



REMTECH 2015

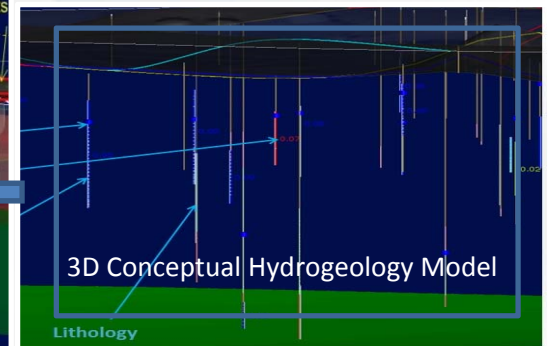
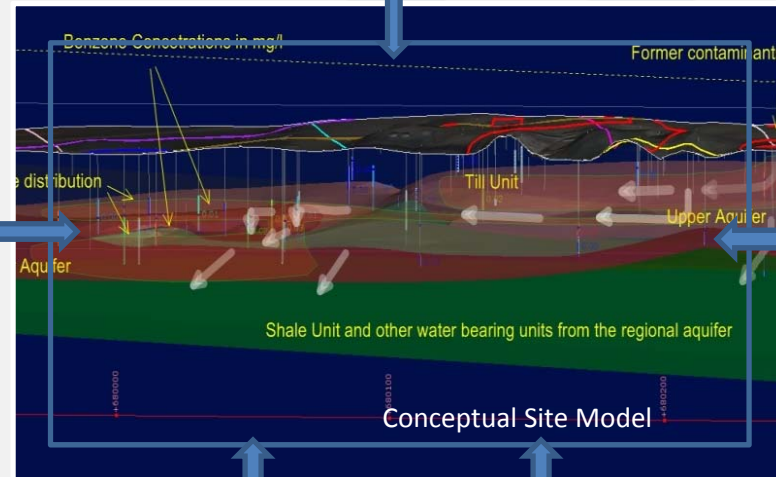
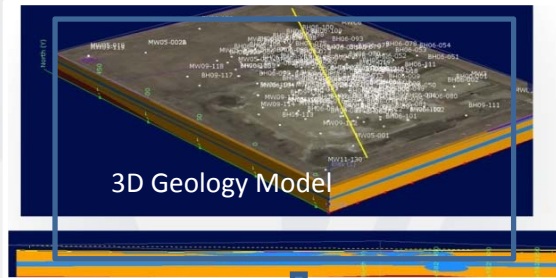
The Use of Effective Conceptual 3D Hydrogeological Models to Improve the Success of Contaminated Site Remediation

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October 16, 2015

Banff, Alberta

Introduction- Why a Conceptual Site Model?



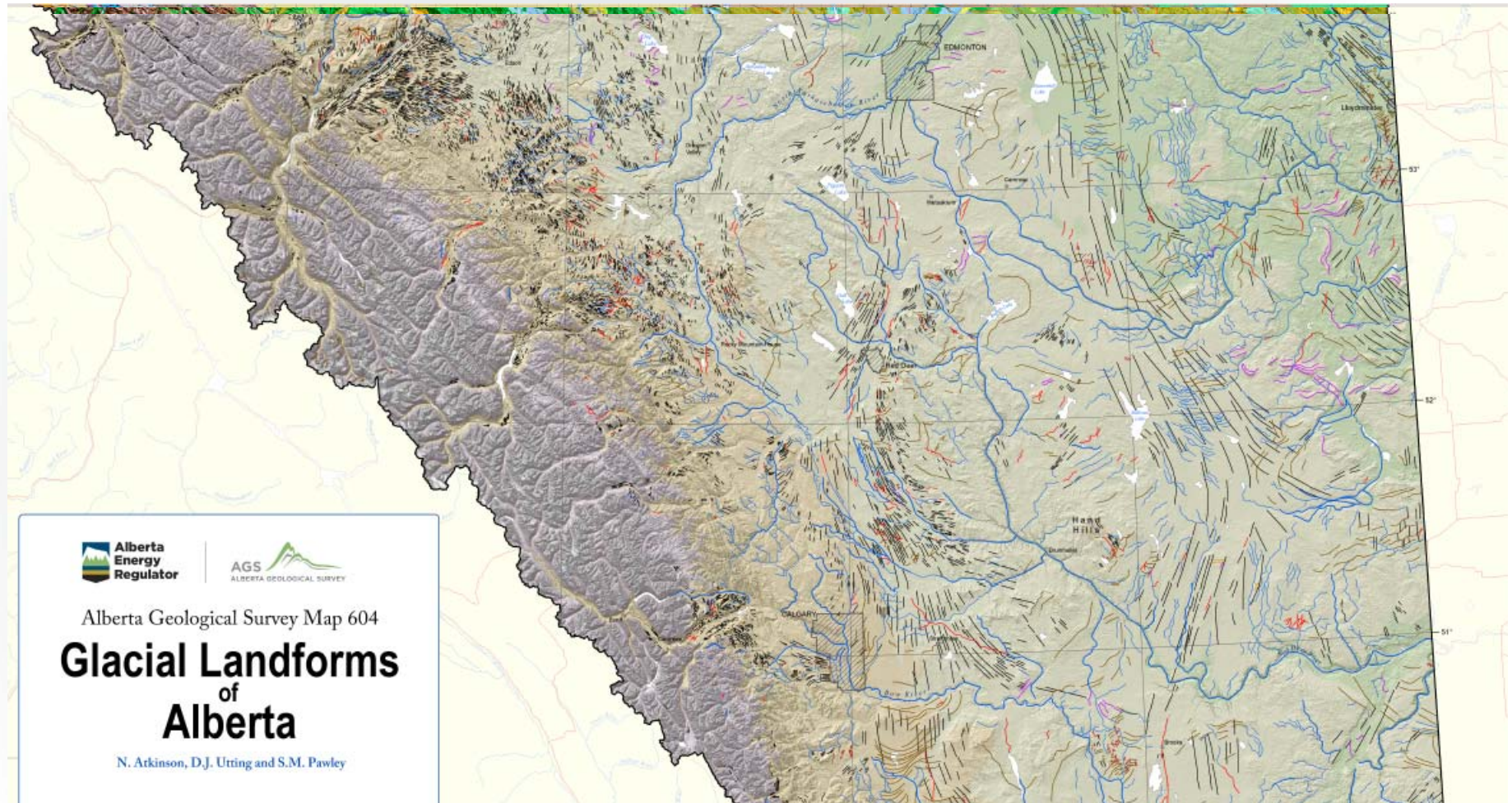
Site ID	Location	Sample Depth (m Top)	Sample Date (YYYY-MM-DD)	Soil Status	Soil Analysis			Notes
					Depth	Moisture	Salinity	
001	Forest	-	-	-	-	-	-0.00%	0.0
002	Forest	-	-	-	-	-	-0.00%	0.0
P14-001	-	-	2014-09-11	Overgrown/Barren	0	0.0	<-0.00%	0.00
P14-002	-	-	2014-09-11	Overgrown/Barren	0	0.0	<-0.00%	0.00
P14-003	-	-	2014-10-10	Remnant	10000	0.0	<-0.00%	0.00
P14-004	-	-	2014-10-09	Remnant	10000	0.0	<-0.00%	0.00
P14-005	-	-	2014-10-09	Remnant	10000	0.0	<-0.00%	0.00
P14-006	-	0.5-1.0	2014-10-07	Forest	0	0.0	<-0.00%	0.00
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Presentation Outline

