

Japan-Mexico Collaboration Agreement



The Cities of Nagoya and Mexico have been sister cities for more than 40 years. The Twinning Agreement of the 2 cities was signed on February 16, 1978, but the previous talks began in 1977, so it can be said that the following year marks 45 years of the twinning of the two cities.

SACMEX (Mexico City Water System) has participated with the Nagoya City Waterworks and Sewerage Bureau (NWWSB), under the Partnership Program of JICA and within the Twinning Agreement between the Cities of Mexico and Nagoya ratified in 2007 (which states in its article II, Areas of Cooperation, paragraph E, subsection V, "The City of Nagoya will provide general and technical assistance to the "Program to Improve the Quality of Water " in Mexico City") in the following agreements:

- First Agreement: 2005-2010,
Trained personnel in Nagoya City: 11;
Experts received from Nagoya City Waterworks and Sewerage Bureau: 5.
- Second Agreement: 2011-2013,
Trained personnel in Nagoya City: 5;
Experts received from Nagoya City Waterworks and Sewerage Bureau : 6.
- Third Agreement: 2014-2017,
Trained personnel in Nagoya City: 12;
Experts received from Nagoya City Waterworks and Sewerage Bureau : 3.

Project for Strengthening the Risk Management for Earthquake Disasters In the Mexico City Water System



Result 1.

SACMEX creates and updates the "Emergency Manual" in case of an earthquake.



Result 2.

SACMEX and SGIRPC personnel acquires knowledge and optimizes the technics to improve the resilience against earthquakes in the hydraulic infrastructure of Mexico City.



Conclusions

At the end of the last agreement and derived from the earthquake of September 19, 2017, of 7.1 degrees of magnitude 120 km south of Mexico City, JICA Japan has proposed an agreement for the prevention of damages to hydraulic infrastructure in case of natural disasters.

The agreement was formalized on January 16, 2020 in the body of the document, establishing also the cooperation and joint work with the Secretariat for Comprehensive Risk Management and Civil Protection (SGIRPC).

The agreement is accompanied by a matrix of activities, and due to the pandemic, monthly meetings have been held during this year through digital platforms to build up the documents which would lead to the success of this project.

Result 1 SACMEX creates and updates the “Emergency Manual” in case of an earthquake.

During the exchange of information with the Nagoya City Waterworks, knowledge was acquired to start to prepare the Emergency Manuals in Case of an Earthquake for the area of Wastewater Treatment and Reuse, which made possible to start with two types of manuals, one focused on directors, deputy directors and heads of area.

The other in an operational context, that is, to the site personnel.



Emergency Manual in
Case of an Earthquake



Operation Emergency Manual



Emergency Manual in Case of an Earthquake Wastewater Treatment and Reuse.

The ability of a city to overcome chronic tensions and acute impacts will be conditioned to the extent that the continuity of operation of strategic systems and vital services such as the Mexico City Water System (SACMEX) is guaranteed. To meet this objective, SACMEX must strengthen its institutional capacities through evidence-based strategies and actions that integrate robust data methods and analysis that can be directly linked to decision-making.

The information shared by our colleagues of the Nagoya Waterworks and Sewerage Bureau allowed us to constitute the index topics for this manual, since according to the Nagoya experts the manual must be perfectly understandable and with a constantly enriched content.

Particularly for the content of this manual we focus on the upper chain of command, by giving the user an overview in case of an earthquake and how to act in case the chain of command is broken by any eventuality and thus continue with the operation.

Below we present the Index that will contain the Manual.

- Civil Protection (Allows the User to acquire knowledge about how to act during an earthquake and thus share it with the personnel)
- Composition of the Emergency Committee C5
- Identificate and prepare alternative headquarters for the Operations Control Center, in case this is necessary.
- Infrastructure (Allows the User to Know the Infrastructure of the city as well as its vulnerabilities in case of an earthquake, for decision making)
- Identification and delimitation of priority attention areas
- Routes for the Motorcyclists Group
- Summary of the Report and Infrastructure Follow-up System
- Emergency program for ART supply
- Calculation of costs to replace the affected infrastructure
- Technical appendix



Emergency Manual in Case of an Earthquake - Operation. Wastewater Treatment and Reuse.

