

INTER OFFICE MEMO

To : CLP Manager, Director, Deputy Director, SOPAC Water Sector'
From : Davendra Nath, Water Safety Plans Officer.
Date : 16/06/06
Subject : Scoping Mission Trip- Republic of Palau.

MISSION REPORT

Subject : Drinking Water Quality, Republic of Palau.

Place Visited: Koror, Republic of Palau.

Dates: 5th to 9th June 2006

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Title of Project: Pacific Water Safety Plans Programme

Participating Agencies: Bureau of Public Works.
Ministry of Health
Environment Quality Protection Board
South Pacific Applied Geoscience Commission (SOPAC)
World Health Organization (WHO)

Source of Funding: AUSAID/ SOPAC

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1. PURPOSE OF MISSION

The SOPAC/WHO scoping mission to the Republic of Palau from 5th to 9th June 2006 was arranged to assess the commitment of the Government of Palau and to identify the partners for a possible Water Safety Plans Project. The Mission team comprised of Mr Davendra Nath, SOPAC, Project Officer, Mr Marc Overmars, Water Advisor SOPAC and Mr Mitesh Mudaliar Project Assistant ,WHO. The teams Terms of Reference were as follows;

1. Brief the Bureau of Public Works and Water Utilities of Republic of Palau on Pacific Water Safety Plans Programme;
2. Consult with and engage all relevant government agencies (including water, health and environment) and also community representatives and NGOs;
3. Complete visits to potential pilot project sites;
4. Propose with government partners a workable project management structure and steering committee for the implementation of the pilot project(s) and co-ordination of in-country activities;
5. Evaluate country commitments and the potential for “ownership” of the Republic of Palau – Water Safety Plans Pilot project.

The mission was jointly fielded by the Director, South Pacific Applied Geoscience Commission (SOPAC) and the WHO Representative- South Pacific following the request from the Ministry of State, Ministry of Resources and Development and Ministry of Health.

2. BACKGROUND

The Concept of Water Safety Plans (WSP) has been included as a new risk-assessment and risk-management approach to ensuring safe drinking water, in the 3rd edition of WHO's Guidelines for Drinking Water Quality. This approach was introduced to the Pacific Island Countries (PICs) in a WHO workshop held in February 2005 in Nadi, Fiji. The workshop attended by 18 countries and territories resulted in a 'Framework for Action on Drinking Water Quality and Health in Pacific Island Countries.'

The Framework included amongst others, proposed actions to improve Water Quality Monitoring and introduce Community-Based Monitoring and the Water Safety Plan concept in Pacific Island Countries.

The meetings of Pacific Island Health Ministers in Apia, Samoa endorsed this 'Framework' two months later with statement in the 'Samoa Commitment'. The Pacific wide water quality and water safety plan programmes have since been proposed and funded.

The 'Pacific Water Safety Plans Programme' began in late 2005 under AusAID funding to SOPAC and WHO. This two year joint programme will pilot Water Safety Plans in at least four PICs with the Republic of Palau selected as one of the Micronesian country.

The role of the WHO/SOPAC scoping mission was proposed to determine the interest and scope and secure the commitment of key government counterparts including the Ministry of State, Ministry of Resources and Development and Ministry of Health (MOH).

COUNTRY PROFILE:

The Republic of Palau is the most western island group of the Caroline Islands and is an archipelago of approximately 350 islands located in the south-western Pacific Ocean about 500 miles north of the equator and at 7.20 north latitude and 134. 28 east longitude. The nearest neighbouring islands are Guam, the Philippines and Papua New Guinea respectively.

The main archipelago is approximately 100 miles in length and 16 miles across and includes the seven major islands, all of which are populated. The largest island is Babeldaob with an area of 153 square miles. Ten of Palau's sixteen states lie on Babeldaob. South of Babeldaob is the island of Koror state. Stretching south of Koror for about twenty miles are hundreds of tiny mushroom shaped uninhabited islands known as rock islands. At the end of the chain of rock islands are the two inhabited islands of Peleliu and Anguar.

