

TOPIC:

The Impact of the Recent Drought on the National Water Commission (NWC) Water Supply Services to Kingston and St. Andrew

Presenter:

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The Impact of the Recent Drought on the National Water Commission (NWC) Water Supply Services to Kingston and St. Andrew

Objectives:

- Identify and highlight the severity of the drought on KSA
- Assess the multi-dimensional impacts on KSA and the NWC
- Identify mitigation measures implemented by NWC.
- Identifies lessons learnt and preventative mechanisms to be adopted.
- Recommend improvement strategies to mitigate reoccurrence

Methodology:

- Literature Review
- Reviewing of Government Agencies Unpublished Reports
- First Hand Experience

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Definition of Droughts:

- *Meteorological drought*

A deficiency in precipitation extended over a long period

- *Hydrological drought*

departure of surface and subsurface water supplies from some average condition at various points in time

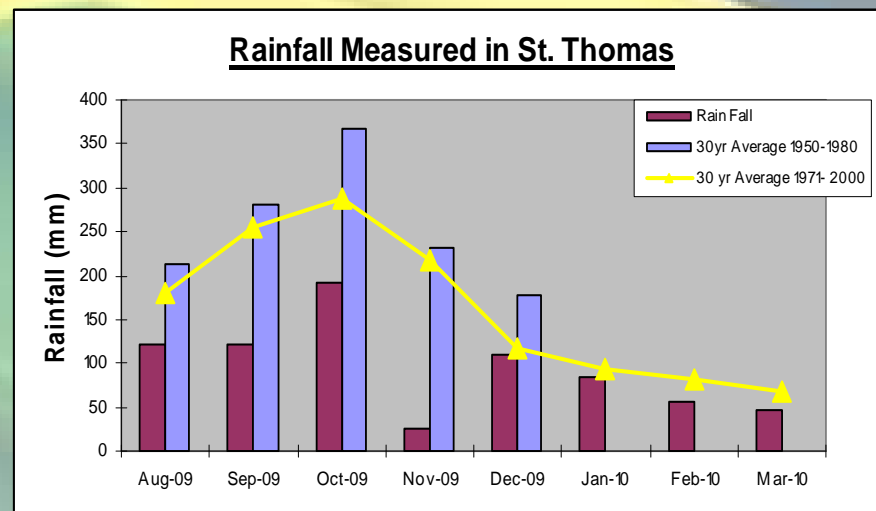
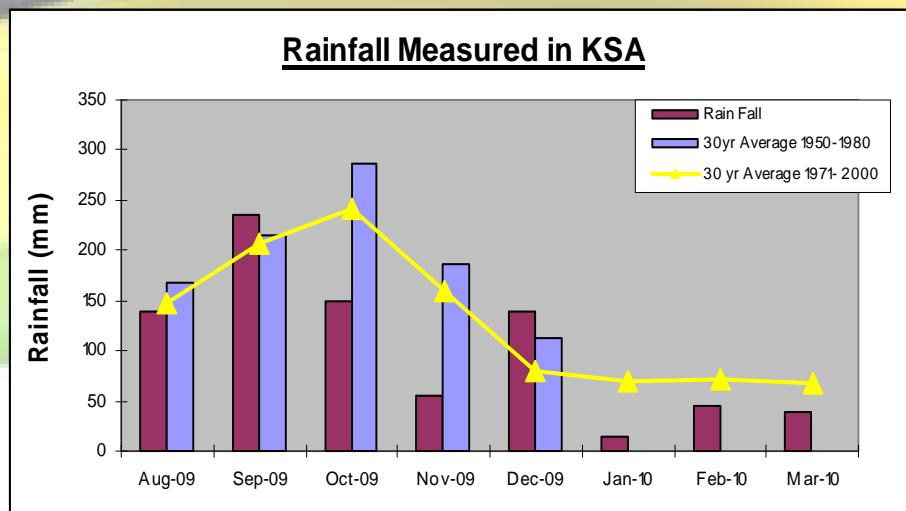
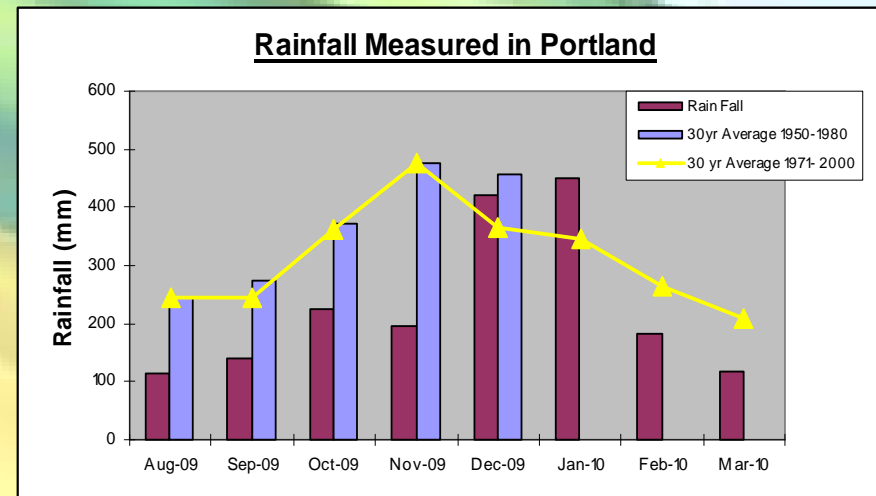
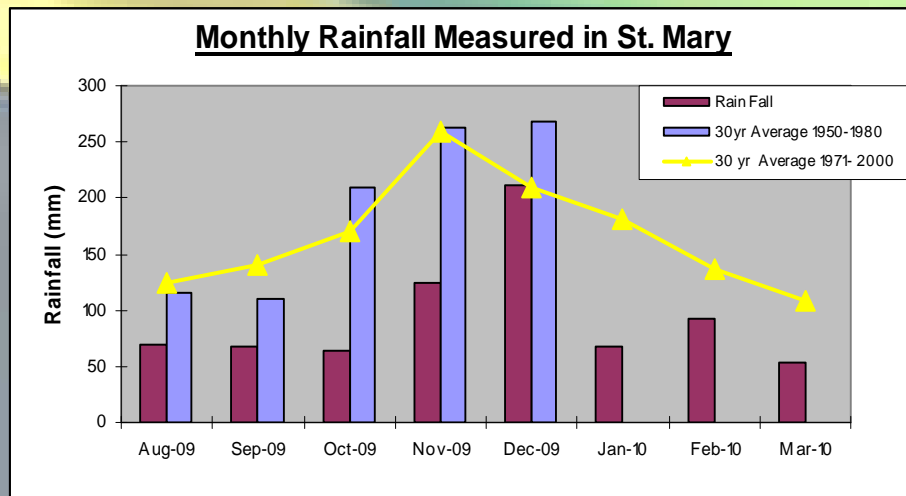
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Percentage of Normal for 2 Consecutive Months	Drought Condition or Status
20% or less	Extreme Drought
21% to 40%	Severe Drought
41% to 60%	Normal Drought
Above 60%	No Drought

