Publications of the U.S. Geological Survey, 1990

U.S. DEPARTMENT OF THE INTERIOR

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1990

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BOOKS

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Professional papers are mainly comprehensive scientific reports of wide and lasting interest and importance to professional scientists and engineers. Included are reports on the results of resource studies, and of topographic, hydrologic, and geologic investigations. They also include collections of related papers addressing different aspects of a single scientific topic.

P 1076-C. World nonbauxite aluminum resources excluding alunite, by J. W. Hosterman, S. H. Patterson and E. E. Good. 1990. p. C1-C73. (Geology and resources of aluminum.)

P 1200-ND. NORTH DAKOTA. The National Gazetteer of the United States of America; North Dakota 1990. Prepared in cooperation with the U.S. Board on Geographic Names. 1990. 141 p.

Introduction, by D. J. Orth. p. ix-xx.

North Dakota, by J. C. Campbell. p. xx-xxv.

Glossary, by R. L. Payne. p. xxvi-xxvii.

P 1200-US. The National Gazetteer of the United States of America; United States concise 1990. Prepared in cooperation with the U.S. Board of Geographic Names. 1990. 526 p.

Introduction, by D. J. Orth. p. ix-xiv.

Glossary, by R. L. Payne. p. xxxi-xxxii.

P 1336-B. The New Madrid earthquakes; an engineering-geologic interpretation of relict liquefaction features, by S. F. Obermeier. 1989. p. B1-B114. 11 plates in pocket. (The New Madrid, Missouri, earthquake region; geological, seismological, and geotechnical studies; edited by D. P. Russ and A. J. Crone.)

P 1370-D. ARIZONA. Studies of geology and hydrology in the Basin and Range Province, Southwestern United States, for isolation of high-level radioactive waste; characterization of the Sonoran region, Arizona, edited by M. S. Bedinger, K. A. Sargent, and W. H. Langer, U.S. Geological Survey. Prepared in cooperation with the states of Arizona, California, Idaho, Nevada, New Mexico, Texas, and Utah. 1990. p. D1-D40. 6 plates in pocket. (Studies of geology and hydrology for isolation of high-level radioactive waste.) (Supersedes Open-file report 84-741.)

Introduction, by M. S. Bedinger, K. A. Sargent, U.S. Geological Survey; and R. B. Scarborough, Arizona Bureau of Geology and Mineral Technology. p. D2-D4.

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Mineral and energy resources, by B. T. Brady, U.S. Geological Survey; and R. B. Scarborough, Arizona Bureau of Geology and Mineral Technology. p. D35-D40.

P 1370-F. NEVADA, CALIFORNIA. Studies of geology and hydrology in the Basin and Range Province, Southwestern United States, for isolation of high-level radioactive waste; characterization of the Death Valley region, Nevada and California, edited by M. S. Bedinger, K. A. Sargent, and W. H. Langer, U.S. Geological Survey. Prepared in cooperation with the states of Arizona, California, Idaho, Nevada, New Mexico, Texas, and Utah. 1989. p. F1-F49. 8 plates in pocket. (Studies of geology and hydrology for isolation of high-level radioactive waste.) (Supersedes Open-file report 84-743.)

Introduction, by M. S. Bedinger and K. A. Sargent, U.S. Geological Survey. p. F2-F4.

Geology, by T. L. T. Grose, Nevada Bureau of Mines and Geology and Colorado School of Mines; and G. I. Smith, U.S. Geological Survey. p. F5-F19.

Potential host media for radioactive waste, by K. A. Sargent, U.S. Geological Survey. p. F20-F23.

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P 1370-G. UTAH, NEVADA. Studies of geology and hydrology in the Basin and Range Province, Southwestern United States, for isolation of high-level radioactive waste; characterization of the Bonneville region, Utah and Nevada, edited by M. S. Bedinger, K. A. Sargent and W. H. Langer. Prepared in cooperation with the states of Arizona, California, Idaho, Nevada, New Mexico, Texas, and Utah. 1990. p. G1-G38. 7 plates in pocket. (Studies of geology and hydrology for isolation of high-level radioactive waste.) (Supersedes Open-file report 84-744.)

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Geology, by K. A. Sargent, U.S. Geological Survey; and D. R. Mabey, Utah Geological and Mineral Survey. p. G5-G15.

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(Studies of geology and hydrology for isolation of high-level radioactive waste; supersedes Open-file report 84-745.)

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1. Glaciers of Irian Jaya, Indonesia, by Ian Allison, Australian Antarctic Division; and J. A. Peterson, Monash University. p. H1-H20.

2. Glaciers of New Zealand, by T. J. H. Chinn, New Zealand Geological Survey. p. H25-H48.

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1. Overview of the Cenozoic geology of the Blue Mountains region, by G. W. Walker, U.S. Geological Survey. p. 1-11.

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P 1464. Summary of the U.S. Geological Survey and U.S. Bureau of Land Management national coal-hydrology program, 1974-84, edited by L. J. Britton, C. L. Anderson, D. A. Goolsby, U.S. Geological Survey; and B. P. Van Haveren, U.S. Bureau of Land Management. Prepared in cooperation with the U.S. Bureau of Land Management. 1989. 183 p. 1 plate in pocket.

Coal resources, by Wilbur Palmquist, U.S. Bureau of Land Management. p. 3-8.

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History of the coal-hydrology program, by H. H. Hudson, U.S. Geological Survey; and B. P. Van Haveren, U.S. Bureau of Land Management. p. 21-24.

Hydrologic studies in coal regions, by L. J. Britton, U.S. Geological Survey. p. 25-30.

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Summary and additional data needs, by B. P. Van Haveren, U.S. Bureau of Land Management; and D. A. Goolsby, U.S. Geological Survey. p. 167-170.

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P 1487. CALIFORNIA. The Coalinga, California, earthquake of May 2, 1983, edited by M. J. Rymer and W. L. Ellsworth, U.S. Geological Survey. 1990. 417 p. 4 plates in pocket.

1. A summary of the Cenozoic stratigraphy and geologic history of the Coalinga region, Central California, by J. A. Bartow, U.S. Geological Survey. p. 3-12.

2. Tectonic setting, by R. F. Yerkes, U.S. Geological Survey. p. 13-22.

3. Upper-crustal velocity structure near Coalinga, as determined from seismic-refraction data, by A. W. Walter, U.S. Geological Survey. p. 23-39.

4. Structure of the Coalinga area and thrust origin of the earthquake, by C. M. Wentworth, U.S. Geological Survey; and M. D. Zoback, Stanford University. p. 41-68.

5. Tectonic implications of gravity and magnetic models along east-west seismic profiles across the Great Valley near Coalinga, by Andrew Griscom and R. C. Jachens, U.S. Geological Survey. p. 69-78.

6. Tectonic history and thrust-fold deformation style of seismically active structures near Coalinga, by J. S. Namson, ARCO

Oil and Gas Co.; T. L. Davis, and M. B. Lagoe, ARCO Exploration Co. p. 79-96.

7. Regional seismotectonic model for the southern Coast Ranges, by J. P. Eaton and M. J. Rymer, U.S. Geological Survey. p. 97-111.

8. The earthquake and its aftershocks from May 2 through September 30, 1983, by J. P. Eaton, U.S. Geological Survey. p. 113-170.

9. Complex faulting structure inferred from local seismic observations of M≥1.0 aftershocks, May 2-June 30, 1983, by D. M. Eberhart-Phillips and P. A. Reasenberg, U.S. Geological Survey. p. 171-192.

10. Source parameters of the earthquake, as inferred from broadband body waves, by G. L. Choy, U.S. Geological Survey. p. 193-205.

11. Kinematic source parameters determined by time-dependent moment-tensor inversion and an analysis of teleseismic first motions, by S. A. Sipkin and R. E. Needham, U.S. Geological Survey. p. 207-213.

12. Ground-motion and source parameters of the Coalinga earthquake sequence, by A. F. McGarr, C. S. Mueller, J. B. Fletcher, and M. C. Andrews, U.S. Geological Survey. p. 215-234.

13. Abnormally high fluid pressures in the region of the Coalinga earthquake sequence and their significance, by R. F. Yerkes, Paia Levine, and C. M. Wentworth, U.S. Geological Survey. p. 235-257.

14. Stress and fluid-pressure changes associated with oil-field operations; a critical assessment of effects in the focal region of the earthquake, by Paul Segall and R. F. Yerkes, U.S. Geological Survey. p. 259-272.

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16. The Nuñez Fault and its surface rupture during the Coalinga earthquake sequence, by M. J. Rymer, K. J. Kendrick, J. J. Lienkaemper, and M. M. Clark, U.S. Geological Survey. p. 299-318.

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- Wa U.S. Department of the Interior, Rm. 2650, 18th and C Sts., NW, Washington, DC 20240.
- Wb U.S. Department of the Interior, Natural Resources Library, Gifts and Exchange Section, 18th and C Sts., NW, Washington, DC 20240.

WRI 84-4000. Simulation of dynamic floodflows at gaged stations in the Southeastern United States, by R. E. Faye and M. E. Blalock. 1984. 114 p. (NC, Da, M, Wb.)

WRI 84-4115. WEST VIRGINIA. Underground coal mines as sources of water for public supply in northern Upshur County, West Virginia, by W. A. Hobba, Jr. Prepared in cooperation with the Upshur County Commission and the City of Buckhannon, West Virginia. 1987. 38 p. (NC, Da, M, Wb, Wa.)

WRI 85-4225-B. ARIZONA. Flood of October 1983 and history of flooding along the San Francisco River, Clifton, Arizona, by H. W. Hjalmarson. Prepared in cooperation with the U.S. Army Corps of Engineers and the U.S. Bureau of Reclamation. 1990. 42 p. (NC, Da, M, Wb; USGS, WRD, Room 5A, Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ 86001.)

WRI 85-4225-C. ARIZONA. Floods of October 1983 in southeastern Arizona, by R. H. Roeske, J. M. Garrett and J. H. Eychaner. Prepared in cooperation with the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and Arizona Department of Water Resources. 1989. 77 p. (NC, Da, M, Wb; USGS, WRD, Room 5A, Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Drive, Bldg. 3, Flagstaff, AZ 86001.)

WRI 85-4283. PENNSYLVANIA. Surface-water quality in the West Branch Susquehanna River basin, Pennsylvania; an appraisal of areal and temporal variability from 1962 to 1982 in Hydrologic Accounting Unit 020502, by R. A. Hainly, J. F. Truhlar and K. L. Wetzel. 1989. 49 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1107, 228 Walnut St., 4th Floor, Federal Bldg., Harrisburg, PA 17108.)

WRI 85-4287. WYOMING. Invertebrate communities of small streams in northeastern Wyoming, by D. A. Peterson. 1990. 45 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 86-4053-A. MASSACHUSETTS. Yield and quality of ground water from stratified-drift aquifers, Taunton River basin, Massachusetts; executive summary, by W. W. Lapham and J. C. Olimpio. Prepared in cooperation with the Commonwealth of Massachusetts, Department of Environmental Management. 1989. 11 p. (NC, Da, M, Wb.)

WRI 86-4075. GEORGIA. Occurrence and availability of ground water in the Athens region, northeastern Georgia, by D. B. Radtke, C. W. Cressler, H. A. Perlman, H. E. Blanchard, Jr., K. W. McFadden and Rebekah Brooks. Prepared in cooperation with the U.S. Army Corps of Engineers. 1986. 79 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

WRI 86-4169. OKLAHOMA. Water quality in Gaines Creek and Gaines Creek arm of Eufaula Lake, Oklahoma, by J. K. Kurklin. Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 97 p. (NC, Da, M, Wb; USGS, WRD, 215 Dean A. McGee Ave., Room 621, Oklahoma City, OK 73102.)

WRI 86-4345. MISSISSIPPI. Quality of water and bottom material of streams that drain potential lignite mining areas in the outcrop area of the Wilcox Group in Mississippi, by S. J. Kalkhoff. Prepared in cooperation with the Mississippi Department of Natural Resources. 1989. 34 p. (NC, Da, M, Wb.)

