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SURVEY NOTES

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Mapping Nearly Complete In Utah

All of the state of Utah with the exception of a small strip along the Nevada border is now covered by topographic maps that have been published or will be published within the next three years by the Topographic Division of the U. S. Geological Survey. In 1966, when little more than half of the state had been mapped, the legislature decided to accelerate mapping coverage by joining with the USGS in a cooperative effort as an addition to the national mapping program. In recent years the state's appropriation has amounted to $50,000 per year. To date, Utah has invested $435,000, which has been matched by a similar sum from the USGS.

Besides revising the existing maps and replacing 15-minute quadrangles with 7½-minute coverage, future mapping will take up the advances of space-age techniques and produce even better maps and map by-products. By the end of summer 1976, well over half of the state will be covered by uniform scale (1:70,000), high-altitude photography from which the Topographic Division will produce 430 new orthophotoquads in addition to the 52 now available. These orthophotoquads, which can be produced much more rapidly and inexpensively than the standard topographic map, are corrected photographic representations of 7½-minute quadrangles without contours. The wide coverage of high quality, uniform scale photography will be attractive to all users of aerial photographs.

The U. S. Geological Survey maintains a sales office in Room 8102, Federal Building, 125 South State Street in Salt Lake City where maps can be purchased. In addition, the sales office has information on photography, base-map negatives, and other map by-products.

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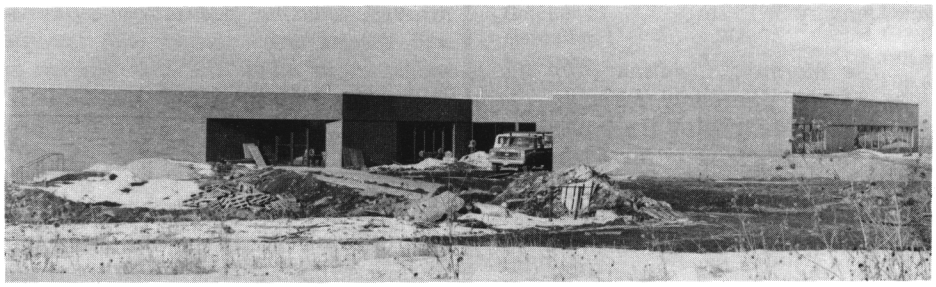

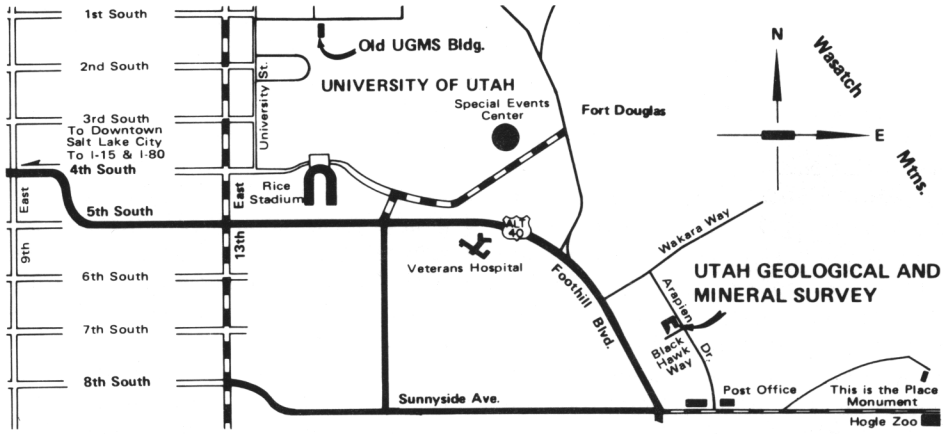

Top: Our new home, soon to be completed. The building, which sits on 1.6 acres, uses a pleasing design of double-face brick construction. *(UGMS photo) Bottom:* Map shows the way to our new location.

Pardon us while we change into something more comfortable

New Building Almost Ready

With the start of a new year the Utah Geological and Mineral Survey is making a number of changes. Late in February we will move into a new building, designed especially for us, in the Research Park addition to the University of Utah campus. With this issue of *Survey Notes*, formerly the *Quarterly Review*, we have changed to a name that we think more appropriate for our newsletter. In the masthead of our newsletter we are introducing our newly adopted logo for UGMS.

