



# SURVEY NOTES

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Service to the State of Utah

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## DEBRIS FLOOD IN WILLARD

### HIGHWAY, CANAL BLOCKED

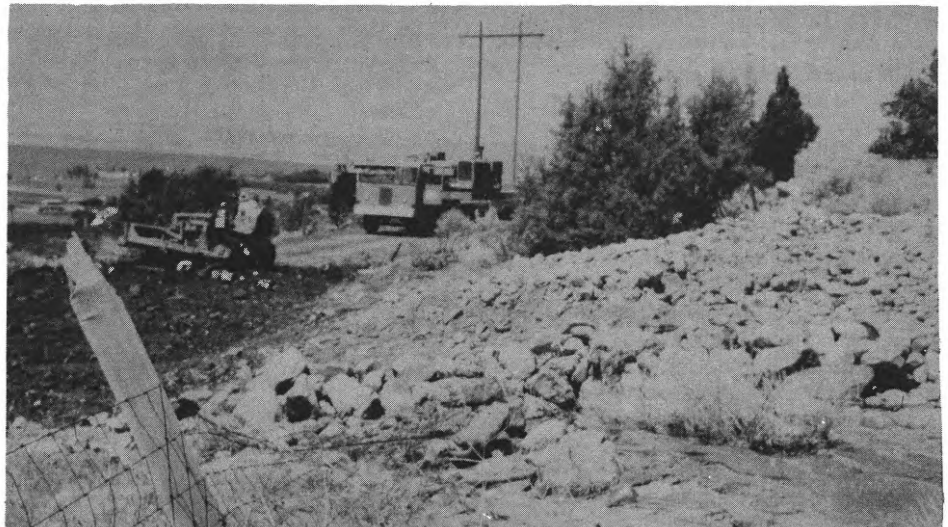
On Sunday, August 13, 1978, a brief but intense thunderstorm struck the vicinity of Willard, Box Elder County, Utah. Runoff from the Wasatch mountain front east of town produced flashfloods from several canyons which blocked the Ogden-Brigham City Canal in at least three locations. Muddy water closed U. S. Highway 89 for a time and filled the basements of three houses east of Highway 89, where drainage has been blocked by the highway (Ogden Standard Examiner, August 14, 1978). Some hail damage to the peach crop was also reported.

Rainfall was sufficiently intense to produce sheet flow on the sandy gravel soil of the Provo-age benches at the foot of the mountain, from north of Willard Canyon to south of Cook Canyon (Figure 1). (Similar runoff was noted in North Ogden, where, however, no debris was reported). One inch in 20 minutes is a reasonable estimate of rainfall intensity at the storm's center.

Examination of the flashflood channels and debris deposits below the mouths of four of the five canyons showed that deposits were composed of angular rocks and boulders mixed with driftwood and finer material.

The evidence indicates that the floods crested as very active "mud flows", with coarse debris borne in suspension in a viscous matrix of water highly charged with sediment, and that as the flow declined it became less charged with sediment.

Although there are no comparative data on storm intensities, the flooding, touted by the press as the worst in 50 years, caused less damage than the destructive debris floods of the 1930's.



Bull dozer clears flood debris from Ogden-Brigham City canal.

### FIRST INLAND OFFSHORE WELL IS "DUSTER"

At press time Amoco Production was preparing to plug and abandon its No. 1 Indian Canyon-State test in the north arm of Great Salt Lake. Total depth of the well was 12,470'. The bottom 20 feet of the well is reported to have penetrated Precambrian mica schist. Only very slight shows of gas were reportedly encountered in scattered intervals of the well.

The barge from which the well was drilled will be moved eight miles northwest where Amoco will drill the second well in its offshore program. The second well is 4½ miles southwest of the Rozel oil seeps on the lake shore.

Spokesmen for Amoco emphasized that while the stratigraphic section penetrated in the first well holds some promise for the possible presence of oil or gas beneath the lake, the shows of gas encountered were only detectable by sensitive instruments that monitored gas content of drill cuttings and drilling mud. There definitely were no shows of oil or gas to suggest that commercial gas or oil production was present at the drill site.

### MILS CONTRACT FOR UGMS

The U. S. Bureau of Mines has awarded a two-year contract to UGMS for preparation of a "Mineral Industry Location System (MILS)" for Utah. This will require recording the location of every mining prospect, every occurrence of commercially important minerals (excluding water, oil, and gas) and all processing plants including mills, smelters, kilns, etc. Locations of both past and present operations and producers are to be included. The information will be entered onto coded MILS forms, arranged by counties, for entry into a computerized storage system. Each location will be plotted on the largest scale topographic maps available.

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# DIGGIN'S



## RICH GAS PRODUCTION

Gas from the 1977 discovery at Hogback Ridge in Rich County is being produced into the Northwest Pipeline Corporation system and will be shared 50/50 with Mountain Fuel Supply Company. Connecting the well required construction of eight miles of new pipeline.