	Extreme Drought	Severe Drought	Normal Drought	No Drought
August		Clarendon		
September		Clarendon	St. Mary & St. Thomas	
October			Portland, St. Mary St. Thomas	
November		St. Thomas, Clarendon, St. Mary, KSA and Portland		
December			St. Thomas	
January	KSA (New Castle)			
February			KSA	
March		Clarendon	St. Mary, St. Thomas & Portland	

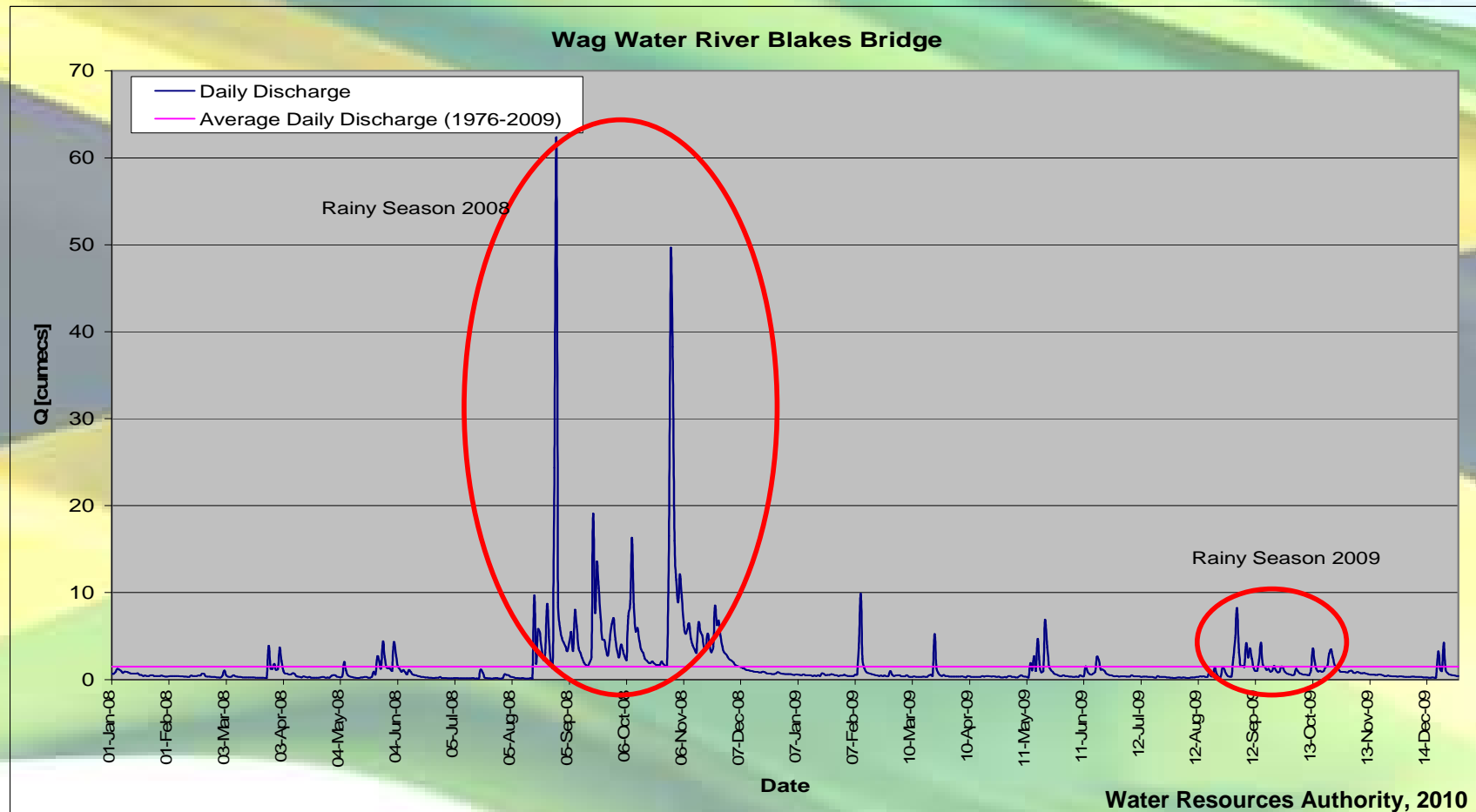
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Rainfall incidence for parishes contributing to KSA Streamflows



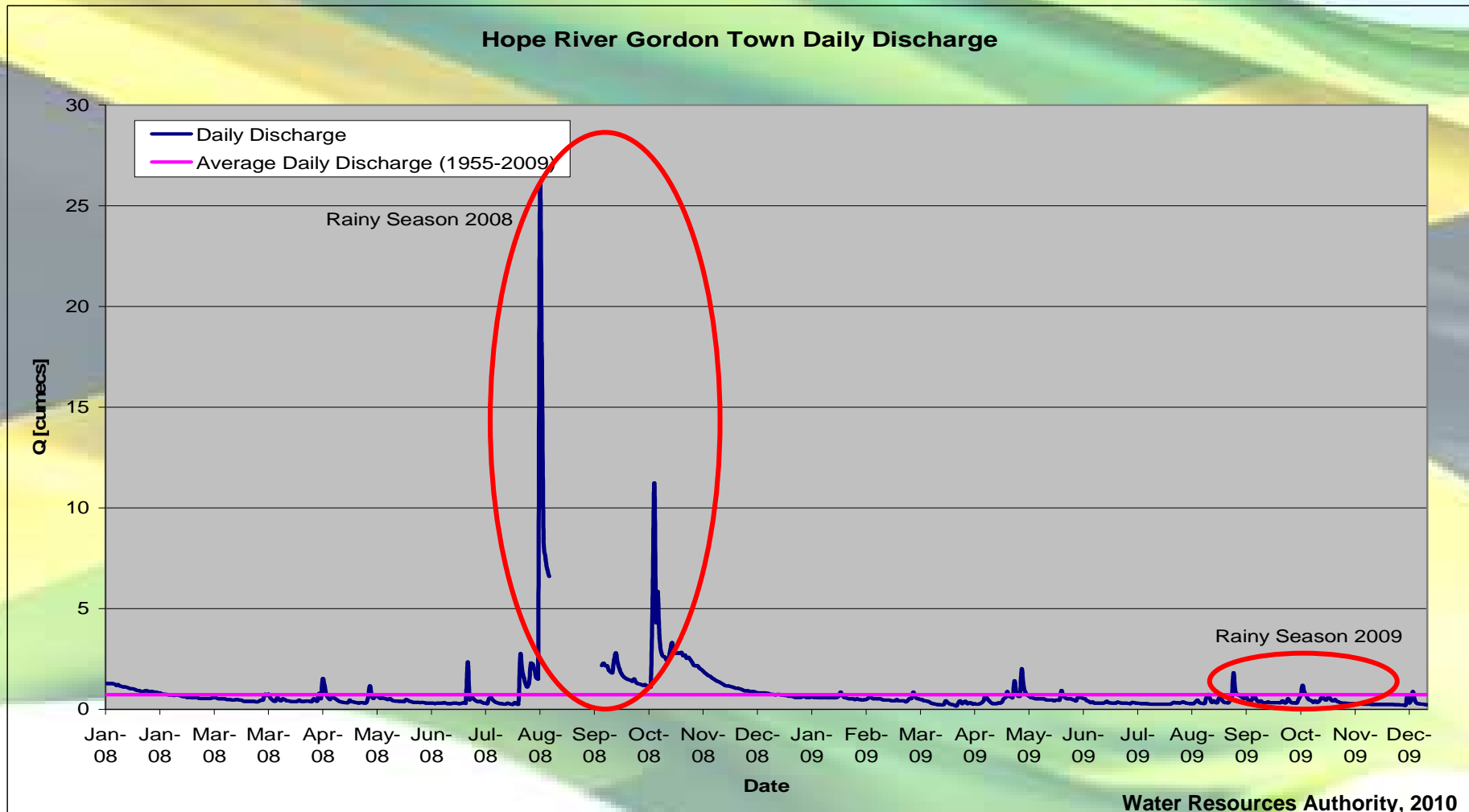
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Streamflows for Rivers Contributing to KSA Water Supplies