WRI 87-4019. PUERTO RICO. Sedimentation survey of Lago Loíza, Puerto Rico, July 1985, by Ferdinand Quiñones, Bruce Green and Luis Santiago. Prepared in cooperation with the U.S. Department of Agriculture. 1989. 17 p. (NC, Da, M, Wb; USGS, WRD, GPO Box 4424, San Juan, PR 00936.)

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WRI 87-4040. MINNESOTA. Effects of agriculture on quality of water in surficial sand-plain aquifers in Douglas, Kandiyohi, Pope, and Stearns counties, Minnesota, by H. W. Anderson, Jr. Prepared in cooperation with the soil and water conservation districts of Douglas, Kandiyohi, Pope, and Stearns counties, and the Wesmin Resource Conservation and Development Association.

1989. 52 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 87-4051. SOUTH DAKOTA. Composition, distribution, and hydrologic effects of contaminated sediments resulting from the discharge of gold milling wastes to Whitewood Creek at Lead and Deadwood, South Dakota, by K. E. Goddard. 1989. 76 p. (NC, Da, M, Wb, Db.)

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WRI 87-4124. CONNECTICUT. Estimation of the recharge area of a pumped, stratified-drift aquifer in Connecticut by simulation modeling, by D. L. Mazzaferro. Prepared in cooperation with the Midstate Regional Planning Agency, Connecticut. 1989. 100 p., 4 over-size sheets. (NC, Da, A, M, Wb, Db, LA, U; USGS, WRD, NED Library, 10 Causeway St., Room 926, Boston, MA 02222-1040; PIO, USGS, ESIS, E-146 Federal Bldg., Box 53, 701 "C" St., Anchorage, AK 99508-4664; PIO, USGS, Bldg. 3, Room 122, Mail Stop 533, Menlo Park, CA.)

WRI 87-4137. A diffusion hydrodynamic model, by T. V. Hromadka, II and Chung-cheng Yen. 1987. 135 p. (NC, Da, M, Wb.)

WRI 87-4156. SOUTH DAKOTA. Appraisal of the water resources of the Skunk Creek Aquifer in Minnehaha County, South Dakota, by G. L. Ohland. Prepared in cooperation with the U.S. Army Corps of Engineers, South Dakota Department of Water and Natural Resources, East Dakota Water Development District, Minnehaha County, and the City of Sioux Falls. 1990. 54 p. (NC, Da, M, Wb, Db.)

WRI 87-4163. Users manual for a branched Lagrangian transport model, by H. E. Jobson and D. H. Schoellhamer. 1987. 73 p. (NC, Da, M, Wb.)

WRI 87-4178. NORTH CAROLINA. Aquifers in Cretaceous rocks of the central coastal plain of North Carolina, by M. D. Winner, Jr. and W. L. Lyke. Prepared in cooperation with the North Carolina Department of Natural Resources and Community Development, Green County, City of Kinston, City of New Bern, Town of Ayden, Town of Farmville, Town of La Grange, Town of Pinetops, Town of Snow Hill, Town of Stantonsburg, Greenville Utilities, North Lenoir Water Corporation. 1989. 71 p., 20 over-size sheets; 13 sheets, scale 1:253,440 (1 inch = 4 miles). (NC, Da, M, Wb.)

WRI 87-4181. NEW JERSEY. Corrosive ground water in the Kirkwood-Cohansey aquifer system in the vicinity of Ocean County, east-central New Jersey, by G. R. Kish, J. L. Barringer and R. L. Ulery. Prepared in cooperation with the New Jersey Department of Environmental Protection. 1987. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 87-4200. WYOMING. Geochemistry of batch-extract waters derived from spoil material collected at the Cordero coal mine, Powder River basin, Wyoming, by D. L. Naftz. Prepared in cooperation with the U.S. Bureau of Land Management. 1990. 58 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

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WRI 87-4238. WASHINGTON, OREGON, IDAHO. Geologic framework of the Columbia Plateau aquifer system, Washington, Oregon, and Idaho, by B. W. Drost, K. J. Whiteman and J. B. Gonthier. 1990. 10 p., 10 over-size sheets, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb, LA, S, SF; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)

WRI 87-4242. WASHINGTON, OREGON, IDAHO. Water-quality characteristics of the Columbia Plateau regional aquifer system in parts of Washington, Oregon, and Idaho, by W. C. Steinkampf. 1989. 37 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

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WRI 88-4005. PENNSYLVANIA. Suspended-sediment yields from an unmined area and from mined areas before and after reclamation in Pennsylvania, June 1978-September 1983, by L. A. Reed and R. A. Hainly. Prepared in cooperation with the Pennsylvania Department of Environmental Resources. 1989. 50 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1107, 228 Walnut St., 4th Floor, Federal Bldg., Harrisburg, PA 17108.)

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WRI 88-4030. CALIFORNIA. Water resources of Soledad, Poway, and Moosa basins, San Diego County, California, by K. D. Evenson. Prepared in cooperation with the California Re-

gional Water Quality Control Board. 1989. 87 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

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WRI 88-4033. COLORADO. Hydrologic effects of pumpage from the Denver Basin bedrock aquifers of northern El Paso County, Colorado, by E. R. Banta. Prepared in cooperation with the City of Colorado Springs. 1989. 84 p., 5 over-size sheets, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb, Db, U; WRD, USGS, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 88-4044. FLORIDA. Salinity and flow relations and effects of reduced flow in the Chassahowitzka River and Homosassa River estuaries, Southwest Florida, by D. K. Yobbi and L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1989. 38 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 88-4064. WYOMING. Flood boundaries and water-surface profile for the computed 100-year flood, Swift Creek at Afton, Wyoming, 1986, by J. G. Rankl and J. G. Wallace. 1989. 2 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

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WRI 88-4089. LOUISIANA. Reconnaissance study of water and bottom material quality in the lower Calcasieu River, southwestern Louisiana, May 29-30, 1985, edited by C. R. Demas. 1989. 51 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

A. Occurrence of nutrients, minor elements, and organic compounds in water and bottom material in the lower Calcasieu River, Louisiana, by C. R. Demas, D. K. Demcheck and P. B. Curwick. p. 1-17.

B. Microbial content of water and bottom material in the lower Calcasieu River, Louisiana, by D. M. Updegraff. p. 19-22.

C. The occurrence and distribution of semivolatile organic compounds in the lower Calcasieu River, Louisiana, by use of the closed-loop-stripping isolation procedure, by L. B. Barber, II. p. 23-33.

D. Distribution of organic compounds in the lower Calcasieu River, Louisiana, with special emphasis on haloarenes, by W. E. Pereira, C. E. Rostad, Robert Keck and C. T. Chiou. p. 35-51.

WRI 88-4091. NEW YORK. Availability of ground water from unconsolidated deposits in the Mohawk River basin, New York, by R. J. Reynolds. Prepared in cooperation with the New York State Department of Environmental Conservation. 1990. 9 p., 9 over-size sheets, scale 1:125,000 (1 inch = about 2 miles). (NC, Da, M, Wb; Library, USGS, WRD, P.O. Box 1669, Albany, NY 12201.)

WRI 88-4094. Map of mean annual runoff for the northeastern, southeastern, mid-Atlantic United States, water years 1951-80, by W. R. Krug, W. A. Gebert, D. J. Craczyk, D. L. Stevens, Jr., B. P. Rochelle and M. R. Church. Prepared in cooperation with the U.S. Environmental Protection Agency. 1990. 11 p., 1 over-size sheet, scale 1:3,168,000 (1 inch = 50 miles). (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719.)

WRI 88-4108. WASHINGTON, OREGON, IDAHO. Estimates of ground-water recharge to the Columbia Plateau regional aquifer system, Washington, Oregon, and Idaho, for predevelopment and current land-use conditions, by H. H. Bauer and J. J. Vaccaro. 1990. 37 p., 2 over-size sheets, scale 1:2,000,000 (1 inch = about 32 miles). (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 88-4113. NEW YORK. Availability and historical development of ground-water resources on Long Island, New York; an introduction, by Bronius Nemickas, G. E. Mallard and T. E. Reilly. 1989. 43 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1669, Albany, NY 12201.)

WRI 88-4114. MINNESOTA. Water resources of the Fond du Lac Indian Reservation, east-central Minnesota, by J. F. Ruhl. Prepared in cooperation with the Fond du Lac Indian Reservation. 1989. 42 p. (NC, Da, M, Wb.)

WRI 88-4116. FLORIDA. Effects of river discharge and high-tide stage on salinity intrusion in the Weeki Wachee, Crystal, and Withlacoochee River estuaries, Southwest Florida, by D. K. Yobbi and L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1989. 63 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 88-4118. COLORADO. Reconnaissance of water quality of Pueblo Reservoir, Colorado; May through December 1985, by P. R. Edelmann. Prepared in cooperation with the Pueblo Board of Water Works, Fountain Valley Authority, Southeastern Colorado Water Conservancy District, Pueblo West Metropolitan District, St. Charles Mesa Water District, and the U.S. Bureau of Reclamation. 1989. 53 p., 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225.)

WRI 88-4124. MINNESOTA. Geohydrology and water quality of confined glacial-drift aquifers in the Brooten-Belgrade area, west-central Minnesota, by G. N. Delin. Prepared in cooperation with the Minnesota Department of Natural Resources and the Western Minnesota Resource Conservation and Development Association. 1990. 138 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 88-4126. A vertically averaged spectral model for tidal circulation in estuaries; Part 1, Model formation, by J. R. Burau and R. T. Cheng. Prepared in cooperation with the California State Water Resources Control Board and the California Department of Water Resources. 1989. 31 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 88-4128. NEW HAMPSHIRE. Geohydrology and water quality of stratified-drift aquifers in the Exeter, Lamprey, and Oyster River basins, southeastern New Hampshire, by R. B. Moore. Prepared in cooperation with the State of New Hampshire, Department of Environmental Services. 1989. 61 p., 4 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb.)

WRI 88-4129. MINNESOTA. Cost-effectiveness of the streamflow-gaging program in Minnesota, by T. A. Winterstein and A. D. Amtson. 1989. 94 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 88-4135. NEW YORK. Geohydrology of the Bethpage-Hicksville-Levittown area, Long Island, New York, by D. A. Smolensky and S. M. Feldman. Prepared in cooperation with the Nassau County Department of Health. 1988. 25 p., 1 over-size sheet. (NC, Da, M, Wb; Library, USGS, WRD, P.O. Box 1669, Albany, NY 12201.)

WRI 88-4136. COLORADO. Suspended sediment and sediment-source areas in the Fountain Creek drainage basin upstream from Widefield, southeastern Colorado, by Paul von Guerard. Prepared in cooperation with the Colorado Springs Department of Utilities. 1989. 36 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Center, Denver, CO 80225.)

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WRI 88-4143. GEORGIA, ALABAMA, SOUTH CAROLINA. Ground-water flow and stream-aquifer relations in the northern coastal plain of Georgia and adjacent parts of Alabama and South Carolina, by R. E. Faye and G. C. Mayer. 1990. 83 p., 7 over-size sheets. (NC, Da, M, Wb.)

WRI 88-4150. INDIANA. Streamflow and stream quality in the coal-mining region, Patoka River basin, southwestern Indiana, 1983-85, by D. E. Renn. Prepared in cooperation with the Indiana Department of Natural Resources. 1989. 68 p. (NC, Da, M, Wb, Wa.)

WRI 88-4154. TEXAS. Flow pattern in regional aquifers and flow relations between the lower Colorado River valley and regional aquifers in six counties of southeastern Texas, by D. G. Woodward. Prepared in cooperation with Lower Colorado River Authority. 1989. 24 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753; USGS, ESIC, 507 National Ctr., Reston, VA 22092.)

WRI 88-4156. UTAH. Hydrology of the Prospector Square area, Summit County, Utah, by J. L. Mason. Prepared in cooperation with Utah Department of Health. 1989. 75 p. (NC, Da, M, Wb, U, Db; USGS, WRD, Room 1016, Administration Bldg., 1745 West 1700 South, Salt Lake City, UT 84104.)