For the present, gas will be produced only from the Dinwoody Formation (Triassic) at about 9,500 to 9,600 feet. Gas containing hydrogen sulfide from the deeper Phosphoria Formation (Permian) can not be produced economically at present without expensive separation facilities for the single well.

The Hogback Ridge discovery drilled by American Quasar Petroleum has been offset to the northwest and south by deep dry holes, an indication of the complex geology and high risks involved in Overthrust Belt exploration.

## OIL BOOM ROLLS ON

A major gas-condensate discovery seems destined to become Summit County's fifth oil and gas field. Anschutz Oil No. 34-1, NW SE 34-4N-7E, on the Anschutz Ranch, tested 34.9 million cubic feet of gas and 872 barrels of condensate per day from about 700 feet of productive section in the Jurassic Twin Creek Limestone. Depth of the tested zone was 6,981 to 7,677 feet.

The new well is 7 miles north of the Pineview Oil Field and about 4 miles northwest of Mountain Fuel's gas pipeline to the Salt Lake Valley.

Summit County's four fields are Bridger Lake (discovered 1966), Pineview (1975), Elkhorn (1977), and Lodgepole (1977). Bridger Lake Field is not considered to be in the Overthrust Belt.

## URANIUM EXPLORATION OPTION

Sunshine Mining Company has completed option arrangements for a

minimum three-year lease on 36,000 acres in two tracts in the San Rafael mining district, Emery County. Exploration activities are to begin in late 1978. The San Rafael district has produced uranium since the 1950's and is the subject of UGMS Bulletin 113, now at press.

## COSTLY PAPER

The U. S. Commission on Federal Paperwork estimates that it costs American business \$32 billion annually to comply with paperwork requirements of the federal government. The figure exceeds the total revenue of all but two of the nation's largest corporations.

## NAMES CONFERENCE

A one-day meeting of the Western States Geographic Names Conference was held in the Governor's Board Room, State Capitol, November 3. Representatives of ten western states (including Alaska) attended. Following the sessions, the group toured the Fort Douglas Museum and cemetery and Research Park including a brief stop at the UGMS building to view the Crane Mineral Collection.

## OVERTHRUST BELT MAP

The Wyoming Geological Survey has published a 24" x 50" map in color, scale 1:316,800, entitled "Tectonic Map of the Overthrust Belt, Western Wyoming, Southeastern Idaho and Northeastern Utah". The map is for sale by the WGS from its offices at the University of Wyoming for \$3.00. Drilling data is posted to March 31, 1978.

## NEW BOARD MEMBER

Robert R. Norman, geologist for the Minerals Division, Buttes Gas and Oil, Moab, has been appointed by Governor Matheson to fill a vacancy on the UGMS Board. He replaces Mr. Harry Perry, Cedar City, who resigned from the Board after moving to Texas.

Mr. Norman has worked as a

geologist in southeastern Utah since the early 1950's and is well known in the fields of petroleum, potash and uranium. He is a member of GSA and AAPG and regional geological associations. He has served on the Board of the Utah Division of Oil, Gas and Mining.

## UTAH GEOLOGY PRICE UP

Due to the relentless increase in costs of material and services, the price of Utah Geology has been raised to \$4.00 per issue or \$7.50 for a year's subscription.

The author of each article in Utah Geology now receives 25 free reprints, but s/he must buy a copy of the periodical if s/he wishes one.

## IN SITU URANIUM VENTURE

Energy Resources, Albuquerque, and Hunt Oil, Dallas, have exercised options to acquire 44,500 acres adjacent to existing acreage holdings near Blanding, San Juan County. The companies now control about 86,000 acres in a joint venture aimed at in situ recovery of uranium. An additional 5,000 acres controlled by Tipperary Oil, Midland, Texas, in the immediate area has also been committed to the venture.

Mountain States Engineers, Tucson, and In-Situ Consulting, Laramie, have completed hydrologic studies which will be followed by studies and tests of uranium leaching techniques.

## 13 WILDERNESS AREAS

The State Wilderness Committee, after months of hearings and deliberations, recommended that 13 of 127 roadless areas reviewed under the U. S. Forest Service RARE II program be designated wilderness. Of the 13 areas, covering a total of 684,120 acres, one area, the High Uintas, covered 408,000 acres or 60% of the total. Many boundary changes and other stipulations were attached to the recommendations.

Four other areas, covering 123,410 acres in 6 counties, were recommended for further study. These include 37,820 acres in the highly mineralized Tushar Mountains in Beaver and Piute Counties.

## ENERGY VIEW POINTS

### CONSERVATION

What is Utah doing about scarce energy resources?

The Utah State Energy Conservation and Development Council was established in June 1977 to make specific plans and recommendations.

