft works completed
750	Puttur	Conical part of tank ongoing
350	Navatkuli, Velanai	Navatkuli–Tank wall work ongoing Velanai- Painting work ongoing
250	Mandaithivu, Poonakary	Mandaithivu – Painting work ongoing Poonakary - Shaft work ongoing

2.3.2 Under Package – 2

Capacity m ³	Tower Sites	Progress
1800	Old Park	Painting work ongoing
1200	Nallur	Painting work ongoing
1000	Vaddukkoddai	Conical part of tank ongoing
350	Kayts	Tank wall work ongoing
350	Kodikamam, Karainagar, Palai	Tank wall work ongoing Palai – Shaft work completed
250	Punguduthivu	Pipe fixing work ongoing

2.3.3 Project Location Map for Elevated Towers



3. PROCUREMENT STATUS PACKAGES

3.1 PEIC/JKWSSP/SEA WATER REVERSE OSMOSIS PLANT/2015/01

Design, build and operate a sea water reverse osmosis desalination plant of 24 MLD capacity at Thalaiyadi, Jaffna district (SWRO desalination plant). As per the ADB safeguard Policy, the environmental impact assessment and the Environmental Impact Assessment were carried out separately for this component. Approval to construct the reverse osmosis plant has been obtained from Central Environmental Authority. This sub component categorized as A for Environment and B for Resettlement. Environmental Management plan and the Resettlement Plan has been prepared and submitted to ADB. The document has been published on the websites too. Web Site available link is <https://www.adb.org/projects/documents/sri-37378-014-rp>

Tender document for Design, Build and Operation of Sea Water Reverse Osmosis Plant under evaluation and the construction works not yet commenced. The Grievances Redress Committee was formed in this area to monitor the complaints and grievances during the construction time as well as the operation period. This package is under Technical Evaluation sage.

3.2 PEIC/JKWSSP/Network/2014/02

Supplying and Laying of water Distribution Networks in Palai, Kodikamam, Meesalai, Poonakary, Puttur, Nawatkuli, Karainagar, Pungudutivu, Vaddukkodai, Kattudai, Nallur Zones, JMC Transmission Pipeline & Construction of Office/Stores, Quarters at Velanai, Kaddudai, Navatkuli, Pokkanai, Poonery and Karaveddy. This package is under Tender Evaluation stage.

3.3PEIC/JKWSSP/ Water Towers/2017/01

Construction of water towers at Pommaveli, Karaveddy, Nainathivu, Analaithivu and Eluvaithivu. This package is under Technical Evaluation stage.

3.4 PEIC/JKWSSP/JMC Distribution Networks /2017/01

Supplying and Laying of water Distribution Networks in Jaffna city area. Which is under document approval stage.

3.5 PEIC/JKWSSP/M&E/2017/01

Supplying and Installation of Mechanical, Electrical, Instrumentation, Control Components and SCADA System. Which is under draft tender document preparation stage.

V. ENVIRONMENTAL MONITORING AND MITIGATION MEASURES

Based on the approved EMoPs, the package contractors should have to carry out the monitoring of selected environmental parameters such as water quality, soil quality and rain fall, Air quality and Noise quality periodically. The contractor should monitor the parameters during the pre-constructing (baseline), construction and post-construction or operation period of project.

- a. **Climate** – Jaffna peninsula is in Sri Lanka's dry zone, where average rainfall is 1000 – 1250 mm/year. Daily average temperature is 26.3⁰C in December/January and 30.9⁰C in May. The northeast monsoon brings high wind, and rainfall of >200 mm in October – January, but rainfall is < 80 mm/month in the rest of the year.
- b. **Air Quality** – Air quality has not been measured in Jaffna, but with low traffic, no heavy industry and good dispersion by sea breezes, air quality will almost certainly be high, except for possibly some dust blown by monsoon wind.

- c. **Noise** – Tunneling and pipe installation for underground utilities involve the use of various mechanical equipment. Quality Powered Mechanical Equipment (QPME) such as excavator, generator and mobile crane which emitted relatively less noise compared with non- QPME are widely available in the territory. Moreover, the employment of some quieter construction methods such as top-down construction method or pipe jacking can also reduce the construction noise generation. Noise impact could arise from construction activities of the TWTM-2 package. The potential construction noise impacts by the dredging would be related to the noise emitted from marine crafts such as grab dredgers, working boats etc., whilst noise would also be emitted from borer pipe pulling machinery and by the drilling method. Silent equipment could be reduced to acceptable level of Noise.
- d. **Topography and Soils** – Jaffna peninsula is low (max 11 m) and flat, with costal landforms, and soils a mixture of marine deposits and wind derived sediments.
- e. **Geology** - Jaffna was covered by seawater up to the Miocene and the limestone geology derives from coral reefs. The limestone is 50 – 90 m thick, with Mannar sandstone below and a discontinuous layer above. Surface soil is sandy.
- f. **Flora and Fauna** -Flora and Fauna will be affect by way of the direct physical disturbance and indirect effects suspendedsediment and habitat structure, reduced penetration of light needed for biosynthesis, reducing dissolved oxygen and blocking of feeding organs in the TWTM-2 package.
- g. **Water Quality** – Water quality is an important constituent in concrete. It chemically reacts with concrete to produce desired properties of concrete. Mixing water is the quantity of water that comes in contact with cement, impact slump of concrete and is used to determine the water cementitious material ratio of the concrete mixture. In general, water that is fit for human consumption is acceptable for use as mixing water. Most concrete plants have a source of tube well water used as mixing water without any qualification testing. All contractor was analyzed water quality use for curing for concrete.

VI.RAIN FALL DATA

According to the records available pertaining to the contract it shows that slight rains occurred DN1, ET1, ET2, TWTM1 and TWTM2 until starting of the North - East monsoon rain and received high rainfall during the end of October to December starting of the North- East monsoon. The construction

works were considerably affected by the heavy rain and Contractor's progress was delayed during this period.

Recorded rainfall data is given in Appendix: 3.

VII. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The possible impacts of the construction activities were identified and forecasted in EMP. The mitigating measures suggested and summarized in the Environmental Management Plan (EMP). The contractors should follow the above guidelines and comply with necessary requests such as obtaining of the licenses and approvals on given time period. Moreover the contractors should give their priority to protect the surrounding environmental and socio-economic landscape.

While conducting of the Monthly Progress review Meetings, the Employer and the Consultant clearly observe the contractors performance on the EMP activities, Traffic Safety and workers safety arrangements and If any short coming observed immediately instruction given to follow this EMP.

VIII. GRIEVANCE REDRESS MECHANISM

Further, 15 No of Grievances Redress Committee formed in all Divisional Secretariat Divisions and having quarterly meetings up to September 2015 to discuss the issues and complaints. Due to the restructured of the project, there were no meetings conducted up to Sep 2016. After the restructured of the project, now quarterly meetings are ongoing. So far 36 meetings held on DS Offices and it was explained to the community about the complaint process and the GRC details. If the complaint arise at the site, contractors immediately solve and submit the report to PD/ PMCIU.

There are no complaints so far under TWTM – 1 &2. Prior to the pipe lying works the officers visited to the every household and explained the works and got their consent to lay the works. But there are some issues raised due to the damage of fence or boundary wall. But it was rectified once the pipe laying completed and the contractor did the fencing and constructed the boundary wall as soon as possible. Separate details report on Annual Social Safeguard Monitoring Report- 2017 was prepared by PMCIU could be referred.

IX.CONCLUSION AND FURTHER ACTIONS

During the period of 2017, Overall Environmental safeguards implementation is satisfactory. Instructions have given to contractor to avoid/ minimize any adverse social impact that may arise during construction period. Specially, keen concern about minimize the dust and noise generation, as well as loss of accesses to shop and houses due to the construction activities. Further to that monitoring of Environmental safeguard activities regularly overseen by the PMCIU and PEIC staff.

As per ADB's requirement, the project authority established a mechanism to receive and facilitate resolution of affected persons' concerns, complaints and grievances about the project's environmental performance. The grievances mechanism should be scaled to the risks and adverse impacts of the project. It will be addressed affected peoples' concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all the affected people at no cost and without retribution. The affected people will be informed by appropriate mechanism. During the period reported issues are very less and no major issues arisen.

The ongoing construction works may have caused traffic congestion due to high volume of traffic and narrow condition of existing roads, especially in A9 road. Therefore a good traffic control plan was used throughout the working period. All contractor shows his enthusiastic approach on Traffic Safety and Personal Safety activities throughout the project period.

After completion of the construction activities, the contractor should attend to the rehabilitation works for their sites such as yards; borrow area, plant sites and disposal sites before handover.

The contractor should give attention to reduce public nuisances caused by the construction works, especially rectification activities on house damages.

Finally the JKWSSP project is ensure this EMP implemented according to the requirements.

