**TASK 2: GEOLOGIC EXAMINATION OF THE BIRDS NEST AQUIFER**

The Birds Nest aquifer is normally capped by Dolomitic siltstone, above the sediments are clays and silt. Like many porosity, there is a fluvial influence in the north 500 feet of the core, as well as a north-south flow of groundwater to the north. The two bedded sodium carbonate bed, as well as a sample of nodular nahcolite, were classified as calcareous mudstones (<70% “clay” [sum of Na, Al, Si, K, and Fe] and >22.5% CaO), clay-rich mudstone / siltstone / sand, and dolomitic mud/siltstone.

Current research includes sodium carbonate bed, nahcolite beds and nahcolite nodules within calcareous mudstone. As well as a sample of nodular nahcolite, which was classified as calcareous mudstones (<70% “clay” [sum of Na, Al, Si, K, and Fe] and >22.5% CaO), clay-rich mudstone / siltstone / sand, and dolomitic mud/siltstone. The right samples show that the dominate mineral is calcite with minor amounts of nahcolite. Since calcite is much less soluble than nahcolite, the nahcolite samples were classified as nahcolite beds and nodules within calcareous mudstone.

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**Lithologic Units**
- Middle R-6 (2565 ft)
- R-8 (1510 ft)
- B-Groove (2376 ft)
- Four Senators (2314 ft)

**Core housed at the Utah Core Research Center**
- Clay silt
- Nahcolite bed
- Dolomitic mud/siltstone
- Clay-rich mudstone
- Calcareous mudstone

**Fluctuating profundal lithofacies**
- Underfilled Basin (i.e., ripples)
- Calcareous-rich mud/siltstone
- Basin-ward expression
- Fluvial-lacustrine lithofacies

**Fluvial influence**
- Nodule or fracture fill analyzed with XRF
- Plant and/or insect material

**Lesotho**
- 48.4 Ma (Smith and others, 2008)

**Depth**
- 2232.6 ft
- 2275.9 ft
- 2350 ft
- 2371 ft
- 2376 ft
- 2424 ft
- 2502.2 ft
- 2598 ft
- 2890 ft
- 2990 ft
- 3000 ft

**Matrix**
- Overall slightly calcareous
- Duchesne River
- Gilsonite vein
- Water disposal well
- Oil field
- Cross section well
- Township and Range

**Figures**
- Depth: 2244.6-2244.9 ft
- Depth: 2376 ft
- Depth: 2502.2 ft
- Depth: 2598 ft

**Tables**
- Depth: 1644 ft
- Depth: 1933.1-1938.3 ft
- Depth: 1632.5-1637.8 ft
- Depth: 1634.1-1635.1 ft
- Depth: 1702.7-1703.4 ft
- Depth: 1708.0-1708.9 ft
- Depth: 1879.2 ft
- Depth: 1889.4 ft
- Depth: 1890.6 ft
- Depth: 2262.8-2263.1 ft
- Depth: 2583.1-2584.1 ft
- Depth: 2598 ft