

Progress in Establishing a Gambian National Shellfish Sanitation Program (GNSSP)



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USAID
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REPUBLIC OF THE GAMBIA



COASTAL RESOURCES CENTER

University of Rhode Island

Goal

To gather sanitary shoreline surveys and sanitary water quality data in the various estuaries of The Gambia in support of developing the nation's water quality zones to protect public health through safer Gambian oyster and clam harvests, and to support development of a Gambian National Shellfish Sanitation Program (GNSSP) to boost shellfish consumer confidence and expand Gambian shellfish markets

Key Outputs

- **August 2010 – December 2013, bacterial water quality measurements have been taken from 20 sites in three different estuaries in Western Gambia: Tanbi, Kubeneh, and Allahin & analyzed by G-DWR. July 2011 – Study tour to US to observe NSSP & RI State Program**
- **May-June 2011 – Study tour to US to observe NSSP & RI State Program**
- **Since January 2012, sanitary shoreline surveys have been conducted by G-DWR and several partner agencies in shellfish growing estuaries to identify potential sources of contamination.**
- **Water quality & sanitary survey data over 3 years time has been used to assign provisional water quality classifications for the 3 estuaries.**
- **Jan 2014 – Water quality classification zones were mapped using Geographic Information System services of the G-NEA**

Gambia and Rhode Island

	<i>Rhode Island</i>	<i>Gambia</i>
Area	3,140 km ²	10,380 km ²
% water	13.9%	11.5%
Population	1,050,300	1,705,000
Density	388.0/km ²	164.2/km ²



Value of oysters USA and Gambia



- Great difference in oyster prices USA & Gambia
- Why?



Average RI & CT Oyster Prices per Standard Bushel (80 lb) by Decade

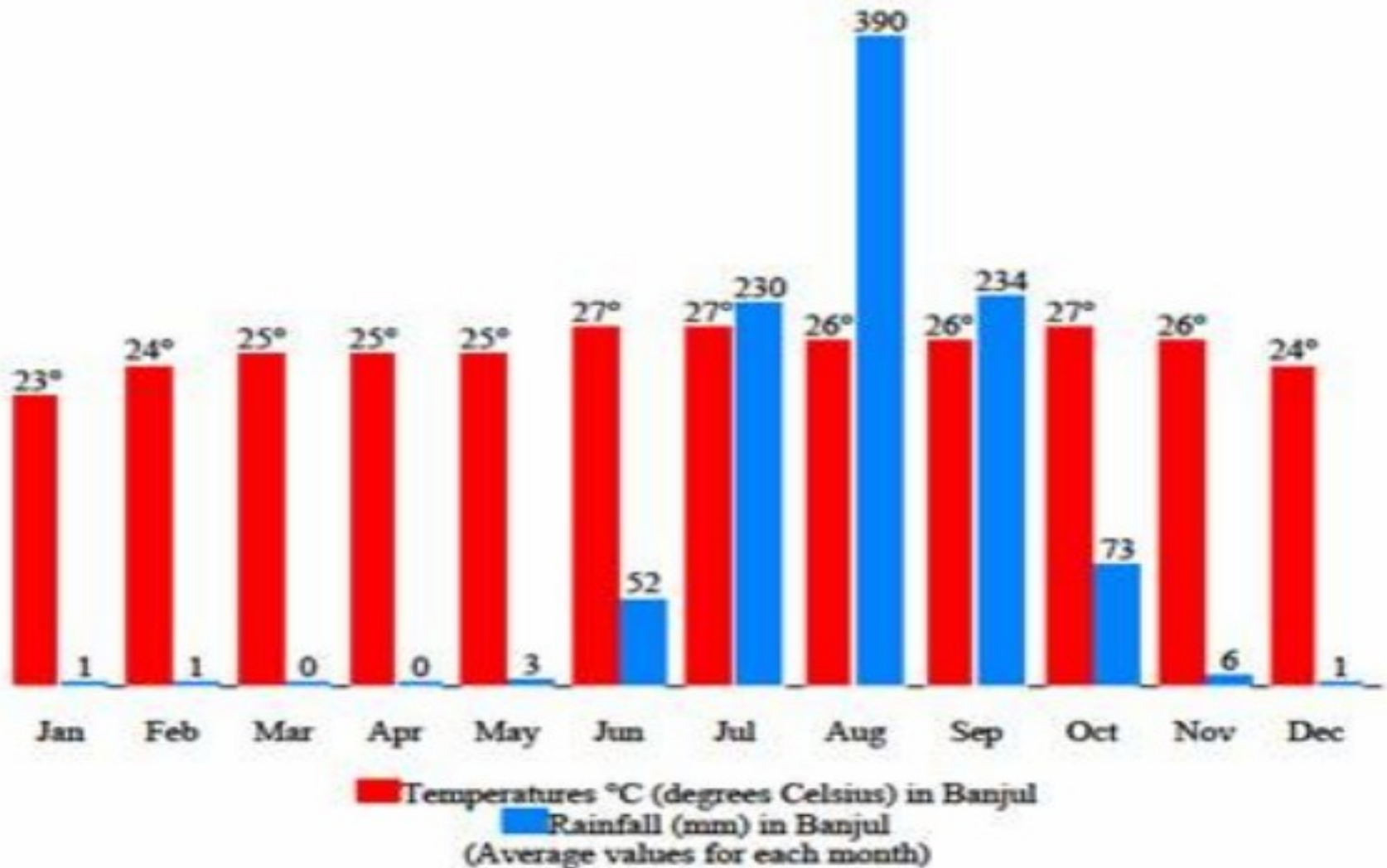
Year	Prices	
	<i>Actual US\$</i>	<i>Inflation adjusted to 2013 US\$</i>
1880	\$1.22	\$56.70
1890	0.63	20.79
1900	1.09	46.07
1910	0.65	17.01
1920	0.74	8.65
1930	1.12	15.69
1940	1.08	18.04
1950	2.41	23.39
1960	9.57	75.61
1970	14.00	84.39
1980	26.26	74.53
1990	59.60	106.65
2000	92.00	124.65
•	115.00	123.34

Sources: MacKenzie 1996; Greg Silkes, American Mussel (pers comm); U.S. Dept. of Labor Inflation Statistics.