APPENDIX

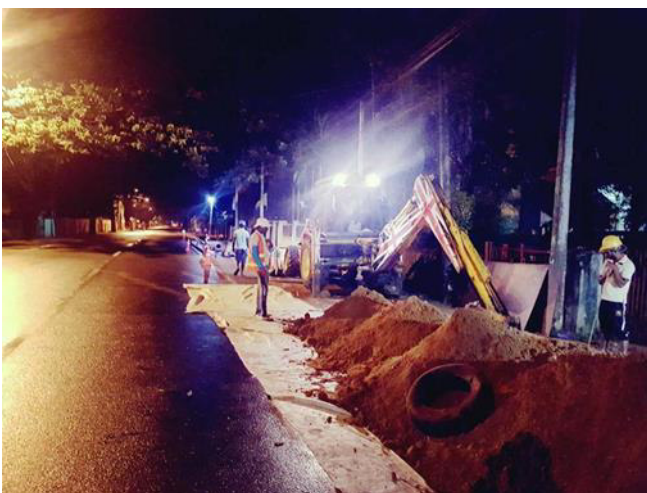
APPENDIX-1

Progress photos on the ongoing contracts.

1.1 Ongoing construction activities of TWTM-1



1.2 Ongoing construction activities of TWTM-2





APPENDIX: 2
Environmental Monitoring Results

2.1 Observed Environmental Parameter results of PEIC/JKWSSP/NETWORK/2013/01 -Water quality report of water use for concrete Kaddudai.

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தேசிய நீர் வழங்கல் வடிகாலமைப்புச் சபை
National Water Supply & Drainage Board



Regional Manager (J)
பிரதான முன்னாள் (க.ம)

Tele: } 021-222 3742
Fax: } 021-222 7965

Regional Laboratory, Jaffna

Kandy Road,
Jaffna

Chemist (J)

இயக்குநர் (க.ம)
Tele: } 021-222 7964
Fax: } 021-222 7965

Water Quality Report

1. Laboratory Sample No : JPS 4599
2. Date of Sampling : 22-Oct-15 10.30 am
3. Report required : Sierra Construction (Pvt) Ltd,
No:127, Kachcheri Nallur road,
Jaffna.
4. Location : Katudai Site
5. Sample Collected By : Mr.Basil Stve (Construction Manager)
6. Source of Sample : Dug Well
7. Weather : Dry

PARAMETERS		RESULTS	Room Temperature : 27.2°C	Units
			SLS 814 : 2013 Permissible level	
Chemical Quality				
1	Electrical Conductivity	6700	750	µS/cm
2	Chlorides(as Cl)	2858	250	mg/l
3	Total Hardness (as CaCO ₃)	2106	250	mg/l
4	Sulphate (as SO ₄)	324	250	mg/l
5	pH	7.13	6.5-8.5	-

Undet - Undeterminable amount (small amount)

This report is issued for the information of the client. It shall not be published in total or in part without written authority of General Manager, National Water Supply and Drainage Board. This report is limited specifically to this specimen

Chemist

S. Saravanan
Regional Chemist
National Water Supply & Drainage Board
Jaffna

Lab Assistant

2.2 Observed Environmental Parameter results of PEIC/JKWSSP/NETWORK/2013/01 -Water quality report of water use for concrete Nallur.

தமிழக சட்ட சபை
தேசிய நீர் வழங்கல் வடிகாலமைப்புச் சபை
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 Kandy Road, Jaffna

Regional Manager (J)
 Telephone: 021-222 3742
 Fax: 021-222 3746

Chemist (J)
 Telephone: 021-222 3744
 Fax: 021-222 3746

1. Laboratory Sample No : 8147
 2. Date of Sampling : 19-Jan-15
 3. Report required : Sierra Constructions,
 127, Kachchen Nallur Road, Jaffna
 4. Location : Sanken Ready mix Plant, Navatkuli
 5. Source of Sample : Kalthady WSS
 6. Weather : Dry

Room Temperature : 28.1°C

PARAMETERS	RESULTS	Max. concentration		Units
		Desirable level	Permissible level	
Physical Quality				
1. Turbidity	0.5	2	5	NTU
2. colour	10	5	30	Hazen unit
Chemical Quality				
1. Electrical Conductivity	815	750	3500	µS/cm
2. Chlorides (as Cl)	288	200	1200	mg/l
3. Total Hardness (as CaCO ₃)	245	250	600	mg/l
4. Total Alkalinity (as CaCO ₃)	155	200	400	mg/l
5. Total Dissolved Solid	522	500	2000	mg/l
6. Nitrate (as N)	Undet	-	10	mg/l
7. Nitrite (as N)	Undet	-	0.01	mg/l
8. Fluoride (as F)	0.27	0.5	1.5	mg/l
9. Sulfate (as SO ₄)	176	200	400	mg/l
10. Total phosphate (as PO ₄ ³⁻)	0.55	-	2.0	mg/l
11. Total iron	Undet	0.1	1.0	mg/l
12. Zinc	8.12	5.5	5.5	-
Bacteriological Quality				
No. of Coliforms/100 ml	Nil	-	10	None
No. of E. coli/100 ml	Nil	-	Nil	None

Interpretation: Good water quality (small amount)

Recommendation:

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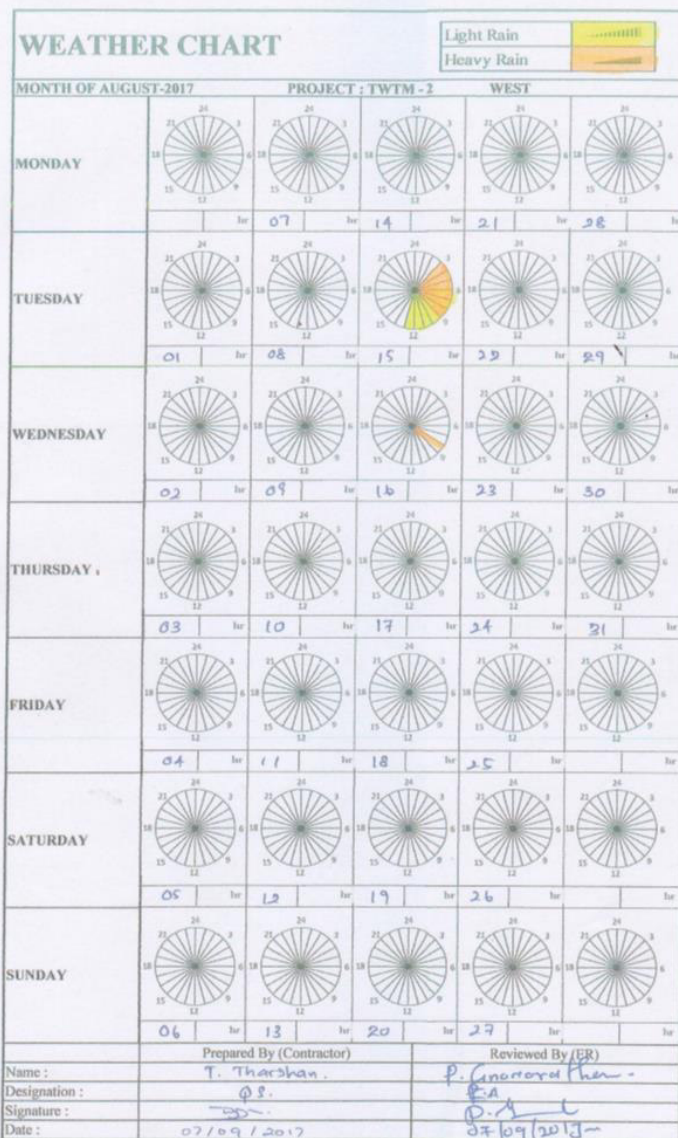
S. Saravanan
 Regional Chemist
 National Water Supply & Drainage Board

