Part 1. Industry Perspectives. Experiences of a travelling scientist
&
Part 2. Development of waste water treatment options for Concentrated Animal Feeding Operations.

Presented by

Neil Beckingham

QED Environmental Solutions (Florida) LLC

Who is Neil Beckingham?

Education & Professional Affiliations

•Bachelor of Science with Honors (Geology/ Chemistry)

•Graduate Diploma of Environmental Science

•Master in Arts – Policy (Ecological Sustainable Development)

•American Water Association (Corporate Member)
•Australian Institute of Mining and Metallurgy (Member)
•Australian Water Association (Corporate Member)

Who is Neil Beckingham?

- **Feb 2003 to current, Vice President, QED Environmental Solutions (Florida), LLC**
- **Apr 2001 to Jan 2003, General Manager, Technology, Research & Development, QED Occtech Limited**
- **Dec 1998 to May 2001, Coordinator of Industrial Projects, ATA Environmental**
- **Jun 1996 to Dec 1997, Senior Environmental Scientist, Alan Tingay & Associates**
- **Feb 1994 to May 1996, Chief Geologist, MineMap Pty Ltd**
- **Feb 1992 to Dec 1993, Geologist, Hamersley Iron Pty Ltd, Tom Price**
- **Nov 1991 to Feb 1992, Geologist, Plutonic Exploration (contract)**
- **Nov 1990 to Feb 1991, Geologist, Western Mining Corporation (contract)**

Lessons Learnt

•Science is an excellent background for logical thought required for Management.

•BUT also worth exploring "softer" subjects like Policy, Law, Business, ethics (philosophy) - all powerful combinations

• International work is there for the taking – same issues around the planet. Well worth the experience (France, Chile, Japan, SE Asia, Aust, UK)

•Don't be afraid to specialize or generalize

•Put effort into relationships, not always about how much you know but more who you know!

•Take time (plenty) to smell the roses

•If you're going to do a Masters don't, do a PhD.

Who is QED Occtech?

- Supplier of world class Waste Water Treatment Solutions
- Focus on water re-use in agricultural, mining, food & beverage, industrial and municipal sectors
- Current business activities in Australia, USA, Japan & Asia
- Driven by cleaner production and commercial benefits
- **Every waste is potentially a valuable resource looking for a use.**

QED Tangential Flow Separator – A Reaction Clarifier

• Summation of many simple proven aspects of improving clarification and all these aspects have culminated in the QTFS.

• Designed to provide just the right amount of mixing energy for particle to particle contact to facilitate mixing and floc.

• Sides have steep repose not possible in traditional clarifiers

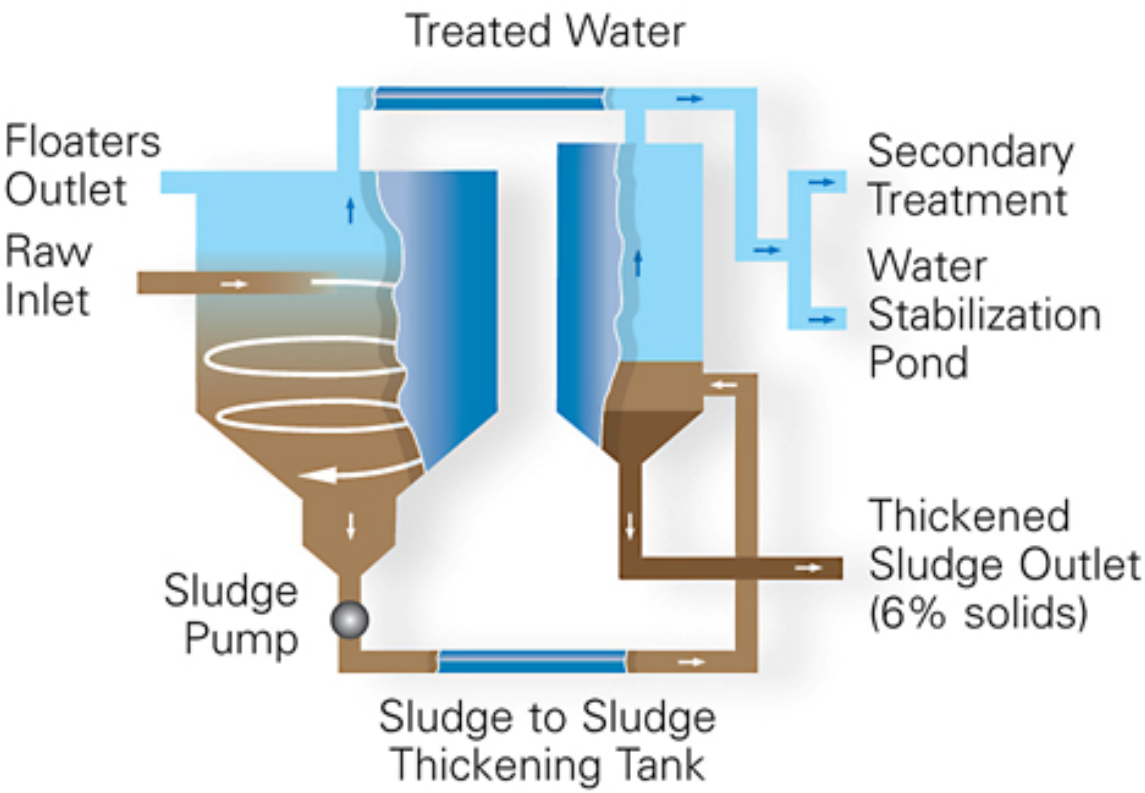
• Natural circular motion tends to move solids to centre, where there is the settling (trap) space [a larger volume that causes loss of momentum and solids to settle] and start to compact. Compaction is a function of the height of solids and we have (about) up to a metre.