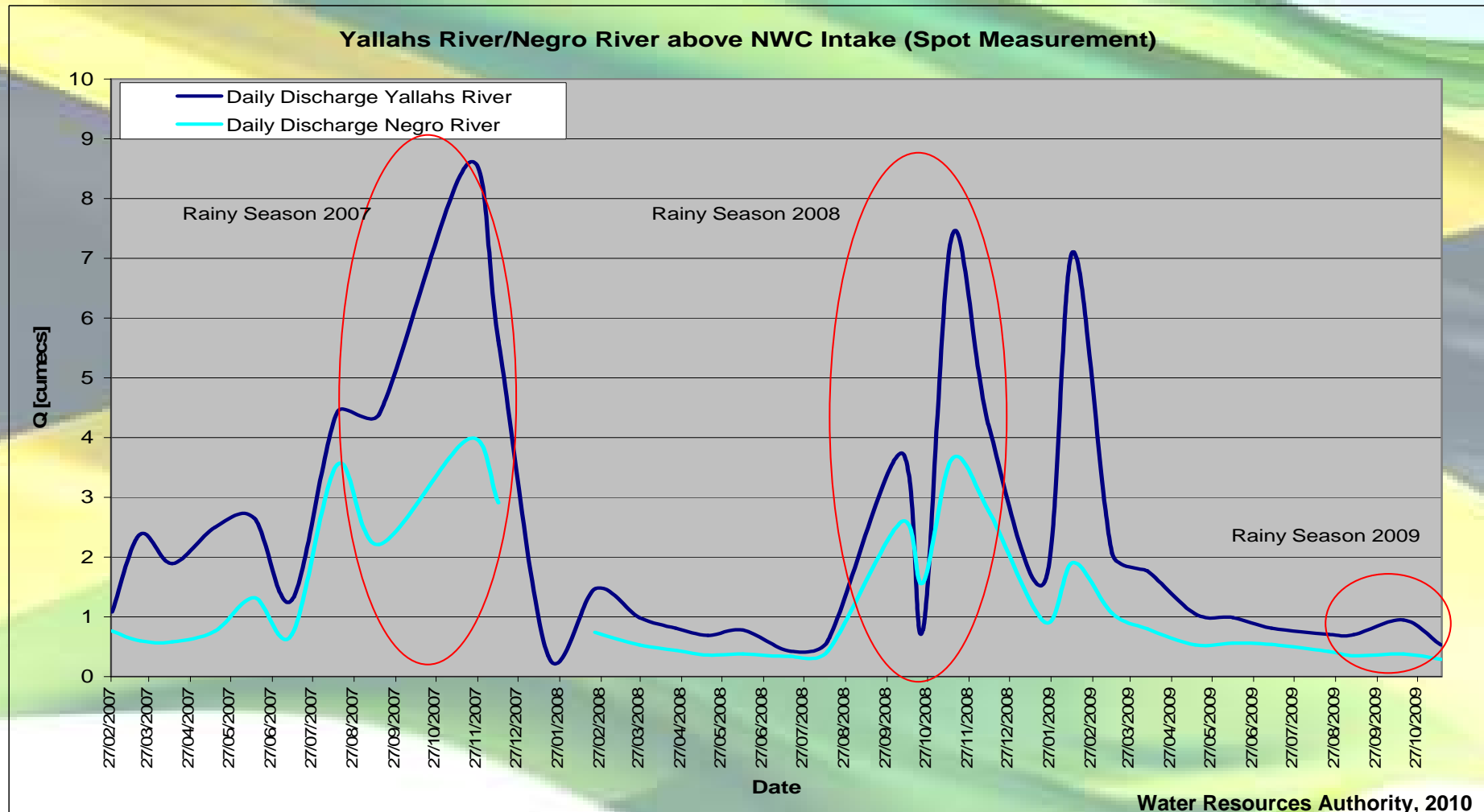
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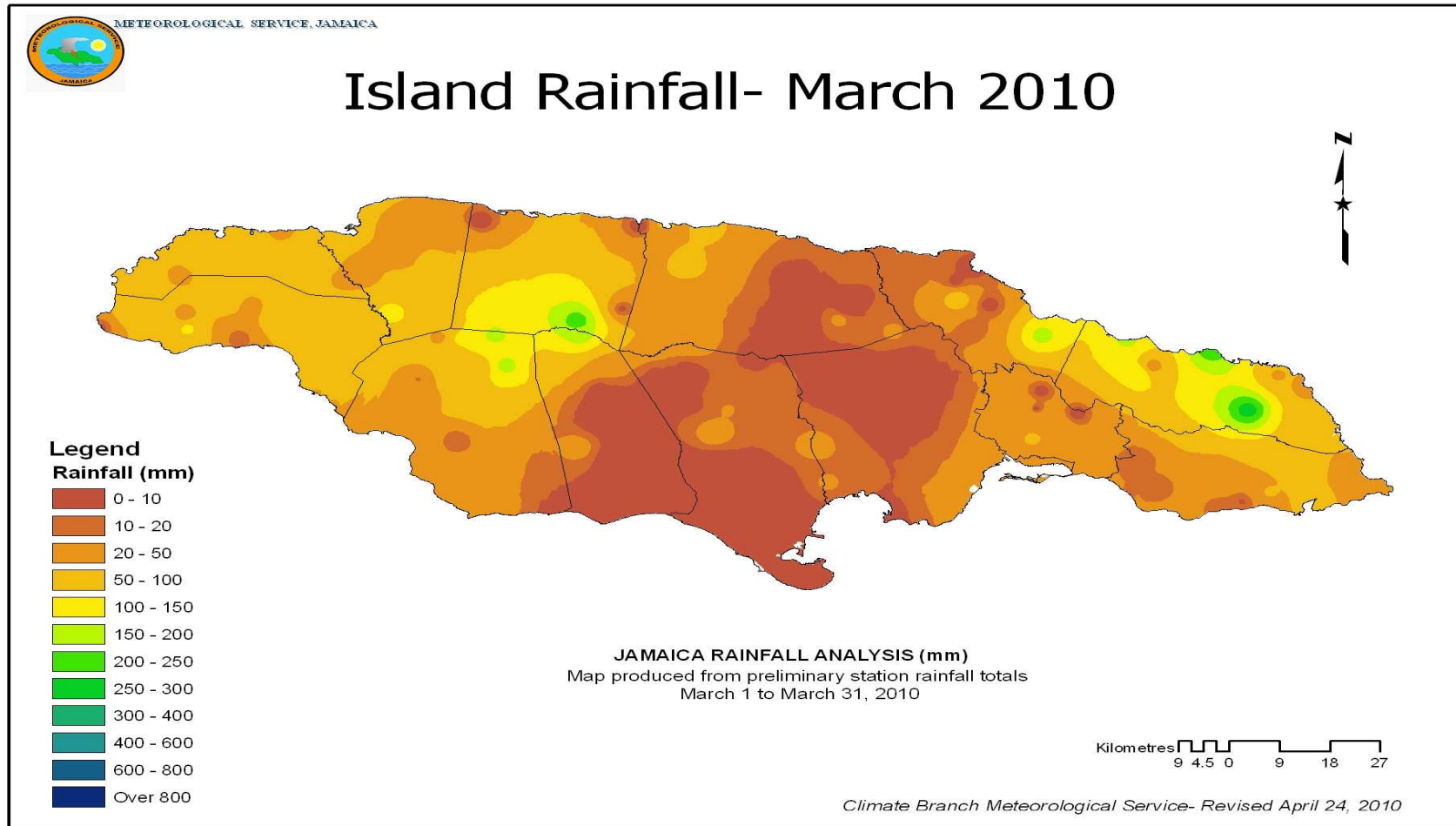


