WERF Sensor Challenge
and the GWRC Sensors RFP

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Who is WERF

- US based “Not for Profit” Research Foundation
- Research providing solutions for water quality issues through advances in science and technology
- $7 million / year
- Subscriber driven
- Volunteer Board, Research Council
- Advisory committees for each program / project
- Leverage through partnerships and collaborations
Who Supports WERF Research

- WERF’s 300+ Subscribers:
  - Public Utilities (WW and SW), incl. WSAA – the Water Services Association of Australia
  - Industry (including trade associations)
  - Engineering/Consulting Firms
  - Equipment Manufacturers
  - State Regulators
- Federal Funding
- Partnerships and Collaborations
Research Drivers

- Improve water quality
- Protect human and environmental health
- Gain efficiency and reduce costs
- Achieve sustainable water resource management
- Inform regulations and policy
- Implement best practices
WERF Challenge
Sensor Integration and Guidance
Sensors Integration & Guidance

**Exploratory Team Members:**
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**Research Collaborators / Liaisons**
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**Research Council Liaisons**
- William Cooper
- John Barber
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**Other Contributors**
- Tony Palmer
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- Stephen G. Nutt
- Chris Vriezen
- Dan Chauvin
Sensors Integration & Guidance

- Report:
  SENSOR INTEGRATION AND GUIDANCE - STATE OF THE KNOWLEDGE - December 2010

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Sensors Integration & Guidance

Objectives

- Identify online sensors and associated methods* that minimize compliance violations and maintain or increase the efficiency of wastewater collection systems and treatment operations.

- Provide information, guidance and tools to address key issues to enhance the wastewater treatment process by using real-time sensor detection.
Sensors Integration & Guidance

- Drivers
  - Regulatory
  - Process Optimization (Performance & Reliability)
  - Energy Savings, Generation, Recapturing
  - Emerging Technologies
Desired Outcomes
- Build upon industry experiences both in the USA and abroad.
- Identify sensors and associated instrumentation that are robust, reliable, accurate and simple to operate and install.
- Understand and identify the most important water quality parameters or surrogates for sensor measurement.
Sensors Integration & Guidance

• Desired Outcomes
  – Communicate industry needs and sensor detection limits to the marketplace and regulators
  – Identify future research needs.
  – Make decisions for sensor selection to suit staffing level, skills and budgets.
  – Identify measurements that can be used as indicators or surrogates for operational changes and/or early warning of operational problems.
Sensors Integration & Guidance

• Research Plan
  – Develop Guidance for Industry
    • Gather existing industry knowledge and information
    • Expert workshop with technology transfer
    • Guidance and case studies
  – Application of suitable indicator and/or advanced molecular tools
  – Testing of TOC analyzers and correlation to BOD$_5$
  – Development and field-testing of **online monitoring platforms** in wastewater collection and treatment systems
WERF Sensors Integration & Guidance Challenge

First project:

$175K WERF-led collaboration through Global Water Research Coalition – “Survey of Experiences with Sensors”

- 7 sponsors: WERF, WSAA, Singapore PUB, STOWA (Netherlands), CIRSEE (France), UKWIR, WaterRF (USA)
- 4 collaborators: TZW (Germany), KWR (Netherlands), WRC (South Africa), US EPA
WERF Sensors Integration & Guidance Challenge

Objectives

- Gather and analyze information on sensor type, capital and operating costs, and case studies
- Seek and share unpublished “real world” experiences across the globe for water and wastewater
- Define practical research needs

RFP is expected in Jan 2012
Online Monitoring Platforms


- Goals:
  - Develop and field test real-time multi-sensor platform: integrating novel and generic sensors that can reliably operate in wastewater environment
  - Develop real time event impact prediction system with recommended response.

- Cost: $1.65M cash ($825K from ARC) - $1.1M in-kind
- Duration: 5 years (2012 – 2017)