• Base is designed for easy access if plugs.

Benefits of QTFS

- Less contact time required for floc and settlings, smaller volume, smaller physical size
- Not prone to thermal upsets
- No scrapers or mechanical devices
- All in one design for physical or chemical reaction and clarification
- Higher solids density
- Smaller foot print and possibility to relocated, viz the pilot model.
- Minimize Chemical Costs
- Can be incorporated in larger systems (eg anaerobic digester)

QED Tangential Flow Separator



McArthur Farm – Intensive Dairy Farming
Okeechobee - FLORIDA

Waste Water Solutions

QED Occtech SERVICES

Arial View of QTFS at McArthur Farms

Process flow Diagram - current

Dairy Sheds

Screw Press

Sand Separator

Balance Tank # 1

Grit Separator

Balance Tank # 2

Chemical Dosing

QTFS

Solids for reuse

Lagoon

Waste Water Solutions

QED Occtech SERVICES

Wandalup Farms, West Australia

INTENSIVE ANIMAL FARMING - WWTP

Waste Water Solutions

QED Occtech SERVICES

Corbett Farms (Hogs) – Smithfield Foods Inc

NORTH CAROLINA, USA, 10M^3 HOUR (WWTP)

Waste Water Solutions

QED Occtech SERVICES

Fuso Farms, Japan

INTENSIVE ANIMAL FARMING - WWTP

Waste Water Solutions

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Sibu, Malaysia

LANDFILL LEACHATE - WWTP

Waste Water Solutions

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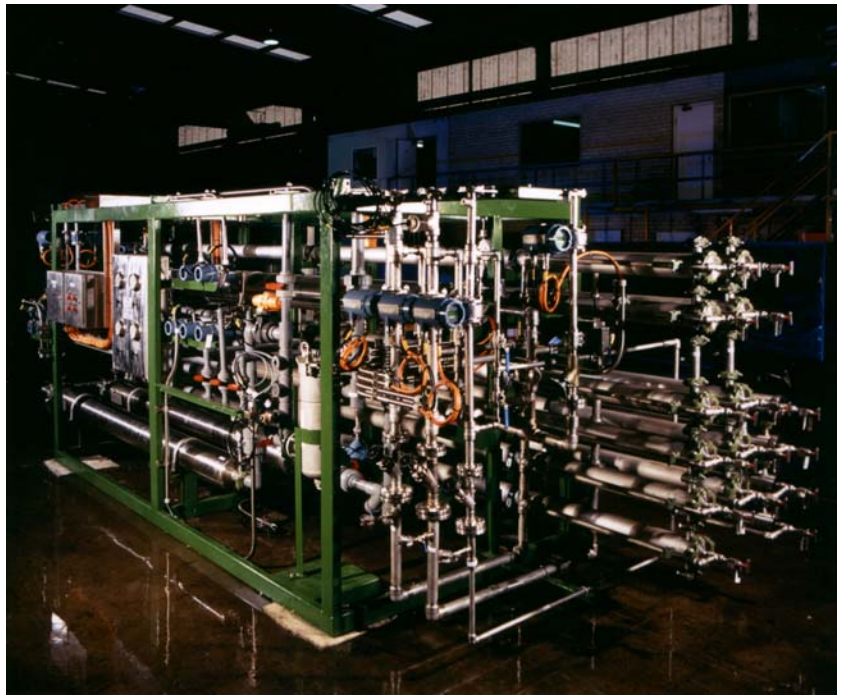
Industrial Projects



World's first plant to recover cyanide for Australian Gold Refineries

Industrial Projects

Test Plant for removal of contaminants from acidic Wastewater – Tampa, Florida.

Industrial Projects

Membrane plant to remove arsenic, cyanide, dioxins & radionuclides for BHP Billiton.

Industrial Projects

World's first plant to recover radionuclides
from nuclear reactor scrubber wastewater
ANSTO (Australian Nuclear Science & Technology Organization)

Innovative Wastewater Solutions

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