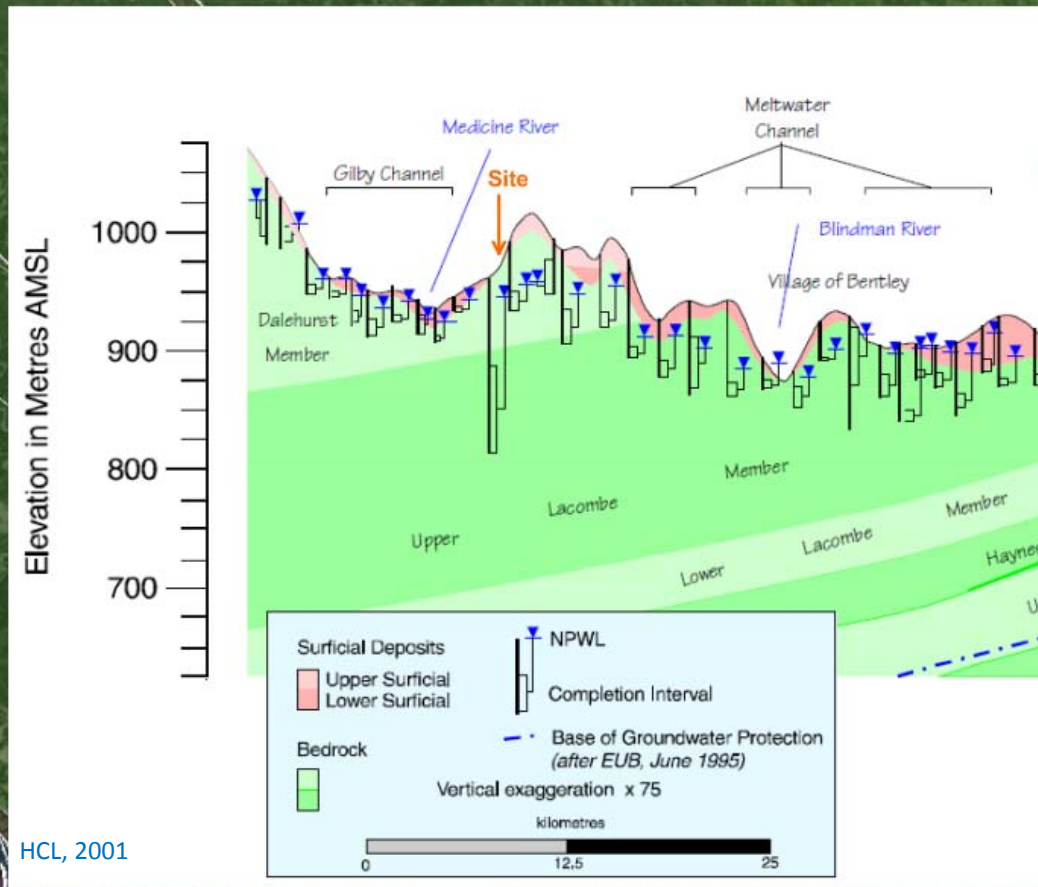
- Complex Geology and Hydrogeology Situations in Alberta
- 3D Conceptual Geological Model
- 3D Conceptual Hydrogeological Model
- Conceptual Site Model
- Conclusions

