GEOLOGIC SETTING OF THE THERMO KGRA (KNOWN GEOTHERMAL RESOURCE AREA), BEAVER COUNTY, UTAH

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Thermo KGRA contains some of the hottest springs in Utah. The springs are along two NNE-trending en echelon lines of travertine mounds that rise about 15 m above the valley floor 7 km north of the western Black Mountains. The adjacent Black Mountains consist mostly of andesitic mudflow breccia of the 26-22 m.y.-old Mount Dutton Formation overlain by dacitic cones, lava flows and volcanic mudflow breccia of the 21-19 m.y.-old Horse Valley Formation. A deeply eroded dome of rhyolite forms two small hills, flanked by Bonneville shoreline gravels, 3 km east of the hot springs. The Thermo dome is part of an east-west belt of small, isolated rhyolite plugs and flows of Pleistocene to middle Miocene age that extend from east of Kingston, in the Sevier Plateau, west to the Staatz-Blawn Mountain mine area, in the Wah Wah Range. K-Ar dating of some rhyolites of this belt is underway. Mineralization, hydrothermal alteration, and geophysical lineaments occupy the same belt, which is probably part of the greater Marysvale-Pioche mineral belt. Most major faults in the northern Black Mountains and southern Mineral Mountains strike northeast, but east-west faults are locally common, even though they are rare elsewhere in this part of the Great Basin. The travertine mounds and most hot springs lie along faults of the northeast set, but faults of the east-west set cut Quaternary sediments immediately east of the hot springs. Thermo hot springs thus is at the site of intersecting, nearly orthogonal young faults. If the rhyolite dome is young, it may be a source of geo-

CHEMICAL PROCESSES OF PURIFICATION OF WASTEWATERS INTRODUCED INTO THE SUBSURFACE

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Disposal of wastes to the subsurface has become more attractive as control of discharges to surface waters has become more stringent. Injection wells and spreading of sewage effluent on the land, with possibilities for pollution of ground water, are examples. Long term storage radioactive wastes in the vadose zone of arid regions has been advocated.

Many chemical processes may operate to protect ground water from contaminants, including: dilution, buffering of pH, chemical precipitation by reaction with native components, hydrolysis and precipitation precipitation by oxidation or reduction, mechanical filtration, volume ization, biological degradation, radioactive decay, and sorption, all processes will function in all circumstances, but geochemists are able to predict which processes are most likely to be effective. For example, buffering of pH will usually occur, whereas precipitation be reaction with native species will be less common. Numerous examples pollution of ground water are known throughout the world, showing the purification capacity of subsurface materials has been exhausted.

At present it is impossible to quantitatively predict the purity potential and capacity of a given soil or alluvium for a given pollulant. Laboratory work must be performed to determine if the materials of the subsurface offer protection to ground water. Measurements of distribution coefficients and isotherm maxima are especially helpful. These measurements offer initial guidelines for disposal of the waste Monitoring is essential. With proper safeguards, it should be possible.

UNIVERSITY OF UTAH RESEARCH INSTITUTE EARTH SCIENCE LAB. use the subsurface environment for ground water resources.

MAJOR UNCONFORMITY IN UPPER CRETAC Ryder, Robert T., U.S. Geologic w paleontological data and details jor unconformity between the Upper Lue Gate Shale Members of the Manco

The unconformity is manifested of introduced that the Ferron interfingers we also Blue Gate Shale Member commonly lowerate bed as much as I foot thic much as 4 inches in length, well-day chert, white or light-gray quarite quartite.

Detailed correlations of sandst stern and southern margins of the more of the uppermost Ferron was be Blue Gate in the southwestern pa

Fossils from the Ferron and Blury spans as many as six faunal zone ronian to late Coniacian time. The dicating the zones of Prionocyclus on the youngest fossiliferous strate of Scaphites depressus from the unconformity.

An unconformity at approximately also been documented in the San lorado and the Kaiparowits basin o

TERNS OF CRETACEOUS SHALLOW MARINE KPORT AREAS, UTAH

Ryer, Thomas A., Department of Geo University, New Haven, Connectic taceous strata exposed in the Coal tral Utah accumulated in alluvial rshore and offshore marine deposit ts were deposited in this region d the Aspen-Mowry, Greenhorn, and Ni its of each marine invasion may be mal sequences, each of which conta ded above by the disconformity as pence. In some cases, the basal d inements. Analysis of sedimentary biogenic features clearly indicat gradational. Retrogradational sha irely lacking. Sections through d sach marine invasion are character of which is generally more marin r than that which preceded it; t ressively less marine in characte les of deposition at the western m y in this region do not conform give-regressive models of some au th movements of the strand.

BON ISOTOPE PALEOCLIMATOLOGY sackett, William H., Departm