Greater Natural Buttes Area Gas Development Project - 3675 new wells - proposed, draft EIS
• South Unit Oil and Gas Development Project - 400 new wells - proposed, draft EIS
• West Tavaputs Natural Gas Field Development Project - 626 new wells - approved
• Big Pulp Natural Gas Development Project - 662 new wells - approved, EA in process
• Sundance Canyon Field Development Project - 240 new wells - proposed, EA in process

Greater Natural Buttes Area Gas Development Project

South Unit Project - 400 wells

Big Pulp Natural Gas Development Project

The Birds Nest aquifer, formed from the dissolution of saline minerals in the Eocene upper Green River Formation, as a potential large-scale saline water disposal zone.

Evaluation of geophysical logs from over 30 wells, together with 21 core descriptions, 5 measured outcrop sections, and 3 regional cross section analyses were used to map the spatial and vertical extent of the upper and lower Birds Nest aquifer zones that demonstrate potential for large-scale saline water disposal. As ancient Lake Uinta began to recede, its waters became hypersaline, depositing large saline nodules and thin saline mineral beds within a 30 to 110 foot thick interval of dolomitic mudstone, forming the more extensive, ~300 square mile, lower Birds Nest zone. An influx of fresh water, represented by volcanioclastic debris flows recorded in rocks on the east side of the basin (Horsebench Sandstone), decreased the lake’s salinity for a period of time, greatly reducing saline mineral deposition. However, as the lake continued to shrink, it once again returned to its hypersaline state, depositing large saline nodules in a less extensive, ~360 square mile and 30-110 foot thick, upper Birds Nest zone, centered farther to the west than the lower zone.

Several other limiting factors will play a role in determining potentially safe saline water disposal volumes into the Birds Nest aquifer, including: 1) chemistry of water currently in the Birds Nest zone – saline water disposal can only occur in an aquifer with water greater than 10,000 mg/L TDS; 2) saline mineral dissolution – only areas with significant saline mineral dissolution can transmit and store saline water, 3) transmission of water via fractures or gilsonite veins, and 4) proximity to potentially developable oil shale resources.

ABSTRACT

Eastern Uinta Basin natural gas producers have identified the Birds Nest aquifer, located in the Para-As Uinta Basin petroleum production increases – natural gas production increased 189% in the past 10 years, while oil production increased 159% – so has proximity to potentially developable oil shale resources.

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