WRI 88-4157. UTAH. Continuous seismic-reflection survey of the Great Salt Lake, Utah; east of Antelope and Fremont islands, by P. M. Lambert and J. C. West. Prepared in cooperation with the Utah Department of Natural Resources. 1989. 17 p., 1 over-size sheet. (NC, Da, M, Wb, U, Db; USGS, WRD, 1745 West 1700 South, Room 1016, Administration Building, Salt Lake City, UT 84104.)

WRI 88-4162. FLORIDA. Hydraulic and salinity characteristics of the tidal reach of the Peace River, southwestern Florida, by Y. E. Stoker, S. E. Henderson and B. F. McPherson. Prepared in cooperation with the Florida Department of Environmental Regulation. 1989. 37 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 88-4170. FLORIDA. Effects of three highway-runoff detention methods on water quality of the surficial aquifer system in central Florida, by D. M. Schiffer. Prepared in cooperation with the Florida Department of transportation. 1989. 79 p. (NC, Da, M, Wb; USGS, WRD, Suite 1006, 224 West Center St., Altamonte Springs, FL 32714.)

WRI 88-4171. FLORIDA. Potential for saltwater intrusion into the upper Floridan Aquifer, Hernando and Manatee counties, Florida, by G. L. Mahon. Prepared in cooperation with the Southwest Florida Water Management District. 1989. 47 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 88-4180. TENNESSEE. Altitude of potentiometric surface, fall 1985, and historic water-level changes in the Memphis Aquifer in western Tennessee, by W. S. Parks and J. K. Carmichael. 1990. 8 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, AgriCenter International, 7777 Walnut Grove Blvd., Suite LLB2, Memphis, TN 38119.)

WRI 88-4181. TENNESSEE. Geology and ground-water resources of the Cockfield Formation in western Tennessee, by W. S. Parks and J. K. Carmichael. 1988. (NC, Da, M, Wb; USGS, WRD, Room A-413 Federal Bldg., Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.) (Available from USGS, WRD, AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 88-4183. NEW JERSEY. Aquifer-test analysis of the upper aquifer of the Potomac-Raritan-Magothy aquifer system, Union Beach Borough, Monmouth County, New Jersey, by A. A. Pucci, Jr., D. A. Pope and Tamara Ivahnenko. Prepared in cooperation with the New Jersey Department of Environmental Protection, Division of Water Resources. 1989. 27 p., 3 over-size sheets. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 88-4184. OREGON. Ground-water inflow to the Deschutes River near the Warm Springs Indian Reservation, Oregon, August

1985, by E. L. Bolke and Antonius Laenen. Prepared in cooperation with the Confederated Tribes of the Warm Springs Reservation. 1989. 18 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, S, SF, LA; USGS, Library, 5400 McArthur, Vancouver, WA 98661; and USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402.)

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4. Ground-water input program, by G. W. Hawkins. p. 4.1-4.5.

5. Screen entry input and update procedure, by J. W. Atwood. p. 5.1-5.18.

6. Ground-water edit program, by C. A. Babcock. p. 6.1-6.12.

7. Ground-water update program, by C. A. Babcock. p. 7.1-7.12.

8. Ground-water retrieval/tabling program, by G. D. Rogers and R. R. Luckey. p. 8.1-8.56.

9. Ground-water hydrograph program, by S. M. Sober. p. 9.1-9.5.

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11. System 2000 GWSI convert program, by G. W. Hawkins. p. 11.1-11.4.

12. Ground-water and water-quality inventory, by G. W. Hawkins. p. 12.1-12.3.

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Mineral resource assessment of the Butte 1° × 2° Quadrangle using geographic information system technology, by J. E. Elliott, C. M. Trautwein, J. L. Dwyer and S. H. Moll. p. 4.

Reflectance of ore minerals; a search-and-match identification system for IBM and compatible microcomputers using the IMA/COM quantitative data file for ore minerals, second issue, by C. N. Gerlitz, B. F. Leonard and A. J. Criddle. p. 5.

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Geochemical variations of lavas from the Mount Bachelor volcanic chain, by C. A. Gardner. p. 29-35.

Road log for day 2; southern part of the Mount Bachelor volcanic chain and late Holocene rhyolite eruptions at South Sister, by W. E. Scott and C. A. Gardner. p. 36-48.

Road log for day 3; middle Pleistocene pyroclastic-fall and flow units near Bend, by B. E. Hill and W. E. Scott. p. 49-50.

Oregon central High Cascade pyroclastic units in the vicinity of Bend, Oregon, by B. E. Hill and E. M. Taylor. p. 51-54.

Age and correlation of mid-Quaternary ash beds and tuffs in the vicinity of Bend, Oregon, by A. M. Sarna-Wojcicki, C. E. Meyer, J. K. Nakata, W. E. Scott, B. E. Hill, J. L. Slate and P. C. Russell. p. 55-62.

OF 89-0646. ALASKA. Gold occurrences near Snowcap Mountain, Lime Hills B-2 Quadrangle, Alaska, by B. M. Gamble, E. A. Bailey and B. L. Reed. 1989. 8 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 89-0647. CALIFORNIA. Geologic sections to accompany geologic map of the central and northern Funeral Mountains and adjacent areas, Death Valley region, Southern California, by L. A. Wright, B. W. Troxel and J. L. Zigler. Prepared in cooperation with the U.S. Department of Energy. 1989. 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Accompaniment to Open-file report 89-348.)

OF 89-0648. ALASKA. Ophiolites and other mafic-ultramafic complexes in Alaska, by W. W. Patton, Jr., S. E. Box and D. J. Grybeck. 1989. 27 p., 1 over-size sheet. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 89-0649. CALIFORNIA. Paleogene benthic foraminifers from the Loma Prieta Quadrangle, California, by Kristin McDougall. 1989. 117 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0650. CALIFORNIA. Catalog of creepmeter measurements in California from 1966 through 1988, by S. S. Schulz. 1989. 193 p., 4 over-size sheets. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0651. Felsic-mafic ratios and silica saturation ratios; their rationale and use as petrographic and petrologic indicators, by E. J. Young. 1989. 32 p. (NC, Da, M.)

OF 89-0652. WYOMING. Listing of geochemical data, and assessment of variability for plants and soils at the Kendrick Reclamation Project Area, Wyoming, by R. C. Severson, J. A. Erdman, J. G. Crock and T. F. Harris. 1989. 65 p. (NC, Da,

M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 89-0653. A collection of MAPGEN command files suitable for hacking, by J. M. Robb. 1989. 41 p. (NC, Da, M.)

OF 89-0654. MINNESOTA. Reconnaissance Quaternary geology map of the International Falls 1° × 2° Quadrangle, by R. J. Horton, G. N. Meyer and A. J. Bajc. Prepared in cooperation with the Minnesota Geological Survey and the Ontario Geological Survey. 1989. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)

OF 89-0655. MONTANA. Measured stratigraphic section of the Upper Cretaceous Frontier Formation near McLeod, Sweet Grass County, Montana, by R. G. Tysdal and D. J. Nichols. 1989. 13 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 89-0656. KANSAS, MISSOURI. Spectrographic analyses of insoluble-residue samples, Joplin 1° × 2° Quadrangle, Kansas and Missouri; drill hole Nos. 71, 72, 73, and 74, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1989. 13 p. (NC, Da, M, Db; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401.)

OF 89-0657. KANSAS, MISSOURI. Spectrographic analyses of insoluble-residue samples, Joplin 1° × 2° Quadrangle, Kansas and Missouri; drill hole Nos. 75, 76, 77, 78 and 79, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1989. 11 p. (NC, Da, M, Db; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401.)

OF 89-0658. Quality assessment program and results for the NAWQA surface water pilot studies, by R. F. Sanzolone and J. L. Ryder. 1989. 22 p. (NC, Da, M.)

OF 89-0659. Some geophysical programs, data bases, and maps from the U.S. Geological Survey, 1971-1989, by Viki Bankey and W. L. Anderson. 1989. 15 p. (NC, Da, M.)

OF 89-0661. Mineralogy of sand in turbidites from Escanaba Trough, Northeast Pacific Ocean, by F. L. Wong. 1989. 10 p. (NC, Da, M, SF, LA, S; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012; Oregon Dep. Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 89-0662. Data format conservation programs for the PC and SUN computer, by J. A. Rogers. 1989. 7 p. (NC, Da, M.)

OF 89-0663. NEVADA. Additional Schlumberger soundings near Jean, Nevada, by A. A. Zohdy and R. J. Bisdorf. 1989. 10 p. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 89-0664. NEVADA. Principal facts, gravity profile, and interpreted geologic model for 128 gravity stations along a portion of a COCORP seismic profile on the Millet 1 by 2 degree Quadrangle, Nevada, by B. A. Chuchel, V. E. Langenheim, R. W. Saltus, D. B. Snyder, H. W. Oliver and C. M. Comfort. 1989. 9 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. Nevada, Reno, NV 89557.)

OF 89-0665. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 125, 126, 127, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1989. 14 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 89-0666. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 128, 129, 130, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1989. 17 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 89-0667. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples in and around Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 131, 132, and 133, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1989. 13 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Division of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 89-0668. Preliminary results from microanalyses of organic matter in the lower Proterozoic uranium ores at Oklo in Gabon, by J. S. Leventhal, Bartholomew Nagy and F. Gauthier-Lafaye. 1989. 18 p. (NC, Da, M.)

OF 89-0669. CALIFORNIA. Aftershocks of the Loma Prieta earthquake; computer animations, by F. W. Klein and S. R. Walter. 1990. 7 p., 1 video, approximately 22 minutes long. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0670. CALIFORNIA. Schlumberger soundings near Lassen Volcanic National Park, California, by A. A. Zohdy and R. J. Bisdorf. 1989. 29 p. (NC, Da, M, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0671. CALIFORNIA. Quaternary geologic map of the Milpitas Quadrangle, Alameda and Santa Clara counties, California, by E. J. Helley and J. R. Wesling. 1989. 18 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660

Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0672. CALIFORNIA. Quaternary geologic map of the San Jose West Quadrangle, Santa Clara County, California, by J. R. Wesling and E. J. Helley. 1989. 9 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0673. ARIZONA. Geologic map of the Planet 2 NW Quadrangle, Mohave County, Arizona, by Ivo Lucchitta and N. H. Suneson. 1989. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 89-0674. ALASKA. Preliminary Tertiary molluscan biostratigraphy of the Alaskan Peninsula, southwestern Alaska, by Louie Marincovich, Jr. and C. L. Powell, II. 1989. 2 over-size sheets. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 89-0675. Empirical relationship among shot size, shotpoint site condition, and recording distance for 1984-1987 U.S. Geological Survey seismic-refraction data, by W. M. Kohler and G. S. Fuis. 1989. 107 p. (NC, Da, M.)

OF 89-0676. CALIFORNIA. Geologic map and structure sections of the Laurel 7-1/2′ Quadrangle, Santa Clara and Santa Cruz counties, California, by J. C. Clark, E. E. Brabb and R. J. McLaughlin. 1989. 31 p., 2 over-size sheets; sheet 1, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0677. MASSACHUSETTS. Geophysical investigation of depth to saltwater near the Herring River (Cape Cod National Seashore), Wellfleet, Massachusetts, by D. V. Fitterman, G. A. Brooks and S. L. Snyder. 1989. 69 p. (NC, Da, M.)

OF 89-0678. VIRGINIA, NORTH CAROLINA. Pliocene marine micropaleontology of southeastern Virginia and northeastern North Carolina, by T. M. Cronin, H. J. Dowsett, L. B. Gosnell and R. M. Ross. 1989. 27 p. (NC, Da, M, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rd., P.O. Box 3667, Charlottesville, VA 22093.)

OF 89-0680. Age of intrusion and mineralization, Pasto Bueno, northern Peru, by G. P. Landis, J. D. Obradovich and C. W. Naeser. 1989. 6 p. (NC, Da, M.)

OF 89-0681. Computer programs released as U.S. Geological Survey publications through August 1989, by R. C. Orndorff, Kurt Dodd, G. B. Gunnells and Yula Sakss. 1989. 70 p. (NC, Da, M.) (Supersedes Open-file report 86-172.)

