Leak Detection & Repair

Blue Print to Water Resource Management

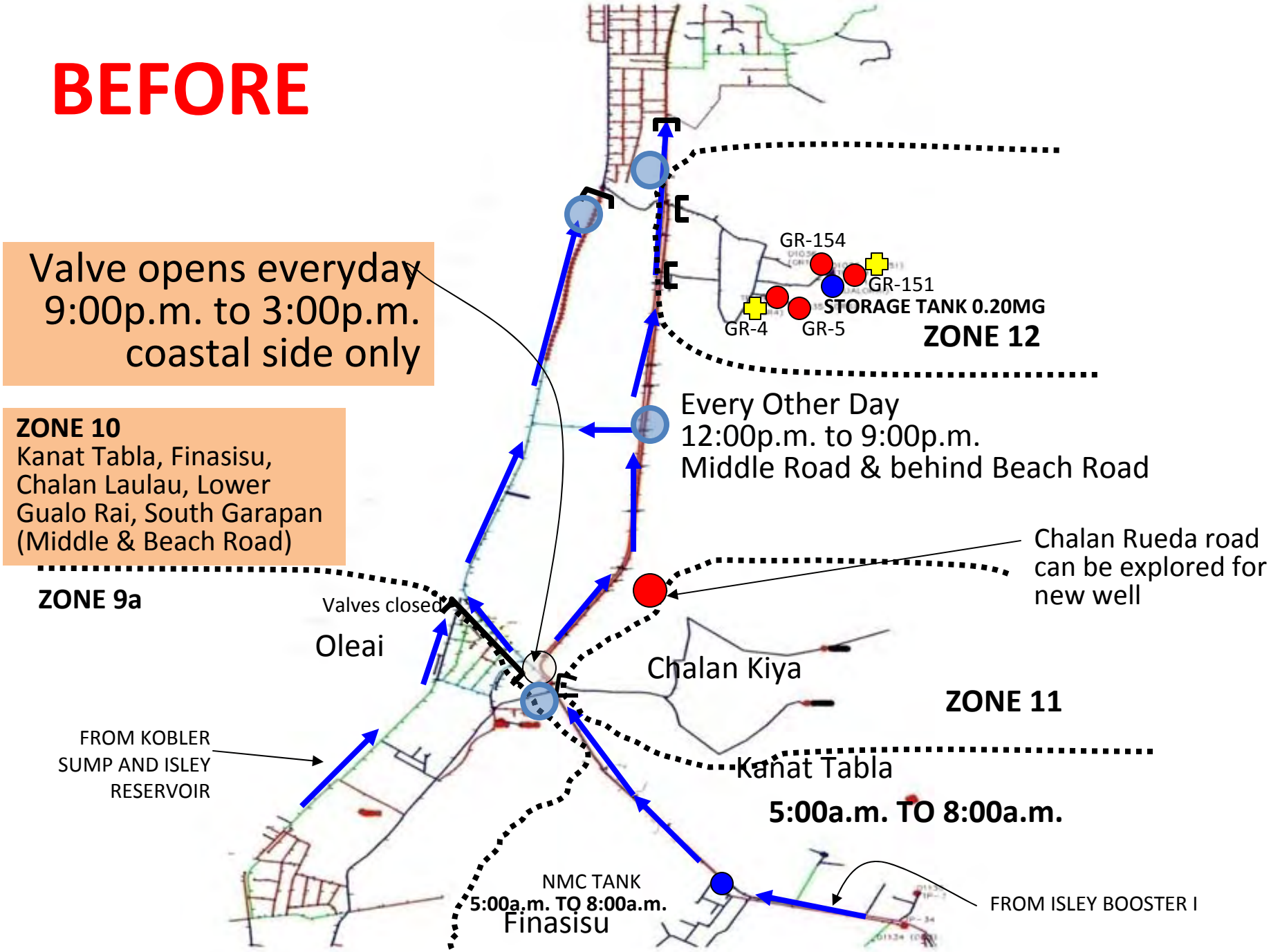
COMMONWEALTH UTILITIES CORPORATION WATER DIVISION

Background

- In 2003, The CNMI Water Task Force (WTF) was created to assist CUC make significant water infrastructure improvements
- The US Army Corps of Engineers was commissioned to develop plans and recommendations for WTF to achieve a pressurized system
- Leak Detection of the entire system was one of the recommended priorities
- In 2005, WTF contracted services for Island wide leak detection and repair phase I
- In 2007, leak detection and repair phase II commenced for the villages of Chalan Kanoa, Susupe and San Antonio.