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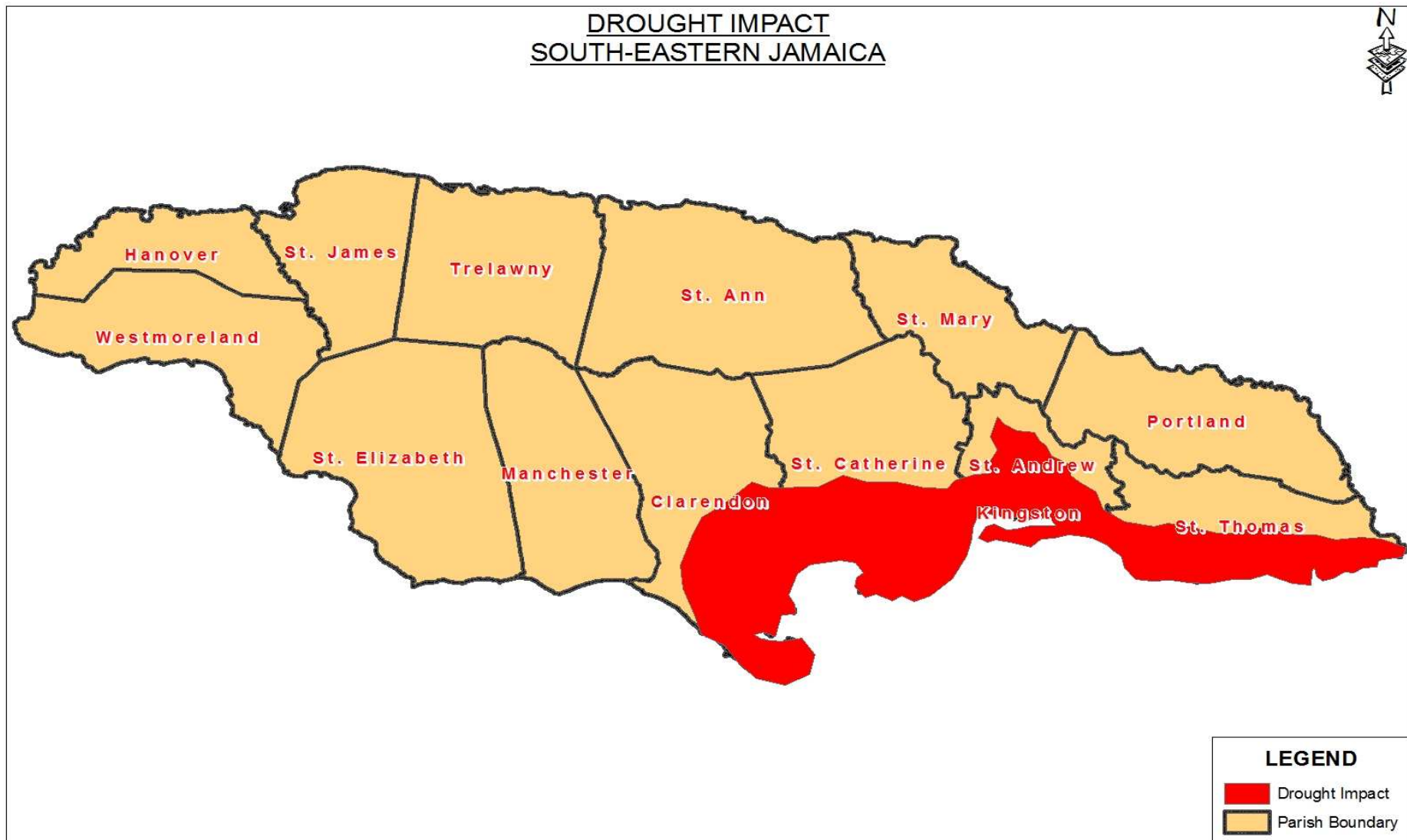
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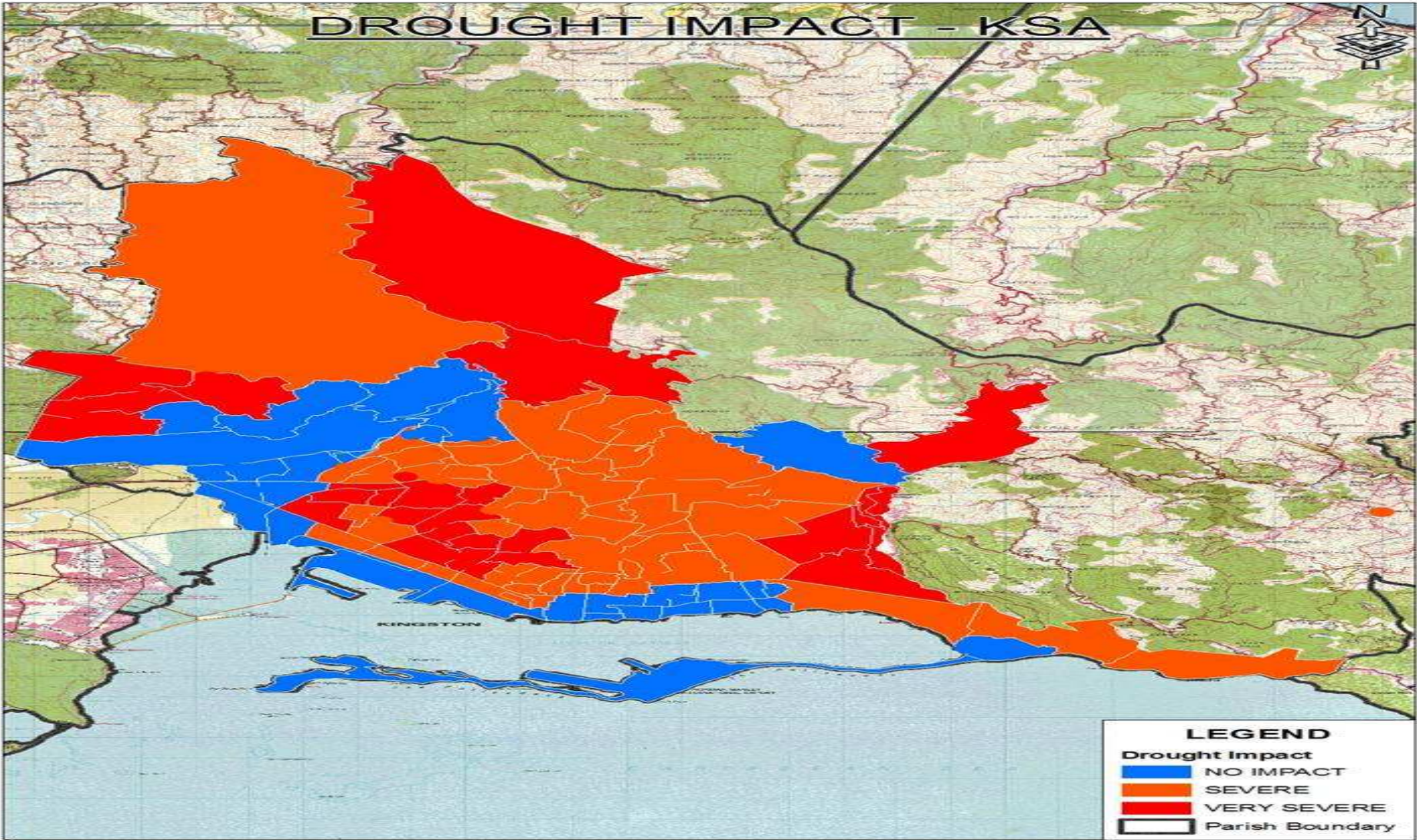