OF 89-0682-A. NEVADA. Principal facts for about 16,000 gravity stations in the Nevada Test Site and vicinity; Chapter A, Principal facts documentation, by R. N. Harris, D. A. Ponce, D. L. Healey and H. W. Oliver. Prepared in cooperation with the U.S. Department of Energy. 1989. 78 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 89-0682-B. NEVADA. Principal facts for about 16,000 gravity stations in the Nevada Test Site and vicinity; Chapter B, Gravity data listing on paper, appendices B-G, by R. N. Harris, D. A. Ponce, D. L. Healey and H. W. Oliver. Prepared in cooperation with the U.S. Department of Energy. 1989. 227 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 89-0682-C. NEVADA. Principal facts for about 16,000 gravity stations in the Nevada Test Site and vicinity; Chapter C, Gravity data on disks, by R. N. Harris, D. A. Ponce, D. L. Healey and H. W. Oliver. Prepared in cooperation with the U.S. Department of Energy. 1989. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

The data described in this report are available on two high-density double-sided, 96-TPI diskettes formatted for IBM PC's using DOS 2.0 or higher versions. The IBM diskette requires the following hardware: 1) and IBM PC, PC/XT, PC/AT, or compatible computer running under PC or MS-DOS, version 2.0 or later; and 2) one double-sided high-density disk drive. The diskettes contain a total of 3 files "README.TXT", a description of the contents of the diskettes; and two gravity data files.

OF 89-0683. NEW JERSEY. Textural, physiographic, bathymetric, and geologic factors controlling economic heavy minerals distribution in surficial sediments on the Atlantic continental shelf offshore of New Jersey, by A. E. Grosz, F. L. Muller, Jane Uptegrove, John Farnsworth, Christy Bell, S. V. Maharaj, Karl Muessig and J. C. Hathaway. Prepared in cooperation with the New Jersey Geological Survey and Rutgers University. 1989. 31 p. (NC, Da, M.)

OF 89-0684. A real-time seismic amplitude measurement system (RSAM), by T. L. Murray and E. T. Endo. 1989. 26 p. (NC, Da, M.)

OF 89-0685. HAWAII. A teacher's guide to questions/answers and lab exercises prepared to accompany the film "Inside Hawaiian Volcanoes", by W. A. Duffield and R. S. Fiske. 1989. 22 p. (NC, Da, M, SF, LA.)

OF 89-0686. CALIFORNIA. Preliminary map of fractures formed in the Summit Road-Skyland Ridge area during the Loma Prieta, California, earthquake of October 17, 1989, by U.S. Geological Survey Staff (R. E. Wells, D. J. Ponti, M. M. Clark, R. C. Bucknam, K. E. Budding, T. E. Fumal, D. S. Harwood, K. R. Lajoie, J. J. Lienkaemper, M. N. Machette, C. S. Prentice, D. P. Schwartz). Field investigation also included Patience Cowie, Ze'ev Reches, and Peter Wood. 1989. 1 over-size sheet, scale 1:12,000 (1 inch = 1,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0687. CALIFORNIA. Color photographs (35 mm slides) showing examples of structural damage and surficial effects of the M 7.1 October 17, 1989, Loma Prieta, California earthquake, compiled by C. C. Ramseyer. 1989. 5 p., 36 35-mm slides. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of

Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0002. WASHINGTON, IDAHO. The 1986 estimate of undiscovered uranium endowment for surficial uranium deposits in the Sandpoint and Spokane NTMS 1° × 2° quadrangles, Washington and Idaho, by W. I. Finch, J. K. Otton, R. B. McCammon and C. T. Pierson. 1990. 16 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural resources, Olympia WA 98504; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0003. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples within and adjacent to the Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 103, 104, and 105, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 37 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0004. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1°×2° Quadrangle, Missouri and Kansas; drill hole Nos. 106, 107, and 108, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 37 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0005. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, within and adjacent to the Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 109, 110, and 111, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 28 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0006. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1°×2° Quadrangle, Missouri and Kansas; drill hole Nos. 112, 113, 114, and 115, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 19 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0007. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1°×2° Quadrangle, Missouri and Kansas; drill hole Nos. 116, 117, and 118, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 22 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0008. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1°×2° Quadrangle, Missouri and Kansas; drill hole Nos. 119, 120, and 121, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 19 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0009. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, within and adjacent to the Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 122, 123, and 124, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 28 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0010-A. Bibliography on trace-element partitioning studies, compiled by Eero Hanski and edited by G. K. Czamanske. 1990. 50 p. (NC, Da, M.)

OF 90-0010-B. Bibliography on trace-element partitioning studies, compiled by Eero Hanski and edited by G. K. Czamanske. 1990. One 5 1/4 inch diskette. (IBM PC, XT, AT, or compatible, MS-DOS v. 2.0 or higher; ASCII format.) (NC, Da, M.)

OF 90-0011-A. Supplement to the Comprehensive bibliography on komatiites, compiled by Eero Hanski and edited by G. K. Czamanske. 1990. 26 p. (NC, Da, M.) (Complement to Open-file report 86-434.)

OF 90-0011-B. Supplement to the Comprehensive bibliography on komatiites, compiled by Eero Hanski and edited by G. K. Czamanske. 1990. One 5/4 inch diskette. (IBM compatible; ASCII format.) (NC, Da, M.) (Complement to Open-file report 86-434.)

OF 90-0012-A. CALIFORNIA. Loma Prieta, California, earthquake; a collection of video images, by D. V. Prose. 1990. 4 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0012-B. CALIFORNIA. Loma Prieta, California, earthquake; a collection of video images, by D. V. Prose. 1990. 1 video, length 65 minutes. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Tape, which is not available from Books and Open File Reports Section, may be obtained from Videotransform, Inc., 2450 Embarcadero Way, Palo Alto, CA 94025; telephone 415-329-4164.)

OF 90-0013. NEVADA. Geochemistry and geology of gold in jasperoid, Elephant Head area, Lander County, Nevada, by T. G. Theodore and G. M. Jones. 1990. 111 p., 1 over-size sheet, scale 1:4,800 (1 inch = 400 feet). (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. Nevada, Reno, NV 89557.)

OF 90-0014. CALIFORNIA. Mass properties of conventional core samples from the Sisquoc, Monterey and Point Sal formations, Unocal Newlove 51 Well, Orcutt oil field, Santa Maria Basin, California, by L. A. Beyer and C. M. Isaacs. 1990. 16 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0015. ARIZONA. Potential breccia pipes in the Mohawk Canyon area, Hualapai Indian Reservation, Arizona, by K. J. Wenrich, G. H. Billingsley and B. S. Van Gosen. Prepared in cooperation with the Hualapai Indian Tribe. 1990. 67 p. (NC, Da, M, Db, LA, SF, U; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0016. Mineral occurrences in the Guiana Shield, Venezuela, by G. B. Sidder. 1990. 28 p., 1 over-size sheet. (NC, Da, M.)

OF 90-0017-A. CALIFORNIA. Principal facts for 398 gravity stations in the Palo Alto 7.5′ Quadrangle, California, by S. F. Carle and V. E. Langenheim. 1990. 11 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0017-B. CALIFORNIA. Principal facts for 398 gravity stations in the Palo Alto 7.5′ Quadrangle, California, by S. F. Carle and V. E. Langenheim. 1990. One 5 1/4 inch diskette. (Data files in ASCII format; IBM PC or compatible, DOS v. 2.0 or higher.) (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0018. CALIFORNIA. Preliminary isoseismal map for the Santa Cruz (Loma Prieta), California, earthquake of October 18, 1989 UTC, by C. W. Stover, B. G. Reagor, F. W. Baldwin and L. R. Brewer. 1990. 24 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0019. Response spectrum techniques for predicting wind-induced vibrations and discomfort in high-rise buildings, by Erdal Safak, E. A. Uzgider and A. Sanh. 1990. 43 p. (NC, Da, M.)

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OF 90-0024. Geologic/geomorphic and structure maps of the northern quarter of Venus, by G. G. Schaber and R. C. Kozak. 1990. 27 p., 2 over-size sheets, scale 1:15,000,000 (1 inch = 240 miles). (NC, Da, M.)

OF 90-0025. NEVADA. Geologic map of Bare Mountain, Nye County, Nevada, by S. A. Monsen, M. D. Carr, M. C. Reheis and P. P. Orkild. 1990. 20 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. Nevada, Reno, NV 89557.)

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OF 90-0031. NEVADA. Electric logging and electrical properties of rocks in the Rainier Mesa area, Nevada Test Site, Nevada, by R. D. Carroll. Prepared in cooperation with the U.S. Department of Energy and the Defense Nuclear Agency. 1990. 90 pages, 8 over-size sheets. (NC, Da, M, SF, LA, Db, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0032. NEVADA. Physical characteristics of alluvium and geochemistry of pebbles and cobbles from the alluvium in drill core above the Rabbit Creek gold deposit, Getchell mining district, Humboldt County, Nevada, by D. J. Madden-McGuire, S. M. Smith, Theodore Botinelly, M. L. Silberman and D. E. Detra.

1990. 43 p. (NC, Da, M, Db, SF, LA, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0033. NEVADA. Preliminary geologic map of the Delamar 3 NE Quadrangle, Lincoln County, Nevada, by R. B. Scott, S. W. Novak and W C Swadley. 1990. 12 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, LA, SF, Db, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

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OF 90-0036. ILLINOIS. Oxygen depletion studies in the Electrical Power Research Institute, Compressed Air Energy Storage facility, Pittsfield, Illinois, by E. F. Ethington, G. R. Olhoeft and T. V. King. 1990. 93 p. (NC, Da, M.)

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OF 90-0039-A. ALASKA. Bottom sediment along oil spill trajectory in Prince William Sound and along Kenai Peninsula, Alaska; Chapter A, Characterization of sample sites along the oil spill trajectory in Prince William Sound and the Gulf of Alaska, by P. R. Carlson and Erk Reimnitz. 1990. 23 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

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OF 90-0039-D. ALASKA. Bottom sediment along oil spill trajectory in Prince William Sound and along Kenai Peninsula, Alaska; Chapter D, Plutonium and ^{210}Pb activities in two cores from Prince William Sound, by M. H. Bothner, C. M. Parmenter, and A. B. Brown; edited by P. R. Carlson and Erk Reimnitz. 1990. 10 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resources Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0039-E. ALASKA. Bottom sediment along oil spill trajectory in Prince William Sound and along Kenai Peninsula, Alaska; Chapter E, Preliminary report on benthic foraminifers from Prince William Sound, Alaska, by P. J. Quinterno; edited by P. R. Carlson and Erk Reimnitz. 1990. 23 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

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OF 90-0040. COLORADO, NEW MEXICO. Results of sample analysis of heavy-mineral deposits in the Point Lookout Sandstone, Southwest Colorado and Northwest New Mexico, by R. S. Zech and Isabelle Brownfield. 1990. 17 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, 1313 Sherman St., Room 818, Denver, CO 80203; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0043. Raw gravity and navigation data from R/V Starella cruises S1-86, S2-86, and S3-86 in the Caribbean Sea, by B. J. Irwin. 1989. 13 p. (NC, Da, M.)

OF 90-0045-A. IGRFGRID; a program for creation of a total magnetic field (International Geomagnetic Reference Field) grid representing the Earth's main magnetic field, by R. E. Sweeney. 1990. 37 p. (NC, Da, M.)

OF 90-0045-B. IGRFGRID; a program for creation of a total magnetic field (International Geomagnetic Reference Field) grid representing the Earth's main magnetic field, by R. E. Sweeney. 1990. One 5 1/4 inch diskette. (Source code.) (NC, Da, M.)

OF 90-0046. Processed strong-motion data for the central Chile aftershock of April 9, 1985; nine accelerograph sites owned by CHILECTRA, ENDESA, and the Department of Geology and Geophysics, University of Chile, by K. W. Campbell, S. T. Algermissen, Edgar Kausel and L. M. Highland. 1990. 170 p. (NC, Da, M.)

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OF 90-0048. Joint spacings, mineral modes, and grain size measurements for selected granitic rocks in the northern Rockies and in Southwest England, by Judy Ehlen and E-an Zen. 1990. 105 p., one 5 1/4 inch diskette. (NC, Da, M; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

The spacing data are presented both as hardcopy in the text and on an IBM-compatible double-density, 5 1/4 inch diskette in ASCII format.