APPENDIX-3
Rainfall Data of sub projects

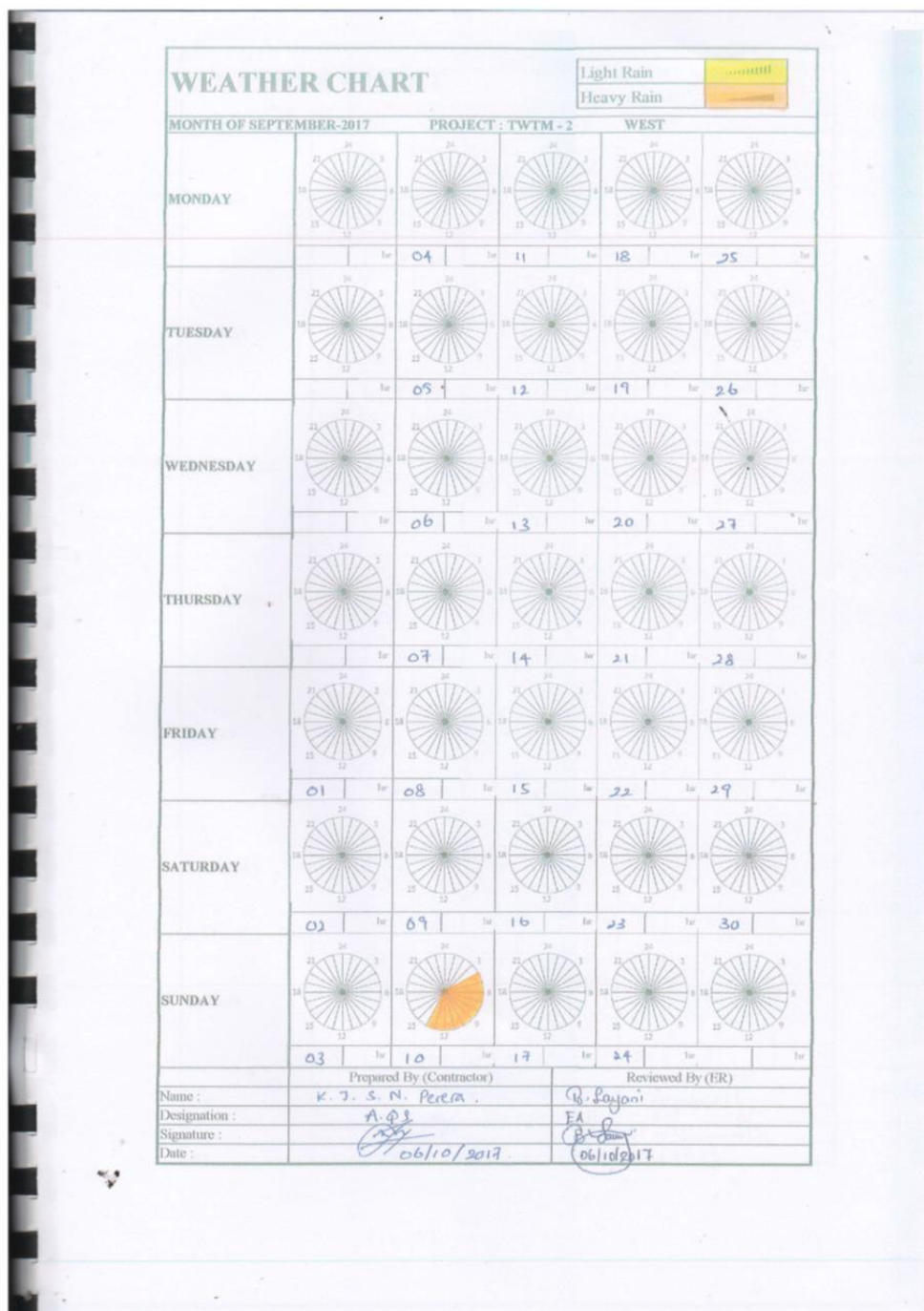
3.1 Rain fall data TWTM-2- East : August- 2017

WEATHER CHART		<div>Light Rain</div> <div>Heavy Rain</div>	
MONTH OF AUGUST-2017		PROJECT : TWTM - 2 EAST	
MONDAY			
	01 hr	02 hr	03 hr
TUESDAY			
	04 hr	05 hr	06 hr
WEDNESDAY			
	07 hr	08 hr	09 hr
THURSDAY			
	10 hr	11 hr	12 hr
FRIDAY			
	13 hr	14 hr	15 hr
SATURDAY			
	16 hr	17 hr	18 hr
SUNDAY			
	19 hr	20 hr	21 hr
Prepared By (Contractor)		Reviewed By (ER)	
Name : K. J. S. N. Perera		T. Jayakanth	
Designation :		E4	
Signature :			
Date : 07/09/2017		20/09/07	

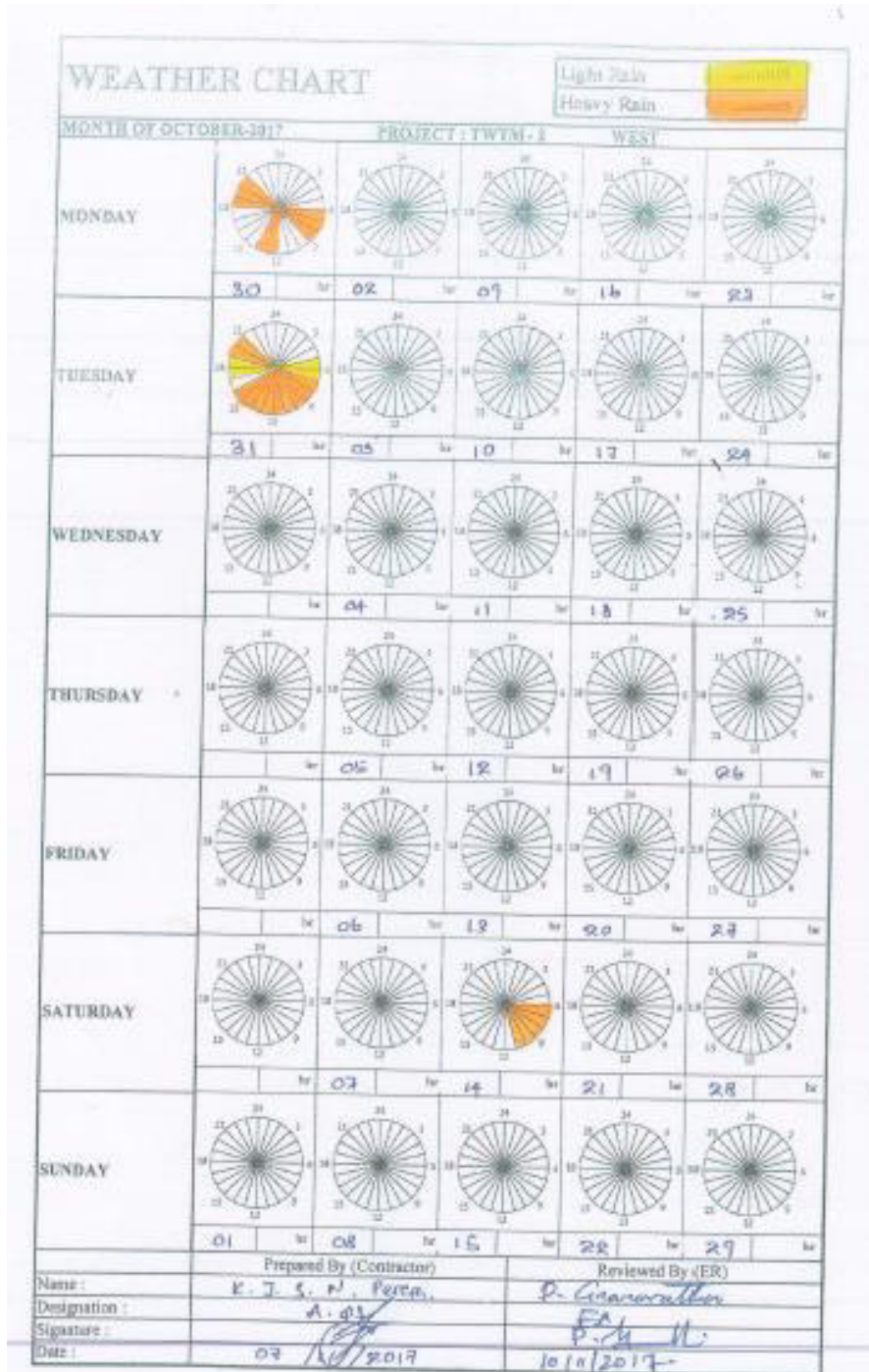
3.2 Rain fall data TWTM-2- West : August- 2017