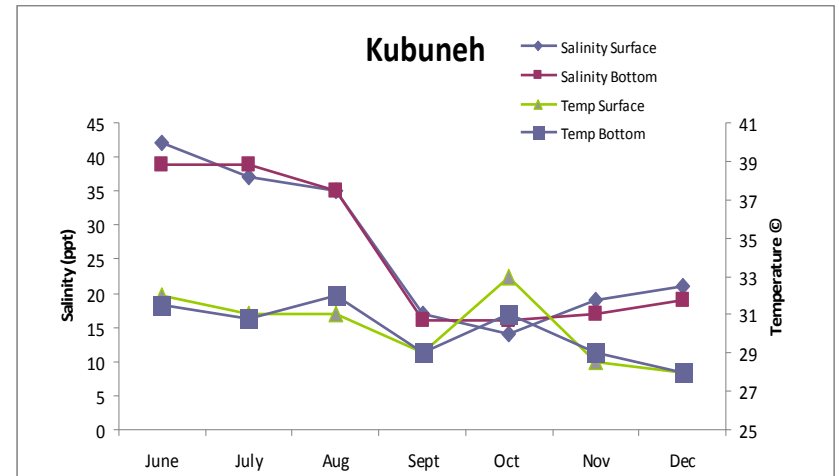
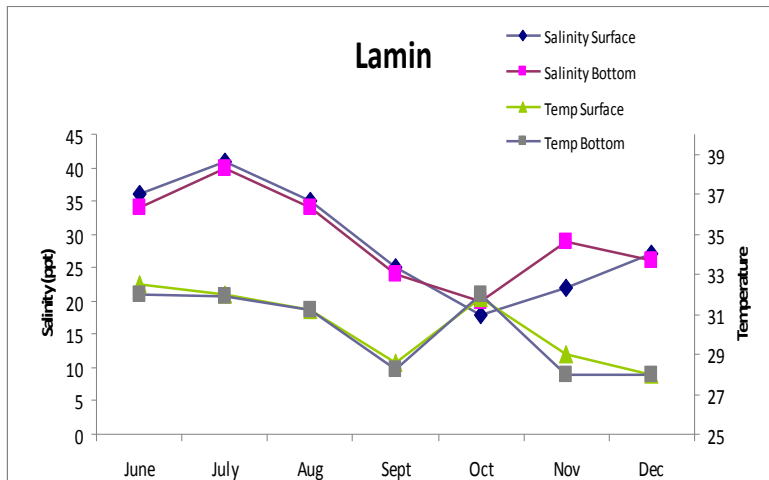
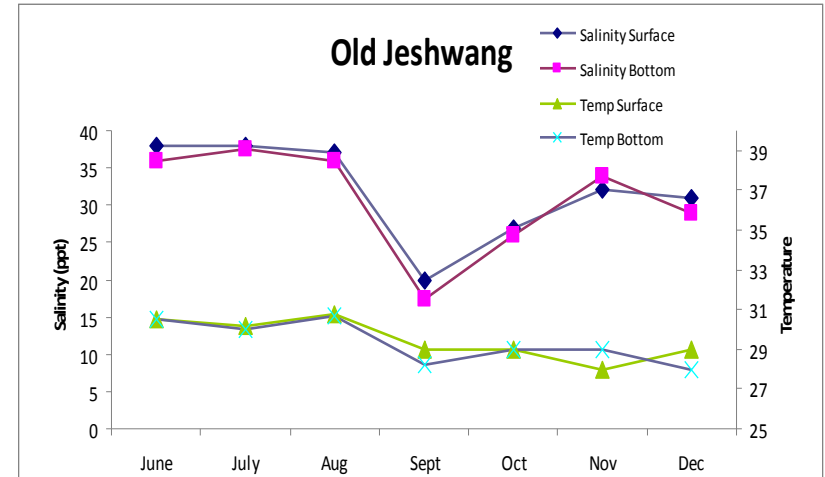
Gambian Officials Visit RI & DC in 2011 to Study NSSP & RI Program