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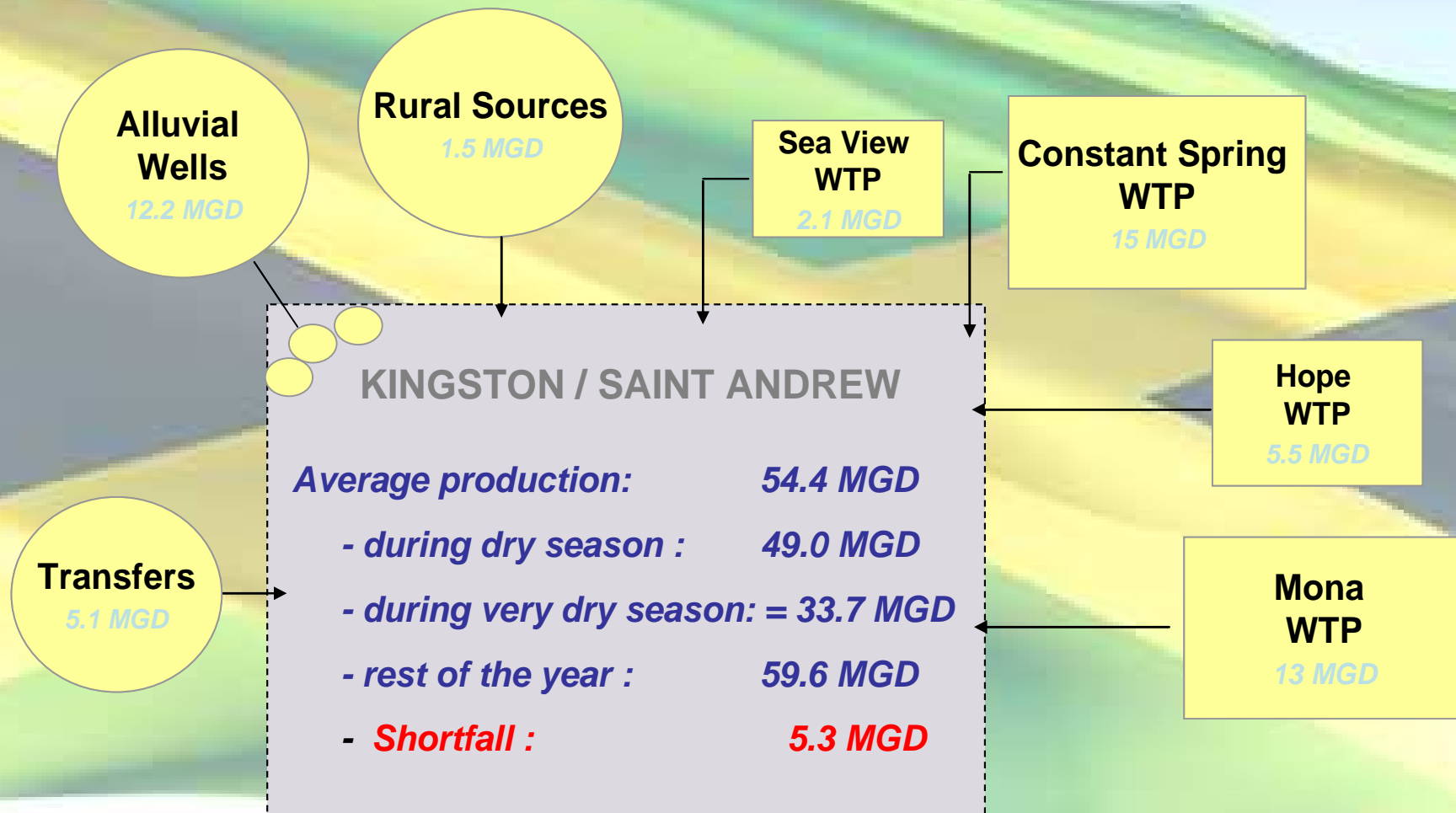
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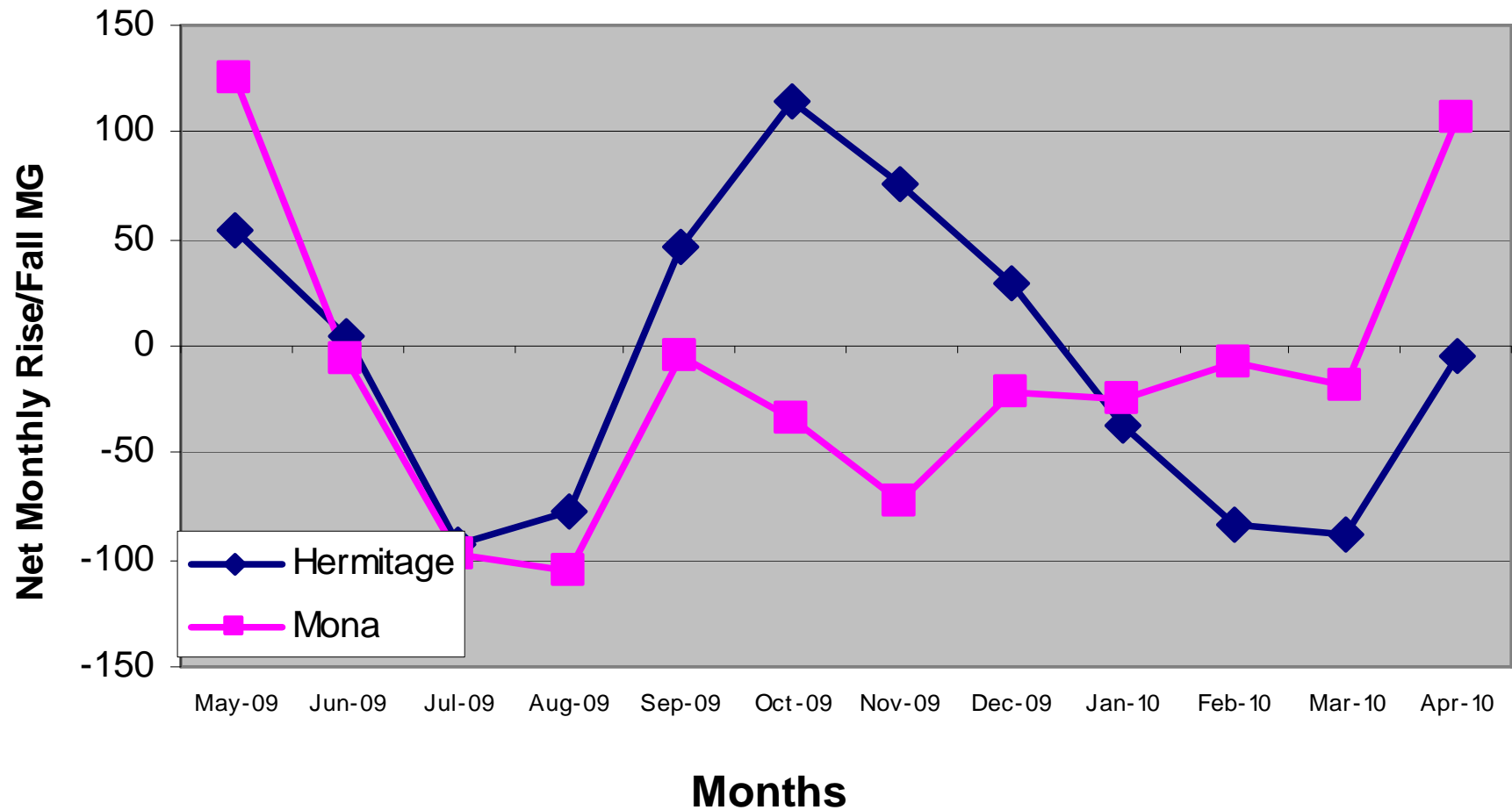
Water Quality Considerations