This manual establishes the General Guidelines to give Continuity to the Operation and states the minimum requirements for establishing a line of command and communication channels within the facilities; in addition, minimum thresholds are established so that operational personnel have access to timely information so that decision makers achieve more efficiency in their actions.

From the information collected and the analysis of the consequences observed in previous events, plus the compilation of experiences with the operation technicians of both SACMEX itself and the Nagoya Waterworks and Sewerage Bureau, the following proposals were obtained that together integrate the proposal of the Emergency Operation Manual:

Routes for the Motorcyclists Group

- Civil Protection (Allows the User to acquire knowledge about how to act during an earthquake in the facilities)
- On-Premises Personnel Format (General, Contact, Function within the Facility and Ability to Perform Another Function.)
- List of Superior Command
- Infrastructure (Allows the User to know the Infrastructure of the Facilities as well as the area of their Influence and its vulnerabilities in case of an earthquake, for decision making)
- Descriptive Report of the Facilities (Gives the user an Overview of the Facilities: Function, Inspection, Vulnerabilities and Know how are Affected when Being Out of Service.)
- Inspection Format for facilities (WWTP, Re-pumping, Pumping Stations, etc.)
- Inspection Format for ART Pipes and Wastewater Network.
- Team Format in the Facilities
- Technical appendix

Result 2. SACMEX and SGIRPC personnel acquire knowledge and optimizes the technics to improve the resilience against earthquakes in the hydraulic infrastructure of Mexico City.

Based on the experiences of the recently presented critical situations in Mexico City, being one of the most representative earthquakes the one on September 2017 where the wastewater and the ART distribution networks were significantly affected, plus the information rescued from various sources related to previous earthquakes, we start to quantitatively determine the vulnerabilities, threats and risks of the infrastructure and its various components that can be affected during an earthquake and cause damage to facilities, roads and service to users.

With the supporting information from new earthquake-resistant technologies provided by our counterparts in Nagoya, we can have an overview of how to use these technologies in the SACMEX infrastructure; due to the health emergency around the world the information exchange has only been through web meetings; we hope that during the next year we can be in direct contact with companies in Japan in the seminars that are scheduled to know first-hand these technologies and thus be able to continue with what is established in the calendar of activities.



Conclusions.

The Water System of Mexico City plays an essential role, both in the field of health and safety of Mexico City, as it is responsible for managing and operating the Drinking Water Network, and the Wastewater Treatment and Reuse Network. It is considered that the management of the infrastructure of SACMEX is one of the most complex in the world, partly because of its size, but above all because of the geographical, social and economic context in which this system is immersed. It is a priority issue for Mexico City's government that SACMEX has the ability to maintain its primary critical functions when events occur that interrupt or compromise its normal operation.

To ensure the continuity of its essential activities, in situations of emergency or disaster, SACMEX must have an Emergency Plan for the Continuity of Operations.

The purpose of the Emergency Manuals in Case of an Earthquake is to effectively minimize the adverse effects on the operation of the Wastewater Treatment and Reuse system caused by interruptions in its normal operation, caused by disturbances of natural origin.

The Objective of this agreement with the City of Nagoya allows us to learn how to ensure that the critical functions in the Operation of Wastewater Treatment and Reuse can be performed for an acceptable period of time after the event, making it possible for the operation to continue efficiently and with a normal organization and thus have a quick recovery from any damage to the facilities as well as to the wastewater and ART distribution networks.

The Directorate of Wastewater Treatment and Reuse thanks the City of Nagoya Waterworks and Sewerage Bureau Staff, to JICA and All Those Involved in this Project.