Conservation of scarce energy resources is encouraged by development of educational material to be used in the secondary schools; by setting up heat and lighting standards for public buildings, and by vehicle tune-up programs within the state. The Council operates energy conservation workshops for industry, building managers, and home owners. Salvage sources, such as waste oil recovery and garbage conversion, will be studied.

A major program is a power plant siting study, to ascertain the capacity of various regions in Utah to accommodate power generating facilities and to locate areas where power plants will have the least negative impact. The council also participates in decision making processes relating to coal leasing, oil shale development, environmental impact reviews, and other programs relating to energy development on public lands in the state of Utah.

Alternative energy resources will be studied and their use encouraged. Development of solar energy will include initial research, surveys, and data-gathering by the Council.

The UGMS is compiling maps of coal lease holdings in Utah for the Energy Council. These maps show areas of federal, state, and private control of

the coal fields.

The Council is composed of thirteen voting members appointed by the Governor, and five ex-officio members. In July 1977 Reed T. Searle was appointed Executive Secretary to the Council; under him is a staff of six, including an Energy Conservation Specialist, an Energy Resource Specialist, a Solar Energy Specialist, an Information Specialist, and two secretaries.

### CONVERSION

At least 5,000 new coal mines must be opened by 1985 if goals of the administration's National Energy Plan to convert from use of oil to coal are to be met. Coal production is to increase from the 648 million tons produced in 1975 to 1,265 million tons by 1985.

The states will have to deal with the social and economic problems related to sudden population growth in coal mining areas, as well as consider regulation of water quality, reclamation, and health and safety. Those states that do not produce coal also face significant impact in rising prices and a growing complexity in economic planning. Tighten your belts!

*from Governors' Bulletin, 7-7-78.*

### WHO NEEDS OIL AND GAS?

Illusions take a long time to die, particularly if they promise a better world than the dreamer can visualize with his eyes open and clear.

To a great extent, the illusions most treasured in the last four years are begin-

ning to recede in the light of facts. The first, greatest, biggest illusion was that we wouldn't need oil and gas anymore.

This is a beautiful dream. It eliminates oil companies and "obscene profits." It eliminates hydrocarbon emissions. No more filling stations. No more utility bills. It brings us to a society that operates on energy from the sun, the wind, and the ocean waves, all of which are free.

To those that looked, the dream was quickly obliterated by facts. To the casual observer, such as the American public, the reality took a little longer to penetrate, but penetrate it has, to an ever-widening group. The only dreamers remaining are the so-called public interest lobbyists and some politicians. Unfortunately, within those two groups are people with the greatest access to opinion-shaping media. However, most of the people have found out that the sun is free, but the solar panels cost more than the utility bills they complain about. It doesn't take long to figure out that the wind is free, but it doesn't blow all the time. The tides won't lap much on the shores of Utah. After all, an American wants cheap energy, to be sure, but he also wants energy that produces light at night, heat in the winter and cooling in the summer.

The next phase of the transition is for more of us to realize that the petroleum industry will be around a little longer than it was thought, and the easiest solution is to expand the resource base and the producible reserves. W. Timothy Dowd, in *Compact Comments* of Interstate Oil Compact Commission.

*by Greg McLaughlin  
Sandy Stewart*

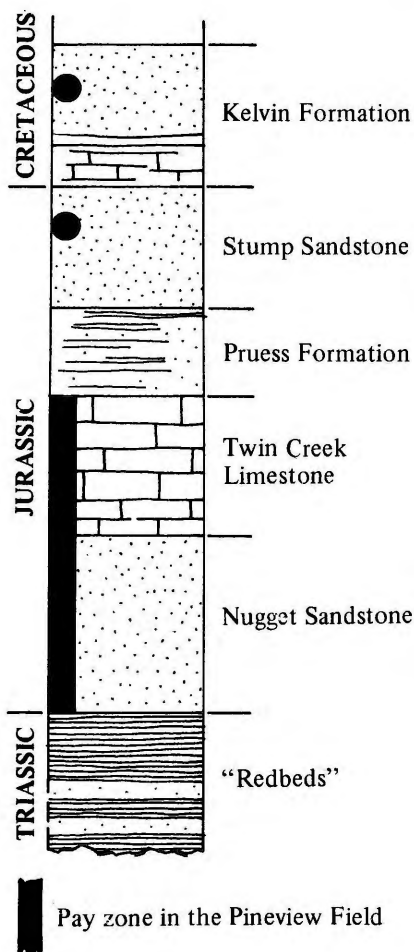
### ROCKY RIDGES, continued





## NEW PAY ZONE for PINEVIEW

Utah's prolific Pineview Oil Field in Summit County has chalked up its fourth pay zone with announcement of oil production from the Jurassic Stump Sandstone. Twenty wells produce from Twin Creek and Nugget, one from Kelvin and one from Stump. The new pay zone was found in the No. 1 Newton Sheep Company well, originally completed in 1975 as the discovery well in the field from the Nugget Sandstone. The Kelvin production was discovered in the summer of 1978 from a well immediately offsetting the newest pay zone discovery.