The majority of Palau's population lives in Koror State, which serves as the commercial centre of the nation. Koror State is urbanised with modern infrastructure and services, paved roads and traffic. Babeldaob and the other remaining islands are rural and undeveloped. The total population of Palau is around 20,000 of which about 14,000 live in Koror. The largest sectors of the economy are services, tourism, fisheries and agriculture.

WATER RESOURCES AND SUPPLY STATUS:

The tropical climate of Palau is warm and humid with an average rainfall of about 150 inches per year. Palau has an abundance of surface water streams and rivers on the main island of Babeldaob, which supply the majority of the public drinking water systems. The island Lake Ngardok is the largest fresh water lake in Micronesia.

A secondary supply source of water for the public water systems is groundwater. Although the potential exists for more ground water use, it has not been extensively developed because of well maintenance problem and water quality problem.

Many of the homes in Palau have their own private individual rainwater catchment systems to provide drinking water. The Koror/Airai system is supplied by two surface water sources both of which are located in Airai State in south Babeldaob. The main source is the 20 million gallon capacity Ngerimel Dam and Reservoir. Water from the dam is supplied to the treatment plant by gravity main. The second source of water is from Ngerikill River pump station that can pump water either into the Ngerimel Dam or directly to the treatment plant through two mains.

3. ACTIVITIES AND FINDINGS

3:1 Activities

The WHO/SOPAC team visited Koror, the administrative state of the Republic of Palau from 5th to 9th June. The mission was hosted by Bureau of Public Works, Environmental Quality Protection Board and the Ministry Of Health, who organised meetings with government and development partners and NGOs.

The programme for the mission and the full list of officials contacted appear in Annex 1 and 2 respectively. A number of relevant books and documents were provided to potential partners, agencies and officials as per annex 4.

3:2 Findings

Monday 5 June

9.00 am

Ms Portia K. Franz, Executive Officer, EQPB, welcomed the team and introduced her and the staff. A meeting was organised at the EQPB office with the government heads of Departments and SOPAC focal points members for Palau. Mr Theo Isamu, Director and sitting chairman from Bureau of Marine Resources, welcomed the WHO/SOPAC scoping mission team and requested all the Ministries present to support and facilitate the mission in regards to the Water Safety Plans Programme..

The members were informed about the Water Safety Plans Programme and the timetable was formulated for the week in consultation with each relevant department. A final visit programme was made and distributed to all the stakeholders. The members present were quite supportive and assured their commitments for the Pacific Water Safety Plans Programme. They strongly believed that the accompanying programme on water quality monitoring should also be implemented in Palau so that safe drinking water can be addressed in a holistic and collaborative approach.

1.30 pm

The team met Ms Portia K. Franz, Executive Officer, and Environment Quality Protection Board who introduced her office staff and the Senior Technician Mr Jerome Sakurai. Ms Franz explained that the board has several functions including water quality monitoring for drinking and source water. The board has a policy guideline on water quality and also does the enforcement. The department have a good laboratory but additional manpower would be useful to address the lack of human resources and development of water quality database. The EQPB laboratory could serve as training mode for other Micronesian countries under the Water Quality Monitoring Programme.

2.00pm

The team met with the Director, Bureau of Public Works, Mr Masasinge Arurang and his deputy Mr Joachim Reklai and Mr David Dengokl Manager Koror/Airai Water Treatment Plant. The team briefed them about the Water Safety Plans programme. The director assured his support in the formulation and implementation of the programme. He further informed that the conventional water treatment was established in 1998 and serves a population of 12,000 in Koror and Airai. Surface water is captured by the dam at Ngerimel and then feeding the treatment plant by gravity with a capacity of 1 MG/day. The total storage capacity of the Ngerimel dam was estimated to be 20-25M Gallon. Additional water is

pumped from the Edeng River supplying around 3M G/day with 3 pumps (1 standby). The total supply to Koror/Airai for a population of ca. 12,000 people is about 4MG/day which equals to around 300G/person/day. For comparison the wastewater treatment plant has a reported capacity of only 2M G/day.