Climatological Data --- Banjul, Gambia



S-T Profiles at Some Sample Stations

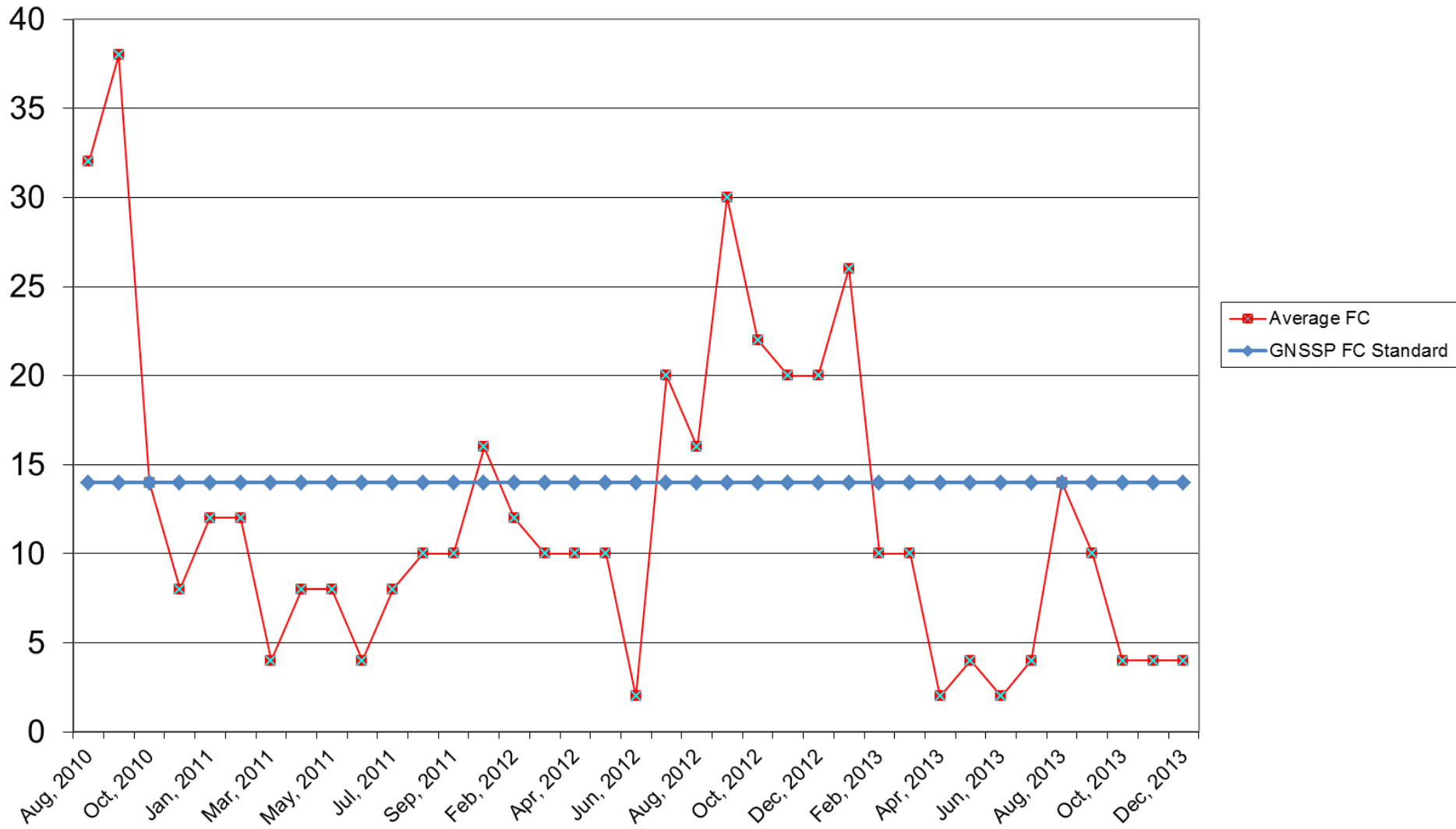


The Allahin Estuary

- Located on border with Southern Senegal
- Blood ark (cockle) & oyster fisheries
- Sanitary survey shows toilet outfalls to estuary



