

NWRB Major Programs/Projects for CY 2021

1. Development of Groundwater Management Plan and Establishment of Groundwater Monitoring Wells in Water Constrained Areas

In pursuance to the urgency of protecting the groundwater resource of the groundwater constraint areas and recognizing it as a reserve resource that may be tapped during extreme drought and disasters, the NWRB proposed the development of groundwater management plan (GMP) which started in 2014. This is in collaboration with LGUs, NGAs, private and academic institutions. It will provide a comprehensive picture of the groundwater aquifer not only in terms of defining their locations and areal extent, but also in terms of their hydraulic properties and internal characteristics.

NWRB started the program, "Development of Groundwater Management Plan for Highly Urbanized Water Constraint Areas" which is piloted in the city of Iloilo. As of 2020, there are already eleven (11) GMP developed for Cagayan de Oro City, Angeles City in Pampanga, Bacolod City, Baguio City, Metro Manila, Metro Cebu, Zamboanga City, Batangas and Tagbilaran City and Cavite

The Development of GMP for Masbate City started last March 2020, and it is already 60% completed. Inception Report, Monitoring Network, GW Vulnerability Assessment, and GW Modelling Reports are already submitted to NWRB. First Stakeholders' consultation was already conducted. Field data collection were temporarily suspended due to travel restrictions to avoid the spread of COVID 19. Development of GMP for Laguna commenced In February 2021.

Major component of the program is the establishment of groundwater monitoring wells in the groundwater constrained areas with GMP. This will serve as a mechanism of monitoring the effectiveness of existing groundwater policy in the area as well as basis for appropriate protection and conservation interventions.

As of 2020, there's already a total of forty-six (46) groundwater monitoring wells established in eleven (11) groundwater constrained areas with GMP. The first areas established with eight (8) monitoring are Iloilo City and surrounding areas in 2014 which are already operational until present. From 2015-2020, different water constrained cities and their surrounding areas were installed with wells. Ten (10) wells in Cagayan de Oro City, six (6) in Angeles City, four (4) in Metro Manila, four (4) in Bacolod City, three (3) in Bacoor, Cavite, three (3) in Mabalacat Pampanga, one (1) in Talisay, Negros Occidental, four (4) in Metro Cebu, one (1) in Talisay, Cebu, and two (2) in Zamboanga. Data collection on water level and water quality from these wells is being conducted by NWRB to monitor the trend of groundwater level and quality in the areas.

Establishment of Groundwater Monitoring Wells in Batangas City (3) and Lipa City (2) was negotiated in November 2020. Establishment of two (2) groundwater monitoring wells in Cavite City and surrounding areas was awarded to the winning bidder last December 2020. As of 2021, construction of wells is on-going.

The overall goal of the program is to effectively and equitably manage the groundwater resources of the study area through the development of a systematic and science based management strategies that does not only consider current situation but as well as the future impact of climate change to ensure long-term sustainability of this resource.

2. Comprehensive Water Resources Assessment for Major River Basins

Comprehensive Water Resources Assessment for Major River Basins is a long term program of NWRB to formulate a scientific report of the available water considering the current changes and trends in the use of water resources such as climate change and increasing developments.

The NWRB first conceptualized the Comprehensive Water Resources Assessment (CWRA) for the Agno River Basin which was completed in June 2016. Four (4) river basins were assessed from 2017 - 2020 as follows: 1) Panay River Basin; 2) Davao River Basin; 3) Jalaur River Basin; 4) Bicol River Basin. As of 2020, there are already five (5) major river basins with CWRA. CWRA for Cagayan de Oro River Basin which started last 2020 is already 60% completed. The implementation of temporary measures limiting movement and transportation due to COVID19 had caused some delays in the performance of project activities.

For 2021, there are two (2) on-going comprehensive water resources assessment - CWRA in Cagayan de Oro River Basin and CWRA in Tagoloan River Basin.

The results of the study provide scientific basis for planning, programming; and project implementation towards more responsive and flexible policies in addressing current water issues particularly the impact of climate change. Recommended water policies and management strategies based from the project results are tools to enhance water resource allocation. LGUs can adopt and use the study results in their water resource development and management initiatives.

3. Sustainability of Listahang Tubig (Water registry) Database

The Listahang Tubig started as a project in 2014 supported by a partnership among

the NWRB as the lead agency, DILG, and the LWUA under a MOA with other cooperating agencies namely the NEDA, USAID, PAWD, and all Provincial/ Municipal Local Government Operations Offices and Local Government Units (LGUs).

Its primary objective is to create a database of water utilities operating in the Philippines and to facilitate improvement in water regulation and water service delivery through access to information of participating water service providers (WSPs).

In 2015, the first of its kind countrywide survey was completed by the five assessment teams of World Bank through the utmost cooperation of all participating parties. Although it's primary objective is only to create a database of water utilities operating in the Philippines, it expanded to generating profiles, establishing a benchmark for level III water utilities, facilitating improvement in water regulation and water service delivery through access to information of participating water service providers (WSPs).

The NWRB was tasked to sustain the cloud-based system where the basic data of WSPs would be made available to all users. As the Listahang Tubig administrator, the NWRB continuously populate, validate and update the data to support various stakeholders on their data requirements.

All WSPs were enjoined to encode the necessary data in the said website, which is intended to be updated annually thereafter. WSPs will update and upload the data directly in the Listahang Tubig website, <http://listahangtubig.cloudapp.net>.

