

## SHARING THE RESULTS IN 2020

### Hydrogeological Assessment and Monitoring of the Tomil-Gagil Aquifer, Yap Proper, FSM

#### Background

The groundwater investigation, undertaken by the Pacific Community at the request of the Yap State Government, as one of the RENI project activities, focused on assessing the impact of abstraction from the existing water supply production bores on the aquifer of Central Tomil. The objective was to provide technical guidance to government and water supply operators on the operation and future development of the Gagil-Tomil aquifer, for improved water security.



In 2019 the SPC Water Resources team made two visits to Yap Proper. In May 2019 a reconnaissance visit was undertaken. In September-October 2019 a longer visit was undertaken to conduct a hydrological assessment of the Gagil-Tomil Aquifer by use of pumping tests to understand the impact of the current abstraction from existing production bores and to determine the capacity of the aquifer. Groundwater assessment using Electrical Resistivity Tomography was also undertaken to identify potential locations for new bores.



Well sites, May 2020

Pressure transducer-type loggers were installed in each of the five monitoring bores to record the changes in water level at these locations over time. The data from these loggers provided a valuable insight into the long-term impacts of climate variability and, potentially, the long-term groundwater abstraction from production bores on the Gagil-Tomil aquifer of the Monguch and Eyeb valleys. In 2020 a rain gauge was installed in Central Tomil.

Water levels in the wells and bores were monitored over the period October 2019 to April 2020. This monitoring yielded especially valuable information as it coincided with the tenth most severe drought on record. April 2020 marked Yap's fourth consecutive month of extreme drought with precipitation totals below 102 mm (4 inches).

The results of the hydrogeological assessment are documented in the publication *Groundwater Resources Assessment: Gagil-Tomil, Yap State 2020*.

A third visit to Yap Proper to share the results with the Yap State government agencies and the water authorities was scheduled for April-May 2020 but had to be cancelled due to the COVID-19 travel restrictions in the Pacific island region.

### **Sharing the results in 2020**

Over the period May to September 2020, five virtual meetings were held with partners in Yap Proper to share the findings and to map out the next steps.

Key participants were from the following agencies:

- Yap State Environmental Protection Agency
- Yap State Department of Resources and Development
- Yap State Weather Service Office
- Gagil Tomil Water Authority
- Yap State Public Services Corporation
- Tamil Resources Conservation Trust
- RENI Project Team (Suva, Fiji)
- SPC-Water Resources Team, GEM Division, Suva, Fiji.

During the meetings the results were shared using power point presentations followed by discussions.

During the preliminary meetings in May, the results of the hydrogeological assessment were shared and discussed (see "Review of the hydrogeological assessment May 2020" presentation ).

During the follow-on meetings in August the ongoing work and the next steps were discussed (see "Ongoing work and next steps" presentation).

In particular, the continued monitoring and management of the aquifer were key discussion areas. Key monitoring activities and those responsible were outlined, see below.

## SUGGESTED WATER RESOURCES MANAGEMENT IMPROVEMENTS



Outcome	Output	Responsible	Timeframe
Improved understanding of groundwater system behaviour during normal and extreme climatic conditions and long-term water resources management	1. Monitoring of production bores including: (a) weekly pumping records, (b) pumping rates and volumes abstracted, (c) pumping schedule, (d) water level and salinity measurement,	YSPSC and GTWA	Immediate term
	2. Monthly monitoring of YSPSC observation bores	YSPSC and EPA	Immediate term
	3. New automatic rain gauge at GTWA site established and periodical data download, analysis and archiving		Immediate term
	4. Water quality sampling and analysis of dissolved iron and manganese during different climatic conditions	EPA	Immediate - Medium term
Improved multi-sectoral engagement, coordination, and actions for integrated water resources management	1. Establish a water resources management committee	EPA	Medium term
	2. Develop a drought response strategy including water conservation		
	3. Establish clear communication strategy amongst stakeholders		
Improved water supply infrastructure resilience to changing climate and for future development needs	1. Leak detection program for the GTWA and YSPS distribution system	YSPSC and GTWA	Long term
	2. Replacement of ageing pipeline infrastructures	YSPSC and GTWA	
	3. Drilling of additional groundwater sources in Gagil	GTWA and Yap State	

The SPC-GEM water team have agreed to continue providing long-term support with data analysis and sharing of the results. The Yap State partners have agreed to support the collection of the data from the rain gauge and the data loggers.

The combined efforts will support the Yap State partners with the long-term management of the Gagil Tomil aquifer.