Faecal Coliform Counts MPN/100mL at Kartong

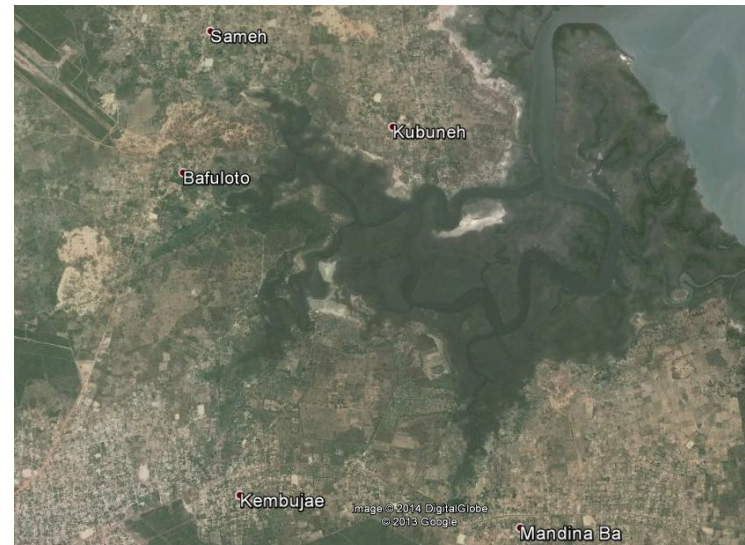


Proposed Kartong Estuary Water Quality Classifications

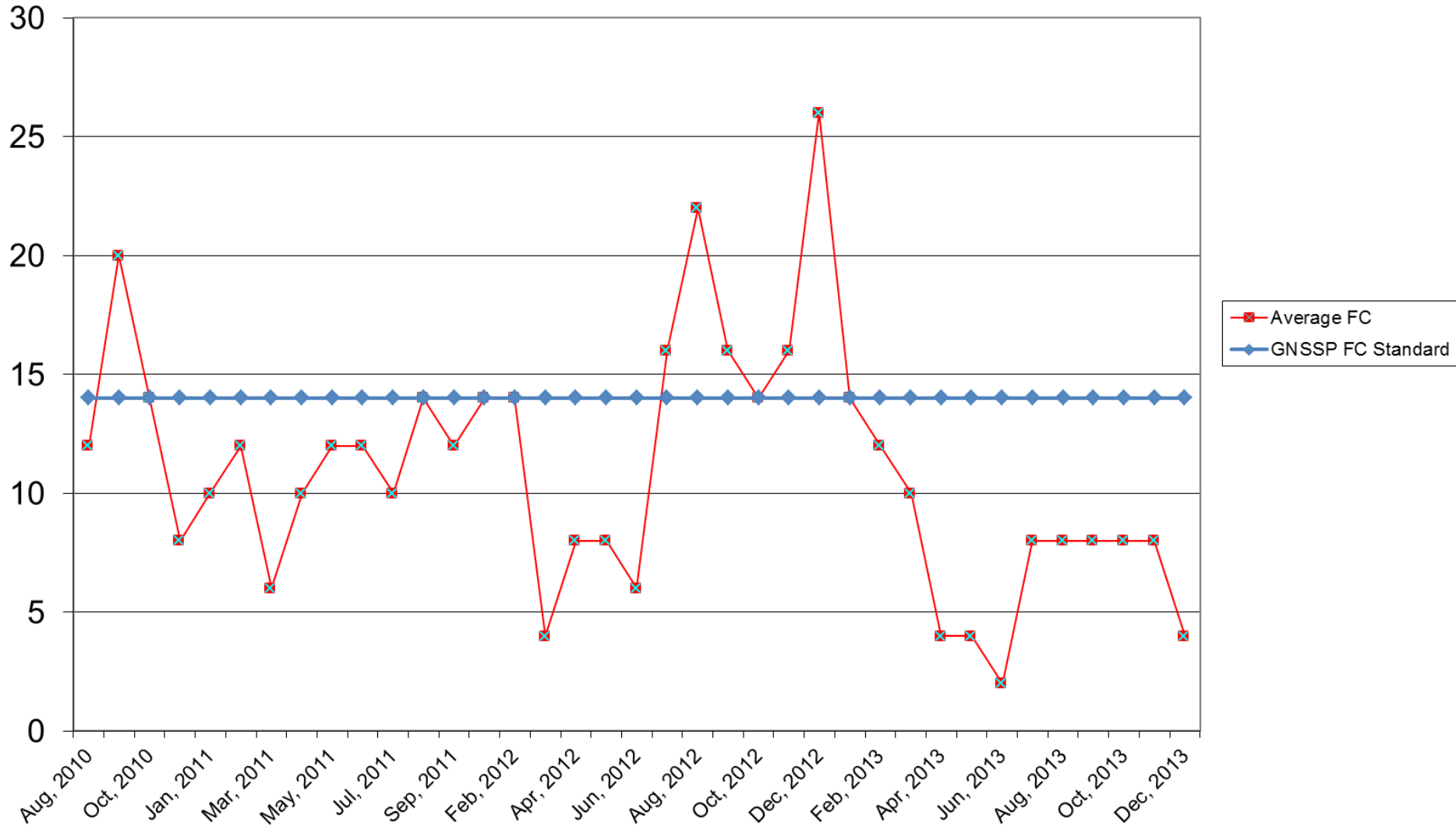


The Kubeneh Estuary

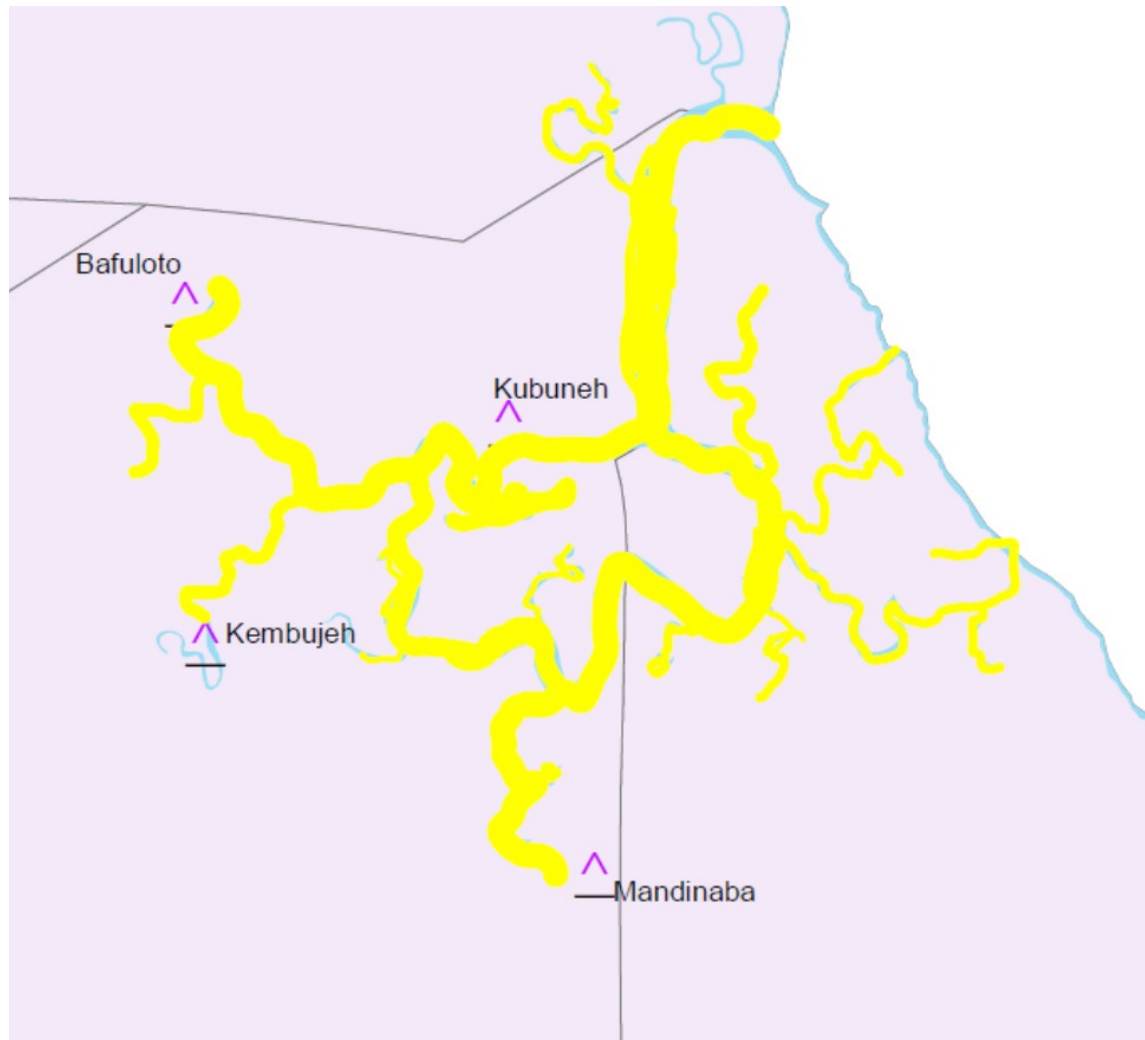
- Located near easternmost suburbs
- Blood ark (cockle) & oyster fisheries
- Four sample sites: Kubeneh, Bafuloto, Kembujeh, Mandina Ba