Complex Geology and Hydrogeology

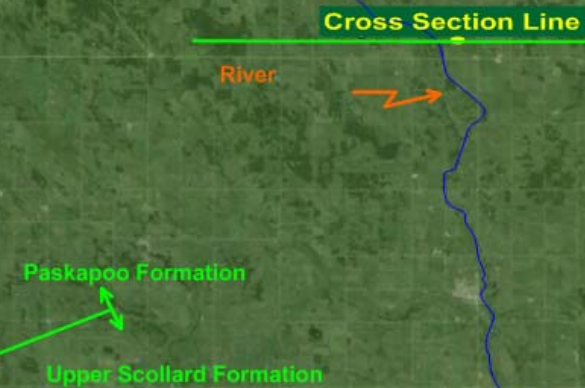


Alberta Complex Geology

Complex Geology and Hydrogeology

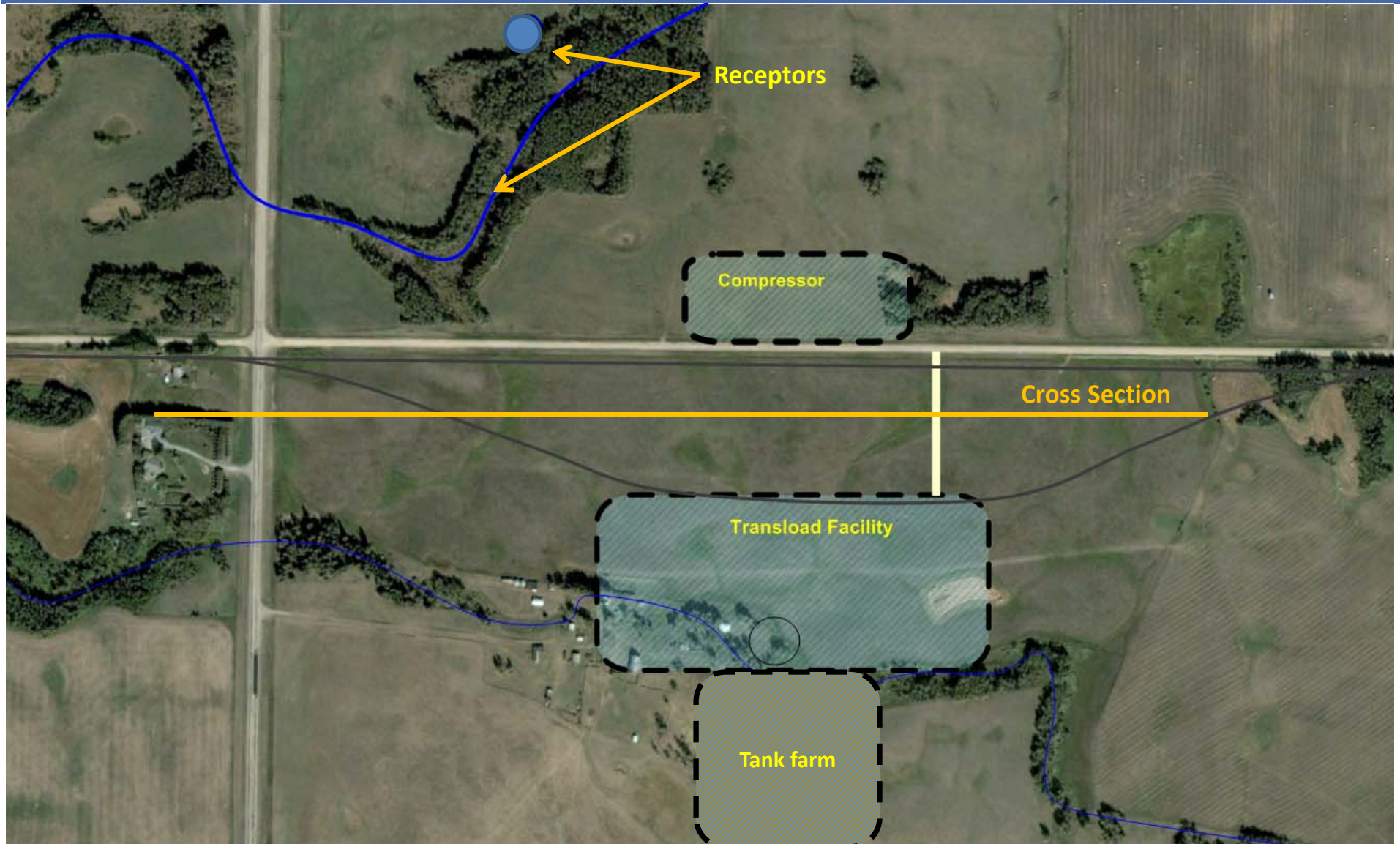


HCL, 2001



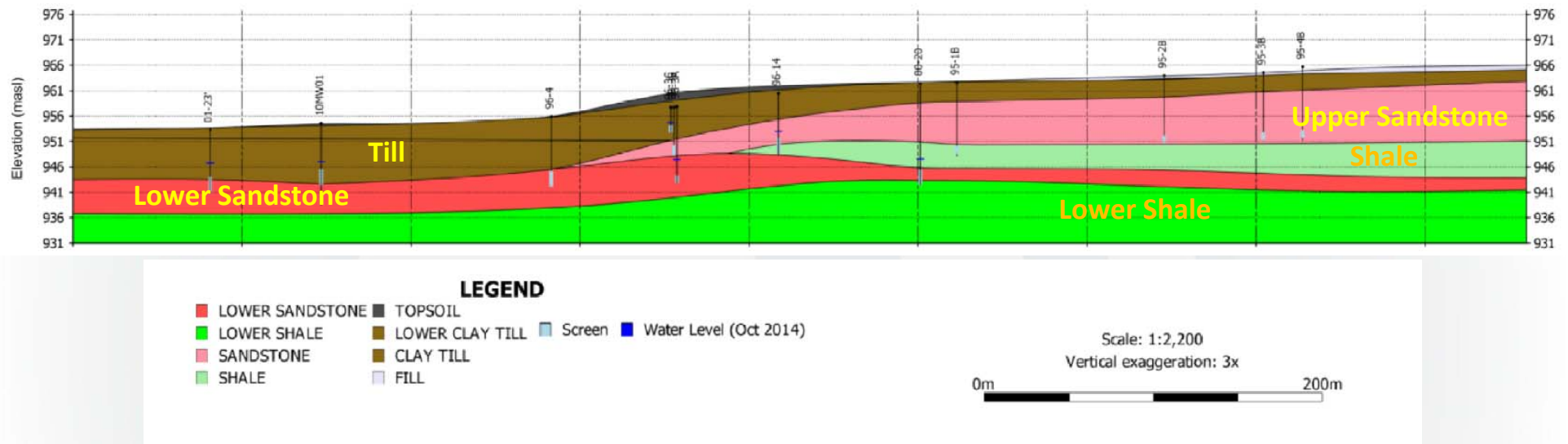
Example of a site location

Complex Geology and Hydrogeology

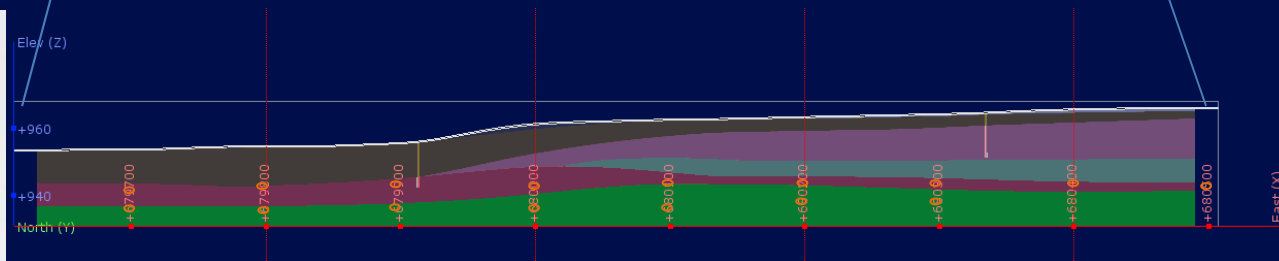
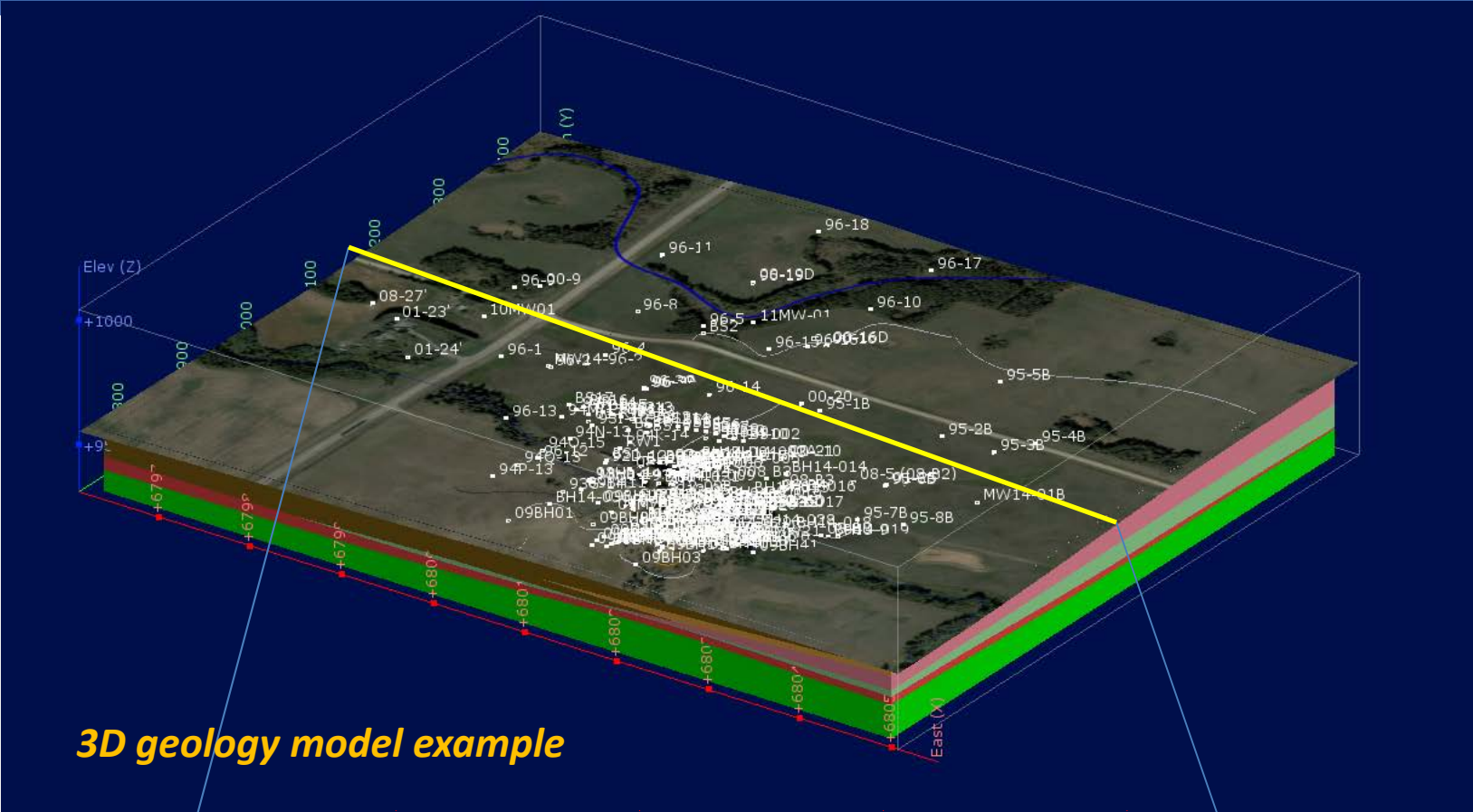