Tuesday 6 June

9.00am

Visited Environmental Quality Protection Board Laboratory which is quite extensively used for the water quality monitoring. Senior Laboratory Technician Mr. Jerome Sakurai showed us the lab and the analysis procedures EQPB is using. The lab was well utilised and had many modern testing equipments. Presently the lab is used for the analysis of drinking water. A separate report is attached.

Tuesday 6 June

2.00pm

The WHO/SOPAC mission team met with the Minister of Health, Mr. Victor M. Yano Director of Health, and the Environmental Health Staff at the Koror Government Hospital. The team briefed the medical staff about the Water Safety Plan Programme with a power point presentation. The Minister for Health, Mr Victor Yano, requested that the plans, once formulated, should also be implemented rather than becoming another document. The Minister also stressed the importance of local involvement in formulation and implementation of the plan.

The Director Mr Stevenson Kuardei inquired on the possibility of fluoridation of the public water supply. The Minister advised that provision of water for the new building development should be enacted in the building code and as water safety plans could be very useful in achieving this.

Individual households use rainwater catchments but the quality of this supply was not adequately monitored. Construction of safe rainwater harvesting systems could be considered in the WSP programme.

It was also identified that many people use commercially bottled water which is monitored by EQPB.

The Minister also informed that appropriate measures to be taken for water supply in drought and formulation of contingency plan are required as many people may use traditional (unsafe) water sources.

The Ministry of Health expressed strong support for the proposed WSP pilot for the Republic Of Palau and indicated willingness to work closely with all stakeholders.

3.30 pm

The WHO/SOPAC team visited the Koror-Airai water treatment plant with the Manager Mr David Dengokl who explained the process in the treatment plant. The treatment plant takes water from the two different sources i.e. one from the dam catchment through gravity flow and the others intake from the river by pumps. Mr David informed that all necessary chemicals are added at the plant to remove turbidity and correct the pH level. Chlorination is manually done and an employee is assigned to do the jar testing to maintain the correct dosing. Rapid-sand filters are used which are cleaned/backwashed when the pressure rises in the feeder pipes. The treatment plant was fenced and well kept.

Wednesday 7 June 2006

8.30 am

The team went for the field trip to survey the existing water intakes for Koror/Airai and visit other States' water supply systems including the one for the new Capital on Babeldaob. The new compact road

was also seen which passes through many natural watersheds. Staff from the Bureau of Public Works and EQPB Mr David Dengokl, Mr Joachim Reklai, Ezra Youch and Mr Jerome Sakurai accompanied the team for the field trips.

The intake and dam for the Koror/Airai water supply was visited. The dam is located inland and collects 400,000 gallons of water per day and fed through gravity flow to the treatment plant. The area was pristine with no animals or farming practice in the vicinity of the catchment area near the dam.

The second intake visited was the river catchment at Edeng River from where the water is pumped to the Koror treatment plant. The river catchment was not well protected as farming and cattle were seen in the vicinity.

On the island of Babeldaob two surface catchment intakes were seen which were operated by electrical pumps and manual chlorination before distribution to the community. The capital water supply was also visited including the treatment plant which a total capacity of around 50,000 Gallons. The water was drawn from nearby Lake Ngerdok and there are plans to extend the supply system in the near future. There were no farming or animals seen in the area and the catchments seemed well preserved. Due to the expected developments around the new capital the source water runs a risk for future pollution and would require extensive treatment prior to distribution. Mr. Jerome confirmed that the monitoring is done for drinking water at intake and at consumer ends to determine microbial and chemical contents.

Thursday 8 June 2006

8.00 pm

On the request of the Minister of Health, Mr Victor. M. Yano, a presentation was done for The House of Delegates and Senate Committee. The committee members and other department heads were presented with an introduction to the Water Safety Plans Programme. The chairman of the delegates, Mr. Joel Toribiong, reiterated that such a plan would benefit Palau and voiced that support and commitment of the committee to assist the WHO/SOPAC team to implement this programme in Palau is assured.

The senate committee voiced that the timing was appropriate for the WSP prior to further developments in the Capital in Melekeok where water supply will be in great demand. The Minister of Health admitted that for the improvement of Public Health the Water Safety Plan is vital.