Faecal Coliform Counts MPN/100mL at Kubuneh



Proposed Kubeneh Estuary Water Quality Classifications

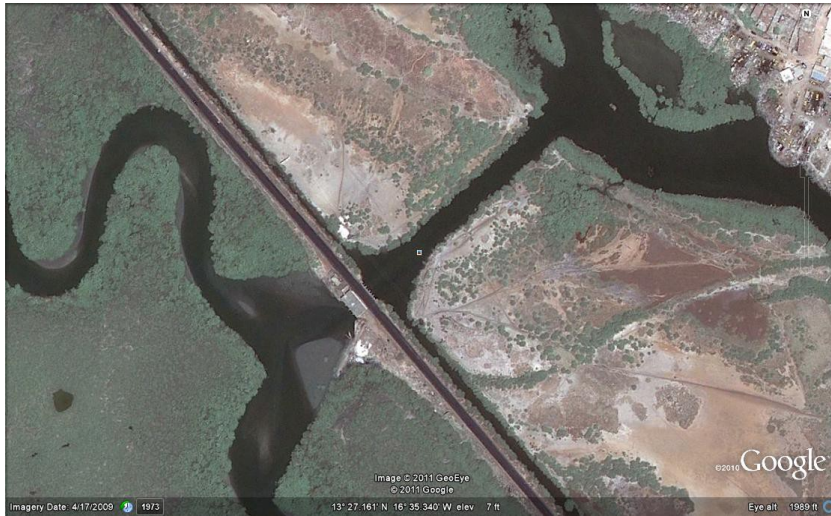


The Tanbi Wetlands Estuary

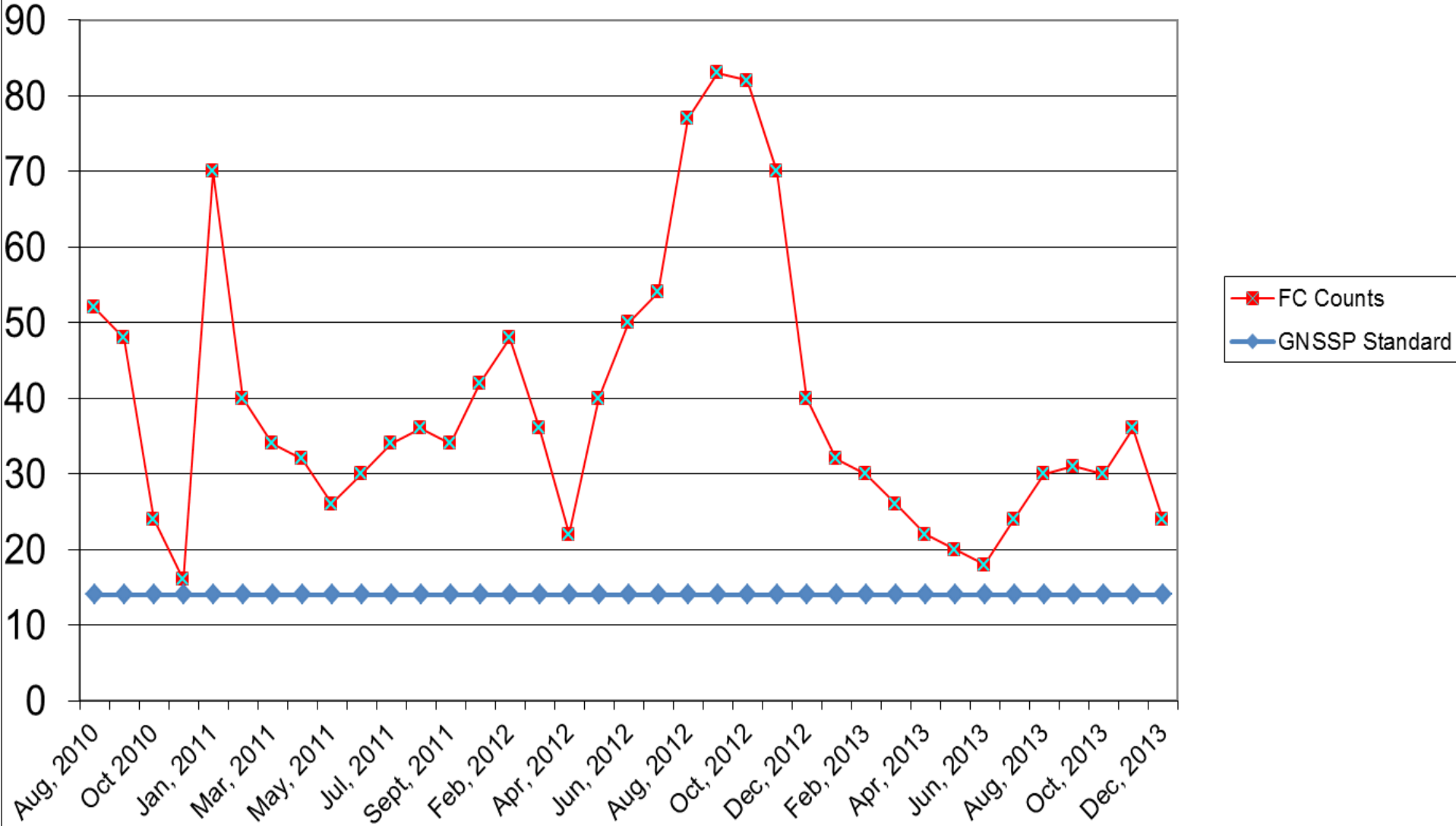
- Located in periurban metro-Banjul
- 15 water quality sampling sites; 11 around perimeter & 4 inside away from habitation
- Several problem areas located by sanitary shoreline survey