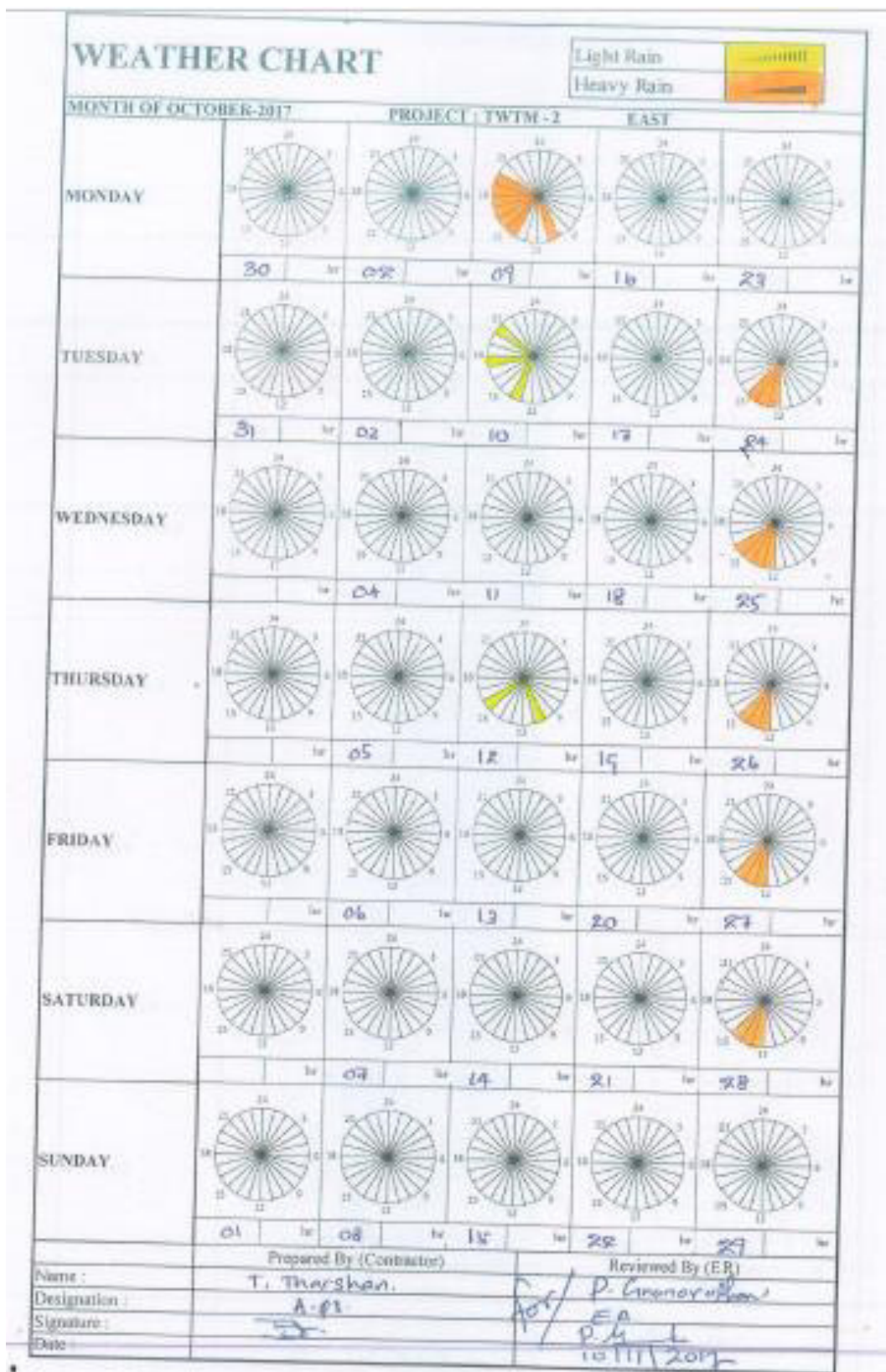
3.3 Rain fall data TWTM-2- West-September2017



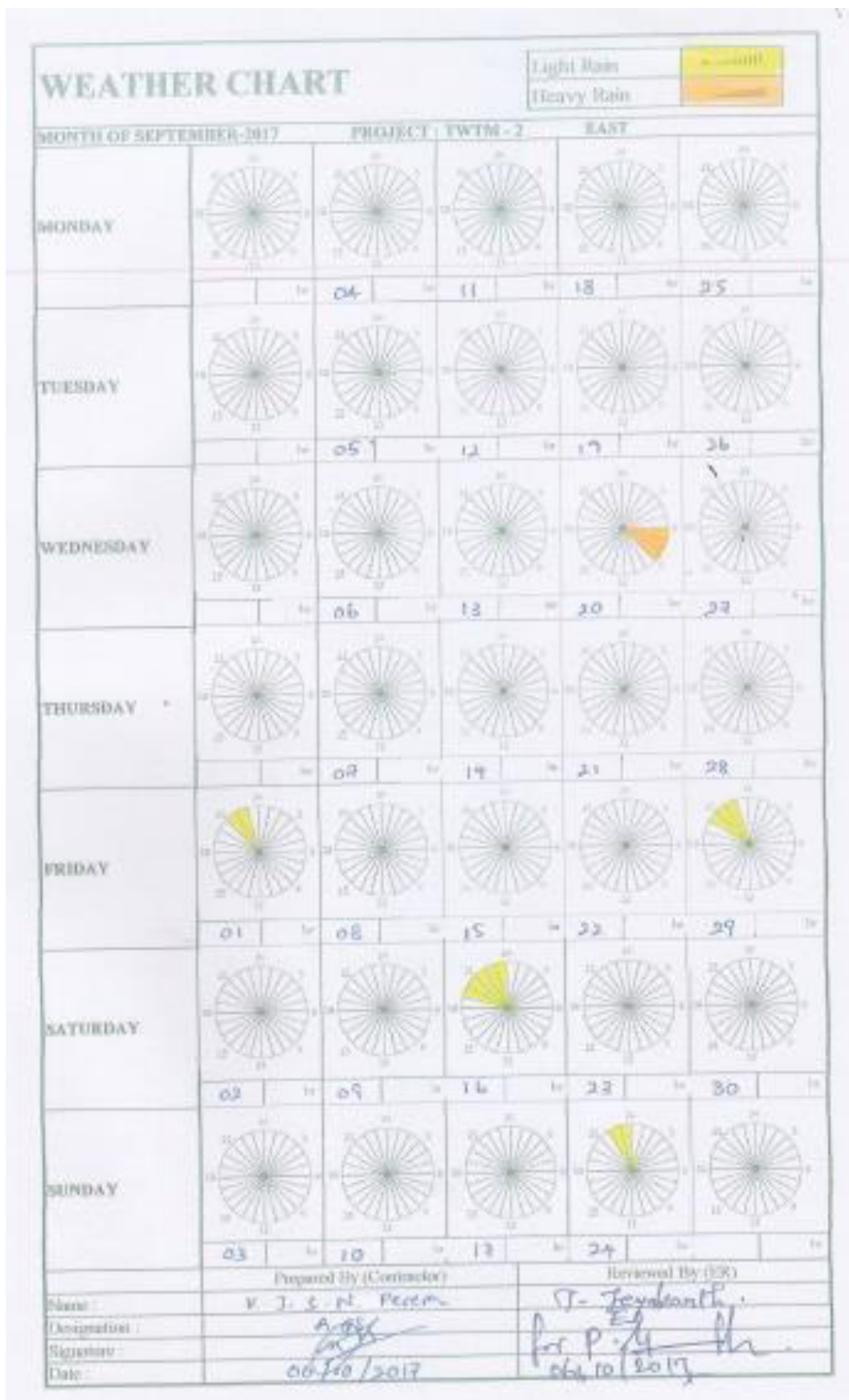
3.4 Rainfall data TWTM-2-West-October-2017



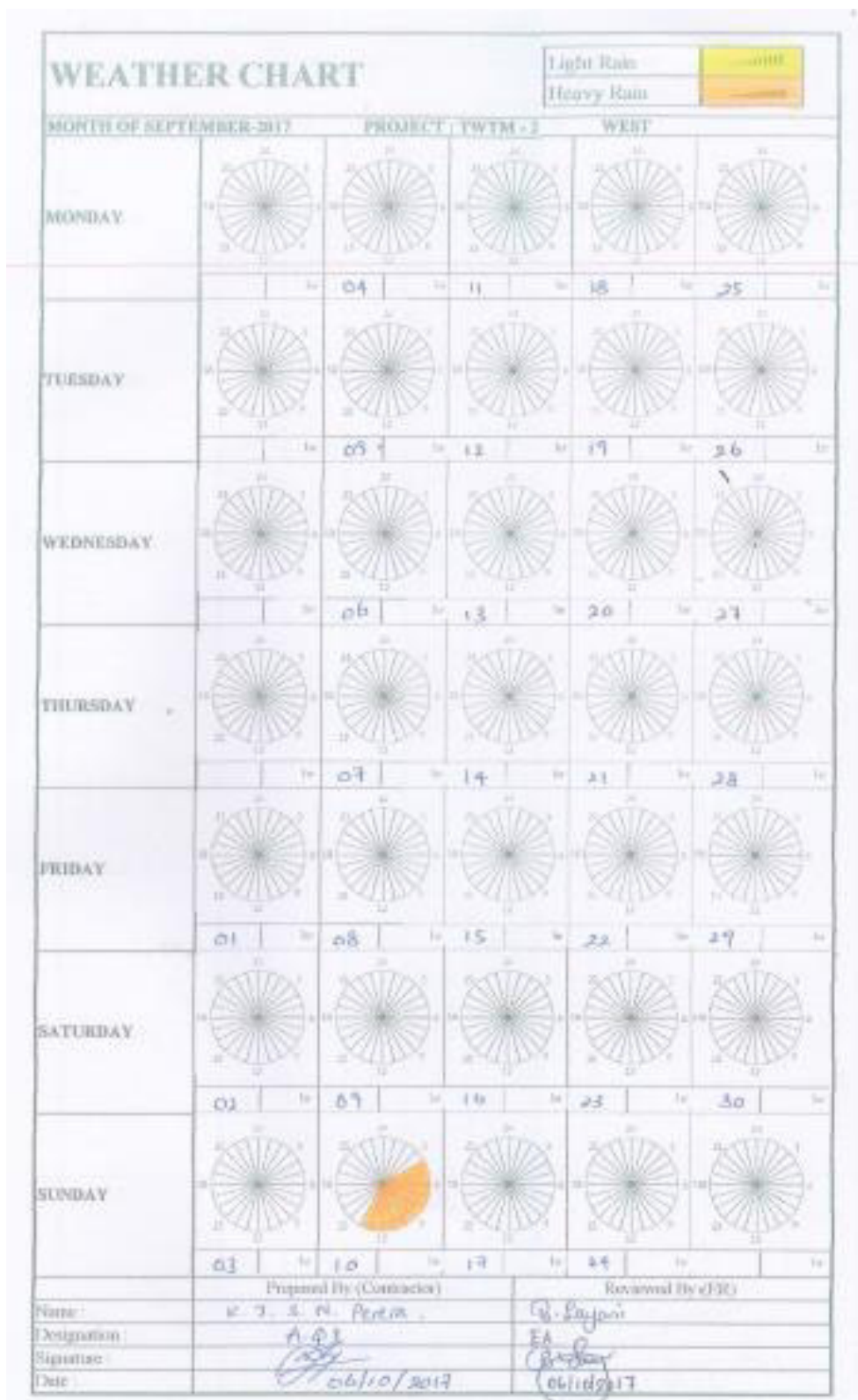
3.5 Rainfall data-TWTM-2 East-October-2017