Complex Geology and Hydrogeology

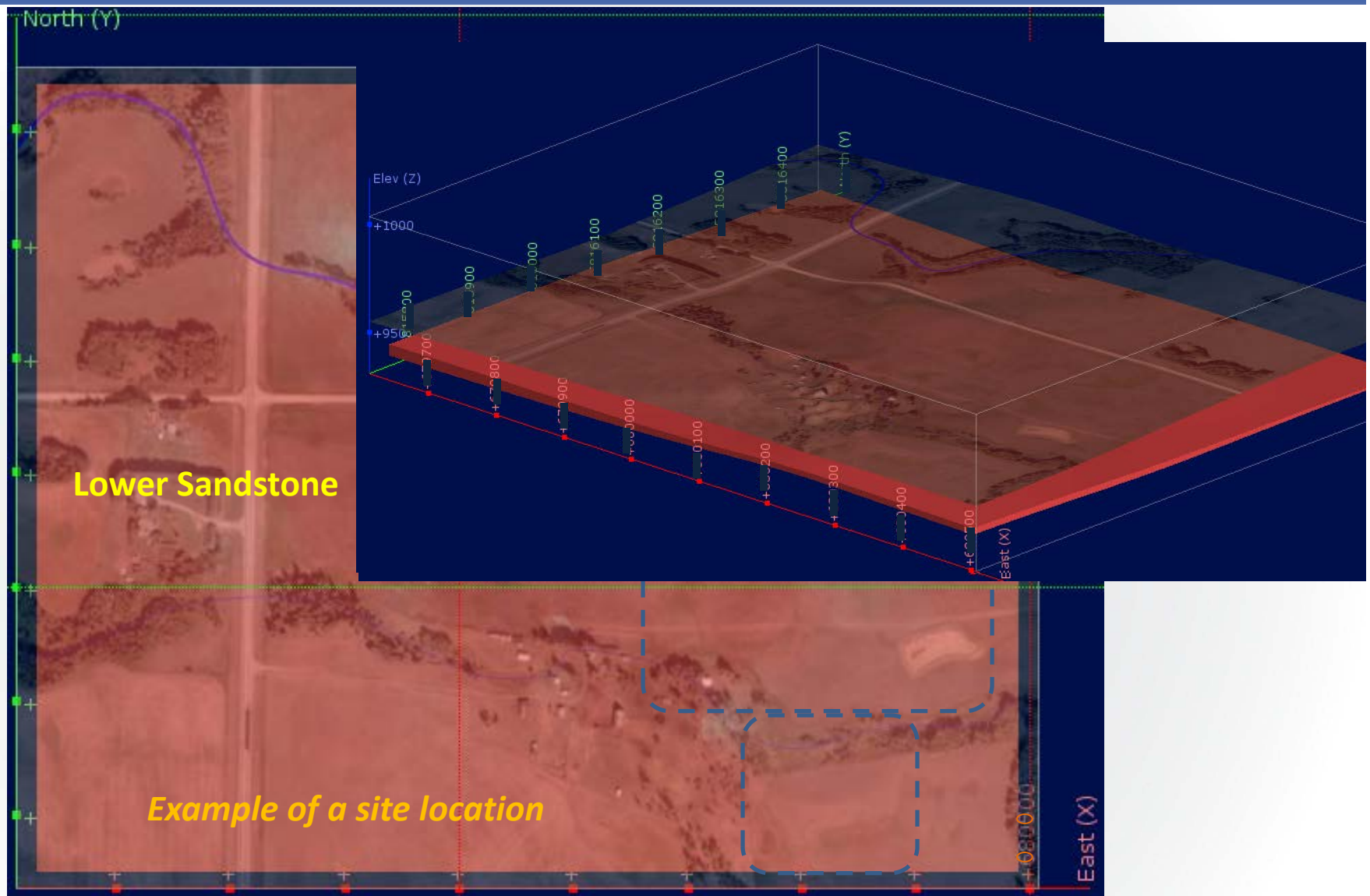
Example of a site location



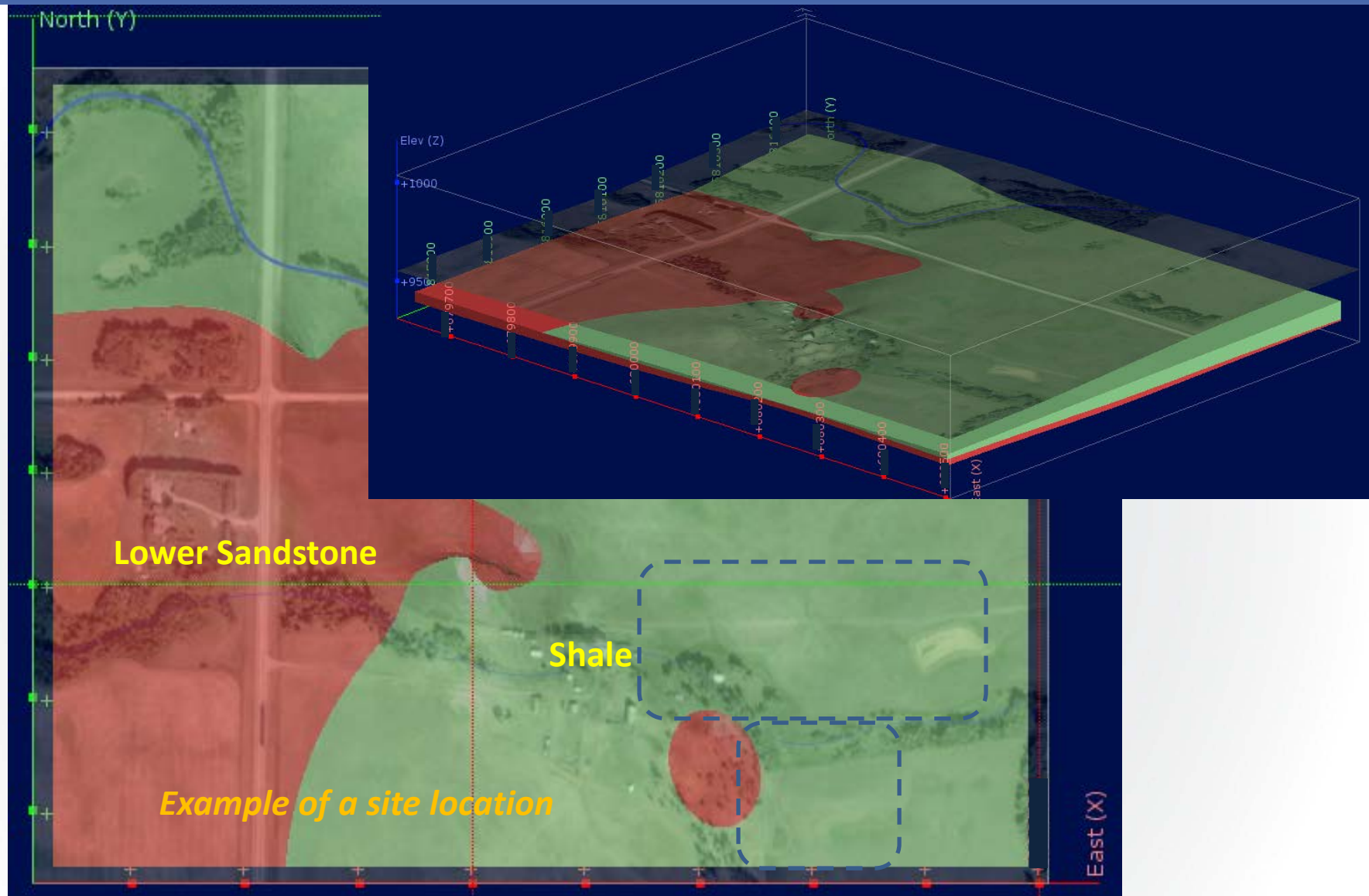
3D Geological Model



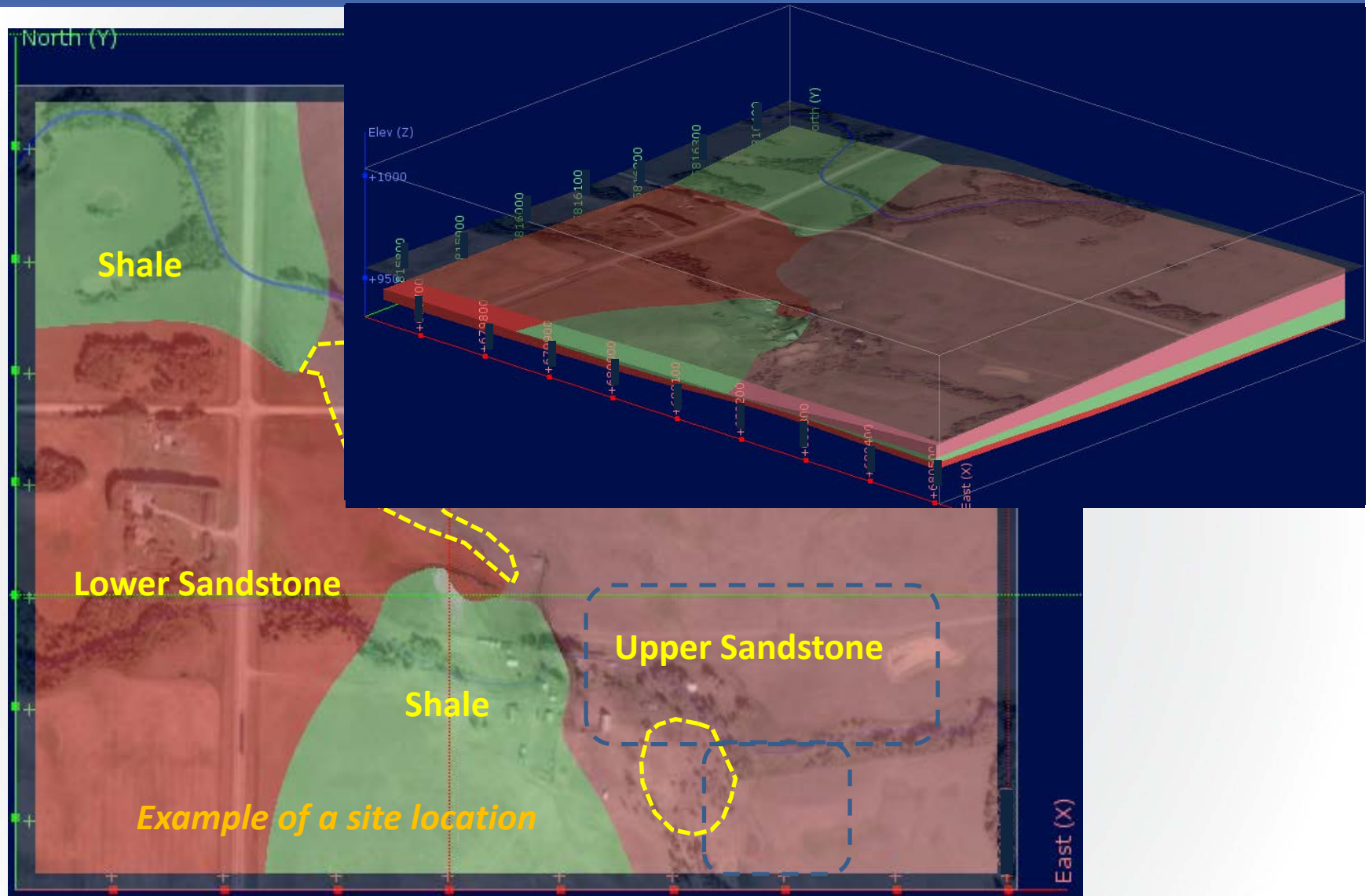
3D Geological Model



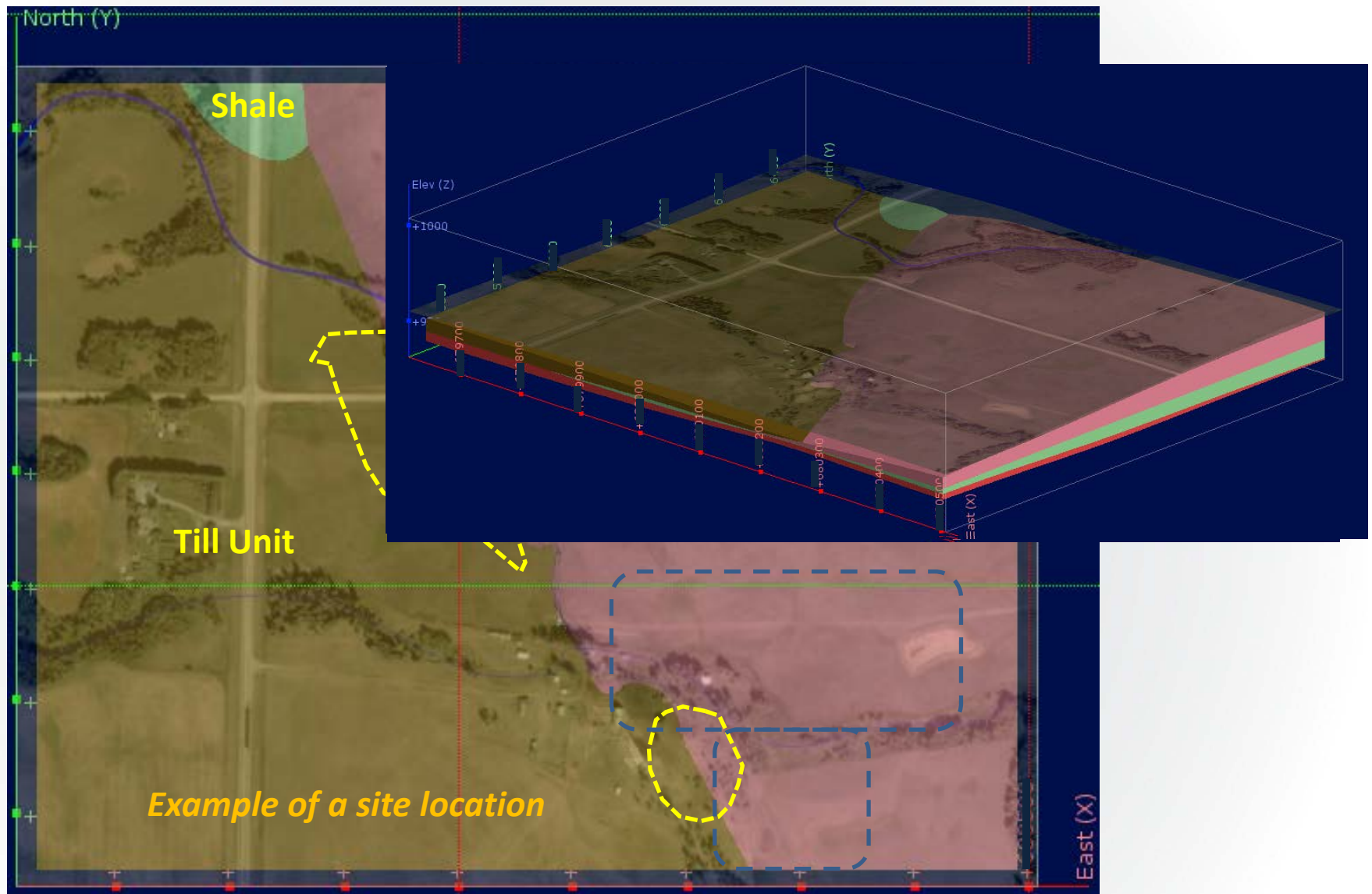
3D Geological Model



3D Geological Model

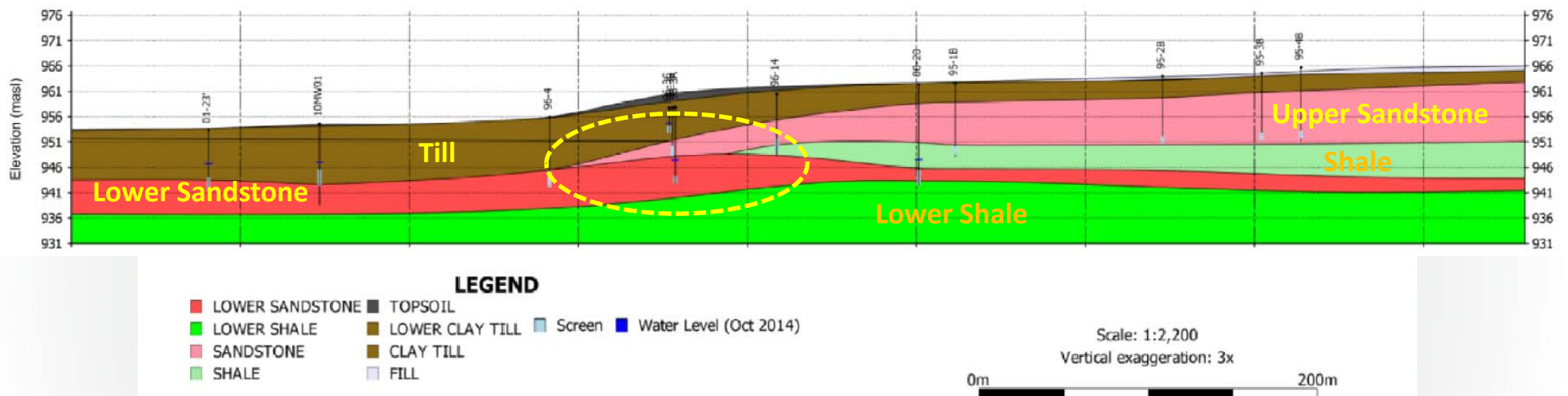


3D Geological Model

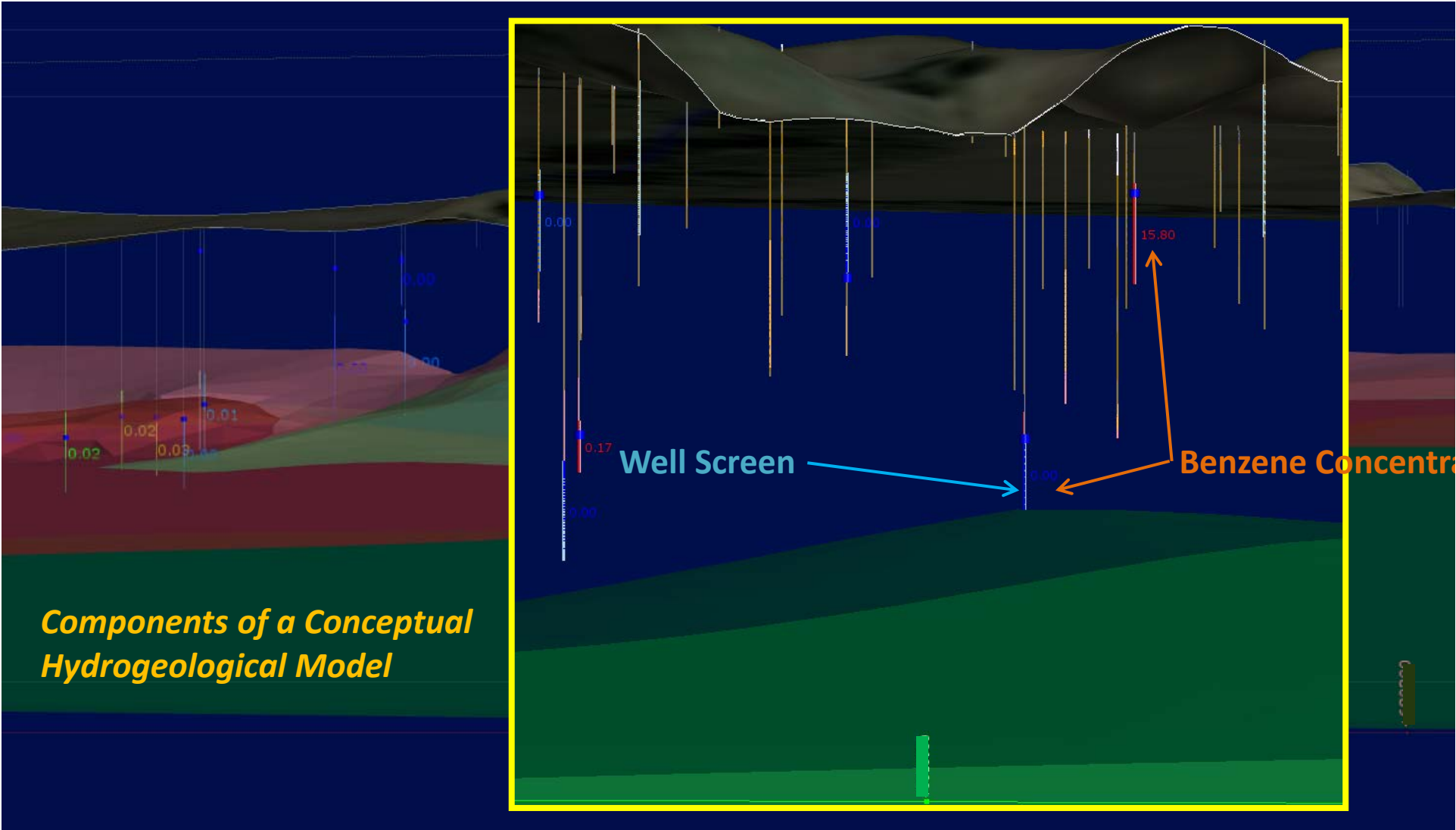


3D Geological Model

Example of a site location