Our new home at 606 Black Hawk Way, Salt Lake City, Utah 84108, was built by The Boyer Company and designed by Environmental Associates, both Salt Lake City firms. The general contractor was J. Ron Stacey. The two level, 16,000 square foot building will house all UGMS activities including the sample library. Ample parking has been provided. The grounds will be attractively landscaped to blend into the Research Park development plan.

See pages 6-7 for details of Federal Land Withdrawals

STATEHOOD DAY CELEBRATION

Remarks of Governor Rampton

For the interest of its readers, the Utah Geological and Mineral Survey prints these remarks of Governor Calvin L. Rampton for the Statehood Day celebration delivered at the Mormon Tabernacle, January 3, 1976.

The Mormon migration from the banks of the Mississippi River to the valley of the Great Salt Lake is regarded by historians as unique in the settlement of the American West. It is so regarded, primarily because it was a large-scale religious migration; but of equal significance in the eyes of students of the period is its impressive organization. Order was the hallmark of the Mormon trek—the product of thorough and meticulous planning.

Planning began before Nauvoo was abandoned: Governor Ford of Illinois wrote that during the winter of 1845-46, as pressure for expulsion mounted, "all the homes in Nauvoo and even the temple (shops) were converted into workshops; and before spring more than twelve thousand wagons were in readiness." The same foresight and planning were responsible for the establishment of Kanesville and Winter Quarters on the Missouri River, and for the plowing and planting of crops by the vanguard of the migration for the provisioning of those to follow.

The settlement of the Salt Lake Valley and the subsequent colonization beyond that valley moved with similar order and discipline. The first thing the advance company attended to in July, 1847, after dedicating the land and its new settlers to the Lord, was the plowing and irrigation of land adjacent to City Creek preparatory to planting.

What followed was a remarkable demonstration of the genius of this people, and particularly of President Brigham Young. The wise, well-planned laying out of settlements, beginning in the Salt Lake Valley, radiates into adjacent areas of present Utah and neighboring states. Every effort was made, through advance exploration and surveying, to minimize the hardships and sacrifices of frontier life.

Not only agricultural settlement was planned. Equally careful planning underlay President Young's efforts to realize the self-sufficiency he desired for his people. The needs of the settlers were asserted, industrial possibilities explored, and special areas settled with specific industries in mind: the Iron Mission at Cedar City, and the Cotton Mission at St. George, for example. Successful efforts were made, as the new church's missionary program expanded, to bring from Europe skilled craftsmen to implement the drive for self-sufficiency: textile workers, iron workers, building tradesmen, etc.

The very late 19th and early 20th centuries brought significant changes to Utah: the California gold rush, the transcontinental railroad, the discovery and operation of mines brought new prosperity and new stimuli to Deseret and then to the Utah Territory. They brought also a new focus upon free enterprise and private property, which at first competed with, and then superseded, the earlier practice of careful planning. The new emphasis affected the attitude toward centralized planning in any form—such planning being too often regarded as an intrusion into private rights and affairs. As a result, while some communities continued to plan their growth and development, others began to grow haphazardly.

This continued to be the case until the 1930's, when—not surprisingly in the arid West—careful planning for the allocation and use of limited water resources became imperative. (The concern at this time, of course, was with water use and distribution—only secondarily with water pollution.) Local governments began to include water commissioners, water-control boards, and conservancy districts. Water planning, superimposed upon the soundly planned communities of the settlement period, served Utah adequately as long as the state remained relatively remote from the impact of national growth and development.

With the coming of World War II, and its transfer of heavy industry from the Pacific Coast, its accelerated use of the railroads, and the beginnings of the interstate highway system, things changed in Utah. Partly as a result of the natural growth in population and industrial enterprise which these years brought and partly as a result of a vigorous state industrial promotion program, the state of Utah in the 1960's became one of the fastest-growing areas in the country. Americans outside our borders learned where Utah was; they became aware of our small population and our open land areas; and land speculation—which had plagued other parts of the nation long since—invaded our state. In a state where 71 percent of the land is federally owned, private land values began to climb and agricultural lands began to be converted into residential subdivisions. The subdivisions, in turn, brought with them such problems as providing adequate utilities, public services such as roads and schools and health care, and erosion-based flooding, which made solutions through some form of cooperative planning imperative.