2.00 pm

The team met with some of the NGO's of Palau at EQPB office conference room. Present were Ms Robin A. De Meo Resource Conservationist, Palau Field Officer, Natural Resources Conservation Service (NRCS); Ms Tiare T. Holm, Executive Director, Palau Conservation Society (PCS); Mr. Eric Verheij, PAN advisor, and Mr Sean Austin, Terrestrial Advisor, The Nature Conservancy (TNC).

The NGOs were explained about the Water Safety Plans Programme and their potential role in the programme such as community mobilisation and awareness .

Given the activities in watershed management and catchment protection in Palau it was considered appropriate to link the catchment protection component of the WSP programme to the existing activities and alliances that have been set-up.

The NGOs present in the meeting indicated their interest to participate in the Water Safety Plans programme.

Friday 9 June 2006

10.00 am

ROUND TABLE MEETING:

The roundtable meeting was attended by three six stakeholders including directors and department heads. The proposed functional structure was presented to the members who with some changes accepted the structure which was headed by the Ministry of Works. Discussion was based on the agencies potential, possible immediate steps, time frame of the project, and roles of the steering committee. It was informed that the Division of Environmental Health did the H₂S testing for the rural and household water system and possibly some training is also required in this area. It was also informed that Palau Community College as an NGO could be used for training and raising community awareness. As Koror/Airai water supply was one major system serving the high percentage of the population it was agreed that it should be considered as the pilot project. The results of the discussion are reflected in the slides which appear in Annex 3.

2.00 pm

A wrap –up meeting was hosted by the Director, Bureau Of Public Works, Mr Masasinge Arurang , Mr Joachim Reklai, Mr David Dengokl and Mrs Portia K.Franz from Environmental quality Protection Board. Discussion was centred on the next steps and the means for cooperating to implement the water safety plans pilot projects in Palau. The venue, timing and participation for a proposed national WSP training and planning workshop were discussed. It was discussed and confirmed that the workshop be in October as agreed by Mr Masasinge Arurang. The meeting was informed that the cooperation of the three department , Bureau of Public Works, Division Of Environmental Health and Environmental Quality Protection Board is crucial for the successful formulation of the Water Safety Plan. The director Mr Arurang assured his support and re-iterated that the plan would assist in the new development in Palau. The details of the discussion are reflected in the slides from the wrap-up meetings in Annex 3.

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusions

1. The quantity of water available for Koror/Airai, the new Capital in Melekeok as well as rural reticulated supplies in other States seem adequate and of generally good quality. Concern was expressed on the quality of individual household systems including the lack of regular monitoring. Awareness and application of community-based monitoring tools have been applied in Palau. These could be strengthened through the WSP introduction.
2. Water Quality Monitoring has been well established by EQPB through a comprehensive monitoring programme including drinking water, coastal water and also commercial water. However, additional training and assistance on database development would be useful.
3. Water Quality Standards are normally complied with for the Koror/Airai supply system, however, for outlying states; the standards are frequently not complied with.

4. Further extension of water supply and treatment may be required for the Tabecheding providing additional supply to Koror/Airai.
5. Further extension of water supply and treatment may be required prior to new developments around the new Captitol in Melekeok.
6. The water supply and treatment facilities have adequate backup systems and few minor improvements may be required.
7. Watershed Management Plans are in various stages of development with communities in several States using Watershed Alliances supported by NGOs. Catchment protection activities have been widely undertaken by a number of agencies but the increased use of pesticides and fertilizers in watershed areas has been a growing concern. The current intake for the water supply of Koror/Airai might require additional protection.
8. There are many national plans, policies and legislations in place or in development that could be relevant to WSP's, including Land-use plans, Watershed Management Plans, Sustainable Development Plans, National Building Code and Forestry legislation.
9. Strong interest exists among the government departments such as Bureau of Public Works, EQPB and the Division of Environmental Health. Cooperation among these three key agencies is essential. All three expressed interest and willingness to support the proposed WSP project in Palau.
10. There are a number of established NGOs who expressed interest in assisting the development of a WSP for Palau. Palau's Conservation Society supported by TNC and the Natural Resources Conservation Services are two major agencies that could play a key-role in addressing Catchment Protection issues as well as raising community awareness on water and health.
11. The Division of Environmental Health (Ministry of Health) have established community based water quality monitoring and awareness programmes for individual household catchments and could benefit from the WSP programme.
12. There is an existing arrangement for the development and recycling of H2S tests between the Division of Environmental Health and EQPB.
13. There is a good scope and support to introduce the WSP concept in Palau as many organizations are well established with good network.
14. There is a good GIS system established (PALARIS) by the Bureau of Lands and Survey, that could be used as decision-making or planning tool for Water Safety Plan implementation.
15. The Palau Community College (PCC) has organised training of water supply operators, in outlying states as well as the Koror/Airai water supply, under the Operation and Maintenance Improvement Programme. The Water Safety Plans concept could be included in the PCC training programme.