The total no. of water utilities registered in the Listahang Tubig as of December 31, 2020 is 27,420 with the following breakdown: Level 1- 15,537; Level II - 5,987; and Level III - 5,896

Orientation Workshops on the Listahang Tubig are being conducted in different provinces for the updating/uploading of data/information to the Listahang Tubig website (<http://listahangtubig.cloudapp.net>). Most of the orientation workshops scheduled for the year 2020 in different provinces were not conducted due to implementation of ECQ. However with the imposition of limitations and or restrictions on domestic travel and public gatherings due to Covid 19 pandemic, NWRB still managed to conduct the "Virtual Re-Orientation Workshop on Listahang Tubig" in the Province of Benguet last November 9, 2020. There are ten (10) provinces (Mountain Province, Batanes, Oriental Mindoro, Occidental Mindoro, Antique, Zamboanga Del Sur, Misamis Oriental, Misamis Occidental, Surigao del Norte and Surigao del Sur) programmed for 2021 where another orientation workshops will be conducted.

4. Automated Real Time Monitoring System (ARMS) for Major Dams

The ARMS Project is a joint project between Mapua Institute of Technology (MIT), Philippine Council for Industry, Energy and Emerging Technology Research and Development – Department of Science and Technology (PCIEERD-DOST) and the National Water Resources Board (NWRB). The pilot testing to remotely monitor realtime hydrological parameters in the watershed and dam reservoir using installed sensors which are all based in WMO standards will help in estimating the amount of available water in the basin. Monitoring of dam reservoirs has been one of the major role of NWRB and having real -time data will help the agency in making efficient decisions.

The overall objective of the Project is to provide an automated real-time monitoring system of measured hydrological and operational parameters at the dam/reservoir for an accurate assessment of situation. These will serve as basis for critical decisions during emergency and crisis management.

ARMS – 1 for Ambuklao Binga and San Roque Dams started in 2016 and still ongoing. Installation of nine (9) automatic weather stations for monitoring of 7 parameters (temperature, humidity, pressure, rainfall, wind speed & direction, and soil moisture) and three (3) water level stations is already completed. Database system for archiving information installed in NWRB is already operational. There is continuous monitoring of facilities/sensors, such that they are operational/ workable prior to turn-over to NWRB.

ARMS-2 for Magat Dam started in 2017. Nine (9) automatic weather stations and one (1) automatic water level sensor are already installed with on-going enhancement. Installation of software in NWRB computers for real time monitoring is yet to be completed.

ARMS -3 for Pantabangan Dam started in 2018. Preparation for the installation of the five (5) automatic weather stations and one (1) automatic water level sensor is on-going. The MOA between NWRB and NIA for the project was just signed by NIA on September 29, 2020.

5. Design and Development of Groundwater Monitoring System for Metro Manila, Cagayan De Oro, Bukidnon and Iloilo Groundwater Monitoring Wells

The project is the development of an automated real time monitoring system for groundwater data thru a sensor network. Groundwater data will be distantly monitored in real time basis from the 22 monitoring wells established in Metro Manila (4 wells), Cagayan de Oro (9 wells), Bukidnon (1 well) and Iloilo (8 wells). This is a joint project

between Philippine Council for Industry, Energy and Emerging Technology Research and Development – Department of Science and Technology (PCIEERDDOST) and NWRB.

The data collected will be used in calibrating the developed modeling tools and will also serve as a tool to monitor the possible impact of climate change in terms of GW levels.

The project started in 2018. There are already eight (8) wells installed with sensor system for real time monitoring as of 2020.

For the year 2021, instruments/sensor for other fourteen (14) monitoring stations will be installed.

6. Enhancement of NWRB Water Permitting Management Information System (WPMIS)

One of the main functions of NWRB is granting or issuance of water permits. In order to fulfill its mandate of providing water for all in an effective and sustainable manner, the internal processes which starts from the filing of the application, evaluation and the grant thereof must cope with present technology, thus migrating from manual filing and screening to automated filing and processing.

The development of NWRB Water Permit Management Information System (WPMIS) which was completed in 2019 is one of the agency's efforts in addressing changes requiring ICT (Information and Communication Technology) to cope with the technicalities of the modern times. With the project, the filing, screening and processing of water permit applications will be automated putting a greater weight or emphasis on digital aquifer analysis for a more science based water allocation for existing and future water users.

Since the WPMIS is a new system for WPA, the developed system is required to be performing well. Enhancement of the system is on-going

7. Disaster Recovery Project at NWRB Main Office and Cebu Extension Office

This project is a Hyper Converge Infrastructure (HI) that rebuild and run as quickly and effectively the agency's information system through internet via virtual private network at Cebu Satellite Office (Location of the project moved to DENR R3 Bldg., Government Center, Maimpis, City of San Fernando, Pampanga) if unforeseen disaster or emergency events interrupt critical operation of NWRB.

Labs IT Services Phils. Corp (service provider) has submitted the inception report, project plans, layout design and implementation, and initial delivery of equipment. However, due to the existing community quarantine, initial equipment installation in the remote project site (Pampanga) is on hold.

8. Development of NWRB Comprehensive Human Resource Information System

The system is for the collection and storage of data on NWRB employees in order to continuously improve efficiency and achieve excellent office processes particularly the human resource (HR) systems

The goal of the project is to establish an efficient and effective HR data system and database, payroll system, attendance and health monitoring, electronic leave application, recruitment database, electronic performance management system and database, learning management system and employee portal.

The project was awarded to the winning bidder in April 2021 and Notice to Proceed was issued in May 2021.

9. Digital Library Project

This project is proposed to serve as an electronic library system which will collect, centralize, and digitize water-related information materials stored in NWRB. It is currently under negotiation after two failed bids.