The 1970's brought the impact of global awareness of environmental pollution of air, land, and water. Federal and state regulatory bodies emerged, and protection of the environment became a mandatory condition for industrial construction or expansion. In recognition of this new awareness, Utah's drive for growth of this kind became selective—we now welcome into the state only non-polluting industries—a step we were able to take with confidence because our earlier drive for gross growth was so successful. In recognition, also, of the obvious fact that rivers and streams, land areas, and the atmosphere do not confine themselves within state or community boundaries, we have twice sought to pass a state land-use planning act. It has failed both times—the second time as a result of a referendum.

The clear recognition that property rights, while inviolate, must, to some extent, be modified by community needs apparently does not find the same acceptance among our people today that it did a century ago. I believe the principal reason for the defeat of land-use planning legislation was the erroneous impression given by many opponents that it was an opening wedge for further expansion of federal governmental regulation. Quite the contrary, it was designed to strengthen the authority of local govern-

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STATEHOOD DAY

(continued from page 2)

ment, putting the state in a coordinating position and leaving little role for the federal government to play. Our failure adequately to address the matter of land-use planning has been reflected over the past year in the actions of the federal bureaucracy in overriding recommendations of state and local government in land-use matters. The Washington-based bureaucracy evidently feels that we cannot or will not address the matter on a local basis.

What of the future? I believe we shall focus, as we did in the beginning, upon what has come to be called "the quality of life." In a time when the desire for clean air, land and water is confronted by the need for the development of old and new sources of energy; when Americans in more congested parts of the country are crying for the preservation of the scenic West as a national recreation area without sufficient regard for the need of the inhabitants of that area to earn a living; when land speculation is threatening to convert even our previously well-planned counties into the flimsy subdivisions and urban slums which are highly visible elsewhere in the country—at such a time I believe the overriding need in Utah is for balance. We must work to reconcile in the best possible manner the protection of the environment with the need for payrolls. There is little value in pure air and water if no one can afford to live where they may be enjoyed. Under those blue skies and beside those sparkling streams there must be incomes to feed, house, and clothe families, and there must be a tax base to provide roads, schools, parks, theaters, and other municipal services and resources. Conversely, the finest homes, schools, and so forth will have little value if life among them becomes impossible because of excessive pollution.

I am convinced, that in the future, Utah will continue to grow, with or without planning. Population will increase, because Utahns will continue to have children and because, as other parts of the country become more congested, in-migration will increase. Business and industry will expand, because the increased population will add to the need for employment and services. So our choice will not lie between growth and no growth; our choice will lie between planned growth and unplanned growth. It is my hope, and my belief, that the values and practices of over a century ago will reassert themselves, and that we will encourage planning of our communities and our resources. I hope also to see this done primarily at the local level, with only enough input from the state and federal governments to assure proper coordination of effort. In that spirit, our state will enter a new era with new problems to solve, but with basic values primarily intact.

Water Levels of Great Salt Lake

Lake levels recorded (in feet above sea level) this fall and winter by the U. S. Geological Survey are:

Date	Boat harbor (south arm)	Saline (north arm)
October 15	4,199.90	4,198.60
November 1	4,200.05	4,198.60
November 15	4,200.20	4,198.60
December 1	4,200.25	4,198.65
December 15	4,200.45	4,198.70
January 1	4,200.60	4,198.90
January 15	4,200.70	4,199.05

The level of the south arm stood 1.15 feet higher on January 15, 1976, than on the same date in 1975.

Roadside Geology

Those who think there's nothing to see in the bleak desert along most of Interstate 80 between Utah and the California coast will be pleasantly surprised with *Roadside Geology of U. S. Interstate 80 between Salt Lake City and San Francisco* by Drs. Ken Hamblin and Keith Rigby of Brigham Young University, John Snyder of the National Science Foundation, and William H. Matthews, III, of Lamar University.