- Expected Water Quality Deterioration
 - Ground Water
 - Surface
- Invertebrate Population as indicator for surface sources
- Impact of:
 - Concentration of nutrients under low flow
 - Microbial contamination in ground water

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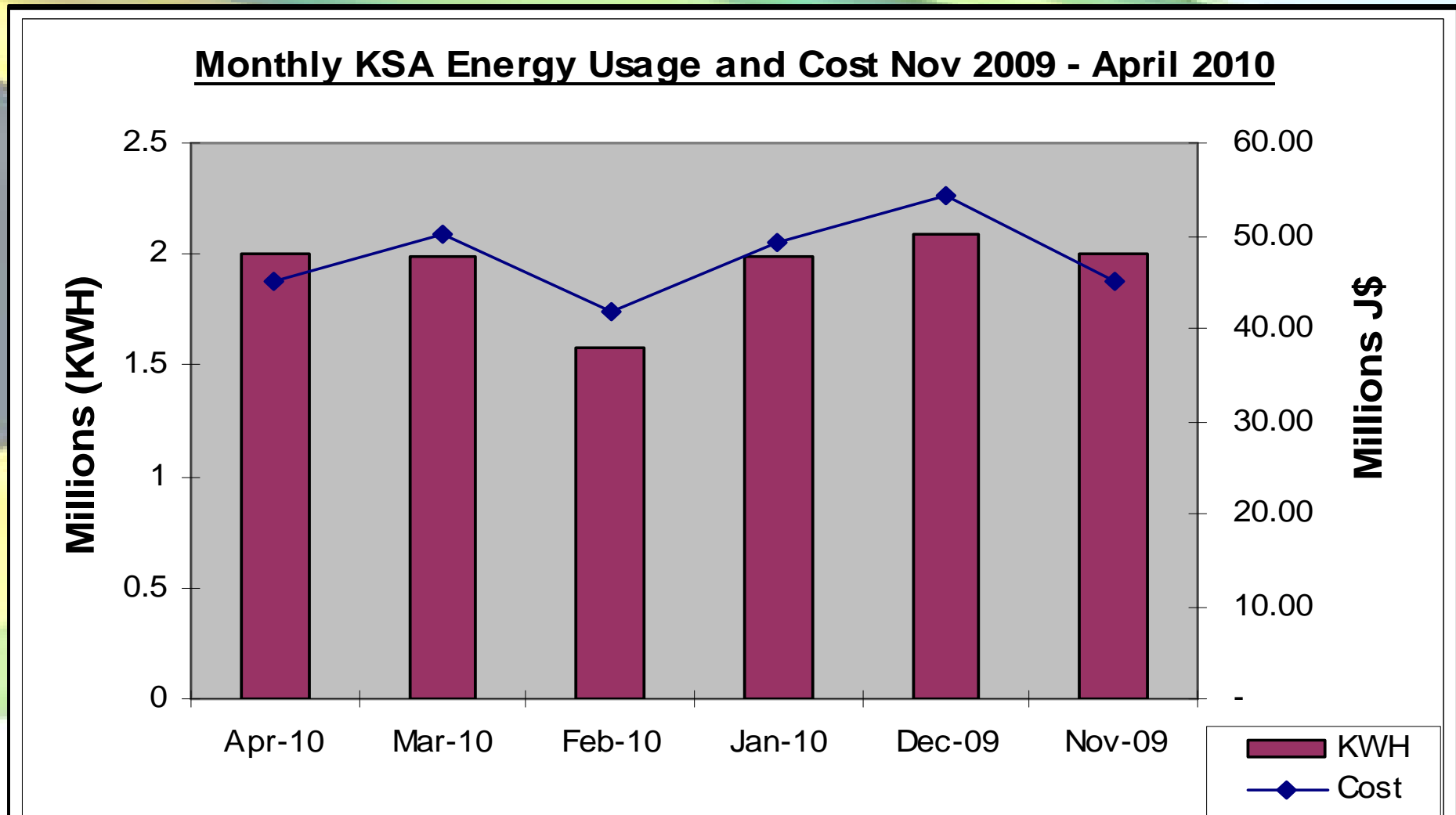
Cumulative Production Over the Period