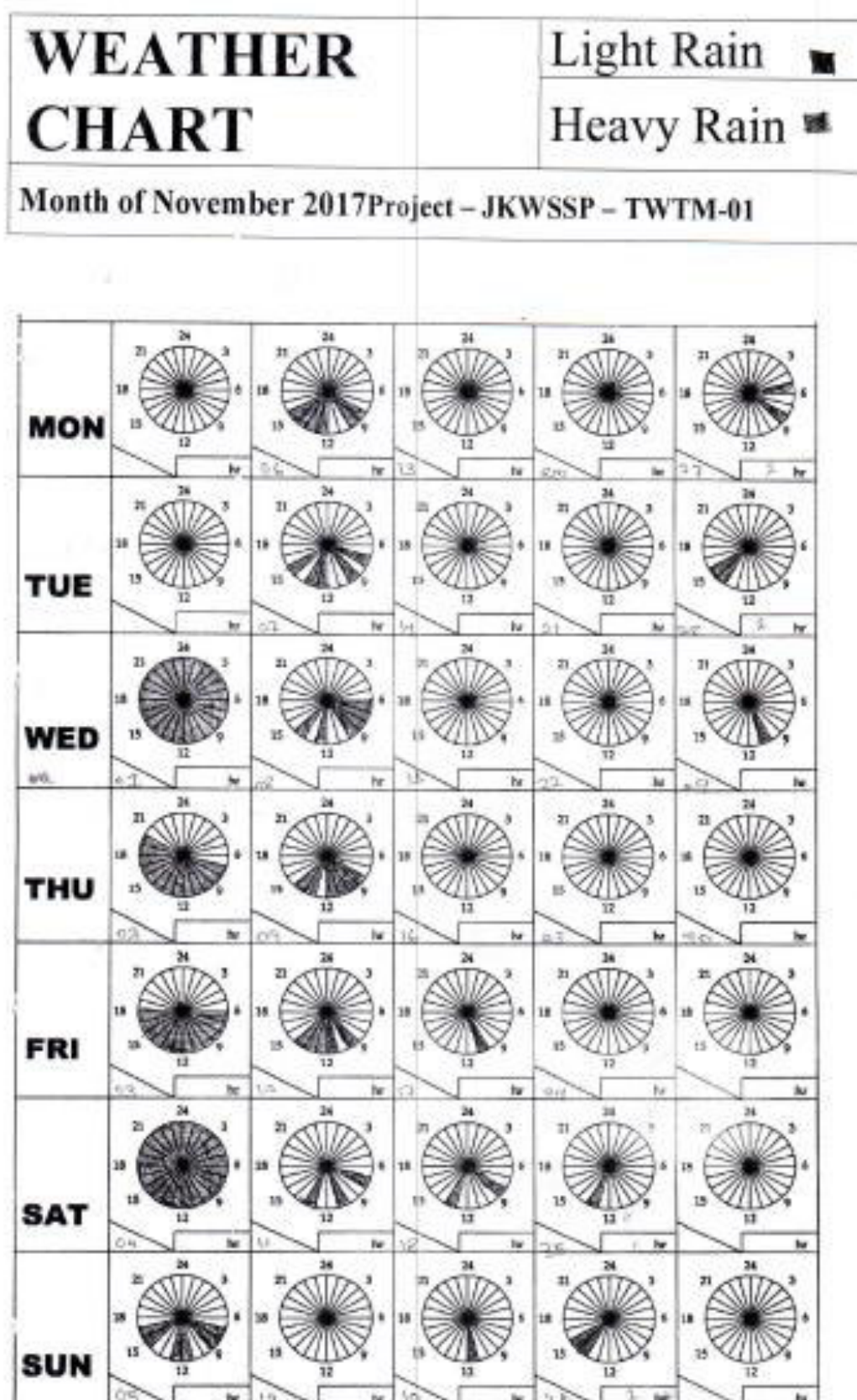
3.6 Rainfall data-TWTM-2 East-September-2017



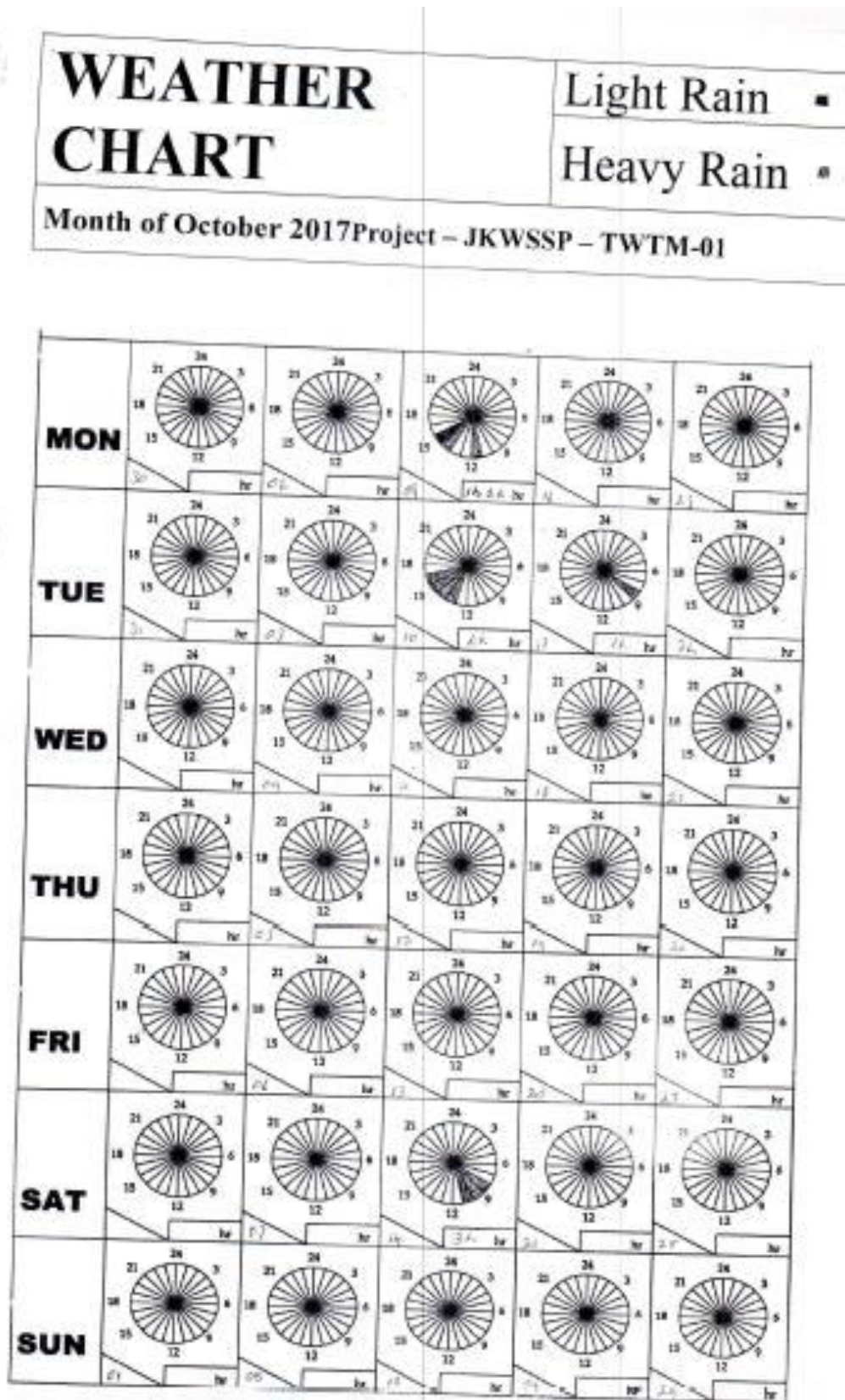
3.7 Rainfall data-TWTM-2 West-September-2017