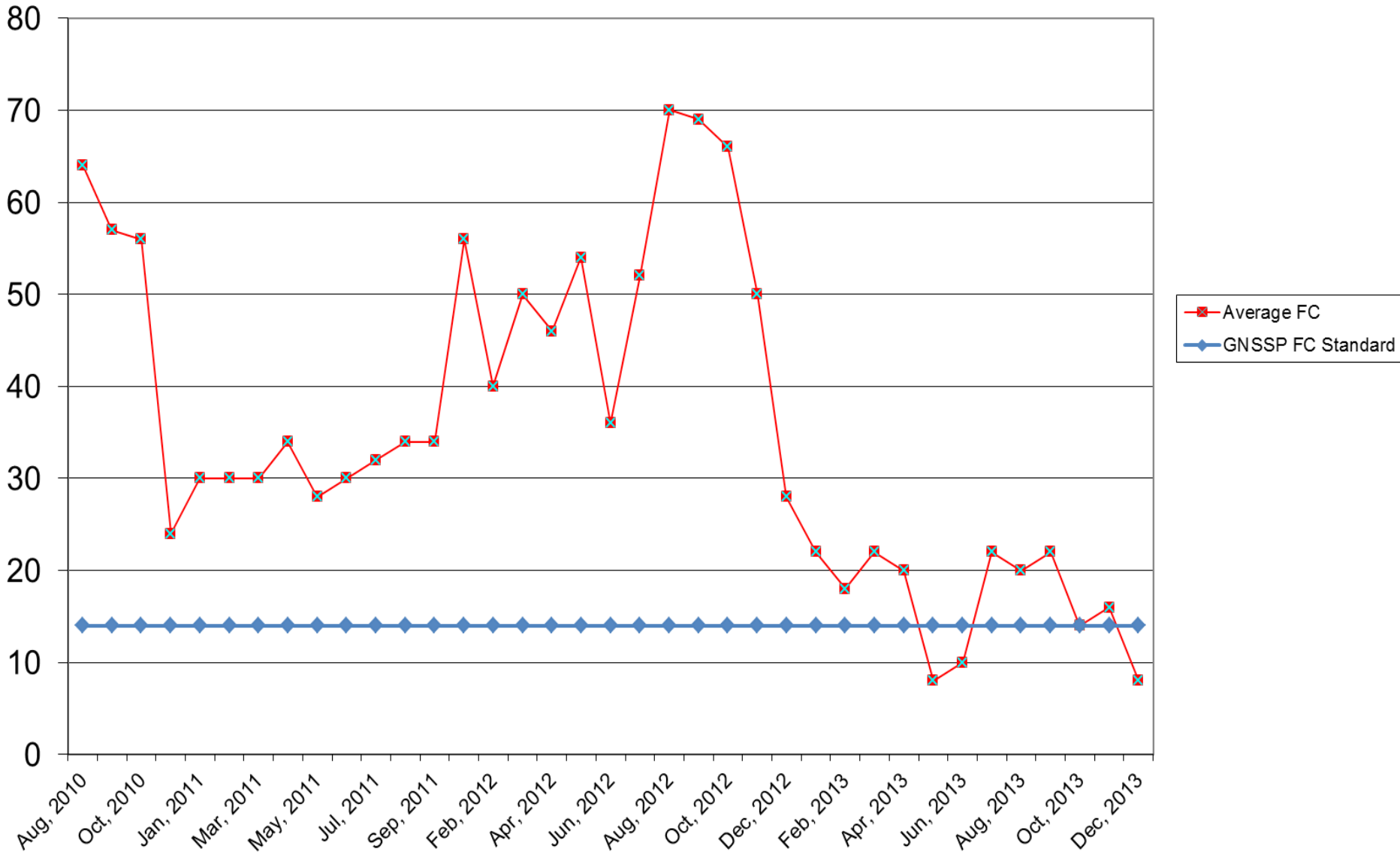
Example sanitary survey problem areas



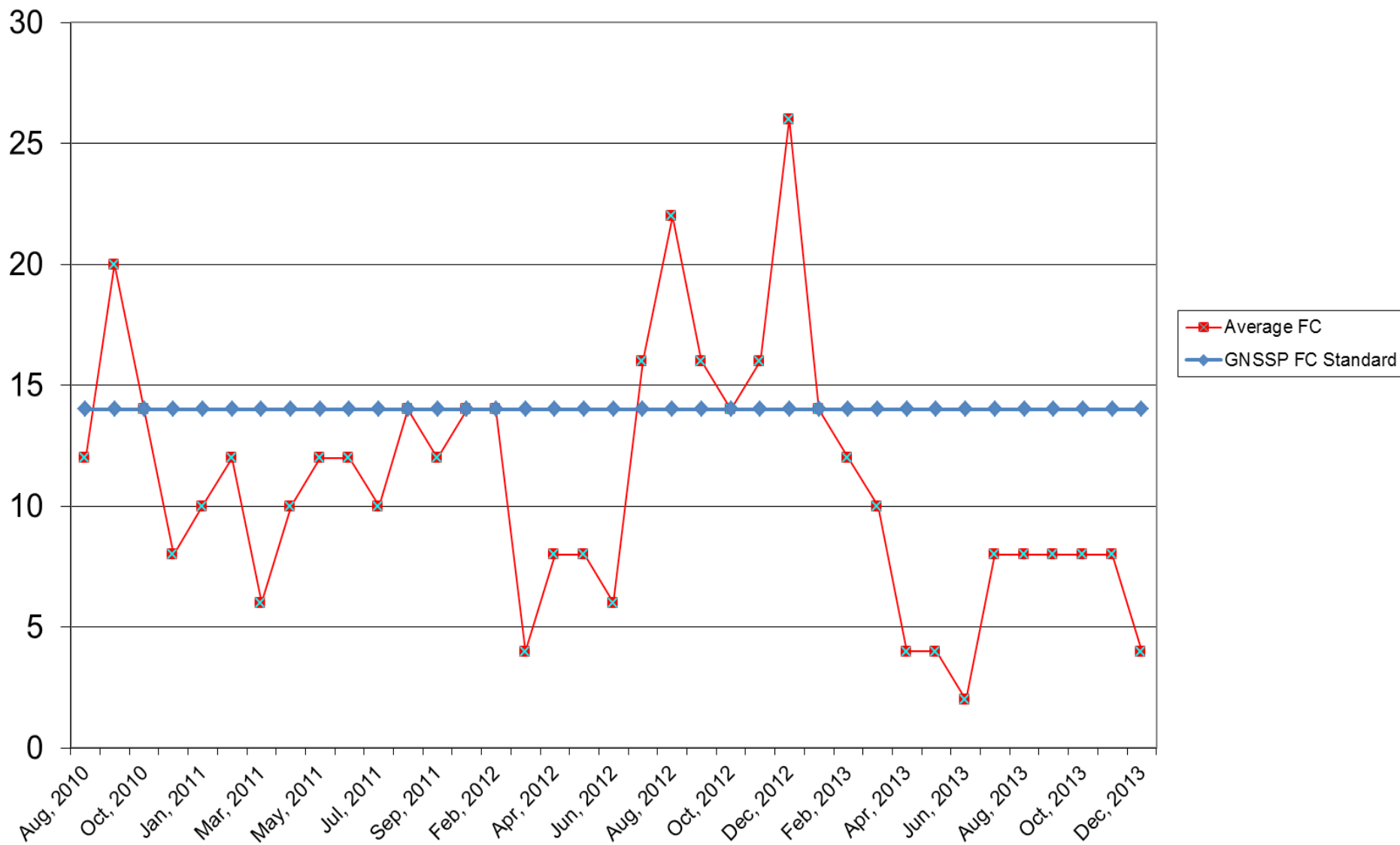