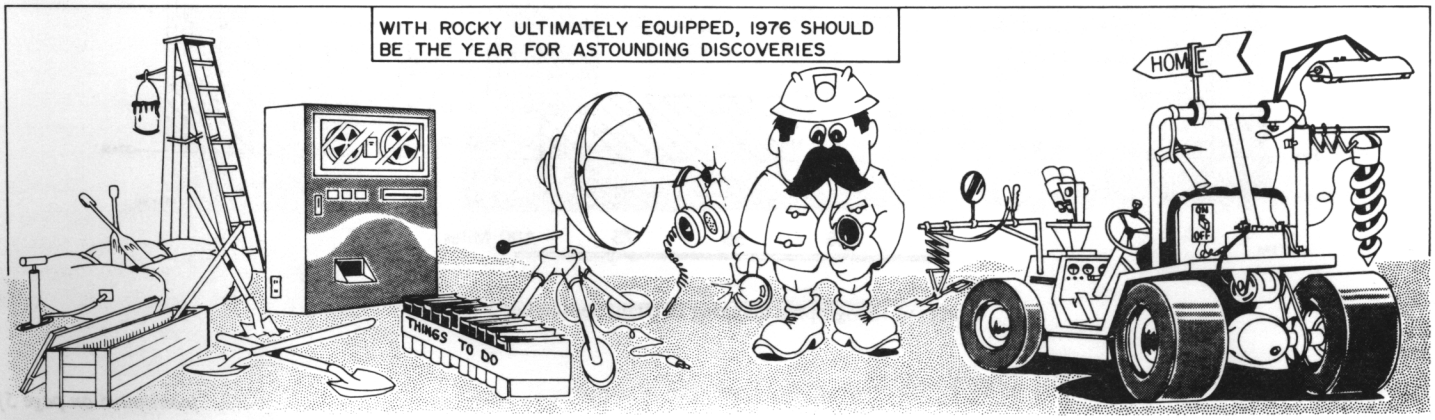
The 50-page booklet, arranged in segments from town to town along the route, is illustrated with maps and photographs, mostly in color. The geology has been kept simple and understandable. A geologic time scale is provided. Sponsored by the American Geological Institute and published by Varna Enterprises, P. O. Box 2216, Van Nuys, CA 91404, the booklet is priced about $1.50.

USGS Bulletin on Arches National Park

The U. S. Geological Survey has issued Bulletin 1393, *The Geologic Story of Arches National Park* by Stan Lohman—an illustrated guide to the geology, geologic history, and anthropology of the park and vicinity. Complete tours of the park by passenger car, by four-wheel drive vehicle, and on foot are described. The bulletin may be purchased from the USGS public inquiries offices in Salt Lake City and Denver for $2.85.

ROCKY RIDGES

by Greg McLaughlin



TOPOGRAPHIC MAPPING

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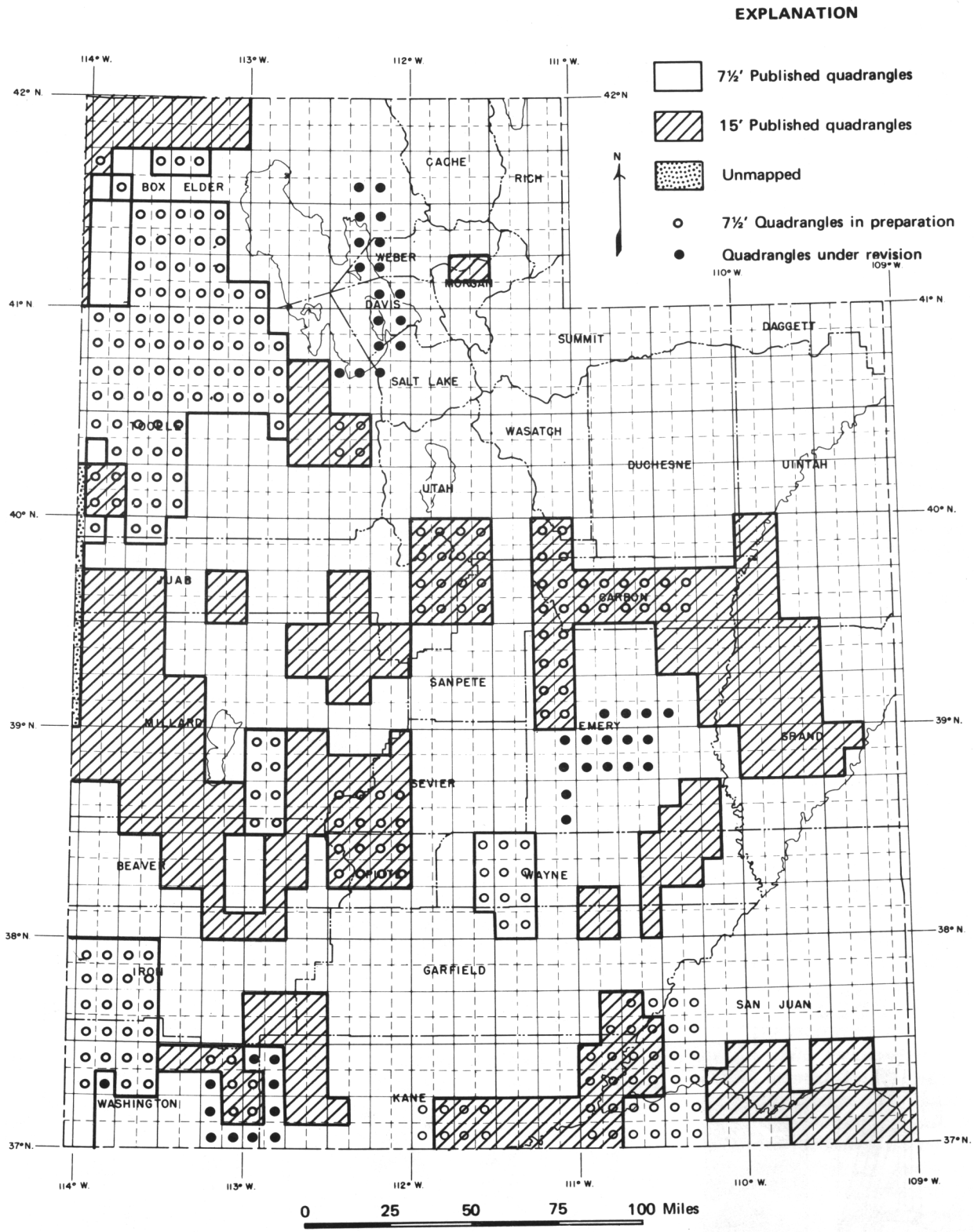