OF 90-0050. Chemical results for bottom material for Department of the Interior irrigation drainage task group studies 1988-1989, by T. F. Harms, K. C. Stewart, P. H. Briggs, P. L. Hageman and C. S. Papp. 1990. 47 p. (NC, Da, M.)

OF 90-0051. Preliminary stratigraphy of piston cores from southeastern Northwind Ridge, Arctic Ocean, by R. L. Phillips, Arthur Grantz and M. W. Mullen. 1990. 1 over-size sheet. (NC, Da, M.)

OF 90-0052. SOUTH DAKOTA. Total and extractable selenium in soils from the Lake Andes-Wagner irrigation area, South Dakota, by S. A. Wilson, R. C. Severson, K. R. Kennedy, A. R. Shinneman and S. A. Kinney. 1990. 23 p. (NC, Da, M, Db; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069.)

OF 90-0053. CALIFORNIA. Composition of basaltic glasses dredged from seven seamounts offshore Southern California on R/V Farnella Cruise F7-87-SC, by A. S. Davis, D. A. Clague, W. B. Friesen and J. R. Hein. 1989. 21 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0055. CALIFORNIA. Preliminary isostatic residual gravity map of the San Jose 1:100,000 scale Quadrangle, California, by B. A. Chuchel and R. C. Jachens. 1990. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0056. A user's guide to the PC-based time-series data-management and plotting program BOB, by T. L. Murray. 1990. 53 p. (NC, Da, M.)

OF 90-0057. IDAHO. Analytical results and sample locality maps of soil, plant (Douglas-fir, sagebrush, sedge, aquatic moss), stream-sediment, and heavy-mineral-concentrate samples from the Baker Creek study area, Blaine County, Idaho, by J. A. Erdman, F. J. Moye, Betty Bailey, R. M. O'Leary and T. A. Roemer. 1990. 16 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0058. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples in and adjacent to the Joplin 1° × 2° Quadrangle, Missouri and Kansas; drill hole Nos. 100, 101, and 102, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 34 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0059. Coal resources of the Lakhra and Sonda coal fields, southern Sind Province, Pakistan; a progress report; Part I, Executive summary, by S. P. Schweinfurth, J. R. SanFilipo, E. R. Landis, R. A. Khan and A. A. Shah. Prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey. 1990. 33 p. (NC, Da, M.)

OF 90-0061. CALIFORNIA. A detailed study of the USGS reducing-gas sensor with field tests at Long Valley, California, by K. A. McGee and A. J. Sutton. 1990. 67 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0062. NEVADA. Lithology, petrography, and geochemistry of three cores from the Goldfield mining district, Nevada, by R. P. Ashley and R. C. Evarts. 1990. 142 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0063. Annotated bibliography of tectonostratigraphic and organic geochemical characteristics of upper Precambrian rocks related to their petroleum potential, by G. F. Ulmishek. 1989. 33 p. (NC, Da, M.)

OF 90-0064. Pliocene climates; scenario for global warming, edited by L. B. Gosnell and R. Z. Poore. 1990. 43 p. (Abstracts from USGS workshop, Denver, CO, Oct. 23-25, 1989.) (NC, Da, M.)

Pliocene environmental changes at Tulelake, Siskiyou County California, from 3 to 2 Ma, by D. P. Adam, J. P. Bradbury and H. J. Rieck. p. 3-5.

Climatic significance of the ostracode fauna from the late Pliocene Kap Kobenhavn Formation, North Greenland, by E. M. Brouwers. p. 7-8.

Pliocene marine climates of the western North Atlantic Ocean, by T. M. Cronin. p. 9-10.

Pliocene paleoceanography of North Atlantic Deep Sea Drilling Project Site 552; application of planktic foraminifer transfer function GSF18, by H. J. Dowsett and R. Z. Poore. p. 11-13.

Using dinocysts to calculate winter sea-surface temperatures, North Atlantic Ocean, by L. E. Edwards. p. 15-16.

Strontium isotopic dating of upper Cenozoic marine deposits, northwestern Alaska, by D. S. Kaufman, G. L. Farmer, G. H. Miller, L. D. Carter and Julie Brigham-Grette. p. 17-21.

Climates and paleogeography of Transcaucasia in the Pliocene, by Aliashra Mamedov. p. 23-28.

New data on Pliocene floras/faunas from the Canadian Arctic and Greenland, by J. V. Matthews, Jr. p. 29-33.

Potential of $^{87}Sr/^{86}Sr$ for dating Pliocene carbonates, by R. Z. Poore and H. J. Dowsett. p. 35-36.

Pliocene atmospheric CO_2: some preliminary observations, by E. T. Sundquist. p. 37-38.

Estimates of Pliocene precipitation and temperature based on multivariate analysis of leaf physiognomy, by J. A. Wolfe. p. 39-42.

OF 90-0065. CALIFORNIA. Pollen data for a 3-m.y. core record from Tulelake, Siskiyou County, California, by D. P. Adam and G. L. Vagenas. 1990. 307 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0067. ALASKA. Mineralogical data and sample locality map of nonmagnetic, heavy-mineral-concentrate samples collected from the eastern part of the Lime Hills Quadrangle, Alaska, by M. S. Allen and K. E. Slaughter. 1990. 64 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, LA, S, SF; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Anchorage, AK 99709-4699; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

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OF 90-0069. ALASKA. Geologic description, chemical analyses and sample locality map for rock samples collected from the eastern part of the Lime Hills Quadrangle, Alaska, by M. S. Allen, M. J. Malcolm, J. M. Motooka and K. E. Slaughter. 1990. 49 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, LA, S, SF; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709-4699; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, Coll. Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

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OF 90-0071. ALASKA. GLORIA investigation of the Exclusive Economic Zone in the Gulf of Alaska; M/V Farnella Cruise F6-89-GA, May 16 to June 11, 1989, by P. R. Carlson, D. M. Mann, Q. J. Huggett and Derek Bishop. 1990. 17 p. (NC, Da, M, A, S, SF, LA; Alaska Div. Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0072. NEVADA. Road guide through lower Paleozoic rock units in the Osgood Mountains and surrounding areas, and a stop at the Golconda thrust fault, Humboldt County, north-central Nevada, by D. J. Madden-McGuire. 1990. 23 p. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0073. Geologic province map of the Venezuelan Guiana Shield, by G. B. Sidder. 1990. 14 p., 1 over-size sheet. (NC, Da, M.)

OF 90-0074. CALIFORNIA. Preliminary ground-water-quality data and the extent of the ground-water basin from drill-hole, seismic, and gravity data in the Palo Alto 7.5′ Quadrangle, California, edited by H. W. Oliver. Prepared in cooperation with the City of Menlo Park. 1990. 21 p., 3 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Preliminary water quality data for the Palo Alto 7 1/2′ Quadrangle, by V. E. Langenheim, H. W. Oliver and H. V. Leland. p. 4-21.

Map showing elevation of the bedrock surface beneath the flatlands of Atherton, Menlo Park, and adjoining areas, California, by E. E. Brabb, S. F. Carle and E. H. Pampeyan.

Isostatic residual gravity anomaly map of the Palo Alto 7 1/2′ Quadrangle, California, by S. F. Carle and V. E. Langenheim.

Geophysical interpretative map showing the bedrock surface underlying the flatland areas of Menlo Park, Atherton and adjoining areas, California, by S. F. Carle, V. E. Langenheim, E. E. Brabb and E. H. Pampeyan.

OF 90-0075. NEW HAMPSHIRE. Wetland and peat resources map of the Milford 7.5-minute Quadrangle, New Hampshire, by C. C. Cameron, D. A. Emery and J. I. Marlowe, III. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da.)

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OF 90-0077-A. GEOMENU; a program for using US GeoData files from 1:2,000,000-scale maps in ISM, by C. K. Runge and K. I. Takahashi. 1990. 22 p. (NC, Da, M.)

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OF 90-0079. MISSISSIPPI. Description of digital data from a helicopter geophysical survey to map brine contamination; Brookhaven oil field, Lincoln County, Mississippi, by W. D. Heran and B. D. Smith. 1990. 56 p. (NC, Da, M.)

OF 90-0080. GSDIG version 3.0; a program to determine latitude, longitude coordinates or X,Y coordinates using a microcomputer (IBM PC or compatible) and digitizer, by G. I. Selner, C. L.

Smith and R. B. Taylor. 1990. 28 p., one 5 1/4 inch diskette. (NC, Da, M.)

OF 90-0081. A working bibliography for the Pliocene, by D. P. Adam, H. L. Dieffenbach and Michael McCormick. 1990. 196 p. (NC, Da, M.)

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OF 90-0162. QADATA user's manual: an interactive computer program for the retrieval and analysis of the results from the external blind sample quality-assurance project of the U.S. Geological Survey, by K. J. Lucey. 1990. 53 p. (NC, Da, M, Wb.)

OF 90-0163. Summary of selected characteristics of large reservoirs in the United States and Puerto Rico, 1988, by B. C. Ruddy and K. J. Hitt. 1990. 295 p. (NC, Da, M, Wb.)

OF 90-0165. Structure and application of an interface program between a geographic-information system and a ground-water flow model, by P. C. Van Metre. 1990. 68 p. (NC, Da, M, Wb, F; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ 85016; and 1940 South 3rd Ave., Yuma, AZ 85364.)

OF 90-0168. MONTANA. Water-quality data (October 1988 through September 1989) and statistical summaries (March 1985 through September 1989) for the Clark Fork and selected tributaries from Galen to Missoula, Montana, by J. H. Lambing. Prepared in cooperation with the U.S. Environmental Protection Agency and the Montana Power Company. 1990. 68 p. (NC, Da, M, Wb, Db, S, U; USGS, WRD, Drawer 10076, Federal Office Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., Box 111, 1500 North 30th, Billings, MT 59101.)

OF 90-0169. FLORIDA. Water resources activities in Florida, 1989-90, edited by M. E. Glenn. 1990. 85 p. (NC, Da, M, Wb.)

OF 90-0178. CALIFORNIA. Hydrographic, biological, and nutrient properties of Tomales Bay, California, March 1985 to May 1986, by B. E. Cole, S. W. Hager and J. T. Hollibaugh. 1990. 90 p. (NC, Da, M, Wb.)

OF 90-0180. WASHINGTON. Summary of water-resources activities of the U.S. Geological Survey in Washington; fiscal year 1989, compiled by J. A. Wayenberg. 1990. 89 p., 1 over-size sheet, scale 1:750,000 (1 inch = about 12 miles). (NC, Da, M, Wb.)

OF 90-0190. TENNESSEE. Water-quality, well-construction, and ground-water level data for an investigation of radionuclides in ground water, Hickman and Maury counties, Tennessee, by G. E. Hileman. Prepared in cooperation with the Tennessee Department of Health and Environment, and the U.S. Environmental Protection Agency. 1990. 13 p. (NC, Da, M, Wb; USGS, WRD, A-413 Federal Bldg., Nashville, TN 37203.)

OF 90-0191. IDAHO. Radionuclides, metals, and organic compounds in water, eastern part of A & B Irrigation District, Minidoka County, Idaho, by L. J. Mann and L. L. Knobel. Prepared in cooperation with the U.S. Department of Energy. 1990. 36 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; Idaho National Engineering Laboratory, USGS, WRD, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0196. CALIFORNIA. Documentation of model input and output values for the geohydrology and mathematical simulation of the Pajaro Valley aquifer system, Santa Cruz and Monterey counties, California, by H. T. Mitten and C. J. Londquist. 1990. 4 p., one 5 1/4 inch diskette. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

DS/HD, IBM compatible computer diskette with compressed files.

OF 90-0201. ARIZONA. Geologic map of the Valentine SE Quadrangle, Mohave County, Arizona, by L. S. Beard and Ivo Lucchitta. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0202. OREGON. Preliminary geologic map of the Nestucca Bay Quadrangle, Tillamook County, Oregon, by P. D. Snavely, Jr., N. S. MacLeod and D. L. Minasian. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0203. Annotated bibliography of gamma-ray methods applied to gold exploration, by D. B. Hoover and H. A. Pierce. 1990. 23 p. (NC, Da, M.)