BEFORE
Valves closed
TORRES-abandoned/salty
Chalan Kiya 24 Hrs.
DUENAS
ZONE 11 BOUNDARY
24 Hrs.
OLEAI WELLS
abandoned
7 ft. deep/salty
ZONE 10
KANAT TABLA
5:00-8:00A.M.
DPS WELL-abandoned
7 ft. deep/salty
NMC
TANK
Susupe
24 Hrs.
PORTION OF CK NOT 24 HRS. DUE TO SUSPECTED LEAKS
FINASISU
5:00-8:00A.M.
ZONE 9a
Chalan Kanoa, Susupe, San Jose, Oleai
Chalan Kanoa
AS WELLS
Direct Feed
San Antonio
KUMOI
ISLEY BOOSTER I
KOBLER SUMP
TANK
ISLEY BOOSTER II

BEFORE


Valve opens everyday
9:00p.m. to 3:00p.m.
coastal side only
ZONE 10
Kanat Tabla, Finasisu, Chalan Laulau, Lower Gualo Rai, South Garapan (Middle & Beach Road)
GR-154
GR-151
STORAGE TANK 0.20MG
GR-4
GR-5
ZONE 12
Every Other Day
12:00p.m. to 9:00p.m.
Middle Road & behind Beach Road
Chalan Rueda road can be explored for new well
ZONE 9a
Valves closed
Oleai
Chalan Kiya
ZONE 11
FROM KOBLER SUMP AND ISLEY RESERVOIR
Kanat Tabla
5:00a.m. TO 8:00a.m.
NMC TANK
5:00a.m. TO 8:00a.m.
Finasisu
FROM ISLEY BOOSTER I

Leak Detection and Repair Phase II

BEFORE LEAK DETECTION

- Chalan Kanoa & Susupe were not recieving 24 hours supply, pressure is lost along the distribution lines coming from numerous Isley Wells.
- Erratic water pressures in San Antonio
- Approximately 1.0MGD production is being lost everyday
- Challenges include multiple & undocumented mains.

Basic Plan of Approach

1. Begin with the Source – Water Division ensuring all wells are operating
2. Leak Detect using High Pressures on the mainlines – Contractor uses ground microphones to identify leaks
3. Utilizing “Block by Block” strategy – Controlling flow into a small portion of the distribution system & exerting high pressures on the mains
4. Cut and Cap old mains

After the Leak Detection Phase II is completed for Chalan Kanoa & Susupe Villages on April 8, 2008:

- 100% of the residents of Chalan Kanoa & Susupe are now receiving 24 hour water service
- 2”-18”pipe repaired/capped at 267 locations
- 225 Valves (2”-16”) replaced
- 1.2 million gallons per day recovered

Isley Reservoir Tank is able to maintain stable water level

Cont. WTF Phase II Leak Detection – Improved Pressure and Water Supply

- Chalan Kanoa – from 4-6 hrs. to 24 hrs.
- Susupe – from 4-6 hrs. to 24 hrs.
- San Antonio - from 5-35 psi to 30-50 psi

LEAK DETECTION AND SURVEY

Leak Detection and Repair – Phase II

Leak Detection and Survey (Point to Point)