3D Conceptual Hydrogeological Model



Upper Sandstone

Receptors

Cross Section

Shale

Shale

Lower Sandstone

Elev (Z)

6100

6000

5900

5800

+1000

+950

+9700

+9800

+9900

+10000

+10100

+10200

+10300

+10400

+10500

+10600

+10700

+10800

+10900

+11000

+11100

+11200

+11300

+11400

+11500

+11600

+11700

+11800

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+21100

+21200

+21300

+21400

+21500

+21600

+21700

+21800

+21900

+22000

+22100

+22200

+22300

+22400

+22500

+22600

+22700

+22800

+22900

+23000

+23100

+23200

+23300

+23400

+23500

+23600

+23700

+23800

+23900

+24000

+24100

+24200

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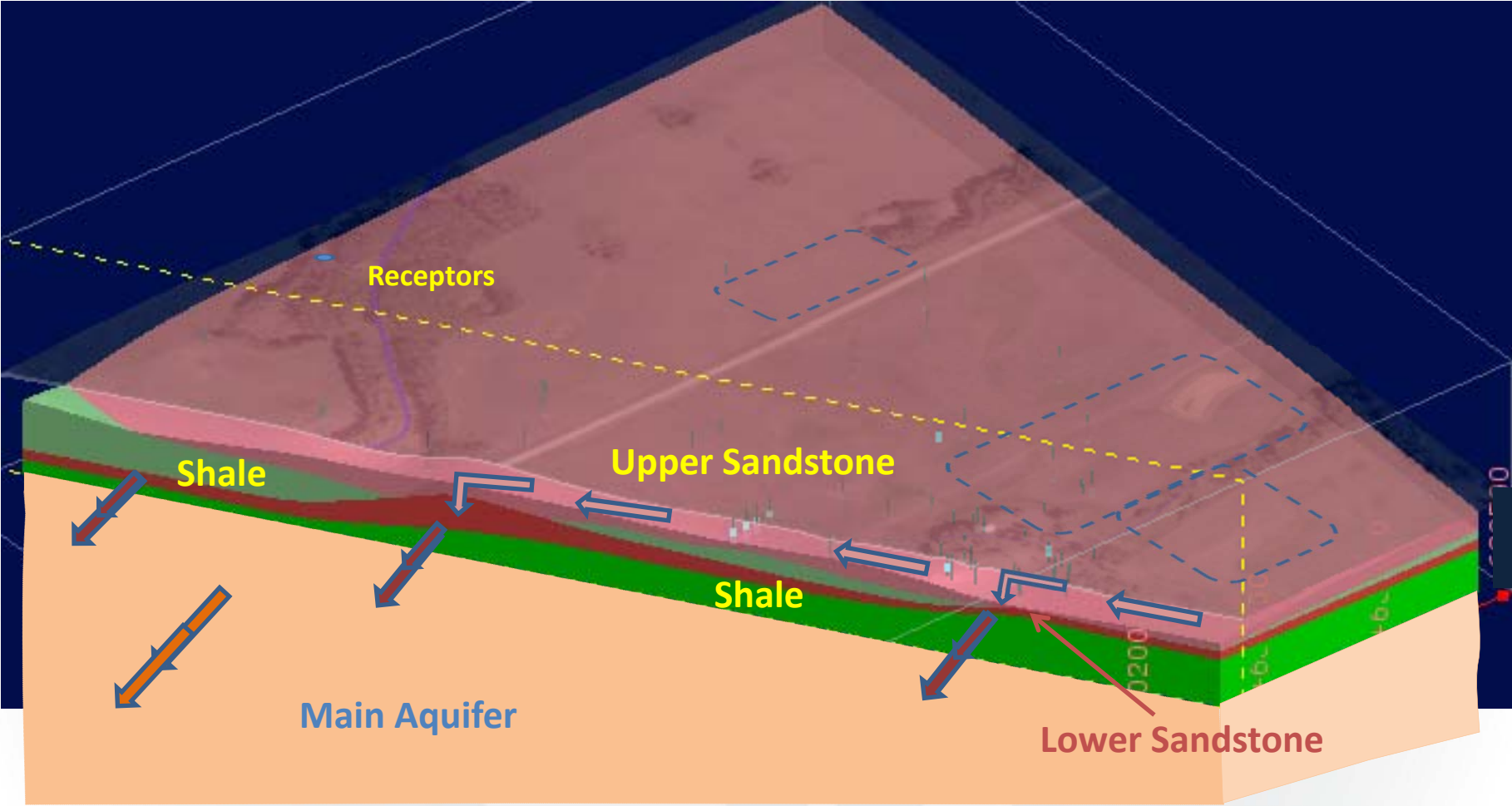
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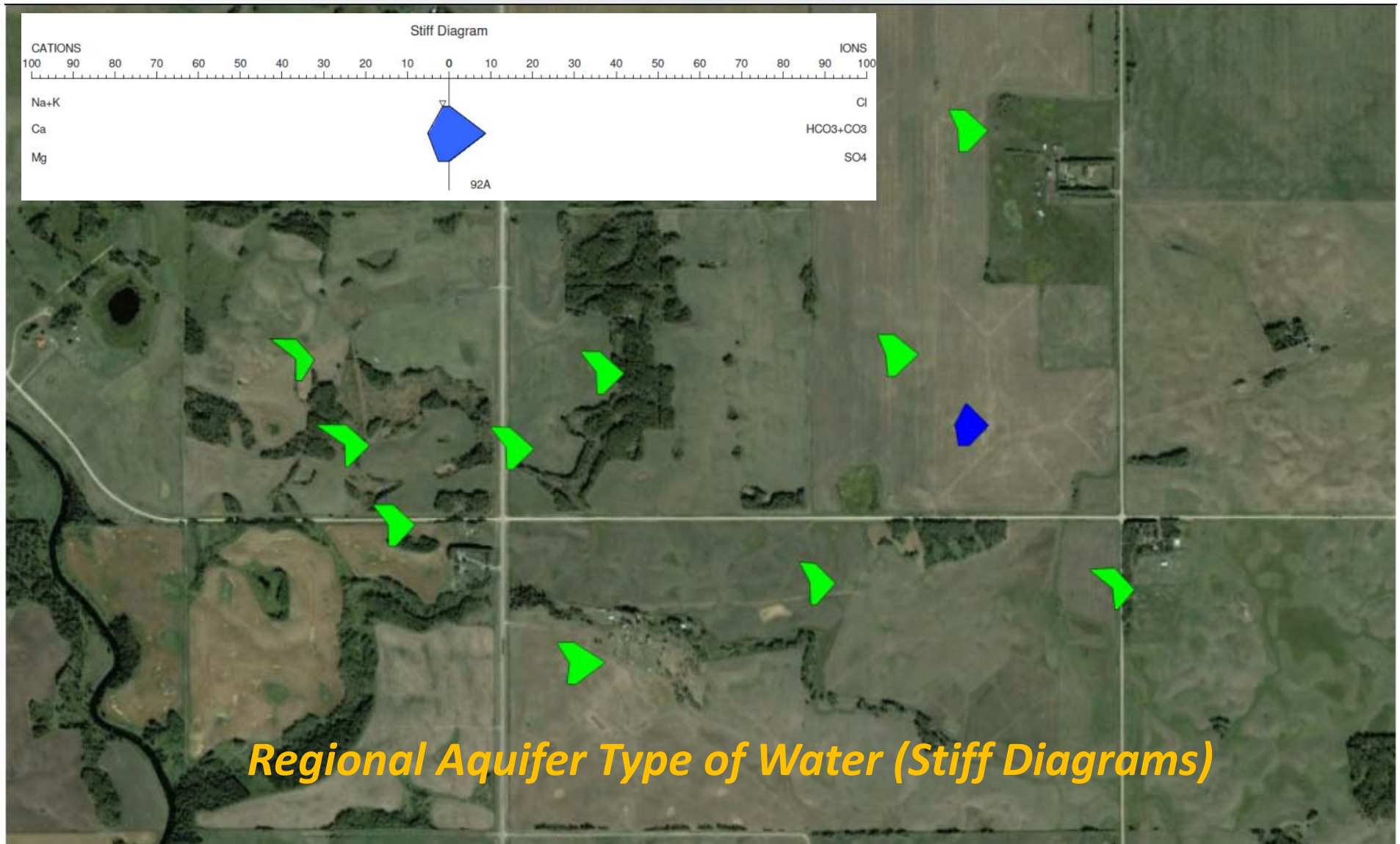
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3D Conceptual Hydrogeological Model