Faecal Coliform Counts MPN/100mL at Wencho



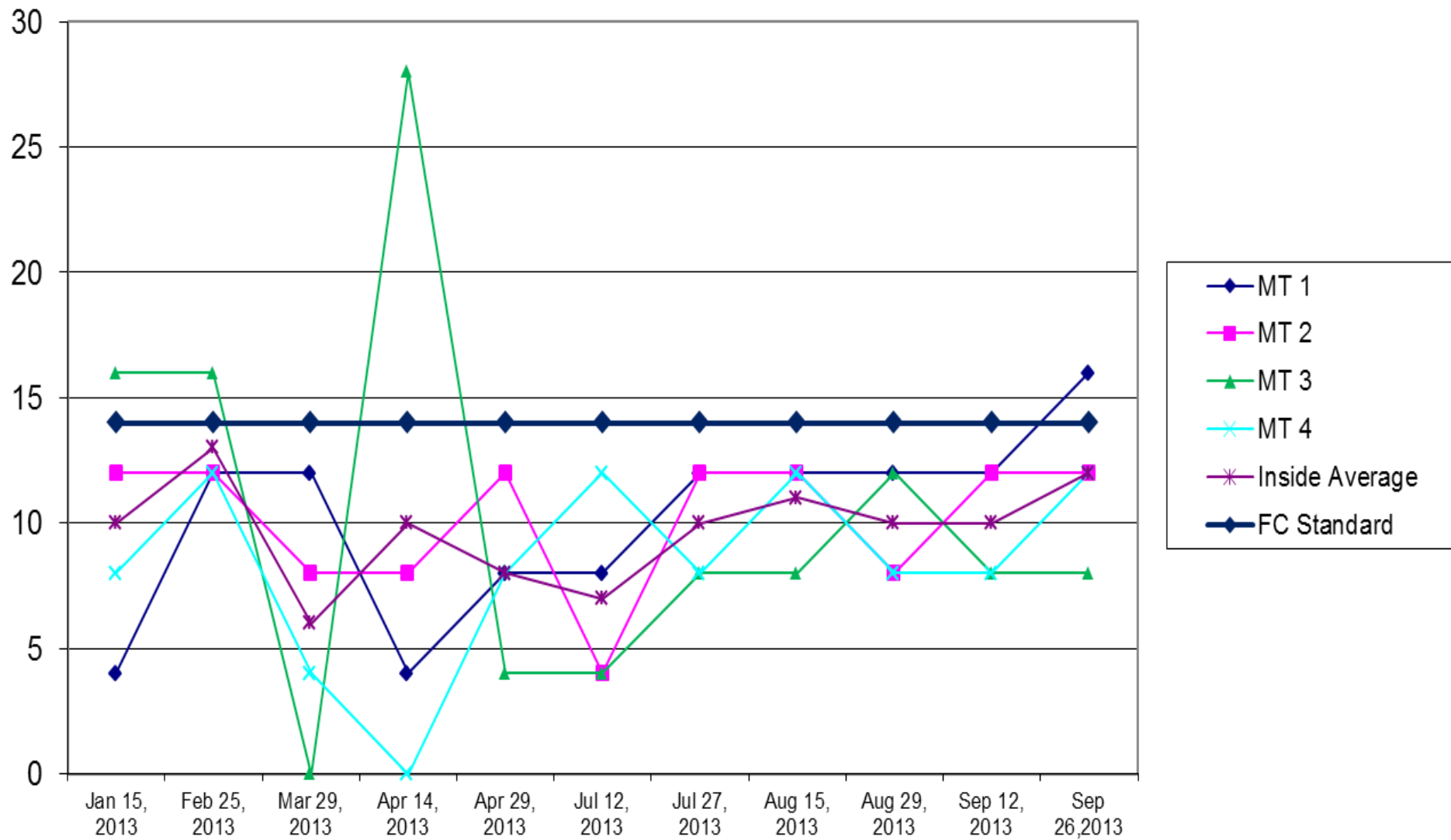
Faecal Coliform Counts MPN/100mL at Old Jeshwang