OF 90-0204. CALIFORNIA, NEVADA. Analytical results and sample locality map of stream-sediment samples from the Reno 1° × 2° Quadrangle, California and Nevada, by J. E. Kilburn, D. B. Smith and R. T. Hopkins. 1990. 71 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0206. CALIFORNIA. Aeromagnetic map of parts of the San Diego, Santa Ana, and adjacent 1° × 2° quadrangles, California. 1990. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0208. Multichannel seismic-reflection profiles from Vanuatu to the Solomon Islands collected in 1984, by H. G. Greene, A. Macfarlane, G. L. Smith and E. L. Geist. 1990. 3 p., 3 over-size sheets. (NC, Da, M.)

OF 90-0210. ALASKA. Gold analytical results and gold signatures from the Anchorage, Charley River, Healy, Iditarod, Juneau, Mt. Hayes, Mt. McKinley, Ophir, Ruby, and Talkeetna quadrangles, Alaska, by J. B. Cathrall, J. C. Antweiler, George VanTrump, Jr. and E. L. Mosier. 1990. 25 p. (NC, Da, M, A, LA, S, SF; Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709-4699; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0211-A. IBM PC programs for automatic processing and interpretation of Wenner sounding curves in QuickBASIC 4.0, by R. J. Bisdorf and A. A. Zohdy. 1990. 50 p. (NC, Da, M.)

OF 90-0211-B. IBM PC programs for automatic processing and interpretation of Wenner sounding curves in QuickBASIC 4.0, by R. J. Bisdorf and A. A. Zohdy. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

ATOWEN is an automatic interpretation program for Wenner sounding curves. Required equipment: IBM PC or compatible, CGA or EGA capability, one 5 1/4 inch disk drive. Recommended equipment: math coprocessor. Optional equipment: Epson compatible printer.

OF 90-0213. Comparative effect of remolding methods on the vane shear strength of Yellow Sea sediment, by W. J. Winters, S. E. Dickenson and J. S. Booth. 1990. 29 p. (NC, Da, M.)

OF 90-0214. CALIFORNIA. Analysis of soil samples from the San Joaquin Valley of California, by S. A. Wilson, K. R. Kennedy, C. A. Gent, P. H. Briggs, R. R. Tidball and J. M. McNeal. 1990. 56 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0215. WISCONSIN. Late Quaternary stratigraphy and sedimentary features along the Wisconsin shoreline, southwestern Lake Michigan, by Juergen Reinhardt. 1990. 20 p. (NC, Da, M.)

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OF 90-0218. NEW JERSEY. Bedrock geologic map of the Rocky Hill Quadrangle, New Jersey, by R. A. Parker and H. F. Houghton. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC.)

OF 90-0219. NEW JERSEY. Bedrock geologic map of the Monmouth Junction Quadrangle, New Jersey, by R. A. Parker and H. F. Houghton. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC.)

OF 90-0220. COLORADO. Foraminifers from the upper part of the Lewis Shale (Upper Cretaceous) near Durango, Colorado, by M. A. Carey. 1990. 30 p. (NC, Da, M, Db, U.)

OF 90-0221. NEVADA. Preliminary geologic map of the Delamar 3 SE Quadrangle, Lincoln County, Nevada, by W C Swadley, W. R. Page, R. B. Scott and E. H. Pampeyan. 1990. 16 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, LA, SF, U; Nev. Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0222. UTAH. Analytical results and sample locality map of stream-sediment samples from the Delta 1° × 2° Quadrangle, Tooele, Juab, Millard, and Utah counties, Utah, by B. F. Arbogast, D. R. Zimbelman and H. A. Whitney. 1990. 46 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0223. MISSOURI, KANSAS. Spectrographic analyses of insoluble-residue samples, Joplin 1°×2° Quadrangle, Missouri and Kansas; drill hole Nos. 134, 135, and 136, by J. H. Bullock, Jr. and H. W. Folger. Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey. 1990. 19 p. (NC, Da, M, Db; Missouri Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Univ. of Kansas, Lawrence, KS 66046.)

OF 90-0224. NEVADA. Geologic map of the Indian Cove Quadrangle, Lincoln County, Nevada, by P. D. Rowley and R. R. Shroba. 1990. 15 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, LA, SF, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0225. UTAH. Assessment of regional earthquake hazards and risk along the Wasatch Front, Utah; Volume IV, edited by P. L. Gori. 1990. 455 p. (NC, Da, M, U, Db; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)

Reducing earthquake hazards in Utah; the crucial connection between researchers and practitioners, by W. J. Kockelman. p. AA1-AA153.

Interactive workshops; essential elements of the Earthquake Hazards Research and Reduction Program in the Wasatch Front, Utah, by P. L. Gori. p. BB1-BB41.

Public perceptions of the implementation of earthquake mitigation policies along the Wasatch Front in Utah, by G. E. Madsen, L. R. Anderson, J. N. Barnes and Genevieve Atwood. p. CC1-CC17.

A data base designed for urban seismic hazards studies, by A. C. Tarr. p. DD1-DD28.

A mapping of ground shaking intensities for Salt Lake County, Utah, by P. C. Emmi. p. EE1-EE44.

Wasatch Front County Hazards Geologist Program, by G. E. Christenson. p. FF1-FF21.

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Landslide hazards; a guide for land-use planning, Davis County, Utah, by R. M. Robison and M. V. Lowe. p. HH1-HH26.

Rock-fall hazards; a guide for land-use planning, Salt Lake County, Utah, by C. V. Nelson. p. II1-II15.

Debris-flow hazards; a guide for land-use planning, Davis County, Utah, by M. V. Lowe. p. JJ1-JJ25.

Liquefaction hazards; a guide for land-use planning, Davis County, Utah, by M. V. Lowe. p. KK1-KK26.

Tectonic subsidence hazard; a guide for land-use planning, Utah and Juab counties, Utah, by R. M. Robison. p. LL1-LL12.

Earthquake-induced ground failure in sensitive clays, vibratory settlement, seiches, surface-drainage disruptions, and increased ground-water discharge, Davis County, Utah, by M. V. Lowe. p. MM1-MM16.

OF 90-0226. CALIFORNIA. Review of the Great Valley Sequence, eastern Diablo Range and northern San Joaquin Valley, Central California, by J. A. Bartow and T. H. Nilsen. 1990. 25 p., 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0227-A. ARIZONA. Paper version of analytical results, and basic statistics and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, creosote-bush, palo verde, and *Bacillus cereus* samples from the Swansea, Planet Peak, Gibraltar Mountain, Cactus Plain, and East Cactus Plain Wilderness Study Areas, La Paz and Mohave counties, Arizona, by R. G. Eppinger, B. M. Adrian, D. L. Fey, R. M. O'Leary, J. M. Motooka, B. H. Roushey, J. R. Erdman, J. R. Watterson and J. R. Hessemer. 1990. 95 p., 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, Db, U, SF, LA; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0227-B. ARIZONA. Diskette version of analytical results, and basic statistics and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, creosote-bush, palo verde, and *Bacillus cereus* samples from the Swansea, Planet Peak, Gibraltar Mountain, Cactus Plain, and East Cactus Plain Wilderness Study Areas, La Paz and Mohave counties, Arizona, by R. G. Eppinger, B. M. Adrian, D. L. Fey, R. M. O'Leary, J. M. Motooka, B. H. Roushey, J. R. Erdman, J. R. Watterson and J. R. Hessemer. 1990. One 5 1/4 inch DS/HD IBM compatible diskette. (NC, Da, M, Db, U, SF, LA; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0228. UTAH. Composite aeromagnetic map of the Richfield 1°×2° Quadrangle, Utah, by J. L. Plesha. 1990. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0229. GSREF version 4.0: a bibliographic reference system for the IBM PC and compatible microcomputers, by G. I. Selner and R. B. Taylor. 1990. 17 p., one 5 1/4 inch diskette. (NC, Da, M.)

GSREF requires a computer that uses the DOS disk operating system and a working familiarity with the use of the computer and DOS. The computer should have at least 512 Kbyte of memory, at least one disk drive, and a printer connected to LPT:1 (parallel port #1). GSREF version 4.0 was written using Microsoft QuickBasic.

OF 90-0230. Estimation of condensate in the assessment of undiscovered petroleum resources, by John Kingston. 1990. 38 p. (NC, Da, M.)

OF 90-0231. Geology, geochemistry and mineral resources of the upper Caura River area, Bolivar State, Venezuela, by G. B. Sidder and Felix Martinez. 1990. 29 p. (NC, Da, M.)

OF 90-0235. COLORADO. Evolution of the Red Mountain alunite deposit, Lake City, Colorado, by D. J. Bove, R. O. Rye and Ken Hon. 1990. 30 p. (NC, Da, M, Db, U.)

OF 90-0236. SOUTH CAROLINA. Geology near a hazardous waste landfill at the headwaters of Lake Marion, Sumter County, South Carolina, by D. C. Prowell. 1990. 24 p., 2 over-size sheets. (NC.) South Carolina Geol. Surv., 5 Geology Rd., Columbia, SC 29210-9998.)

OF 90-0237. UTAH. Analytical results for gold in 1412 stream-sediment samples from the Richfield 1° × 2° Quadrangle, Utah, by J. B. McHugh and W. R. Miller. 1990. 20 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-14280.)

OF 90-0238. ALASKA. Geologic map of the Anchorage B-8 SE and part of the Anchorage B-8 NE quadrangles, Alaska, by L. A. Yehle, H. R. Schmoll and Ernest Dobrovolny. 1990. 37 p., 2 over-size sheets, scale 1:25,000 (1 inch = about 2,000 feet). (NC, Da, M, A, LA, S, SF; Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, Coll. Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0239. NEW MEXICO, ARIZONA. Geology and mineral deposits of the Steeple Rock and Duncan mining districts, Grant and Hidalgo counties, New Mexico, and Greenlee County, Arizona, by D. C. Hedlund. 1990. 27 p. (NC, Da, M, Db, U, SF, LA; Bur. Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0241. MONTANA. Preliminary map showing the location of productive lode and placer gold mines in Montana (with explanatory text), by David Frishman, J. E. Elliott, E. E. Foord, R. C. Pearson and W. H. Raymond. 1990. 62 p., 2 over-size sheets, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0242-A. MONTANA. Data used to prepare a map showing the location of significant gold mines in Montana, by David Frishman, J. E. Elliott, E. E. Foord, R. C. Pearson and W. H. Raymond. 1990. 103 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0242-B. MONTANA. Data used to prepare a map showing the location of significant gold mines in Montana, by David Frishman, J. E. Elliott, E. E. Foord, R. C. Pearson and W. H. Raymond. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

The diskette contains data in the form of comma- and quote-delimited ASCII files. These ASCII files can be imported into database or spreadsheet programs so that users can generate reports customized to their specific needs. The files contain data only; there are no executable programs on the diskette. The user must provide software (usually a commercial database manager or a spreadsheet) in order to access the data. Hardware required is that needed to run the program the purchaser uses.

OF 90-0243. Palynological contribution to geologic mapping of coal-bearing upper Paleocene rocks in the lower Indus coal region, Pakistan, by N. O. Frederiksen. Prepared under the auspices of the U.S. Agency for International Development. 1990. 40 p. (NC, Da, M.)

OF 90-0245. NORTH CAROLINA. Heavy-mineral resource potential of surficial sediments on the Atlantic continental shelf offshore of North Carolina; a reconnaissance study, by A. E. Grosz, C. W. Hoffman, P. E. Gallagher, J. C. Reid and J. C. Hathaway. Prepared in cooperation with the North Carolina Geological Survey. 1990. 58 p. (NC, Da, M.)

OF 90-0246. ALASKA. Redoubt Volcano, Cook Inlet, Alaska; a hazard assessment based on eruptive activity through 1968, by A. B. Till, Elizabeth Yount and J. R. Riehle. 1990. 33 p., 2 over-size sheets, scale 1:125,000 (1 inch = about 2 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0247. CALIFORNIA. Loma Prieta, California, earthquake October 18 (GMT), 1989; processed stong-motion records, Volume 1, by A. G. Brady and P. N. Mork. 1990. 274 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0248. CALIFORNIA. Seismic velocities from borehole measurements at four locations along a fifty-kilometer section of the San Andreas Fault near Parkfield, California, by J. F. Gibbs, E. F. Roth, T. E. Fumal, N. A. Jasek and M. A. Emslie. 1990. 35 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., Los Angeles, CA 90012.)

