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| Title: Regional Hydrogeology of the southern Surat Basin  Project Leader: | | Demonstration Project:  Surat CCS |
| Project Number:  Status: Under Development | Commencement: 2018  Completion: | Total Budget:  ANLEC R&D Contribution: |

***The Context***

CTSCo wishes to understand the options for maximising the efficiency of access to available storage porespace within a southern Surat storage complex. A key requirement will be to monitor and verify the vertical extent of the CO2 plumes and their physical/chemical attributes in the M&V wells. This specific project analyse the potential impact of CO2 injection in the Southern Surat on all aquifers and associated groundwater resources in the vicinity and what is the potential for conflict with existing or future users.

***Unknowns***

What is the potential impact of CO2 injection in the Southern Surat on all aquifers and associated groundwater resources in the vicinity and what is the potential for conflict with existing or future users?

***Research objective***

This project aims to analyse the impact of CCS injection operations on the aquifer characteristic and groundwater quality by comparing available water bores (town bores) to those that originate from the Precipice Sandstone.

***New Knowledge***

* Updated groundwater resources and hydrogeological environment of the Southern Surat that will be used to update the (UQ SDAAP) conceptual hydrogeological model of the area.
* Assessessment of the impact of CCS injection operations on the aquifer characteristics and groundwater quality on other available water bores, town bores that produce groundwater from the Precipice Sandstone.
* Additional quality water samples and analysis from Precipice bores to improve the understanding of the regional hydrogeology of the Precipice Sandstone.

***Work Program***

This is a data gathering and modelling exercises.

* Modelling component - 1
  + Review the UQ SDAAP Project hydrogeological report and related hydrogeological data
  + Update the UQ SDAAP model input data, if relevant, new data or interpretations are available.
  + Load the UQ SDAAP model into suitable regional hydrogeological modelling software.
  + Model the response on bores arising from commercial injection displacing low quality from the injection area into good water quality in adjacent areas.
* Modelling component – 2
  + For commercial-scale operations, there could be value in leveraging the OGIA and Queensland State monitoring bore network plus other available water bores, town bores that produce groundwater from the Precipice Sandstone.
  + How can this network be optimized for monitoring the regional impact of GHG Stream injection within the southern Surat Basin?
* Data Gathering component
  + A targeted new water sampling and analysis campaign of existing bores to improve the understanding of the Precipice aquifer system.
  + This includes repeat sampling and measurement of major/minor ions, trace elements and isotope analysis including age dating. The repeat sampling is to show that the water chemistry is not changing.

***Milestones***

### Milestone 1: Literature review

### Milestone 2: Data acquisition

### Milestone 3: Modelling

### Milestone 4: Final report