## INCREDIBLE INFORMATION DEPARTMENT

Coffee in the UGMS lunch room has decreased in price from ten cents to five cents per cup.

## URANIUM-VANADIUM IN THE SAN RAFAEL RIVER MINING AREA

The San Rafael River mining area, about 15 miles west of Green River, Utah, is important for its production of uranium and vanadium. The first production was in 1880, but most of the ore was mined during the "uranium boom" of the 1950's and 1960's. At least seven mines were active in 1976. (The location is shown at "C" on the index map.)

The area is on the northeast flank of the San Rafael Swell, south of the Uinta Basin and west of the Paradox fold and fault belt. 4,500 to 5,500 feet of gently dipping strata are exposed, ranging in age from Triassic through Cretaceous. Overlying these are large areas of Quaternary alluvium, colluvium, and gravel.

Most of the mineralization is found in the Jurassic sediments on the west flank of a broad, shallow trough adjacent to the east flank of the San Rafael Swell. Here the Jurassic Entrada, Curtis and Summerville Formations have been gently folded into anticlines, synclines, and flexures whose axes trend northeastward. The upper Summerville has been truncated beneath the fluvial Morrison Formation. Continued folding created river drainage channels in the Morrison. These channels mostly trend to the northeast at about the same spacing as the Summerville folding, and are probably controlled by it. Superimposed across the west flank of the broad trough are numerous northwesterly trending faults, most with displacements of less than 50 feet, although a few reach as much as 200 feet.

While uranium and vanadium mineralization is found in the Moss Back Member of the Chinle Formation, the Entrada Formation, and the Salt Wash and Brushy Basin Members of the Morrison Formation, most production comes from the Salt Wash. Mineralization is in the upper part of this member, in a thick, continuous sandstone layer that was formed by the shifting distributary channel systems of several streams that entered the area from the south.

The principal ore control appears to be the carbonaceous material deposited in point-bar, levee, crevasse-splay, and channel-bottom environments.

## NEW CONTRIBUTIONS

Most mineralization is aligned parallel to the northeasterly trending channels or gentle folds and flexures. Faulting cuts ore bodies and appears to be post-ore.

The most common uranium and vanadium minerals include coffinite, uraninite, montroseite, and corvusite. At least 48 mines in the Tidwell and Acerson mineral belts have produced ore that yielded a total of about 3,100,000 pounds of uranium concentrate ( $U_3O_8$ ) and about 5,400,000 pounds of vanadium concentrate ( $V_2O_5$ ) through 1975.

The area has a proven reserve of 23,000 tons at a 0.12 percent  $U_3O_8$  grade with a potential of additional ore capable of yielding 8,000,000 pounds of uranium concentrate and a commensurate amount of vanadium concentrate. Smaller tonnages of higher grade material are available. The most favorable area for future prospecting lies in a band 2-½ miles wide extending southeastward from the Tidwell mineral belt.

Editor's note: The publication of Bulletin 113, *Geology and uranium-vanadium deposits of the San Rafael River mining area, Emery County, Utah*, by Larry Trimble and Hellmut Doelling, has been unavoidably delayed, but should be off the press in November.

## NEW PLACE NAMES APPROVED

Two place names introduced in UGMS Bulletin 113 (in press) have been recommended for approval by the Utah State Committee on Geographic Names.

Shadscale Mesa, which covers an area of about 10 square miles, is located 15 miles west of Green River, Utah and is bounded on the north by Interstate 70 and on the east by the San Rafael River. The San Rafael Reef lies about ½ mile west of the westernmost point on the mesa. The mesa takes its name from the abundant growth of shadscale, *atriplex confertifolia*.

The Squeeze is the narrow valley about 2.7 miles long south of Interstate 70 between Shadscale Mesa on the east and the San Rafael Reef on the west. Here the formations on the east flank of the San Rafael Swell are suddenly upturned and become steep dipping, giving the impression they were caught in a squeeze.

# TO UTAH GEOLOGY

## SAND DUNES IN THE SALT LAKE BASIN ARE THEY FORMED BY WIND OR WAVES?

Extensive eolian deposits are found peripheral to the Great Salt Lake and within the Great Salt Lake Desert area of Utah. There has been some controversy as to their origin: are the dunes of eolian origin, or are they of lacustrine origin, modified somewhat by the wind after the exposure of Lake Bonneville sediments? Their location is shown at "A" on the index map below.

The sand dunes cover approximately 11 percent of the area in the Great Salt Lake Desert and along the coast of Great Salt Lake. Thirty-one dune fields were identified and mapped, and data concerning 11 variables for 169 dunes were gathered.