OF 90-0250. GSDEDIT and GSMEDIT, screen edit programs for GSDRAW and GSMAP data bases using a microcomputer (IBM PC or compatible), by G. I. Selner and R. B. Taylor. 1990. 16 p., one 5 1/4 inch diskette. (NC, Da, M.)

GSDEDIT and GSMEDIT require an IBM PC or compatible microcomputer with at least 512 Kbyte random access memory operating under DOS 2.0 or higher, and a graphics adapter and monitor. EGA or VGA graphics are required for accurate editing; monochrome Hercules graphics can also be used.

OF 90-0253. CALIFORNIA. Effects of the Loma Prieta earthquake on the Marina District, San Francisco, California. 1990. 129 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Summary and conclusions, by T. L. Holzer and T. D. O'Rourke. p. 1-6.

Introduction, by T. L. Holzer. p. 7.

Natural and artificial deposits in the Marina District, by G. G. Bonilla. p. 8-32.

Types of structural damage, by Mehmet Celebi. p. 33-38.

Areal distribution of damage to surface structures, by L. C. Seekins, Frank Lew and Lawrence Kornfield. p. 39-43.

Ground deformation and liquefaction of soil in the Marina District, by M. J. Bennett. p. 44-79.

Performance of pipeline systems in the Marina, by T. D. O'Rourke and B. L. Roth. p. 80-87.

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Engineering and seismic properties of the soil column at Winfield Scott School, San Francisco, by R. E. Kayen, H. P. Liu, T. E. Fumal, R. E. Westerlund, R. E. Warrick, J. F. Gibbs and H. J. Lee. p. 112-129.

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Sedimentary history of the Ross Embayment; a unified hypothesis from a glaciological perspective, by R. B. Alley, D. D. Blankenship and S. T. Rooney. p. 13-23.

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OF 90-0318. Short wave loop-loop sounder, by T. P. Grover and D. C. Stewart. 1990. 24 p. (NC, Da, M.)

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OF 90-0321. COLORADO, NEBRASKA, WYOMING. Macintosh computer display of the history of oil and gas exploration in

the Denver Basin of Colorado, Nebraska and Wyoming, by D. K. Higley, K. I. Takahashi and R. F. Mast. 1990. Four 3 1/2 inch diskettes. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Conservation and Surv. Div., Inst. of Agriculture and Natural Resources, 113 Nebraska Hall, Univ. of Nebraska, Lincoln, NE 68588-0517; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

Hardware requirements to run this program are: 1) a Macintosh II-series computer with color graphics capability, 2) 4 megabytes of disk space for installation (2.5 megabytes once installed), and 3) 4 megabytes of memory without the Multifinder application. The Denver Basin program is on four 3.5 inch, 0.8 megabyte diskettes and can be loaded with Apple system software.

OF 90-0322. IDAHO. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Little Wood River (ID-053-004) Wilderness Study Area, Blaine County, Idaho, by H. W. Folger, M. S. Erickson and P. H. Briggs. 1990. 16 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0324. COLORADO. Geochemistry and origin of combustible gas in Crested Butte, Gunnison County, Colorado, by D. D. Rice, C. N. Threlkeld and J. M. Soule. 1990. 7 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

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OF 90-0325-B. WYOMING, COLORADO. Cross-section B-B′; subsurface correlations of Upper Cretaceous and Tertiary rocks, southern Washakie Basin, Wyoming to northern Sand Wash Basin, Colorado, by J. W. Bader. 1990. 1 over-size sheet. (NC, Da, M, U, Db.)

OF 90-0326. Hamdah ancient gold mines, Kingdom of Saudi Arabia, by P. S. Bosch, Eyad Jannadi, A. M. Helaby, P. R. Johnson, and A. A. Bookstrom, *with a section on* Ground electromagnetic geophysical surveys, by M. A. Bazzari. 1990. 112 p., 8 over-size sheets, scale 1:2,000 (1 inch = 167 feet). (NC, Da, M.)

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OF 90-0329. ARIZONA. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Mount Tipton Wilderness Study Area (AZ-020-012/042), Mohave County, Arizona, by J. H. Bullock, Jr., F. W. Tippitt, R. L. Turner and E. P. Welsch. 1988. 19 p. (NC, Da, M, Db, LA, SF, U; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0332. IDAHO. Fine-grained gold in stream sediments of east-central Lemhi County, Idaho, by G. A. Desborough, W. H. Raymond and K. V. Evans. 1990. 9 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

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OF 90-0466. GEONAMES data base of geologic names of the United States through 1988, compiled by G. W. Luttrell, M. L. Hubert and C. R. Murdock. 1990. 11 p., 16 5 1/4 inch DS/DD IBM compatible diskettes. (NC, Da, M.) (Supersedes Open-file reports 88-44 A-N)

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OF 90-0486. COLORADO, UTAH, WYOMING. Bibliography of the geology of the Green River Formation, Colorado, Utah, and Wyoming to July 1, 1990, by M. C. Smith. 1990. One 3 1/2 inch diskette. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280; Geol. Surv., of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

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OF 90-0510. ARIZONA. Mineral resources of the Cactus Plain and East Cactus Plain Wilderness Study Areas, La Paz County, Arizona, by R. M. Tosdal, R. G. Eppinger, J. A. Erdman, W. F. Hanna, J. A. Pitkin, H. R. Blank, Jr., R. M. O'Leary and J. R. Watterson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 48 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0511. OREGON. Mineral resources of the Badlands Wilderness Study Area and the Badlands Wilderness Study Area Additions, Crook and Deschutes counties, Oregon, by J. R. Bergquist, H. D. King, R. J. Blakely, D. L. Sawatzky and J. E. Olson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 21 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0512. ARIZONA. Mineral resources of the Gibraltar Mountain and Planet Peak Wilderness Study Areas, La Paz County, Arizona, by R. G. Eppinger, J. A. Peterson, H. R. Blank, Jr., K. E. Livo, D. H. Knepper, Jr., J. A. Pitkin, J. E. Spencer, S. J. Reynolds, M. J. Grubensky, T. J. Kreidler and D. C. Scott. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 36 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0513. OREGON. Mineral resources of the Diablo Mountain Wilderness Study Area, Lake County, Oregon, by M. F. Diggles, H. D. King, M. E. Gettings, J. E. Conrad, D. L. Sawatzky, G. A. Soreghan, T. J. Peters and S. L. Willett. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 26 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0514. OREGON. Mineral resources of the Gold Creek and Sperry Creek Wilderness Areas, Malheur County, Oregon, by J. G. Evans, J. G. Frisken, Andrew Griscom, D. L. Sawatzky and M. S. Miller. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 20 p., 1 over-size sheet. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0515. OREGON. Mineral resources of the Lower Owyhee Canyon Wilderness Study Area, Malheur County, Oregon, by J. G. Evans, R. L. Turner, Andrew Griscom, D. L. Sawatzky and J. D. Causey. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 19 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0516. UTAH. Mineral resources of the Mill Creek Canyon Wilderness Study Area, Grand County, Utah, by M. F. Diggles,

J. E. Case, H. N. Barton and J. S. Duval. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 29 p. (NC, Da, M, U, Db; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)

OF 90-0517. OREGON. Mineral resources of the Blue Canyon and Owyhee Breaks Wilderness Study Areas, Malheur County, Oregon, by D. B. Vander Meulen, V. E. Barlock, P. S. Plumley, J. G. Frisken, Andrew Griscom and J. D. Causey. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 29 p., 1 over-size sheet. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0519. OREGON. Mineral resources of the Soda Mountain Wilderness Area, Jackson County, Oregon, by W. J. Pickthorn, R. J. Goldfarb, Donald Plouff, S. J. Sutley, M. D. Wilcox, T. J. Peters and S. L. Willett. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 19 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0522. NEVADA, UTAH. Mineral resources of the Marble Canyon Wilderness Study Area, White Pine County, Nevada, and Millard County, Utah, by M. F. Diggles, G. A. Nowlan, H. R. Blank, Jr., S. M. Marcus and R. F. Kness. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 34 p. (NC, Da, M, U, Db; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0601-A. Earthquake data report, January 1990, by National Earthquake Information Center. 1990. 302 p. (NC, Da, M.)

OF 90-0601-B. Earthquake data report, January 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2 megabyte, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk.

OF 90-0602-A. Earthquake data report, February 1990, by National Earthquake Information Center. 1990. 266 p. (NC, Da, M.)

OF 90-0602-B. Earthquake data report, February 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2 megabyte, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk.

Reports Available Only Through Certain Geological Survey Field Offices

For information on availability and price of these reports, write to the address indicated by a dagger (†) in the listing for the report.

OF 86-0499. PUERTO RICO, VIRGIN ISLANDS. Publications of the U.S. Geological Survey, Water Resources Division, for Puerto Rico and the U.S. Virgin Islands, 1946-1986, by Ferdinand Quiñones and Carmen Garcia. 1986. 27 p. (NC, Da, M, Wb; USGS, WRD, GSA Ctr., Bldg. 652, Highway 28, km 7.2, Pueblo Viejo, San Juan, PR.) †USGS, WRD, G.P.O. Box 4424, San Juan, PR 00936.

OF 87-0030. Laboratory hazards and safety procedures in the geologic environment, by P. L. Hauff, D. W. Brown and Dale Dushane. 1987. 8 p. videotape. (NC, Da, M, Wb.) †USGS, National Training Ctr., Bldg. 53, Denver Federal Ctr., Mail Stop 414, Box 25046, Lakewood, CO 80225.

OF 87-0031. The wading discharge measurement, by W. T. Bond. 1987. 48 p. videotape. (NC, Da, M, Wb.) †USGS, National Training Ctr., Bldg. 53, Denver Federal Ctr., Mail Stop 414, Box 25046, Lakewood, CO 80225.

OF 87-0032. Measuring water levels in wells, by W. T. Bond. 1987. 22 p. videotape. (NC, Da, M, Wb.) †USGS, National Training Ctr., Bldg. 53, Denver Federal Ctr., Mail Stop 414, Box 25046, Lakewood, CO 80225.

OF 87-0227. MARYLAND. Selected geohydrologic characteristics of the Patapsco aquifers at Chalk Point, Prince Georges County, Maryland, by F. K. Mack. Maryland Geological Survey, Department of Natural Resources, Report No. 88-02-4. 1987. 34 p. (NC, Da, M, Wb; USGS, WRD, 208 Carroll Bldg., 8600 LaSalle Rd., Towson, MD 21204; Tawes State Office Bldg., D3, Annapolis, MD; and 2300 St. Paul St., Baltimore, MD.) †Maryland Geol. Surv., Dep. of Natural Resources.

OF 88-0556-A. Catalog of first motion focal mechanisms, 1986-1987; Volume 1, by R. E. Needham. 1988. 236 p. (NC, Da, M.) †USGS, Branch of Global Seismology and Geomagnetism, 1711 Illinois Ave., Room 515, Mail Stop 967, Golden, CO 80401.

OF 88-0556-B. Catalog of first motion focal mechanisms, 1986-1987; Volume 2, by R. E. Needham. 1988. 231 p. (NC, Da, M.) †USGS, Branch of Global Seismology and Geomagnetism, 1711 Illinois Ave., Room 515, Mail Stop 967, Golden, CO 80401.

OF 88-0556-C. Catalog of first motion focal mechanisms, 1986-1987; Volume 3, by R. E. Needham. 1988. 298 p. (NC, Da, M.) †USGS, Branch of Global Seismology and Geomagnetism, 1711 Illinois Ave., Room 515, Mail Stop 967, Golden, CO 80401.)

OF 89-0257. PUERTO RICO. Preliminary map showing locations of landslide in El Yunque Quadrangle, Puerto Rico, by M. R. Guariguata and M. C. Larsen. 1989. 9 p. (NC, Da, M, Wb; USGS, WRD, G.P.O. Box 4424, San Juan, PR 00936.) †USGS, WRD, G.P.O. Box 4424, San Juan, PR 00936.