Status of topographic mapping in Utah, September 1975.

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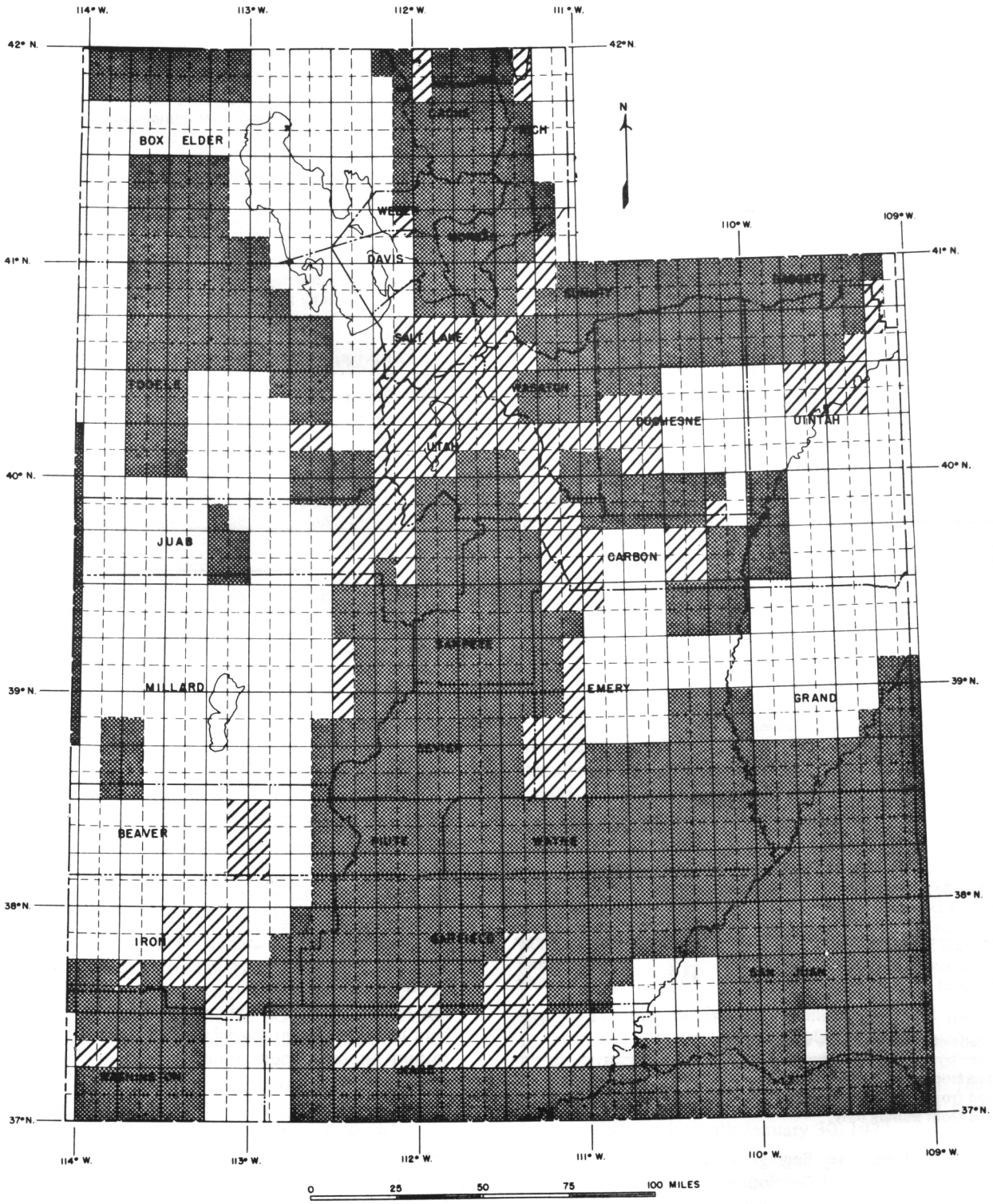
TOPOGRAPHIC MAPPING