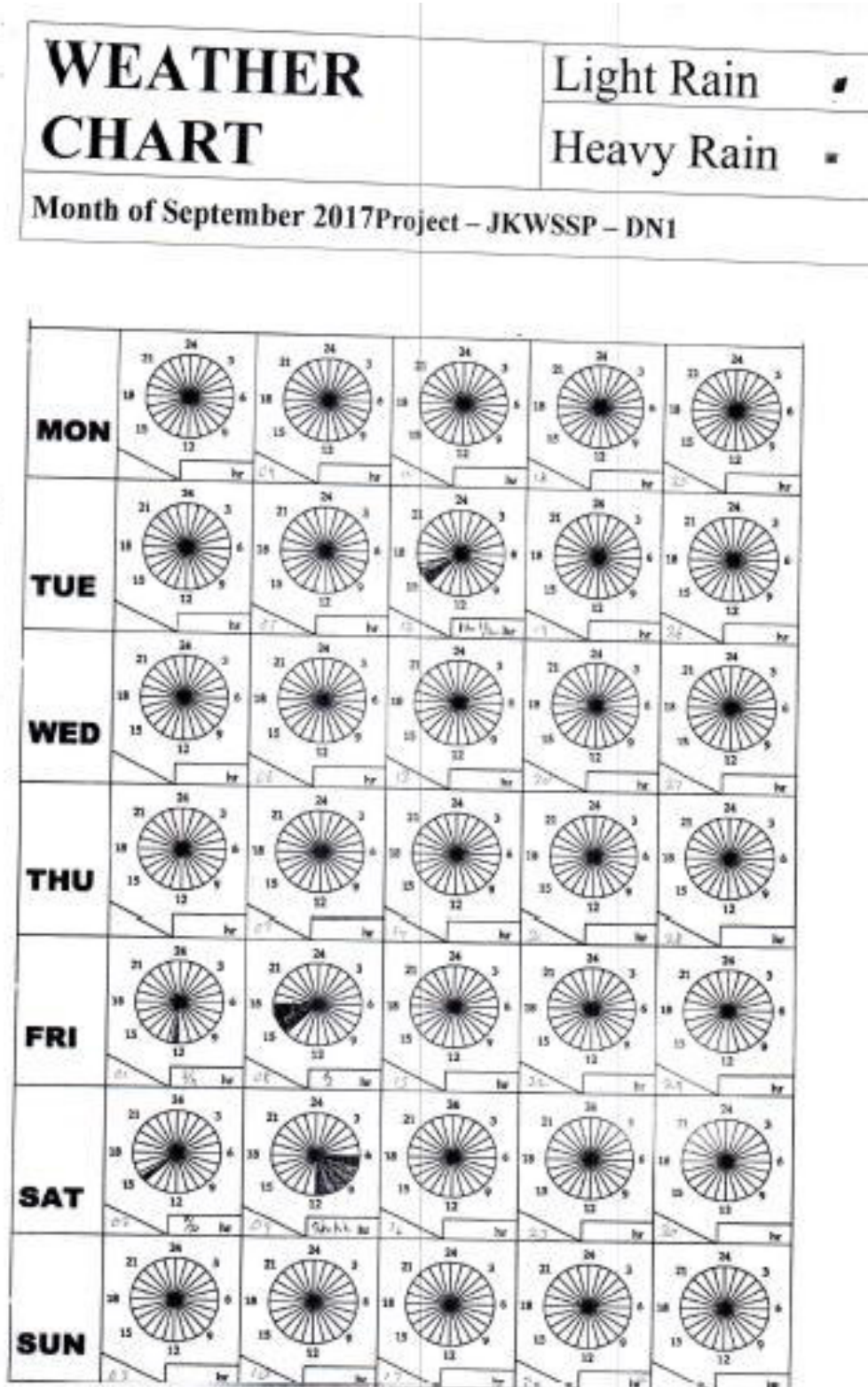
3.8 Rainfall data-TWTM-1 September-2017



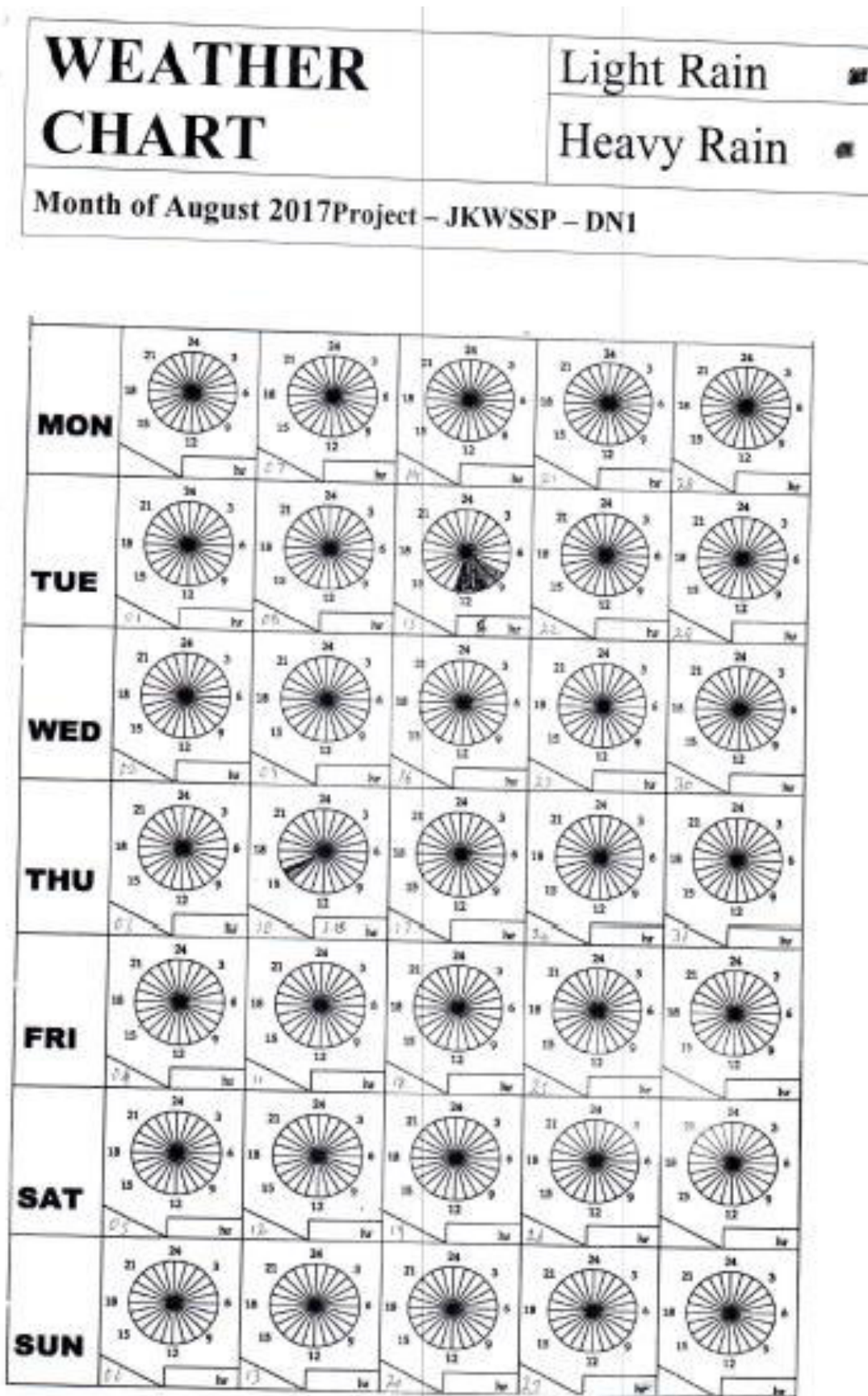
3.9 Rainfall data-TWTM-1 October-2017



3.10 Rainfall data-TWTM-1 September-2017

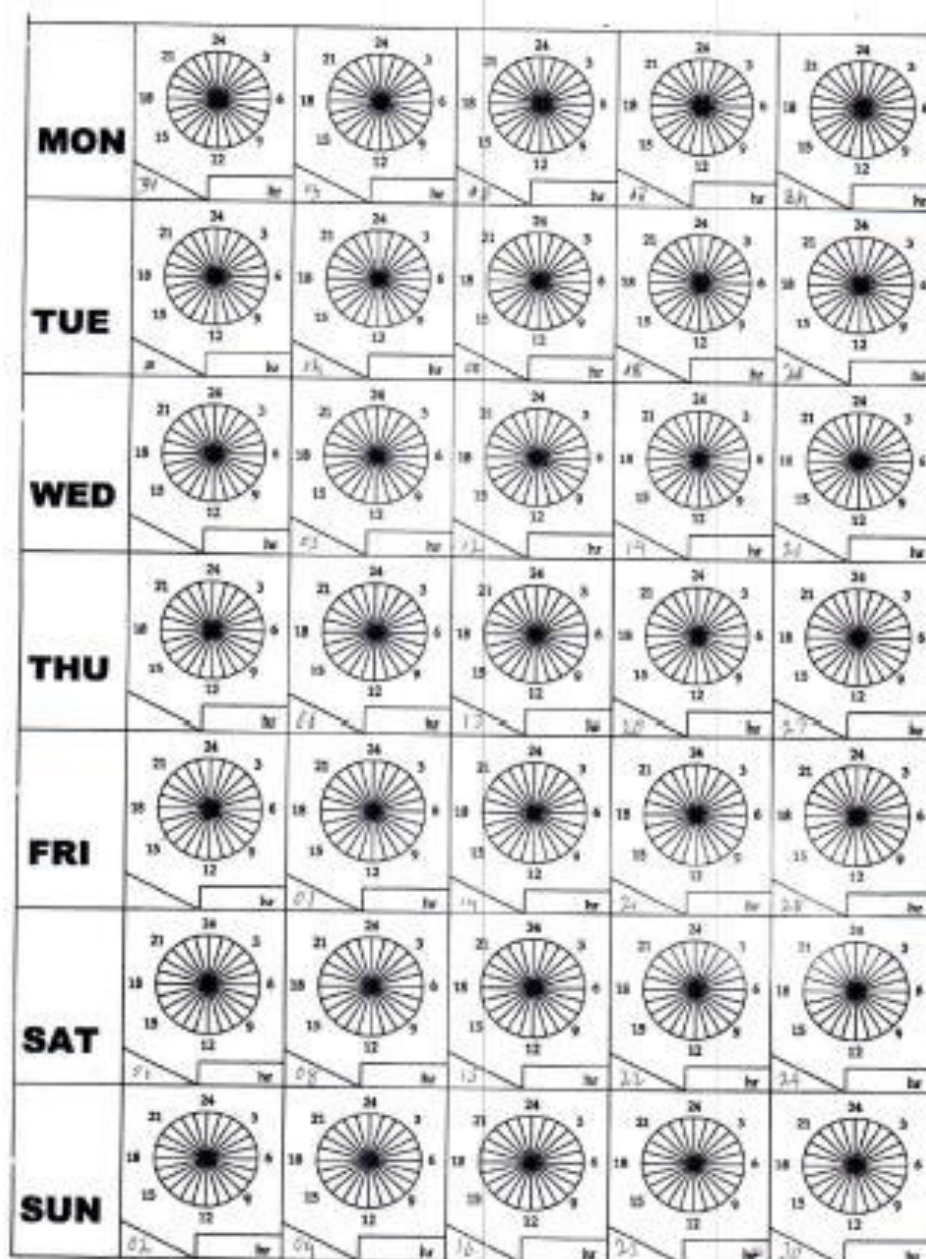