Chalan Kanoa

Leak Detection and Repair – Phase II

Leak Detection and Survey (Ground Microphone)
Susupe

LEAK REPAIR

Leak Detection and Repair - Phase II

Leak Repair – 12” Ø PVC

Chalan Kanoa

Leak Detection and Repair - Phase II

Leak Repair –2” x 1-1/4” dia PVC

Susupe

Leak Detection and Repair - Phase II

Leak Repair –6” x 2” Service Saddle and 2” Corporation Stop

San Antonio

Leak Detection and Repair – Phase II

Leak Repair –6" x 2" Service Saddle and 2" Corporation Stop
Chalan Kanoa

CUT AND CAP

Leak Detection and Repair – Phase II

Cut & Cap –6" ACP

Susupe

Leak Detection and Repair – Phase II

Cut & Cap 6” ACP

Susupe

Leak Detection and Repair – Phase II

Cut & Cap – Undocumented Lines

Chalan Kanoa

Leak Detection and Repair – Phase II

Cut & Cap – Undocumented Lines

San Antonio, Across from PIC

VALVE INSTALLATION

Leak Detection and Repair - Phase 2

Butterfly Valve Installation –18" Ø Butterfly Valve
As Perdido

Leak Detection and Repair - Phase II

Butterfly Valve Installation –18" Ø Butterfly Valve

As Perdido

Leak Detection and Repair – Phase II

Butterfly Valve Installation –18" Ø Butterfly Valve
As Perdido

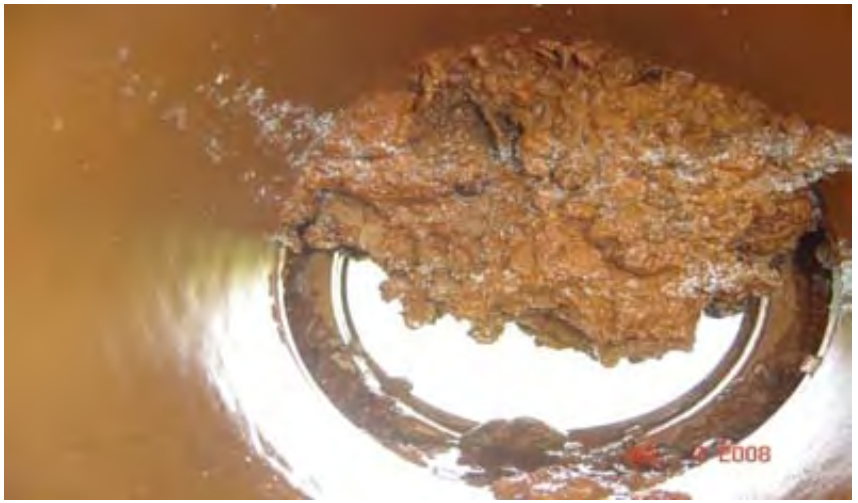
GATE VALVE REPLACEMENT

Leak Detection and Repair - Phase II

Gate Valve Replacement –12" Ø Gate Valve
As Perdido

Leak Detection and Repair - Phase II

Gate Valve Replacement –8" Ø Gate Valve
Koblerville



Leak Detection and Repair - Phase II

Gate Valve Replacement –6" and 12" Ø Gate Valve
San Antonio

REPLACE HYDRANT ASSEMBLIES

Leak Detection and Repair - Phase II

Replacement of Fire Hydrant & Assemblies

Chalan Kanoa

Leak Detection and Repair – Phase II

Replacement of Fire Hydrant & Assemblies
Koblerville

Leak Detection and Repair - Phase II

Replacement of Fire Hydrant & Assemblies

San Antonio

VALVE BOX RAISING

Leak Detection and Repair - Phase II

Valve Box Raising

Chalan Kanoa

POTHOLING

Leak Detection and Repair - Phase II

Potholing

Susupe

Leak Detection and Repair - Phase 2

Potholing

San Antonio

ASPHALT RESTORATION

Leak Detection and Repair - Phase II

Asphalt Restoration

Chalan Kanoa

Leak Detection and Repair - Phase II

Asphalt Restoration

Chalan Piao

Leak Detection and Repair - Phase II

Asphalt Restoration

San Antonio

Leak Detection and Repair - Phase II

Asphalt Restoration

LEAK DETECTION IS A WATER TASK FORCE PROJECT

At the helm is Mr. Pete Sasamoto, P.E.