Data was collected for eleven variables, including dune area, height, dune type, elevation above sea level, sand lithology, orientation of dune field and underlying slope, percentage of dune cover and vegetation cover, and grain size and sorting coefficient of the sand.

Three sand lithologies are present: silica (quartz), gypsum, and oolite. Silica sands are generally found surrounding the Great Salt Lake Desert, gypsum sands are found within the Great Salt Lake Desert, and oolitic sand is found downwind from many beaches along the coast of present-day Great Salt Lake.

Two predominant dune types are present: transverse dunes, found within the Great Salt Lake Desert, and parabolic dunes. The majority of dunes are stabilized by vegetation.

The original beach sands have not been moved far from their original sedimentary sources. Some gypsum sands may have been dunes of an earlier dry cycle, modified by a temporary rise in the lake level.

The results of the statistical testing indicate the dunes are of lacustrine origin and have been reworked by eolian processes.

(from an article by L. Dean, to appear in the Fall issue of *Utah Geology*.)

## CO<sub>2</sub> GEYSER ADDS SALT TO COLORADO RIVER

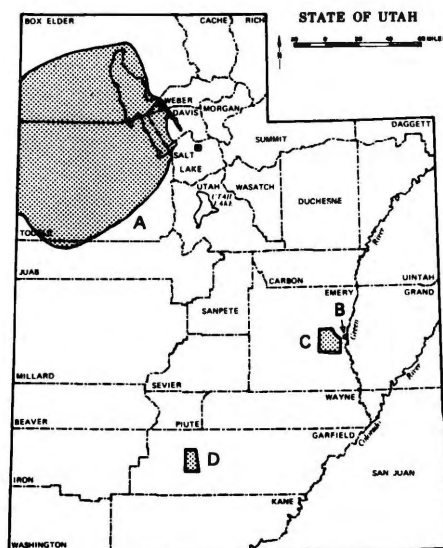
A geologic study was done in conjunction with an environmental impact investigation of the Crystal Geyser, 6.5 kilometers (4 miles) southeast of the community of Green River, Utah. Periodic eruptions of salt-laden waters from the geyser flow into the Green River and provide a source of salts into the Colorado River drainage system. Eruptions average 120 cubic meters (0.1 acre feet) of CO<sub>2</sub> charged water with abundant Na, Ca, K, and Mg salts.

The mineral laden waters form tufa deposits along a nearly 2 kilometer (1.3 miles) exposure that is situated along and controlled by the Little Grand Wash Fault. Three distinctive levels of tufa deposits indicate that the mineral-laden springs have been active along the fault for several hundred thousand years.

Several methods were considered to control the salt laden effluent, but all of these were rejected as either impractical or too expensive. The salts from the geyser are a very small portion of the total salts in the Colorado River.

The location of the geyser is shown at "B" on the index map below.

(from an article by J. L. Baer and J. K. Rigby, to appear in the Fall 1978 issue of *Utah Geology*.)



Index Map

## DRILLING FINDS COAL AT JOHNS VALLEY

Four holes were drilled in Johns Valley, Garfield County, Utah, in late 1976 for the purpose of finding new coal resources. The holes were drilled by a lessee on State of Utah lands. An eighteen-foot coal bed (Smirl zone) was intercepted at the top of the Cretaceous Dakota Formation that strikes N. 23° E. and dips 20° northwest in SW ¼ section 33, T. 33 S., R. 2 W. The Cretaceous rocks and the coal are truncated beneath an unconformity below Tertiary sediments. The unconformity at the drill-site lies about 360 feet beneath the surface. In other parts of Johns Valley other drill holes show the unconformity to lie 200 to 600 feet beneath the surface. The axes of thick coal beds in the Alton field (Dakota coals) and Kaiparowits Plateau field (Straight Cliffs coals) converge on Johns Valley. U. S. Geological Survey drilling in SE ¼ section 10, T. 35 S., R. 2 W. has proven the presence of thick coals in the Straight Cliffs Formation in the Johns Valley area. Johns Valley and vicinity should provide fertile ground for expanding Utah's coal resource. However, the structural relations beneath the unconformity may be complex and will require further study.

The location of Johns Valley is shown at "D" on the index map.

(from an article by H. H. Doelling and F. Davis, to appear in the Fall 1978 issue of *Utah Geology*.)

## NEW STATE MAP

A new state geologic map is in preparation by Dr. Lehi Hintze of Brigham Young University under a consulting contract to UGMS. The map, on 1:500,000 scale (1 inch = 8 miles), will be on a single sheet with accompanying structural and stratigraphic information possibly to be presented on a second sheet.