3.11 Rainfall data-DN-1 August-2017

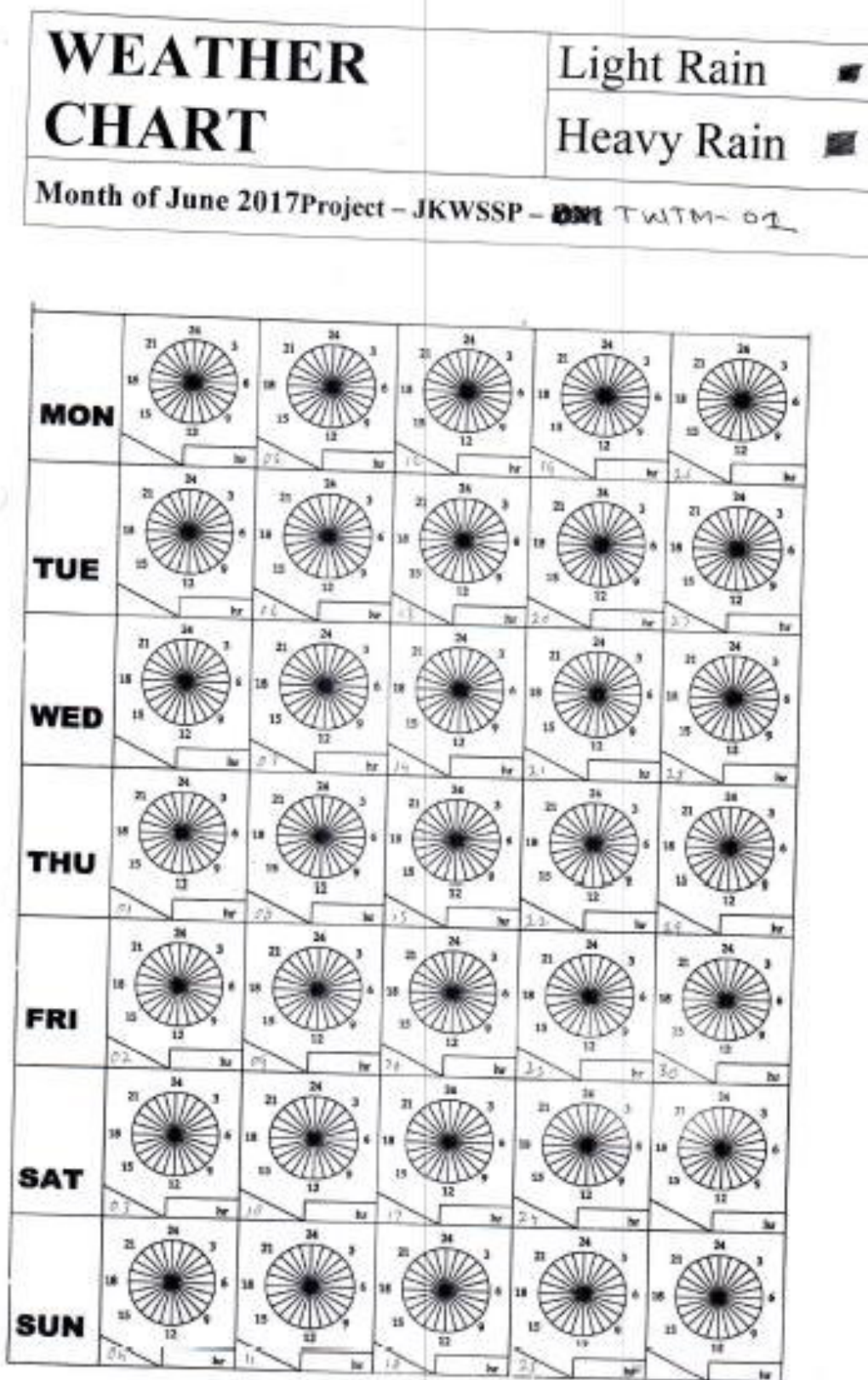


3.12 Rainfall data-TWTM-1 August-2017

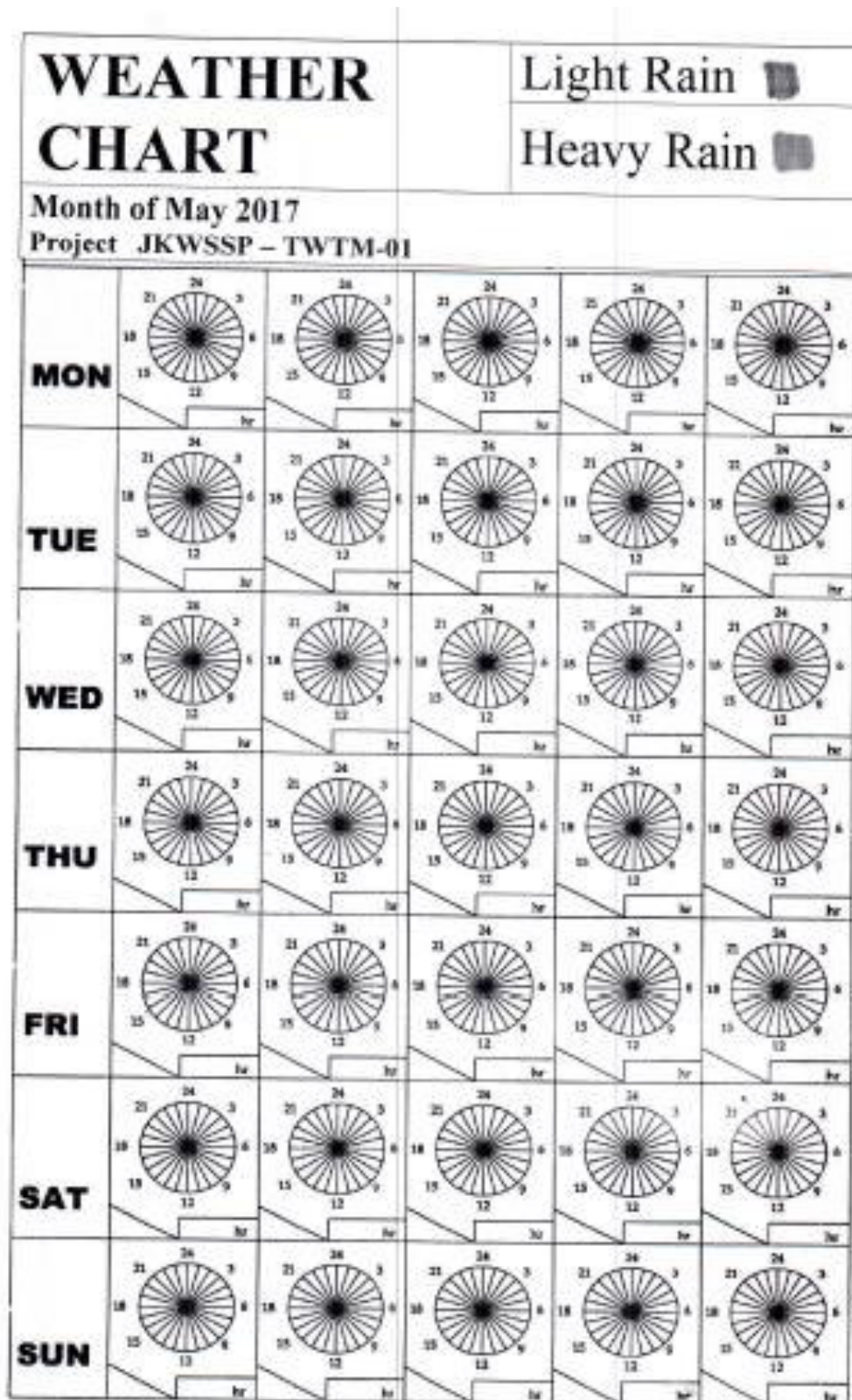
WEATHER CHART	Light Rain	■
	Heavy Rain	■
Month of July 2017 Project – JKWSSP –		TWTM-04



