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Potential by-products from oil shale, Piceance Basin, Colorado

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Based on reconnaissance-level geochemical data and on limited past research results, several valuable mineral products may potentially be produced along with shale oil from the Green River oil shale deposit. These include nahcolite (now being produced by solution mining methods), aluminum (from dawsonite), lithium, gallium, cobalt, manganese, cement, and perhaps others. Collectively, these products could possibly double the "raw rock value" of 30 gallon per ton oil shale. These value-adding potential products could result in (1) significantly increasing the economic viability of oil shale, and (2) allowing economic production of oil from lower grade shale, thus increasing the recoverable shale oil resource. Present and projected leasing and reported research work on shale oil production does not include addressing recovery of these mineral products (except perhaps nahcolite). These materials are a potentially very valuable national resource, and a vigorous R&D program is needed to determine the feasibility of their recovery. Like oil shale, their potential basin-wide value is many trillions of dollars, in market value and, more importantly, in raw material input to our economy.