The new map will match in scale geologic maps of surrounding states and will supplant the present geologic map of Utah printed as four quarters on 1:250,000 (1 inch = 4 miles) scale. The northwest and southwest quarters are now out of print and supply of the other two quarters is steadily diminishing.

The new geologic map by Hintze should be ready in 1979.



## NEW GEOLOGIC MAP OF THE CENTRAL WASATCH FRONT

A geologic map of the central Wasatch Front is being compiled by the Environmental Geology Section of the UGMS at a scale of 1:100,000. The map extends from Clearfield, in the north, to the Draper-Riverton area in the south, and includes the Oquirrh Mountains on the west.

Maps used in the compilation include the U. S. Geological Survey GQ maps of the Draper quadrangle, the Sugar House Quadrangle, the south one-half of the Fort Douglas quadrangle, the Magna quadrangle, the Farnsworth Peak (formerly Garfield) quadrangle. Bruce Bryant, of the U. S. Geological Survey, has contributed a new geologic map of the Farmington Mountains. Also included are University of Utah thesis maps and new Quaternary mapping by the compiler, Fitzhugh Davis, Environmental Geology Section Chief.

The map should be of prime interest to planners, developers, and the public at large in this area of rapid urbanization and industrialization.



The first mercury production in Utah came from the Lucky Boy Mine near Marysville in 1886-87. Found in the early 1880's, the deposit yielded more than 200 flasks of mercury

## GEOHERMAL STUDIES BY UGMS

Shallow ground temperature surveys were made by the UGMS Research Section at Utah Hot Springs, north of Ogden; Udy (Belmont) Hot Springs near Honeyville and Beck Hot Springs in northern Salt Lake City during the summer of 1978. These surveys are made by measuring ground temperatures at the bottoms of numerous 1.5 m holes drilled with an auger in the vicinity of known hot or warm springs. A geologic reconnaissance is made before the holes are drilled, and samples are taken of the water from the springs for chemical analysis. These data are used to study the subsurface controls of the geothermal system.

Thirteen geothermal gradient holes, approximately 75 m deep, will be drilled at five potential low temperature geothermal areas in northern Utah. These holes will be used to measure the change in temperature of the ground with depth. A preliminary environmental assessment of the areas to be studied with the proposed drilling program was prepared and submitted to the Department of Energy in early October. Drilling, by Peterson Brothers Drilling Company of Salt Lake City, was begun in mid-October along the Warm Spring Fault in northern Salt Lake City. Other areas, to be drilled before the end of the year, are Utah Hot Springs, Crystal (Madsen) Hot Springs near Honeyville, Udy (Belmont) Hot Springs and the Little Mountain-South area, west of Ogden.



## CRYSTAL HOT LAKES PROVIDE GEOTHERMAL ENERGY AT POINT OF THE MOUNTAIN

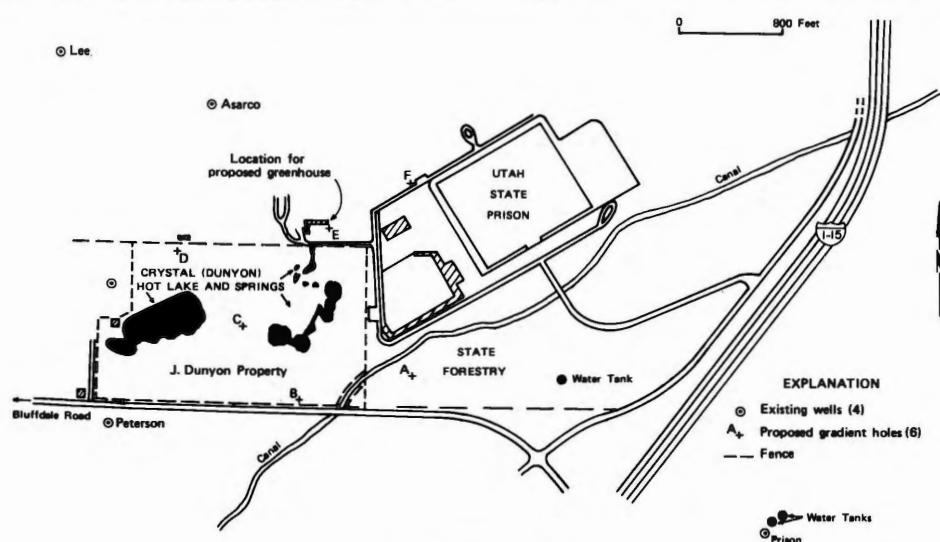
Geothermal drilling and testing of hot springs near Point-of-the-Mountain by the UGMS is only the last of a long sequence of uses of the Crystal Hot Lakes water. The springs are located on Bluffdale Road, just west of the present Utah State Prison (see map).

In the 1840's the springs were part of the Porter Rockwell Ranch, or Half-way Station, where stages stopped on their way through the territory and on their way to California. Porter Rockwell traded his ranch to Dr. John Lewis Dunyon for some property in Salt Lake City. Dr. Dunyon operated the ranch as an inn.