3.13 Rainfall data-TWTM-1 June-2017



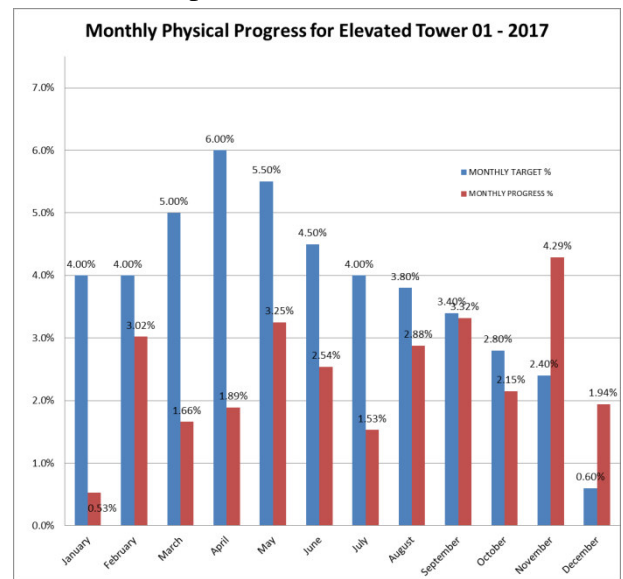
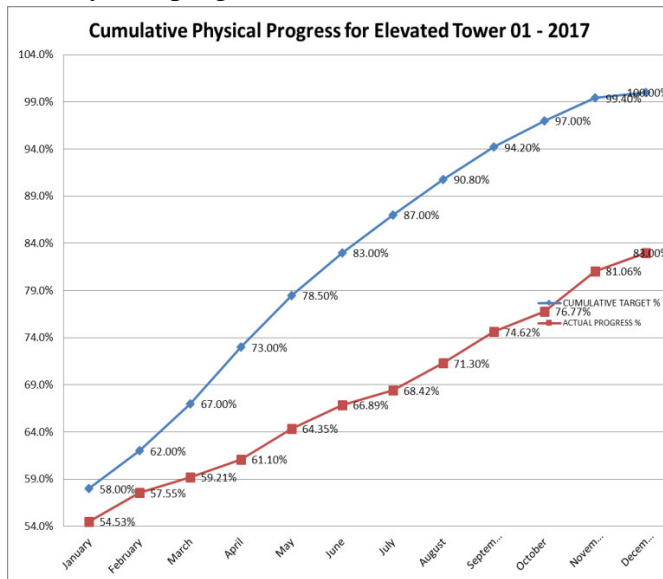
3.14 Rainfall data-TWTM-1 May-2017



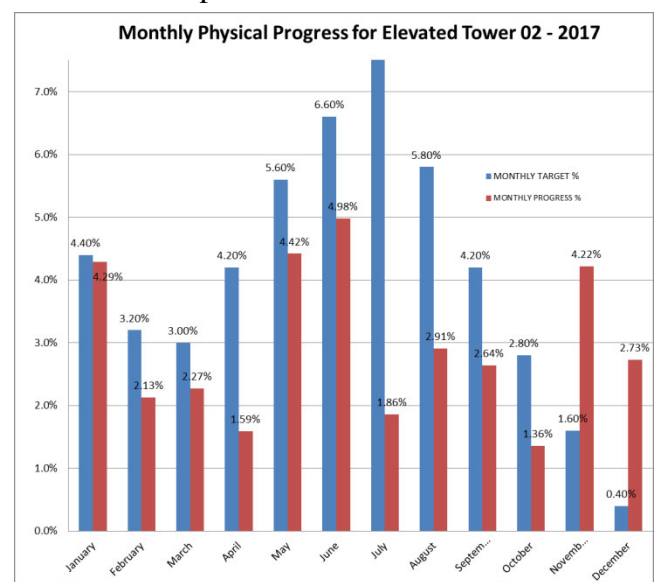
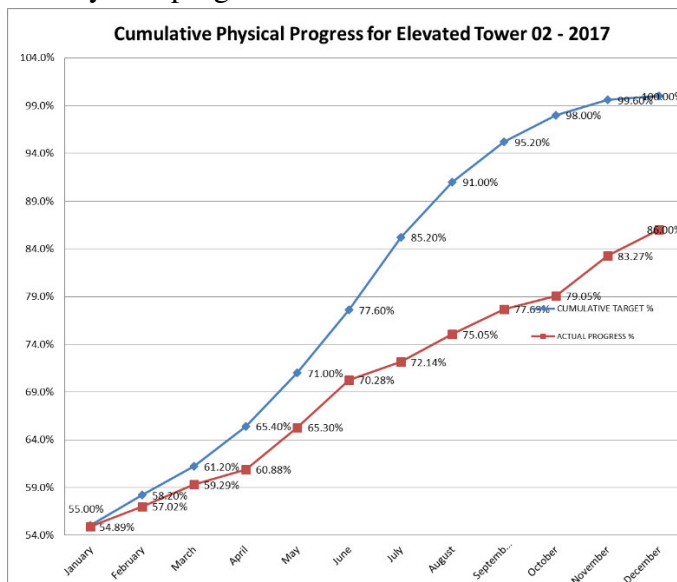
APPENDIX: 4

Summary Physical progress

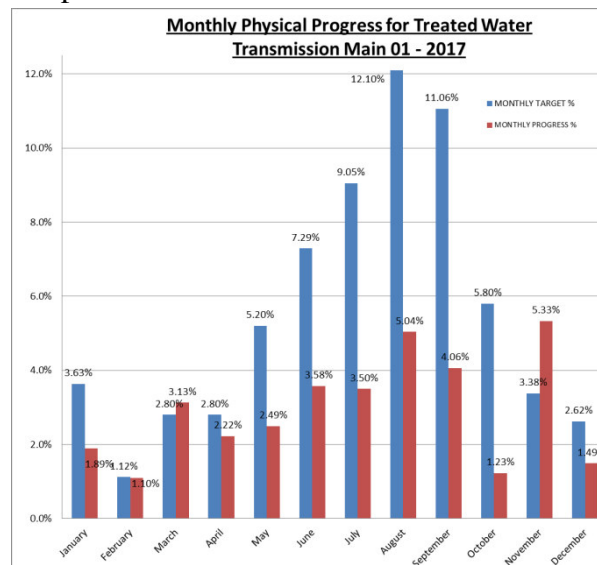
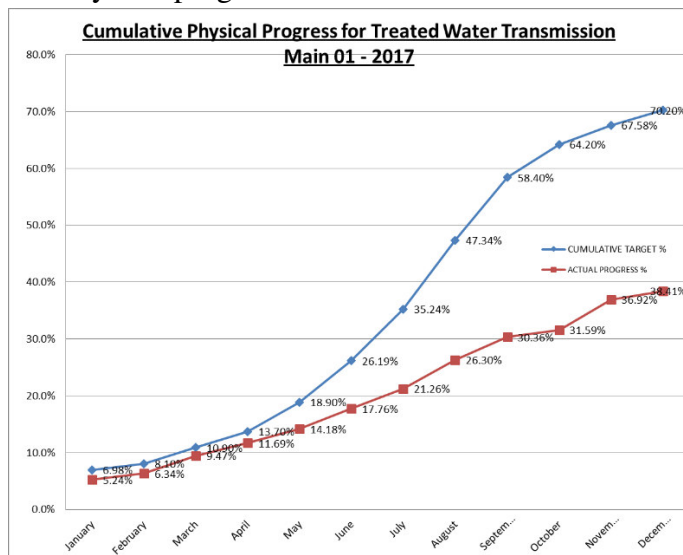
4.1 Physical progress of PEIC/JKWSSP/WATER TOWERS/2013/01 up to December 2017



4.2 Physical progress of PEIC/JKWSSP/WATER TOWERS/2013/02 up to December 2017



4.3 Physical progress of PEIC/JKWSSP/TWTM/2013/01 up to December 2017



4.4 Physical progress of PEIC/JKWSSP/TWTM/2013/02 up to December 2017

