



Orica DNAPL Source Area Depletion Update

Presentation for Community Liaison Committee

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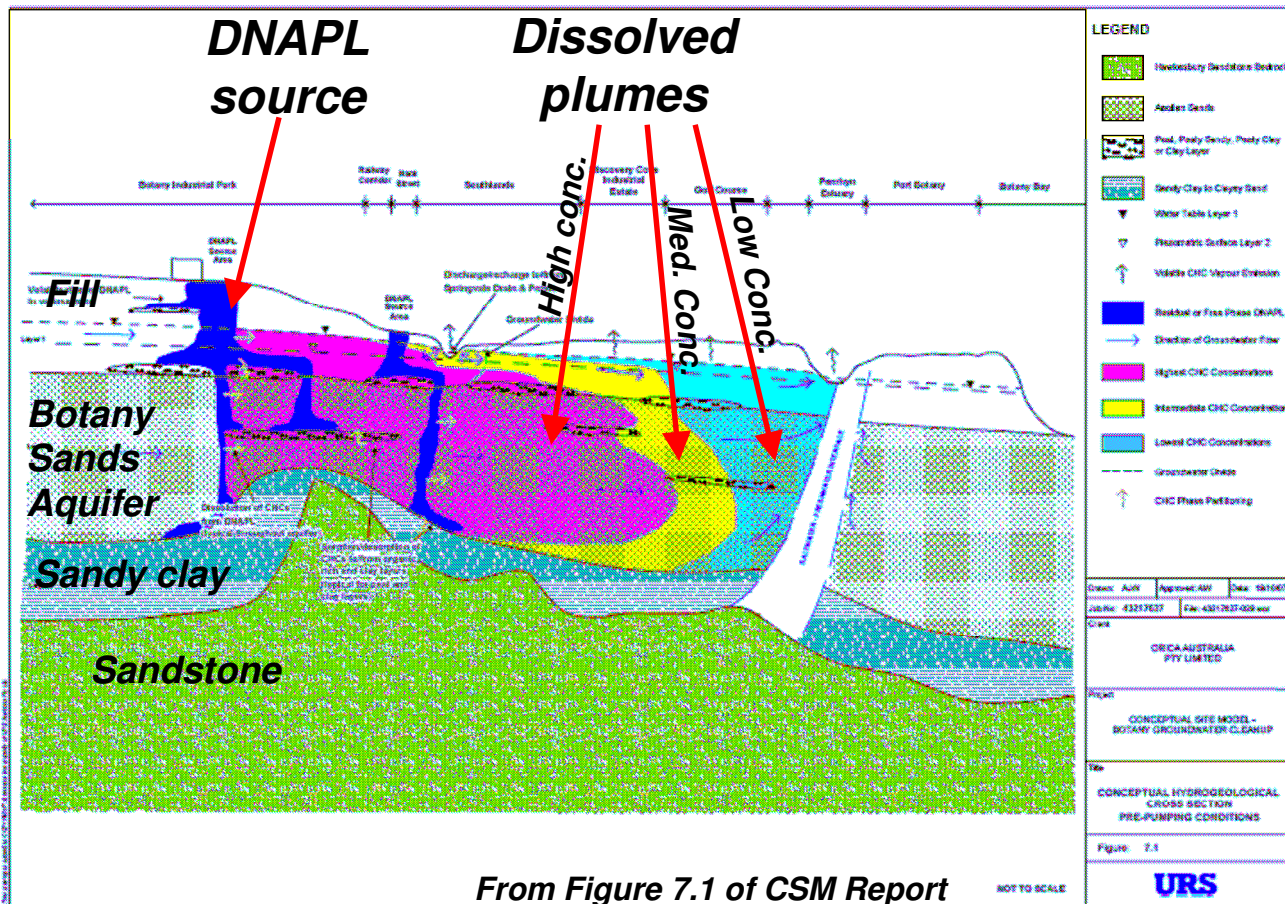


Background

- NCUA Condition 7E requires Orica to consider best practice technology in the remediation of DNAPL and groundwater containing dissolved phase contaminants, through:
 - continued review of relevant, emergent technologies
 - ongoing investigation into the practical application and effectiveness of these technologies in relation to the remediation

Background

- To date:
 - Field trials of in situ barriers (iron and bioremediation)
 - Extensive DNAPL investigations
 - Very difficult to confirm location and distribution
 - DNAPL Technology Mission to North America May 2005
 - Short-list of potential technologies
 - Bench-scale trials of In Situ Chemical Oxidation (ISCO)
 - Detailed design of thermal treatment field trials
- In the meantime
 - Hydraulic containment and GTP operation
 - Excellent results in Springvale Drain, Floodvale Drain and Penrhyn Estuary
 - Human health and environmental risks being controlled
- Identified need to review the overall remedial approach prior to proceeding with field trials of ISCO and thermal treatment



Strategy Review Process

- Consolidate existing information and knowledge
 - Conceptual site model (summary of Botany groundwater knowledge)
 - Contaminant mass estimate
 - Estimated 14,500 tonnes (600 tonnes removed to date)
 - Solute transport modelling
 - Aim:
 - › To evaluate impact of removing source areas
 - › To evaluate alternatives and additions to the pump & treat system
 - Outcome: Even with source removal, pump & treat (or other contaminant containment) is likely to be required for hundreds of years
- Seek the wisdom of local and international experts
 - Strategy review workshop in December 2007
 - Review the reports
 - Review the existing remedial approach and selected technologies
 - Identify alternative remedial technologies or strategies

Strategy Review Outcomes

- ISCO and thermal treatment are well understood
 - Typically field trials are required for ‘proof of design’ not ‘proof of concept’
- ISCO is not appropriate at Botany
 - Very large quantities of treatment chemicals would need to be injected (>10,000 tonnes)
 - Difficulty in effective implementation
- Thermal treatment is not recommended at Botany
 - Capable of mass removal, but:
 - Access restrictions
 - Significant energy demand
 - Unknown implications on GTP operation
- Duration of pump and treat is not significantly reduced by DNAPL removal
- Technologies are evolving

Proposed Way Forward

- Propose:
 - No immediate focus on DNAPL source area depletion
 - Ongoing management of groundwater contamination to ensure human health and environmental receptor risk is acceptable
 - Ongoing review of remedial technology developments for DNAPL, sorbed mass and dissolved phase treatment
- Presented the strategy review and supporting documents to DECC yesterday for their consideration

Mike Kavanaugh, Malcolm Pirnie Inc (USA)

- Attended workshop in December
- Engaged by Orica to evaluate ISCO and thermal treatment technologies
- Invited to assist with presentation to DECC yesterday