In 1920 the property was sold on contract to Jedediah Stokes, who wanted to develop it as a bathing resort to rival Saltair. He built a dance hall, restaurant, and roller-skating pavilion, but his dreams went up in smoke when the pavilion and all the other buildings burned to the ground in 1925. The property was again used as pasture by the sons of Dr. Dunyon, until 1945, when the "hot lakes" were used as a pond to float logs for the Welch Planing Mill, located in Midvale. In spite of the logs, people came to swim, and a few were drowned. It was rumored that the lake was bottomless; scuba divers have since charted the bottom.

The saw mill is no longer active. The Hot Lakes seemed a natural place for raising beaver, an industry then in vogue in Utah. Old refrigerators were sunk for nests; aspens were carted down from the nearby mountains for food. But federal regulations made the industry relatively unprofitable, and today only one person is raising beaver in the lake. In 1975 a fish hatchery for raising tropical fish was built for a Mr. Davis by Mr. Joy F. Dunyon, grandson of Dr. Dunyon. The hatchery is in operation today.

Perhaps the energy "crunch" will encourage use of the hot water from the springs for heating buildings or for growing hydroponic vegetables. Being considered are plans for heating a greenhouse, by the State Division of Forestry, and for heating part of the State Prison. *Note:* This history of the hot springs was abstracted from the recollections of Mr. Joy F. Dunyon, in 1977.



Location of Crystal Hot Lakes



### THREE MILLION DOLLARS FOR MT. NEBO SCENIC LOOP

The final House-Senate Interior Department appropriations bill contains \$3 million for Utah's Mt. Nebo Scenic Loop road and \$250,000 for the state's Hawthorne Perception Park for the Handicapped.

The park is about 15 miles east of Ogden in the South Fork of Ogden Canyon. This brings Hawthorne's total funding so far to almost \$1 million. The new funds were deleted from the Senate bill, but were restored by Rep. Gunn McKay, D-Utah, in the House-Senate Conference.

Rep. McKay, ranking member of the House Interior appropriations subcommittee and the man behind the Mt. Nebo money in the House bill, accused its opponents of trying to stall the road indefinitely. He said the project will need an additional \$3 million in federal money for several years to meet its estimated \$11 million cost.

Of the \$3 million in the final Senate-House bill, Rep. McKay said, \$1 million is for land acquisition, utilities and campsites. Present campsites at Payson Lakes-Box Lake, Tinny Flat and Ponderosa campgrounds, which have space and facilities for 1,650 people would be rehabilitated and improved. Campsites for another 1,500 would be built at the new Black Hawk Group campground.

The remaining \$2 million, he said, would permit the Forest Service to rebuild 12 miles of trails and begin reconstruction and surfacing of the 50-mile road system. The road would be paved between Payson Canyon in Utah County and Salt Creek Canyon in Juab County.  
*from Salt Lake Tribune, October 2, 1978.*

### ALUNITE PROJECT "ON SHELF"

Regulatory tangles, bureaucratic delays, and inflating costs have brought the multimillion dollar Alunite Project, originally planned for a site 20 miles west of Milford, Beaver County, nearly to a complete standstill. Originally estimated to cost \$350 million, costs have now soared to double that figure. In the meantime, there has been a down-

### PEAK NAMED FOR TIMOTHY O'SULLIVAN, PIONEER PHOTOGRAPHER

The Utah State Committee on Geographic Names has recommended that an unnamed peak in the Wasatch Mountains, elevation 11,275 feet (3436 meters), be named O'Sullivan Peak to honor Timothy O'Sullivan, pioneer Civil War and Western Frontier photographer.

Timothy O'Sullivan was born in Ireland, but when he was two years old, his family sailed for America where they settled in Staten Island, New York. As a boy, Tim was introduced to photography by Mathew Brady, well known photographer, who also lived on the Island. O'Sullivan spent a number of years serving his apprenticeship in Brady's New York photo gallery.

In 1867 O'Sullivan signed on as official photographer for the Clarence King geological expedition which took him into the western Rocky Mountains and the Great Basin. During this survey O'Sullivan made many fine photographs of the Wasatch Mountains, canyons, and nearby desert country. He is credited with the first photographs of the Great Salt Lake. After his stint of service with King, O'Sullivan joined the Thomas Selfridge expedition which was to survey a possible canal route through the dense jungles of the Isthmus of Darien (Panama).

O'Sullivan's equipment was a large 20x24-inch camera, which used the wet collodion plate system. This required coating the glass plates just prior to exposing them, then quickly developing the glass negatives under primitive conditions that today would be considered next-to-impossible.

*Note:* Mr. Art Whitehead, a photographer for the U.S. Forest Service, obtained this information from James D. Horan's

turn in the alumina and fertilizer markets.