Net Change in Storage Volumes



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Commercial Impact



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Social Considerations.

Mental and physical stress (anxiety, depression, or even domestic violence)

Affects learning schools

Reductions in nutrition (high-cost food limitations, stress-related dietary deficiencies)

Risk to public safety (fires and spills requiring large volumes of water).

Increased poverty in general, economic displacement

Temporary population migrations to undertake specific personal activities

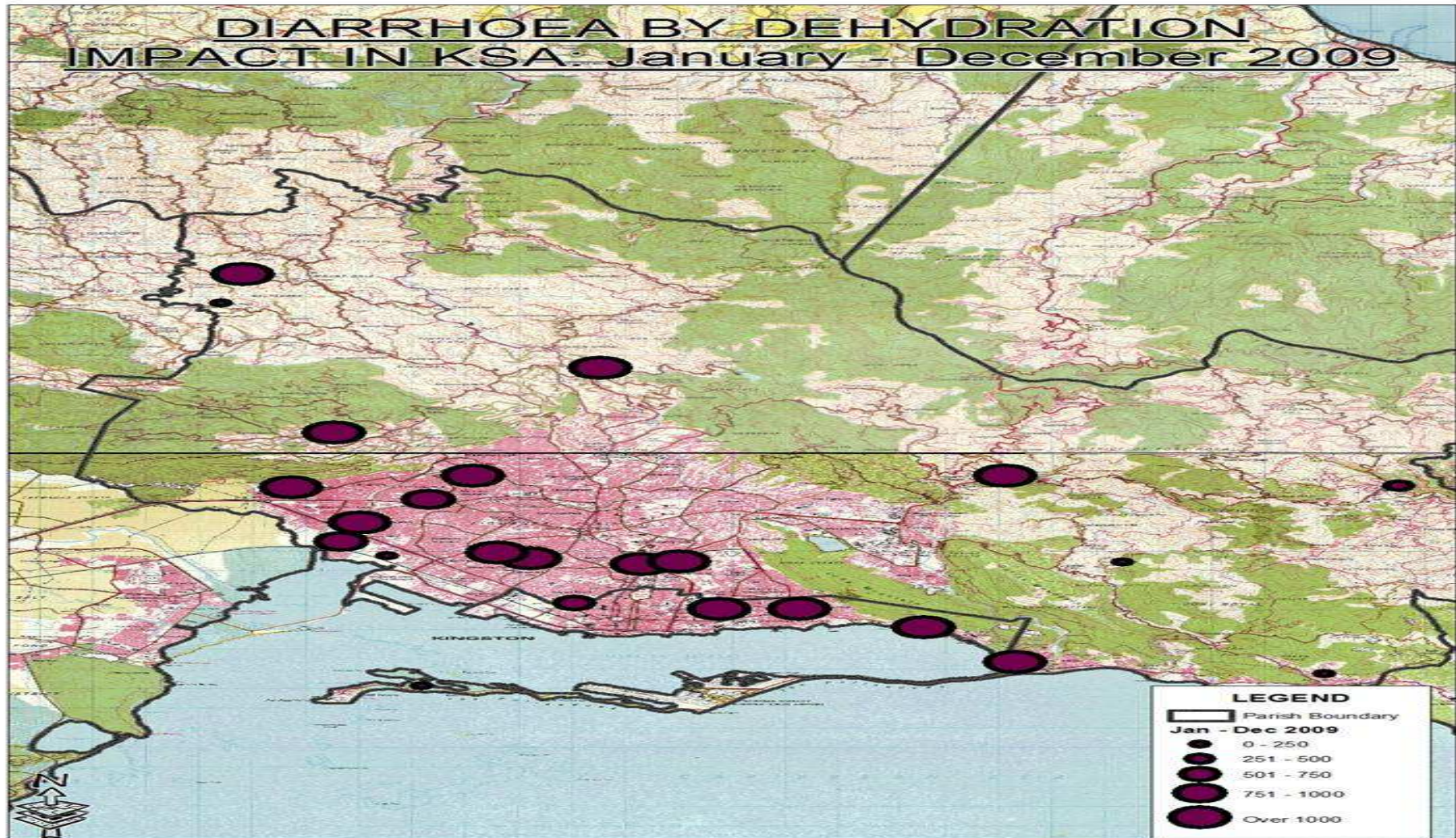
Loss of aesthetic value within communities