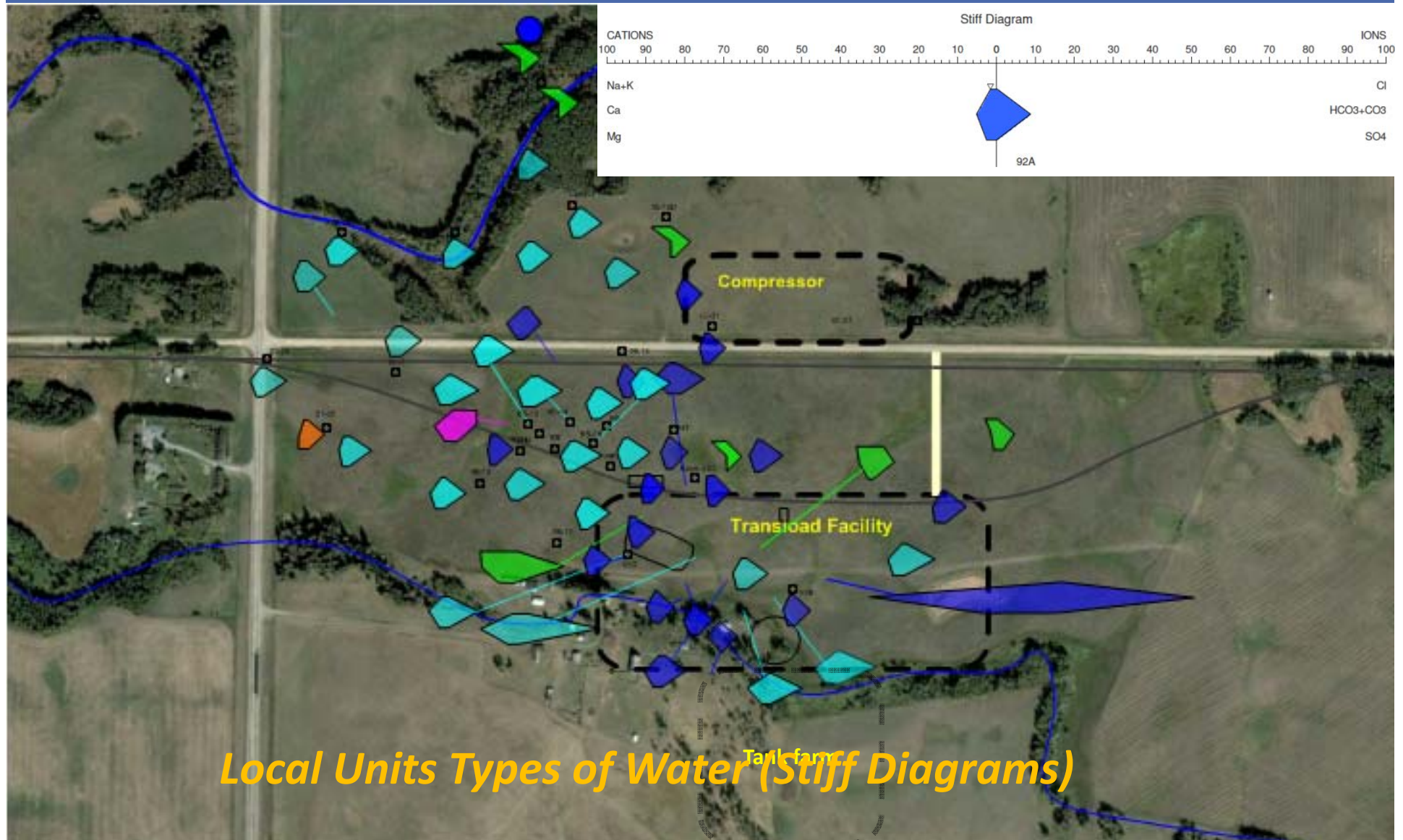


3D Conceptual Hydrogeological Model

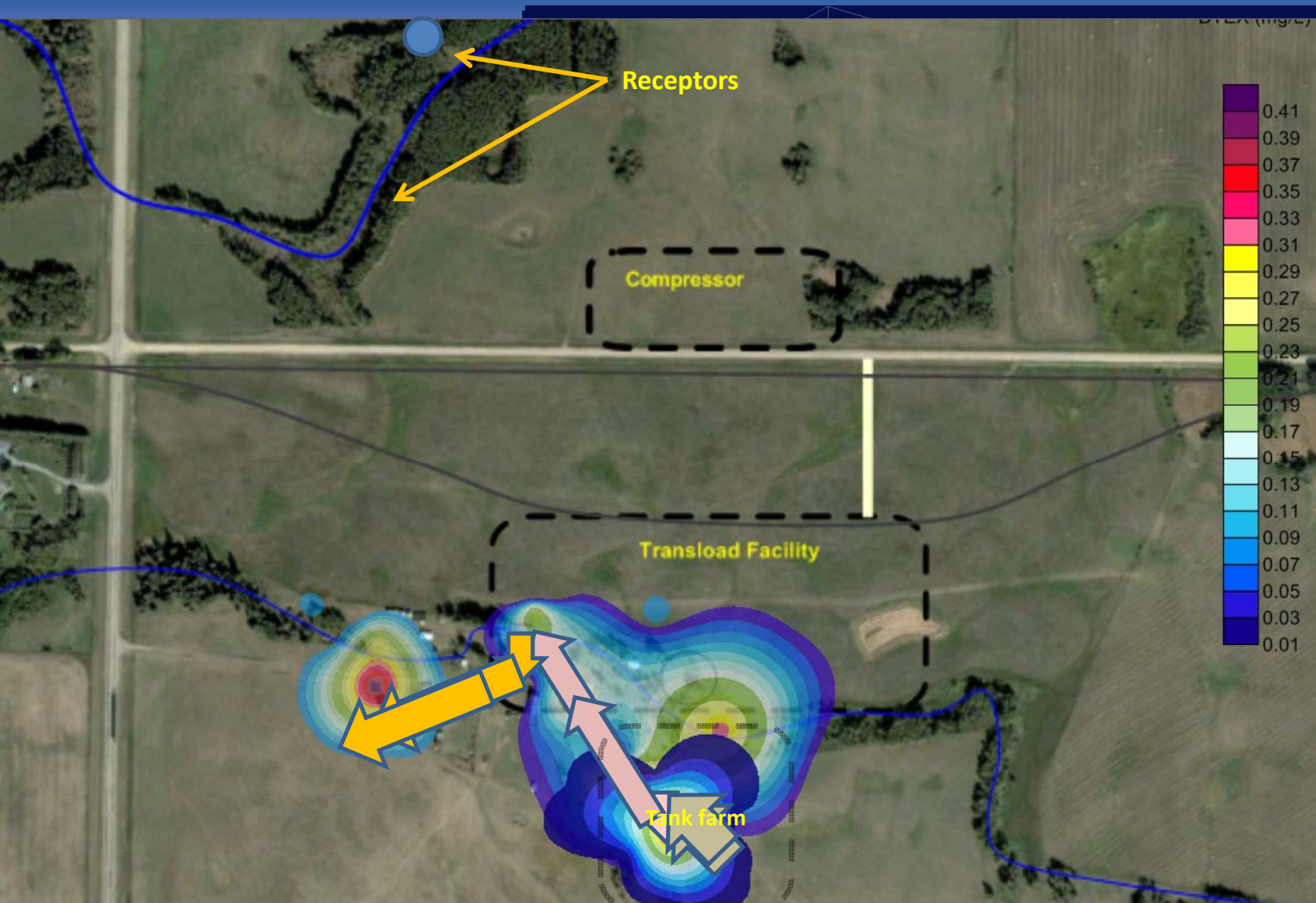


Regional Aquifer Type of Water (Stiff Diagrams)