Most critical factor in the project's "on shelf" status was rejection of the environmental impact statement by EPA on the grounds that the plant would cause Class II air quality standards to be exceeded in the locality five or six days each year.

Book, "Timothy O'Sullivan, America's Forgotten Photographer". The peak is 23 miles southeast of Salt Lake City, Utah, and lies between Big and Little Cottonwood Canyons.

### NEW TAR SAND MAP

Map 33, "Location Map of Oil-Impregnated Rock Deposits of Utah, which has been the principal source of published data on Utah's tar sand deposits since 1973 is being revised and updated and will appear in 1979 as Map 47.

The new map will correct the location of the Chapita Wells deposit (Uintah County) and update and revise mapping of a number of other deposits around the state. One deposit has been eliminated in Washington County (not found) but four new ones have been added in that county as the result of mapping by Dr. Ron Blakey, Northern Arizona University, Flagstaff, Arizona. Blakey, a University of Utah graduate and consultant to UGMS, reported the results of his work in a paper to the Rocky Mountain Section AAPG, last March and has also prepared a paper for the spring 1979 issue of Utah Geology.

### OIL SHALE CASE

Utah's suit to obtain title to 157,000 acres of oil shale land in eastern Uintah County was supported by unanimous decision of the U. S. 10th Circuit Court of Appeals in August.

If Utah wins the suit and gets title to the lands, the State will gain nearly complete control of the richest oil shale lands within its borders. A trust fund totalling almost \$94 million (and growing daily) will also revert to the State if the suit is won. The money in the trust fund originated from bonus and royalty payments on the first two prototype oil shale leases issued by the U. S. Government in 1973.

It has not been learned definitely whether the U. S. Departments of the Interior and Justice will continue the case by appeal to the U. S. Supreme Court. A petition for rehearing the case before the circuit court has been filed possibly to gain time to consider other legal avenues.

## IN MEMORIAM

Rajendra Puri  
1944-1978

Rajendra Puri, engineering geologist, died September 27 after brief hospitalization and surgery. News of his death came as a profound shock to his colleagues and fellow workers in UGMS and in the Department of Natural Resources and other agencies of State and local government.

Rajendra Puri was born in Punjab, India, December 1, 1944. He attended the Indian Institute of Engineering, New Delhi, and Imperial College, London, England where he earned degrees in rock mechanics and engineering seismology. He had held corporate and civil positions in India and England in geotechnical engineering prior to his moving to this country in April 1978 to join UGMS.

Rajendra's work in the engineering geology section was principally in the field of seismic hazards and the siting of public facilities. With other state agencies, such as the Seismic Safety Advisory Council, and local governments, he had begun to organize the seismic safety programs mandated by the 1977 legislature. In his brief tenure of employment he had won the friendship of all who knew him and had gained wide recognition and respect for his intellectual capacity, professional competence, and deep humane concerns. His death brought a very promising career of service to the State of Utah to an untimely end.

The heartfelt sympathy of the UGMS staff is extended to Rajendra's widow, Karin, and son, Shabad, who had come to live in Salt Lake City only six weeks before this tragic event.

## SALT LAKE LEVELS DROP

Gage heights recorded by the U. S. Geological Survey, for the Great Salt Lake are:

Date	Boat Harbor (South Arm)	Saline (North Arm)
August 1	4199.35	4198.00
August 15	4198.90	4197.75
September 1	4198.70	4197.55
September 15	4198.45	4197.45
October 1	4198.55	4197.45
October 15	4198.45	4197.35

The lake declined steadily through the summer from the high level of 4200.20 reached on June until the mid-September heavy snow and rain caused a temporary rise in level, but the decline resumed through a warm and dry October.

## ??? Q AND A ???

(Questions asked frequently of UGMS, over the phone and over the counter)

Q. Where can I find out something about the oil well drilling near my family's ranch in Summit County?

A. The Utah Division of Oil, Gas and Mining issues permits for all oil and gas tests drilled in Utah and publishes a

weekly list of "notices of intention to drill" which gives the name and address of the company drilling the well (operator), location, proposed depth, and other information. DOGM and UGMS may be able to furnish information about drilling depths obtained from commercial oil and gas information services, but this data may not be current or may not be available for wells where information is "tight" or confidential.

## NEW PAY ZONE

At press time, a new pay zone had been reported from a newly drilled well in Lodgepole Field, Summit County, seven miles southwest of Pineview Field. American Quasar Petroleum 26-1 Blonquist flowed 1172 barrels of oil and 412,000 cubic feet of gas daily from the Watton Canyon Member of Twin Creek (Jurassic) at 11,057 to 11,348 feet. Other production in the growing field is from the Giraffe Creek Member of Twin Creek and the Nugget Sandstone (Jurassic).

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