Reduction or modification of recreational activities

Potential for conflicts

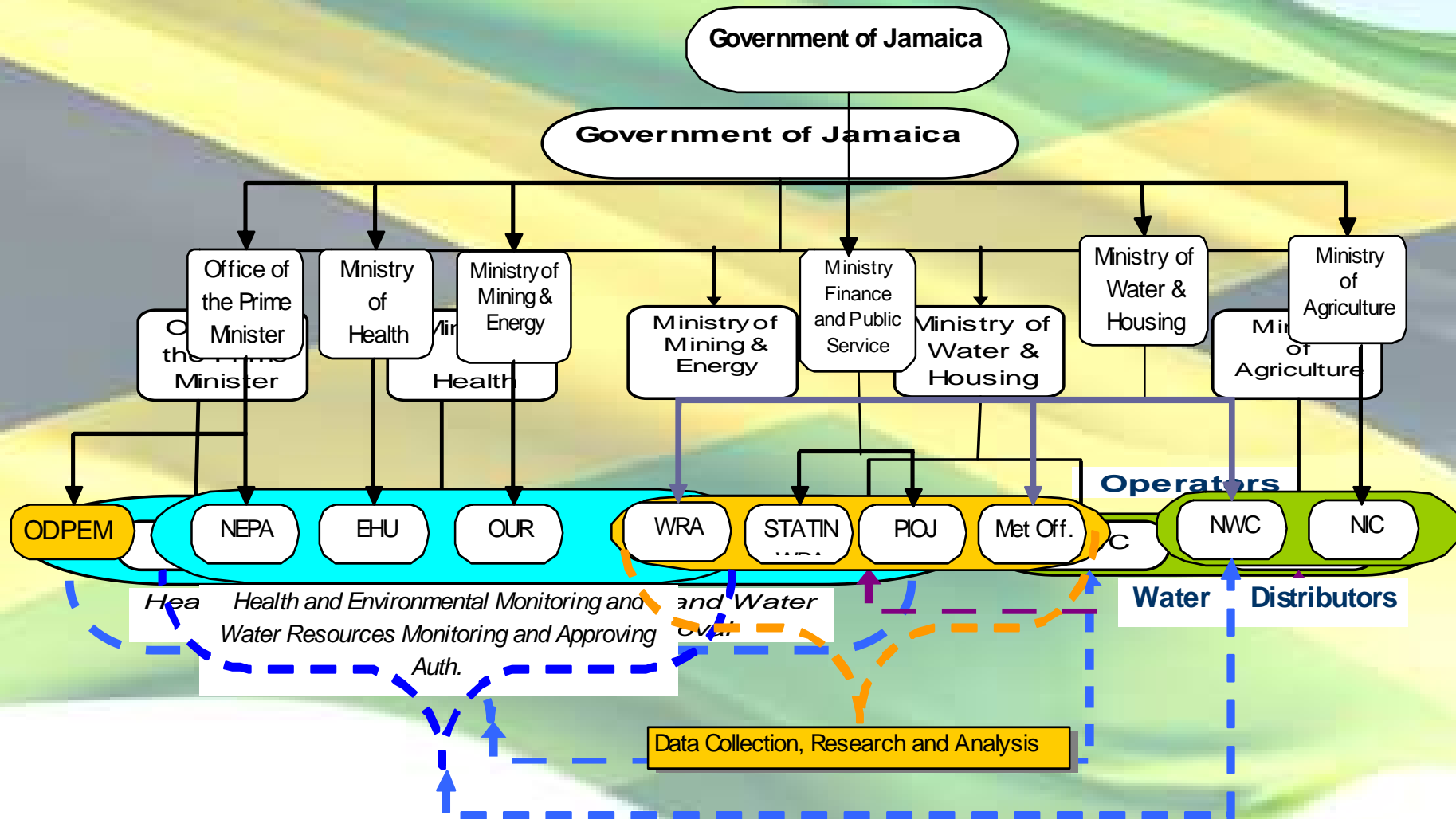
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Public Health Impact Assessment



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Institutional



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Mitigating Actions – Short Term

- Reduction in Water Distributing Hours
- Alternate Distribution (Valve Regulations)
- Increased Trucking
- Increased Public Education Campaign on Conservation
- Prohibition Notice to reduce waste
- Increase volumes (8mgd) from St. Catherine to KSA
- Re-activation of Wells out of Operation

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Mitigating Actions - Long Term

- **Kingston Water & Sanitation Project – IADB**
- **Kingston Metropolitan Area Water Supply Rehabilitation Project**
- **Jamaica Water Supply Improvement Project - US\$210 /**
- **Forestry Planting in Collaboration with the Forestry Department.**

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Recommendations

Objectives

Long term water security for all users

Continuously assessing and identification of vulnerabilities

Mitigating strategies to reduce risk or eliminate such risk.

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Recommendations 10 Point Drought Preparedness Plan

- Appoint a drought task force
- State the purpose and objectives of the plan
- Seek stakeholder participation and resolve conflict
- Inventory resources and identify groups at risk
- Prepare/write the drought preparedness plan
- Identify research needs and fill institutional gaps
- Integrate science and policy
- Publicize the drought preparedness plan and build public awareness
- Develop education programs
- Evaluate and revise the drought preparedness plans

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Recommendations –for Considerations

- Effects of climate change on rainfall frequencies and intensities
- Recognition of wastewater effluent as a water resource
- Structured approach to City planning
- Maximize the use of the Liguanea plain aquifer
- Replacement of aged infrastructure
- Optimization of the storage facilities (Mona & Hermitage)
- Exploration and expansion of production capacities for future demands.

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Conclusions

KSA experienced both a Meteorological and Hydrological drought.

No long term drought mitigation plan

The large geographic area of KSA was severely affected

Institutional responsiveness were disjointed, adhoc

Increased public health vulnerability especially in children.

There was economic cost to KSA and Jamaica on a whole.

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Conclusions

There were negative socio-cultural impacts

Raw water quality assessment required especially during droughts
Billed revenue for KSA fell by an average J\$50m,

Electricity cost is not a function of the volume of water treated

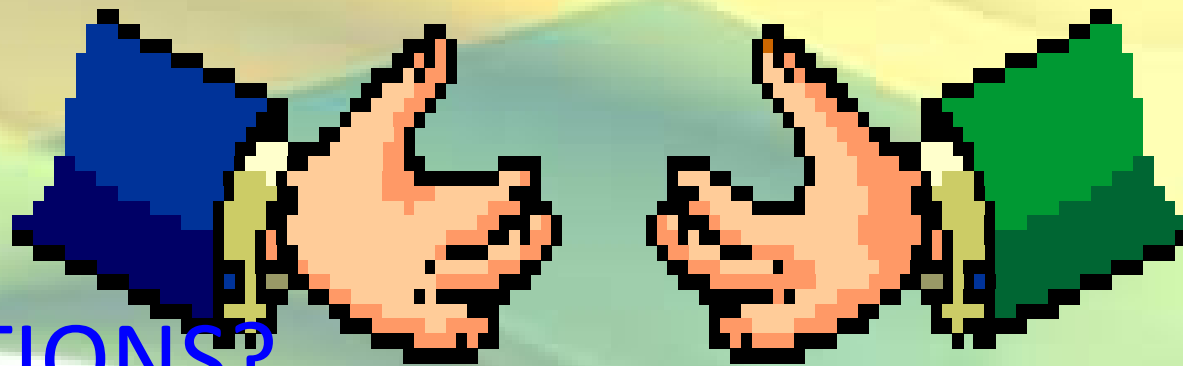
Increased trucking activities and cost over the period.

Public education campaign was not penetrative

Prohibition Notices were ineffective without enforcement

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QUESTIONS?