

# TERRITORIAL CLIMATE & INFRASTRUCTURE WORKSHOP

## WATER

AMERICAN SAMOA  
WATER INFRASTRUCTURE UPGRADE



# WATER INFRASTRUCTURE UPGRADE

- REPLACE 180 MILES OF AGING AND LEAKING AC & HDPE PIPES ISLAND WIDE
- INSTALL 4 MILLION GPD DESALINATION PLANT FOR THE EAST SIDE
- CONSTRUCT A 250,000 CYD RESERVOIR AT MALAEIMI FOR STORM WATER HARVESTING



# CAUSE OF PIPE FAILURES

## ASBESTOS CEMENT PIPES ( ACP)

- JOINT FAILURE
- BENDING STRESS
- GROUND MOVEMENT, SEISMIC EVENTS
- PIPE AGE, END OF LIFE

## HIGH DENSITY POLYETHYLENE PIPE ( HDPE)

- OXIDATION DEGRADATION BY CHLORINE BASED WATER DISINFECTANTS
- WARM ENVIRONMENT
- EMBRITTLEMENT AND CRACKING





# REPLACEMENT OF 180 MILES OF AC & HDPE PIPES

- HIGH FAILURE RATE - UP TO 430 REPAIRS PER MONTH
- HIGH NRW - BETWEEN 55% TO 60%
- HIGH USE OF DISINFECTANT - SODIUM HYPOCHLORITE.
- HIGH PUMPING & ENERGY USAGE
- HIGH OPERATION & MAINTENANCE COSTS

**PROJECT COST- \$118 M**



# 4M GPD DESALINATION PLANT - EAST SIDE OF TUTUILA

HIGH CHLORIDE & SALINITY WATER SOURCES IN  
THE EAST SIDE OF TUTUILA .

- AUA – 1340 mg/L , AUNUU – 10,000 mg/L  
*[ EPA GUIDELINES FOR CHLORIDES IN DRINKING WATER – 250mg/L ]*
- SALT WATER INTRUSION AND SALINITY  
EAST - 1830 mg/L, 1.83 ppt  
AUNUU – 12100 mg/L, 12.1 ppt
- NEW DRILLING IN 2018 & 2019 FAILED TO  
LOCATE NEW SOURCES WITH CHLORIDE LEVELS  
BELOW 1,000 mg/L

**PROJECT COST - \$41M**







**Hyflux - 70 MGD Desalination Plant-Singapore**

# BUILD 250,000 CYD RESERVOIR IN MALAEIMI TO CAPTURE STORM WATER

PROJECT FOCUSES ON BUILDING THE RESERVOIR OR CATCHMENT

- HARVESTING INTO PORTABLE [next phase] AND NON-PORTABLE WATER
- GROUNDWATER OR AQUIFER RECHARGE
- REDUCE DEMAND ON LOCAL AQUIFER
- PREVENT DAMAGING FLOWS
- SLOW RUN OFF AND REDUCE DOWNSTREAM FLOODING IN KOKOLAND & FAGAIMA

**PROJECT COST - \$33M**



# HARVEST AND CONTROL STORM WATER



**HEAVY RAIN CAUSES FLOODING IN FAGAIMA  
- AMERICAN SAMOA**



**LOCAL CATCHMENT, UPPER PEIRCE RESERVOIR  
- SINGAPORE**



# THANKYOU

Wallon Y Fong

684 2580268

wallon@aspower.com

www.aspower.com

