MAINTENANCE OF THE VAAL RIVER RECONCILIATION STRATEGY

Risk Analysis

Presentation to Vaal River Strategy Steering Committee

Venue: DWA Gauteng Regional Office

18 April 2012

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Presentation Layout

- Water Requirement Risks
- System Analysis - Overview
- Stochastic Streamflow – availability risk
- Acceptability Criteria and Evaluation
- Scenario Simulation Analysis of Integrated System

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Water Requirements Risk

- Develop scenarios of projections for thirty-plus years.
- Apply demographic and socio-economic variables as drivers.
- Typically: "High", "Medium" and "Low" scenarios.
- Evaluate reconciliation strategy for "High" and test flexibility with other scenarios.
- Monitor: Compare scenarios against water used.

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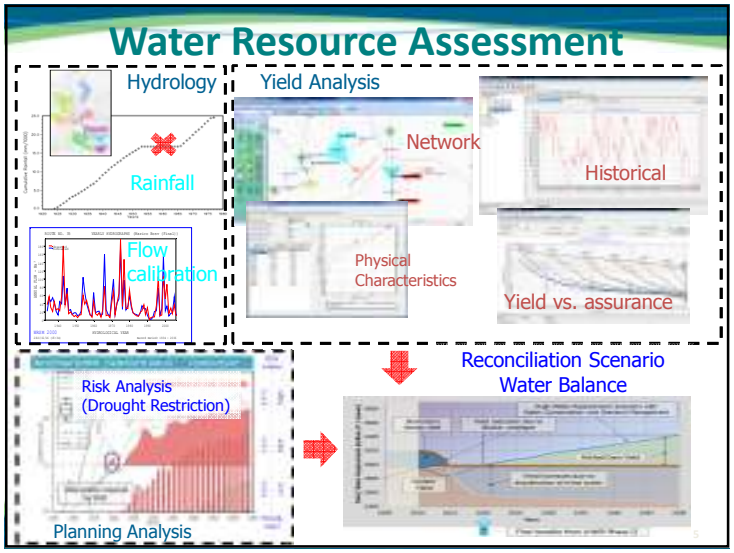
System Analysis - Overview

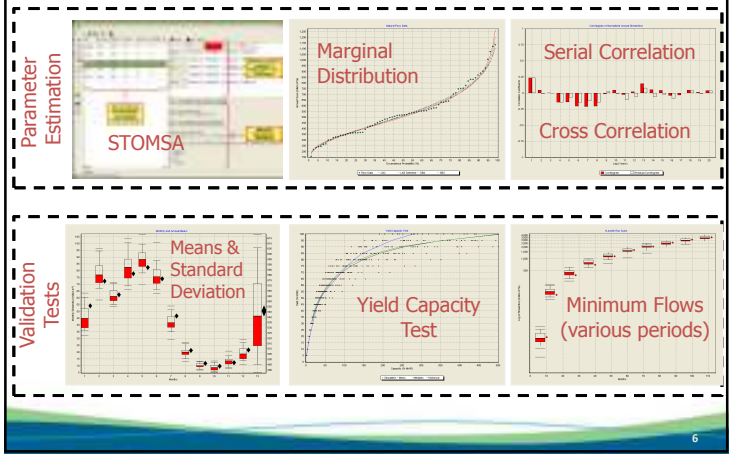
- Apply decision support for water resource operation, maintenance and development planning since 1989.
- Risk based analysis methodology using a multi-site stochastic streamflow model.
- Apply drought curtailments for multi risk criteria water users.
- Integrate interdependent aspects:
  - Water quality management, dilution & re-use (desalination).
  - Inter-basin transfers, Thukela, VRESAP & LHWP.
  - Increasing water requirements and return flows.
  - Commissioning characteristics of new infrastructure – filling of Polihali Dam.

VRESAP : Vaal River Eastern Sub-system Augmentation Project

Water Resource Assessment



Stochastic Streamflow Generation



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Acceptability Criteria

User Sectors	User priority classification (assurance of supply)		
	Low (95 %)	Medium (99 %)	High (99.5 %)
	Proportion of water demand supplied (%)		
Domestic	30	20	50
Industrial	10	30	60
Strategic industries	0	0	100
Irrigation	50	30	20
Curtailment levels:	0	1	2 3

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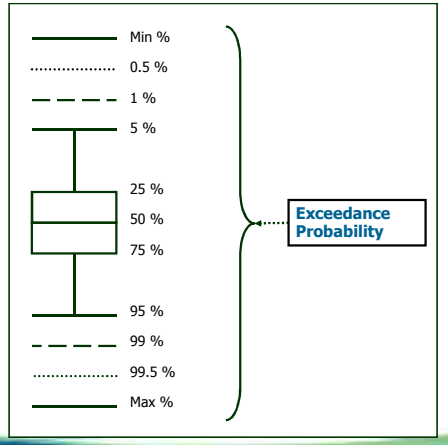
Interpretation of Analysis Results

Probability Distribution (Box Plots)



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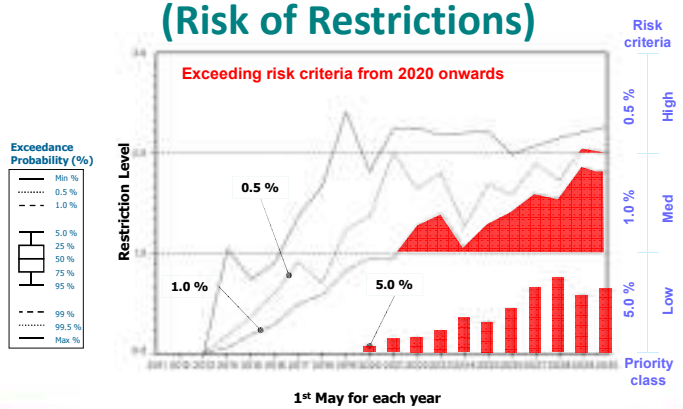
2011 Operating Analysis Scenario (Risk of Restrictions)



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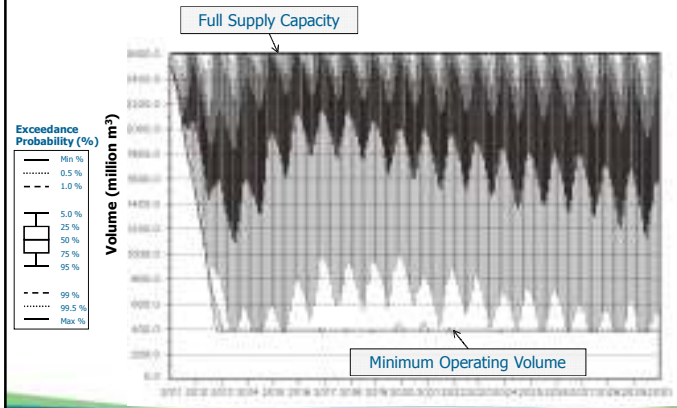
Vaal Dam



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Thank You

Questions for clarification?

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