4.2 Recommendations:

1. A Water Safety Plans (WSP) project for Palau should be formally requested by the Ministry of Resources and Development with a letter to the Director of SOPAC to request that Palau be included as one of the four Pacific WSP pilot countries. This request should also refer to key partnerships agreed upon during the mission.
2. The needed National WSP Steering Committee should be formed with key stakeholders to assist in formulating and implementing the plan.

3. Participation and ownership of high-level officials in the three key government agencies (Bureau of Public Works, EQPB, and Division of Environmental Health) should be maintained throughout implementation of the programme.
4. Training and capacity building on the WSP development and implementation should be provided for the operational staff of the relevant agencies.
5. The Koror/Airai system could be used as pilot demonstration for WSP development after which it could be replicated in outlying states.
6. WSP development for individual household systems could be developed by BPW with support from MoH and EQPB.
7. The Palau Community College could play a key role in further training of operators to introduce WSP to outlying state water supplies.
8. The WSP programme could develop tools and activities that can strengthen the current community based monitoring and water and hygiene awareness activities for rural communities including the development and production of materials and development of school curricula.
9. In order to coordinate the implementation of the WSP programme in Palau, it was recommended to use SOPAC/ EDF9 intern as focal point. Until this position has been filled, Ms. Vernice Stefano from Ministry of Resources and Development will assume this coordinating function. All relevant partners (EQPB, MoH, and BPW) should be copied in on all correspondence.
10. The Steering Committee should finalise the dates, venue, participants and budget for the training and planning workshop and the Palau SOPAC focal point will liaise with SOPAC/WHO to organise it.
11. The WSP Programme will be able to provide financial support, facilitators and experts from NZ MoH, training and capacity building, development of tools and on-going support, all to assist in development and implementation of WSPs.
12. Further support to the WSP programme could be provided through the Water Quality Monitoring programme so that safe drinking water can be addressed in a holistic and collaborative approach.
13. The Bureau of Public Works could complete a water supply system description, assessment and risk analysis.
14. The WSP Project could encourage the Palau government to commit to improving access to safe drinking water.

ACKNOWLEDGEMENT

The kind cooperation of the Directors and staff of the Ministry of Resources And Development, Ministry of Health and Environmental Quality Protection Board of Palau is greatly appreciated. In particular the mission team wishes to thank the Senate delegates of the Palau congress who showed appreciation and support for the Water Safety Plans Programme for Palau.

Alonzo Kyota

Co-ordinator, National Emergency Management Office

PROGRAMME :

ANNEX : 2

Monday 05/06/06	AM	Introduction meeting with Ministries and Departments To draw a Programme for the scoping mission.
	PM	Met Portia K Franz, Executive Office, EQPB Met Director Mr Masasinge , Bureau of Public Works
Tuesday 06/06/06	AM	Visited Environmental Quality protection Board Laboratory
	PM	Met Minister of Health, Director of Health and Division of Environment Health .
	PM	Visited Koror/Airai Water Treatment Plant.
Wednesday 07/06/06	AM	Field visits to drinking water supply catchments and intakes On the Islands of Koror and Babeldaob
	PM	Field visits as above.
Thursday 08/06/06	AM	Presentation in the Palau Congress for the senate delegates.
	PM	Meeting With The NGOs
Friday 09/06/06	AM	Round table Meeting
	PM	Wrap-Up meeting