(continued from page 4)

High-altitude photography authorized or proposed for orthophotoquads

High-altitude photography authorized or proposed for map revision



Status of orthophoto mapping in Utah, December 1975.

Yes, our account is overdrawn

Federal Land Withdrawals

by Carlton H. Stowe
UGMS Minerals Information Specialist
and Advisory Board member for the
U. S. Bureau of Land Management in Utah

Withdrawal of federal land from mineral entry and leasing has received considerable attention across the United States lately, particularly in Utah where it threatens to have drastic effect on future mineral development. With the emphasis on new sources of energy and new mineral development, this withdrawn land assumes great importance to Utah's growth and the nation's general welfare.

Current information from the U. S. Bureau of Land Management, presents the Utah federal land withdrawal picture as follows:

LAND OWNERSHIP, WITHDRAWALS/SEGREGATIONS, FROM MINERAL DEVELOPMENT–UTAH

Land Ownership

	Acres
Total land	52,777,000
Total federal land	34,865,000
Bureau of Land Management	22,641,000
U. S. Forest Service	8,051,000
National Park Service[1]	888,000
Bureau of Reclamation	1,305,000
Department of Defense	1,876,000
Federal Wildlife Service	98,000
Other	6,000

[1] Excludes Glen Canyon National Recreation area.

Formal Withdrawals from Mineral Development

	Acres
National Park Service	888,000[1]
Department of Defense	1,868,000[1]
U. S. Forest Service	201,000[2]
Federal Wildlife Service	66,000[2]
Bureau of Reclamation	164,000[3]
BLM (primitive)	95,000[3]
Total (9.4 percent of federal acreage withdrawn)	3,282,000

[1] Segregated from mining and mineral leasing.
[2] Segregated from mining; segregated from leasing partially.
[3] Segregated from mining only.

Temporary Segregation from Mineral Development[1]

	Acres
Glen Canyon National Recreation Area Under wilderness study and master plan development. Will be partially opened to mineral leasing	1,180,000
U. S. Forest Service Roadless Wilderness Study Mineral leasing suspended pending roadless area/wilderness evaluation study and preparation of Environmental Impact Statement before leasing is resumed	1,500,000
BLM–Oil/Gas Category Designation Under review and analysis for oil and gas leasing category reconsideration. Large percentage segregated pending evaluation of potential primitive and natural areas. Open to mining	1,726,000
BLM–Westwater Canyon Wild and Scenic River Pending wild and scenic river study	12,000
BLM–Green River Corridor (Browns Park) Proposed for withdrawal from mining	5,000
BLM–Kaiparowits Plant/Town Sites Pending Kaiparowits plant decision	12,000
BLM–Oil Shale (Spent Shale Disposal) Pending oil shale development	1,000
State Exchange Applications Applications pending classification consideration by BLM	131,000
Total (13.1 percent of federal acreage temporarily segregated)	4,567,000

[1] BLM "Temporary Segregation from Mineral Development" includes lands where formal segregation is preparatory to withdrawal, segregation by law, and administrative actions. A large amount of this acreage is segregated pending further study and analysis.