Faecal Coliform Counts MPN/100mL at Mandanari



Inside Tanbi Faecal Coliform Results



Proposed Tanbi Wetlands Water Quality Classifications





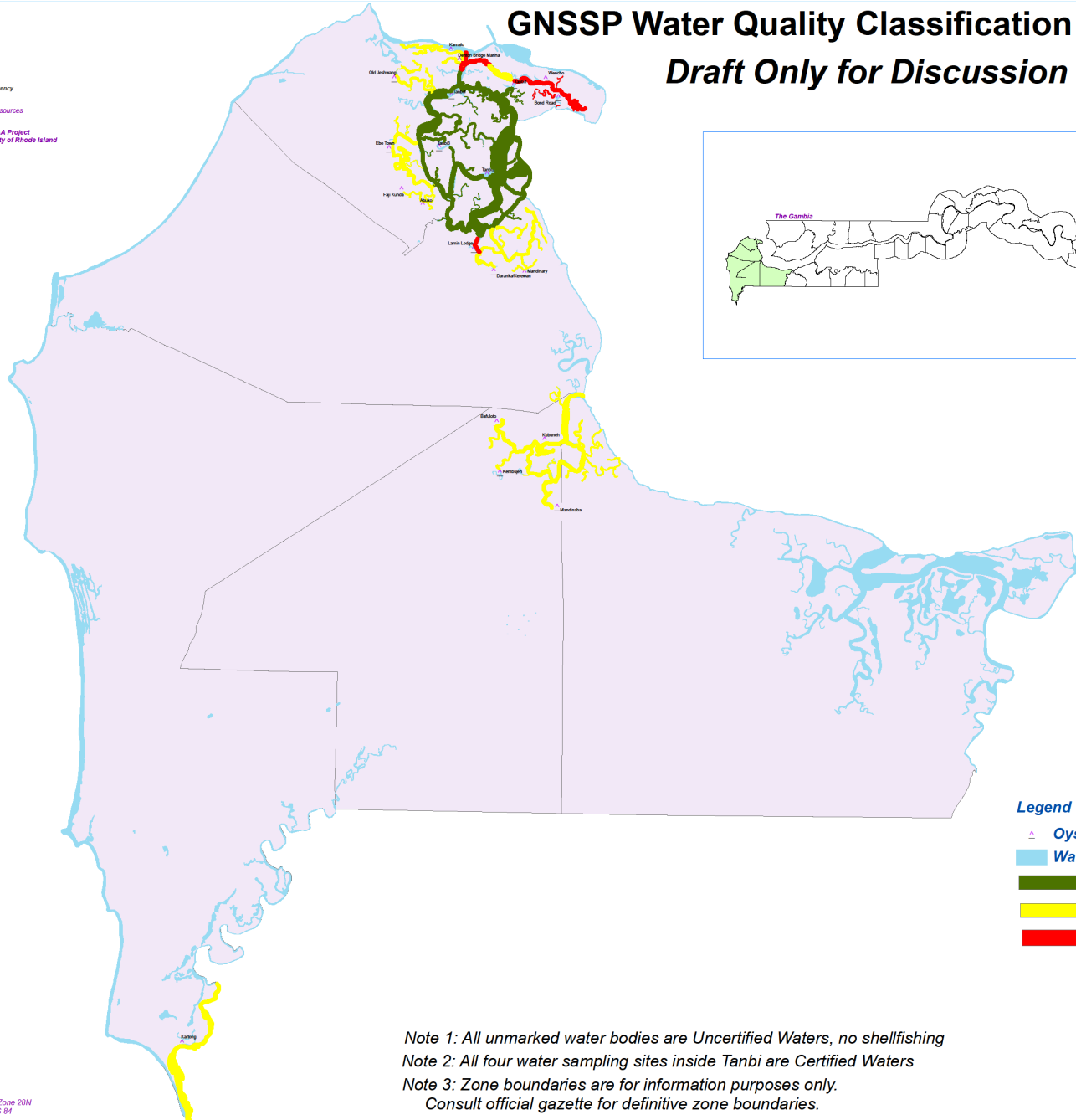
Produced By: National Environment Agency

Data Source: Department of Water Resources

Funded By: USAID/BANAFAA Project
Coastal Resources Center, University of Rhode Island

GNSSP Water Quality Classification Zones- 2014 to 2015

Draft Only for Discussion



Legend

-  Oyster Harvesting & Processing Sites
-  Water Bodies
-  Certified Shellfishing Waters
-  Seasonally Closed Shellfishing Waters
-  Prohibited Shellfishing Waters

Note 1: All unmarked water bodies are Uncertified Waters, no shellfishing

Note 2: All four water sampling sites inside Tanbi are Certified Waters

Note 3: Zone boundaries are for information purposes only.

Consult official gazette for definitive zone boundaries.

Aquaculture & Work to Codify G-NSSP



Where from Here?

- The absolute need for continuous water quality monitoring
- Need for continuously conducting the bi-annual sanitary shoreline survey
- Behavioral change relating to the application of hygiene and sanitation principles
- Application of good manufacturing practices (GMPs) and good hygiene practices (GHPs) during post harvest and post production processes.
- The way forward can focus on an inter agency MoU for the development and implementation of the GNSSP