RBDMS 3D Well Case Management Tool

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Purpose of 3D Tool

To assist agency staff during the Area of Review (AOR) process by providing a tool for capturing site-specific wellbore construction and geologic zone data for viewing in a 3D environment.

Proof of Concept Project Initiated in August 2016
AOR Review Process

- The reviewing staff member (geologist/engineer) will perform a number of steps.
  - Identify the wells within the AOR of review
  - Determine if certain wells can be removed from the process
    - Abandoned locations
    - Wells not penetrating the injection zone
  - Determine the areas base of treatable water
  - Determine the potential confining zones
  - Review each well for adequate layers of protection
    - Casing
    - Cementing
    - Adequate plugging proposals
  - Determine what mitigation or remediation actions are necessary for wells not adequately constructed
During an AOR, a group of wells are selected for review by agency staff.

Review is done to ensure wellbore integrity and site-specific stratigraphic framework are adequate to ensure that injected fluids will not migrate out of the intended zone(s).

Typically, the Base of Underground Sources of Drinking Water (USDWs), casing depths, wellbore cement coverage, formation tops, and other relevant geologic zones are identified in the group of reviewed wells.

Comparisons of “Subsea” elevations of are made from well to well during the evaluation.

AOR Steps To Be Supported by 3D Tool
The 3D AOR Tool will allow users to capture their own unique picks for the base of underground sources of drinking water (USDWs), wellbore cement coverage, formation tops, and other relevant geologic zones are identified in the group of reviewed wells.

The 3D viewer will then allow users to view their picks in a browser-enabled 3D environment.

The picks can be made by clicking on a well that are lacking the necessary picks.

The users unique picks will be stored for future reference, including who made the pick.
Example: 8 Mile Flat North Field, Uintah County, Utah

Select Area from Map Interface

The User Can Define the Radius
View Wellbores in 3D

After 3D Window Opens:

View Existing RBDMS Casing/Formation Data

Select Wellbore for User Specific Data Entry
Application Reads Information from RBDMS

- Location Information
- Depths
- Formation Tops
- Casing Data

Well on the left displays formation tops.
Well on the right displays casing strings.
Adding User-Defined Information Beyond RBDMS

- The Base of Underground Sources of Drinking Water (USDWs)
- Casing Depths
- Wellbore Cement Coverage
- Formation Tops, and Other Relevant Geologic Zones
Examples of User-Defined Site Specific Data

Wellbore Diagram

Well Log
Click on Wellbore Data Entry Form Pops Up →
3D View of User Defined Picks
Demonstration

Test Site (http://ttggis.cloudapp.net/subsurface4/)

http://ttggis.cloudapp.net/subsurface4/
POSSIBLE TECHNOLOGY ROADMAP OPTIONS
Next Steps

• Currently RBDMS and this Data Are Disconnected Separate Geodatabase
  • Need to more tightly integrate with RBDMS

• Using ESRI Tools- Should/Can This Be Migrated To A Pure HTML5 Presentation
  • See other presentation on GIS use in RBDMS

• Representation Is Still Difficult To View- Should A More Wellbore Like Presentation Be Developed?

• Horizontal wells currently not addressed

• Timing

• State Interest