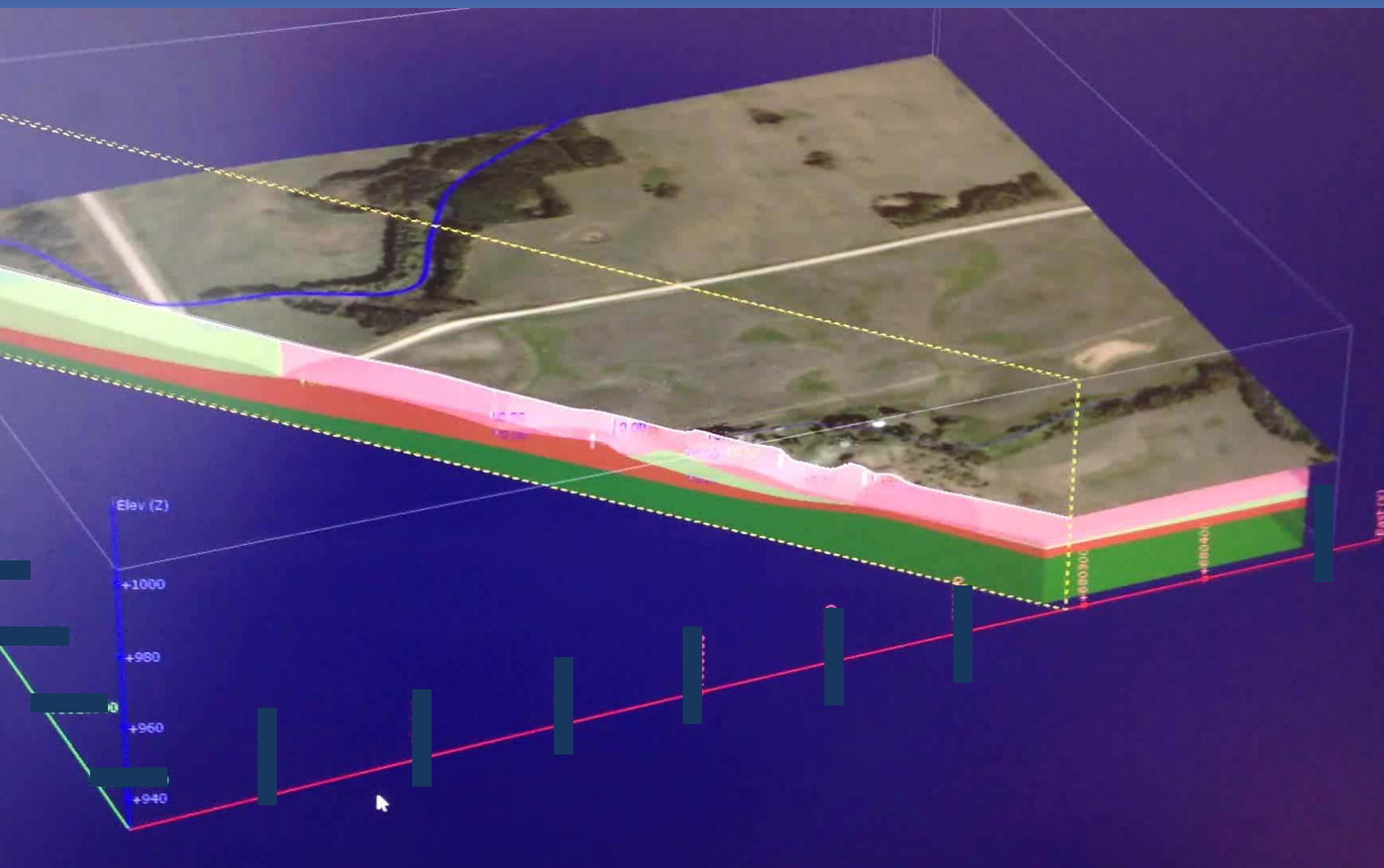
3D Conceptual Hydrogeological Model



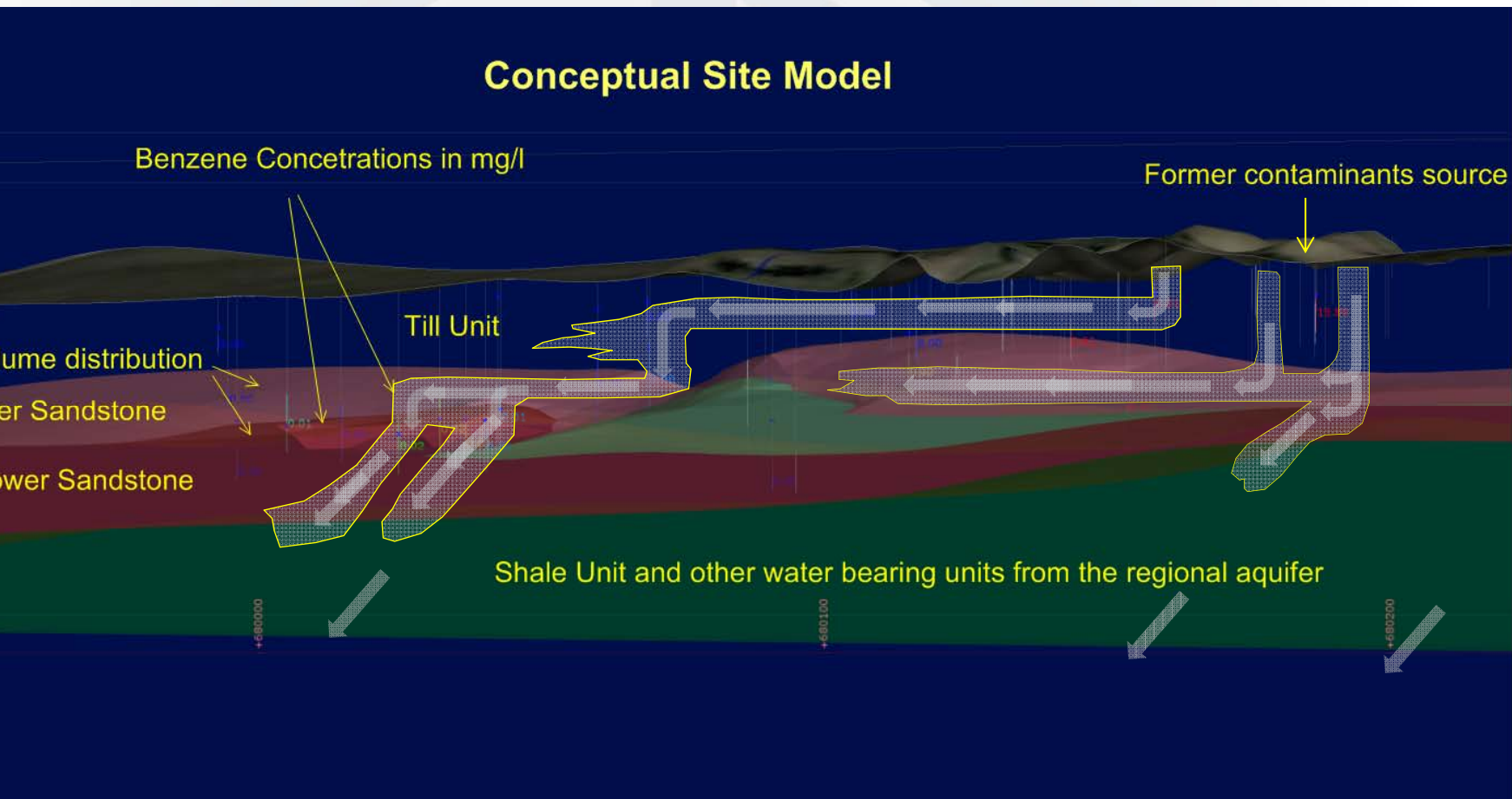
3D Conceptual Hydrogeological Model



Conceptual Site Model



Conceptual Site Model



Conclusions

Most sites have a wealth of data which is not optimally used

Integrating data sets in 3D and time is key to improved site understanding

A well-supported 3D hydrogeological model is the foundation of a strong conceptual site model

Benefits of the 3D conceptual site model approach:

- Cost effective alternative to 3D numerical model
- Enhanced site characterization
- Better monitoring networks
- Improved remediation design
- Improved risk management

A large, faint, light blue logo is centered in the background. It consists of a circle with a vertical line through the center, and two curved lines on the right side that resemble a stylized 'S' or a globe's meridian.

QUESTIONS?



References

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