Summary

	Acres	Percent
Total land–Utah	52,777,000	
Total federal land	34,865,000	66.0[1]
Withdrawn from mining and/or mineral leasing	3,282,000	9.4[2]
Temporary segregations from mining and/or mineral leasing	4,567,000	13.1[2]
Total withdrawn or segregated	7,849,000	22.5[2]
Presently available for mining or mineral leasing	27,016,000	77.5[2]

[1] Utah.
[2] Federal.

In addition, a moratorium on leasing of all coal lands has been in effect since 1971. Proposed coal leasing regulations were published in the *Federal Register* by the Department of the Interior in December 1974; however, these did not go into effect, and new regulations were announced in January 1976 that will permit leasing but with many restrictions. All oil shale lands in Utah have been withdrawn from leasing since 1930 except for 10,000 acres offered by the Department of the Interior in 1974. Oil sand (tar sand) deposits on federal land have also been unavailable for development since a moratorium on bituminous sandstone leases went into effect in 1965.

The BLM's "Oil and Gas Leasing Program in Utah" was originally announced in 1973. It defined 49 percent of BLM land as "open for oil and gas leasing." The other 51 percent was listed either "closed" or "severely restricted" for oil and gas leasing: 40 percent was listed as "open" but with the following restrictions–subject to "special stipulations" 31

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LAND WITHDRAWALS

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Oil and Gas Leasing Classification

BLM administrative area	Category 1 (open leasing)		Category 2 (special stipulations)		Category 3 (no surface occupancy)		Category 4 (no leasing)		Totals	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
SALT LAKE										
Original (1973)	1,922,773	45	1,304,480	31	888,987	21	133,760	3	4,250,000	100
Revision (1-14-76)	3,205,146	77	887,669	21	1,120	0	102,119	2	4,196,054	100
RICHFIELD										
Original	468,868	25	509,247	27	504,435	27	408,952	21	1,891,502	100
Revision	1,191,959	65	206,660	11	54,570	3	379,700	21	1,832,889	100
VERNAL										
Original	1,063,000	63	493,000	29	74,000	5	50,000	3	1,680,000	100
Revision	1,036,000	61	529,000	31	85,000	5	50,000	3	1,700,000	100
KANAB										
Original	1,591,751	68	208,756	9	243,544	10	316,754	13	2,360,805	100
Revision	2,017,291	86	8,370	0	49,060	2	286,084	12	2,360,805	100
FILLMORE										
Original	3,530,091	73	455,345	10	274,633	6	554,180	11	4,814,249	100
Revision	3,154,540	66	1,500,000	31	1,560	0	161,900	3	4,818,000	100
CEDAR CITY										
Original	1,281,354	80	246,181	15	40,633	2	43,432	3	1,611,600	100
Revision	1,424,919	92	12,360	1	27,580	2	87,560	5	1,552,419	100
MONTICELLO										
Original	256,640	5	3,571,510	72	222,701	4	921,371	19	4,972,222	100
Revision	2,593,864	68	851,134	23	49,333	1	304,355	8	3,798,686	100
PRICE										
Original	1,926,000	65	870,000	29	10,300	0	180,000	6	2,986,300	100
Revision	2,500,000	84	101,700	3	27,000	1	354,520	12	2,983,220	100
Totals										
Original (1973)	12,040,477	49	7,658,519	31	2,259,233	9	2,608,449	11	24,566,678	100
Revision (1-14-76)	17,123,719	74	4,096,893	18	295,223	1	1,726,238	7	23,242,073	100

percent, and "no surface occupancy stipulation" 9 percent. The remaining 11 percent was a "suspended or no lease category." On January 14, 1976, BLM district managers in Utah submitted oil and gas leasing category recommendations to the State Director. These proposed revisions, according to BLM, are as follows: category 1—open, subject to standard stipulations; category 2—open, subject to special stipulations; category 3—open areas subject to no surface occupancy stipulation; and category 4—suspended or no leasing category.

Most notable in the "suspended or no leasing category" is the Price area's proposed increase from 180,000 to 354,520 acres, and the Cedar City area change from 43,432 to 87,560 acres. Slight decreases are noted in the Richfield and Kanab areas. Large decreases are recommended in the Fillmore and Monticello areas. BLM reports a breakdown of the "suspended or no leasing category" as follows: primitive areas—896,000 acres; outstanding natural areas—181,300 acres; travel corridors—105,000 acres; wild and scenic rivers—134,000 acres; other recreation areas—100,100 acres; wildlife—224,000 acres; and miscellaneous areas—13,000 acres.

In some areas of the state the "open, subject to standard stipulations" category has increased. Exceptions are in the Vernal and Fillmore areas.

Since 1973, several public hearings have been held on the BLM's leasing program and on various aspects of the temporary segregations. The BLM says that the entire matter is under scrutiny, but, without definite decisions, oil and gas leasing activity has declined considerably.

I would hope that administrative concrete doesn't "set" before further oil and gas provinces and mining operations can be opened.

In Memoriam

George Ernest Untermann, 77, noted paleontologist and longtime worker in Uinta Basin geology, first director-curator of the Utah Field House of Natural History, died November 10, 1975, in Vernal. His wife, Billie Ruple Untermann, also a well-known geologist, preceded him in death January 30, 1973.

Glen Matthew Ruby, 86, petroleum geologist credited with exploration and discovery of fields from Alaska to Tierra del Fuego, including Clay Basin and Big Flat in Utah, died January 5, 1976, in Salt Lake City.

BLM Advisory Board Sets Second Meeting

The Utah Multiple Use Advisory Board to the U. S. Bureau of Land Management has scheduled its second meeting March 4, 1976, in Provo. The board will consider management plans for the Hot Desert Environmental Impact Statement (western and southwestern Utah) and problem areas in utility corridors. The board will visit the utility corridor in the Spanish Fork Canyon area.

The 12-member board, formed late last year by the Utah State Director of the Bureau of Land Management, had its first meeting in St. George in October 1975. At this meeting the board visited various resource areas: Gunlock reservoir, Snow Canyon and Red Mountain vicinity, Beaver Dam Mountain areas, the Desert Tortoise enclosure, Navajo-McCullough transmission routes, the Warner Valley power plant site, and the Virgin anticline vicinity.

Members of the committees of the Advisory Board include: Thad Box, Millie Ehrman, Carlton Stowe, and Vern Wilson, natural resources; Genevieve Atwood, Raymond Spencer, Kenneth Summers, and Glen Willardson, energy resources; and Gordon Harmston, Merrill MacDonald, Orrin Miller, and Paul Rattle, public relations.

Geologist Writes "Grit and Clay"

Dr. M. Dane Picard, sedimentologist and professor of geology at the University of Utah, is author of a book appropriately titled *Grit and Clay*. Published in 1975 by Elsevier Scientific Publishing Company, the 258-page paperback is a "how-to" manual for reviewers of geological literature and much more. It contains a selection of the author's published book and movie reviews together with a smorgasbord of essays, short pieces, pungent observations and quotations, mostly geological and strongly slanted toward petroleum geology and sedimentology. The varied subjects touched on include rattlesnakes and the tribulations of attending scientific meetings.

Grit and Clay is on sale for $9.75 at many local bookstores or can be ordered from the publisher at 52 Vanderbilt Avenue, New York, NY 10017.

FILM SAVES UGMS BOOKS AND MAPS

Utah State Archives has microfilmed the publications and maps of the Utah Geological and Mineral Survey. Three sets have been made: one set to remain on deposit at the State Archives, one set to be on file in the UGMS library, and one set to be shelved in the University of Utah's Marriott Library. The filming included Bulletins dating back to 1908, Circulars first issued in 1942, Maps published as early as 1948, Monograph Series, Oil and Gas Field Studies, Reports of Investigation, Reprints, Special Studies, and Water-Resources Bulletins. Many of the early publications have been out-of-print for a number of years and can now be reviewed either at the State Archives or at the two libraries. Publications dated before 1949 were issued by organizations that preceded the present UGMS.

UTAH GEOLOGICAL AND MINERAL SURVEY
SURVEY NOTES

State of Utah ..... *Calvin L. Rampton, Governor*
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