OF 90-0189. Water-use information for the Missouri River basin, by L. A. Waite. 1990. 1 over-size sheet. (NC, Da, M, Wb.) †USGS, WRD, 1400 Independence Rd., Mail Stop 200, Rolla, MO 65401.

MAPS

GEOLOGIC QUADRANGLE MAPS

Multicolor geologic maps on topographic bases in 7 1/2- or 15-minute quadrangle units; scales mainly 1:24,000 or 1:62,500; show bedrock, surficial, or engineering geology. Maps are accompanied by brief texts and some maps by structure and columnar sections also.

GQ-1635. IDAHO. Geologic map of the Fissure Butte Quadrangle, Blaine and Butte counties, Idaho, by M. A. Kuntz, D. E. Champion and R. H. Lefebvre. 1990. Lat 43°15′ to 43°22′30″, long 113°22′30″ to 113°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 45 by 29 inches (in color).

GQ-1647. ARIZONA, NEW MEXICO. Geologic map of the Window Rock Quadrangle, Apache County, Arizona, and McKinley County, New Mexico, by R. E. Thaden. 1990. Lat 35°37′30″ to 35°45′, long 109° to 109°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 43 1/2 inches (in color).

GQ-1649. ARIZONA, NEW MEXICO. Geologic map of the Buell Park Quadrangle, Apache County, Arizona, and McKinley County, New Mexico, by R. E. Thaden. 1990. Lat 35°52′30″ to 36°, long 109° to 109°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 41 inches (in color).

GQ-1652. NEW MEXICO. Geologic map of the Blue Mesa Quadrangle, Cibola County, New Mexico, by S. L. Moore. 1990. Lat 34°45′ to 34°52′30″, long 107°37′30″ to 107°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 31 inches (in color).

GQ-1657. NEW MEXICO. Geologic map of the Cubero Quadrangle, Cibola County, New Mexico, by C. H. Maxwell. 1990. Lat 35° to 35°07′30″, long 107°30′ to 107°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 31 inches (in color). (Supersedes Open-file report 77-241.)

GQ-1664. NEW MEXICO. Geologic map of the Mecate Meadow Quadrangle, Cibola County, New Mexico, by S. L. Moore. 1990. Lat 34°37′30″ to 34°45′, long 107°37′30″ to 107°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 28 by 31 inches (in color).

GQ-1665. IDAHO. Geologic map of the South Putnam Mountain Quadrangle, Bannock and Caribou counties, Idaho, by K. S. Kellogg. 1990. Lat 42°52′30″ to 43°, long 112°07′30″ to 112°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 37 by 33 inches (in color).

GQ-1666. NEW MEXICO. Geologic map of the Broom Mountain Quadrangle, Cibola County, New Mexico, by C. H. Maxwell. 1990. Lat 34°37′30″ to 34°45′, long 107°30′ to 107°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 31 inches (in color).

GQ-1669. IDAHO. Geologic map of the Jeff Cabin Creek Quadrangle, Bannock and Caribou counties, Idaho, by K. S. Kellogg, S. S. Oriel, R. E. Amerman, P. K. Link and F. R. Hladky. 1989. Lat 42°52′30″ to 43°, long 112° to 112°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 33 inches (in color).

GQ-1671. NEW JERSEY. Bedrock geologic map of the Stanhope Quadrangle, Sussex and Morris counties, New Jersey, by R. A. Volkert, D. H. Monteverde and A. A. Drake, Jr. 1989. Lat 40°52′30″ to 41°, long 74°37′30″ to 74°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 56 by 32 inches.

GQ-1672. NEVADA. Geologic map of the Jake Creek Mountain Quadrangle, Elko County, Nevada, by A. R. Wallace. 1990. Lat 41°07′30″ to 41°15′, long 116°52′30″ to 117°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 27 by 36 inches (in color).

GQ-1673. WYOMING. Geologic map of the Seminoe Dam NE Quadrangle, Carbon County, Wyoming, by H. R. Dixon. 1990. Lat 42°07′30″ to 42°15′, long 106°45′ to 106°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 34 inches (in color).

GQ-1675. NEW MEXICO. Geologic map of the Thoreau Quadrangle, McKinley County, New Mexico, by J. F. Robertson. 1990. Lat 35°22′30″ to 35°30′, long 108°15′ to 108°22′30″. Scale 1:24,000 (1 inch = about 2,000 feet). Sheet 42 1/2 by 32 1/2 inches (in color).

GQ-1678. IDAHO. Geologic map of the Yandell Springs 7 1/2-minute Quadrangle, Bannock and Bingham counties, Idaho, by F. R. Hladky and K. S. Kellogg. 1990. Lat 43° to 43°07′30″, long 112°07′30″ to 112°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 33 1/2 inches (in color).

GQ-1683. NEW MEXICO. Geologic map of the Hosta Butte Quadrangle, McKinley County, New Mexico, by J. F. Robertson. 1990. Lat 35°30′ to 35°37′30″, long 108°07′30″ to 108°15′. Scale 1:24,000 (1 inch = 2000 feet). Sheet 44 by 33 1/2 inches (in color).

GQ-1686. NEW MEXICO. Geologic map of the Cuchillo Quadrangle, Sierra County, New Mexico, by C. H. Maxwell and M. R. Oakman. 1990. Lat 33°07′30″ to 33°15′, long 107°15′ to 107°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 30 inches (in color). (Supersedes Open-file report 86-279.)

GQ-1690. UTAH. Geologic map of the Newcastle Quadrangle, Iron County, Utah, by M. A. Siders, P. D. Rowley, M. A. Shubat, G. E. Christenson and G. L. Galyardt. 1990. Lat 37°37′30″ to 37°45′, long 113°30′ to 113°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 by 32 inches (in color). (Supersedes Open-file report 89-449.)

GEOPHYSICAL INVESTIGATIONS MAPS

Maps on topographic or planimetric bases; various scales; show results of surveys using geophysical techniques, such as gravity, magnetic, seismic, or radioactivity, which reflect subsurface structures that are of economic or geologic significance. Many maps are correlated with the geology.

GP-0993. WYOMING, UTAH, COLORADO. Bouguer gravity anomaly map of southwestern Wyoming, northeastern Utah, and northwestern Colorado, by Viki Bankey and E. A. Merewether. 1990. Lat 40°30′ to 42°30′, long 107° to 111°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 40 inches (in color).

MISCELLANEOUS INVESTIGATIONS SERIES MAPS

Maps on planimetric or topographic bases; regular and irregular areas; various scales; a wide variety of format and subject matter. The series also includes 7 1/2-minute quadrangle photogeologic maps on planimetric bases which show geology as interpreted from aerial photographs. Series also includes maps of Mars and the Moon.

I-1257-K. CALIFORNIA. Shaded relief topographic map of San Mateo County, California, by R. K. Mark and D. S. Aitken. 1990. Lat 37°06′ to 37°43′, long 122°04′30″ to 122°33′15″. Scale 1:62,500 (1 inch = about 1 mile). Sheet 49 3/4 by 29 1/2 inches.

I-1419-B. COLORADO. Residual Bouguer gravity and interpretative maps of the Pueblo 1° × 2° Quadrangle, south-central Colorado, by F. M. Boler and D. P. Klein. 1990. Two sheets. Lat 38° to 39°, long 104° to 106°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 by 26 inches; sheet 2, 40 by 35 inches (all in color). (Accompanied by 8-page text.)

I-1419-C. COLORADO. Residual aeromagnetic and interpretative maps of the Pueblo 1° × 2° Quadrangle, south-central Colorado, by F. M. Boler and D. P. Klein. 1990. Two sheets. Lat 38° to 39°,

long 104° to 106°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 40 by 27 inches; sheet 2, 54 by 40 inches (all in color). (Accompanied by 10-page text.)

I-1419-D. COLORADO. Trace-element geochemical maps of the western three-quarters of the Pueblo 1° × 2° Quadrangle, south-central Colorado, by D. R. Zimbelman and R. B. Taylor. 1990. Three sheets. Lat 38° to 39°, long 104° to 106°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 58 1/4 by 42 inches (all in color).

I-1422. PENNSYLVANIA. Geologic map of Cherry and Godfrey ridges in the Saylorsburg, Stroudsburg, and East Stroudsburg quadrangles, Monroe County, Pennsylvania, by J. B. Epstein. 1989. Two sheets. Lat 40°52′15″ to 41°, long 75°07′30″ to 75°18′15″. Scale 1:8,000 (1 inch = about 667 feet). Sheet 1, 56 by 40 3/4 inches; sheet 2, 42 1/4 by 57 inches (all in color).

I-1508-D. MONTANA. Surficial geologic map of Glacier National Park, Montana, by P. E. Carrara. 1990. Lat 48°15′ to 49°, long 113°15′ to 114°30′. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 50 1/2 by 38 inches (in color).

I-1508-E. MONTANA. Geologic sketches from Many Glacier, Hidden Lake Pass, Comeau Pass, and Bears Hump Viewpoint, Waterton-Glacier International Peace Park, Alberta, Canada, and Montana, United States, by T. R. Alpha and W. H. Nelson. 1990. Two sheets. Lat about 48°30′ to 49°10′, long about 113°30′ to 114°30′. Sheet 1, 37 by 31 1/2 inches; sheet 2, 36 3/4 by 33 1/2 inches.

I-1706. CALIFORNIA. Geologic map and structure sections of the Little Indian Valley-Wilbur Springs geothermal area, northern Coast Ranges, California, by R. J. McLaughlin, H. N. Ohlin, D. J. Thormahlen, D. L. Jones, J. W. Miller and C. D. Blome. 1990. Two sheets. Lat 39° to 39°15′, long 122°22′30″ to 122°37′30″. Each sheet, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 38 1/4 by 51 1/4 inches; sheet 2, 39 by 47 3/4 inches (all in color). (Supersedes Open-file report 85-285.)

I-1725. NEW YORK. Geologic map of the Beaver Creek area in the Grenville Lowlands, St. Lawrence County, New York, by C. E. Brown. 1989. Lat about 44°22′ to 44°32′, long about 75°22′ to 75°29′. Scale 1:18,000 (1 inch = about 1,584 feet). Sheet 42 by 58 inches (in color). (Accompanied by 7-page text.)

I-1803-B. IDAHO, MONTANA. Map showing analysis of linear features for mineral assessment in the Dillon 1° × 2° Quadrangle, Idaho and Montana, by T. L. Purdy and L. C. Rowan. 1990. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 30 inches (in color). (Accompanied by 37-page text.)

I-1803-D. IDAHO, MONTANA. Map showing mineral resource assessment for silver, cobalt, and base metals in Proterozoic sedimentary rocks and for iron, chromium, nickel, talc, chlorite, gold, and graphite in Archean crystalline rocks, Dillon 1° × 2° Quadrangle, Idaho and Montana, by R. C. Pearson, W. F. Hanna, H. L. James, J. S. Loen, S. H. Moll, E. T. Ruppel and C. M. Trautwein. 1990. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 46 by 38 inches (in color).

I-1815. MONTANA. Geologic map of the Sphinx Mountain Quadrangle and adjacent parts of the Cameron, Cliff Lake, and Hebgen Dam quadrangles, Montana, by R. G. Tysdal. 1990. Lat 44°50′ to 45°15′, long 111°15′ to 111°35′. Scale 1:62,500 (1 inch = 1 mile). Sheet 36 by 48 inches (in color).

I-1821. ARIZONA. Experimental digital shaded-relief maps of Arizona, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 32° to 37°, long 109° to 115°. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 37 1/2 by 24 1/2 inches (in color); sheet 2, 24 3/4 by 31 inches.

I-1846. WYOMING. Experimental digital shaded-relief maps of Wyoming, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 41° to 45°, long 104° to 111°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 26 by 30 1/2 inches (in color); sheet 2, 26 by 26 1/2 inches.

I-1847. UTAH. Experimental digital shaded-relief maps of Utah, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 37° to 42 °, long 109° to 114°. Each sheet, 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 20 1/2 by 34 1/2 inches (in color); sheet 2, 20 1/4 by 30 1/4 inches.

I-1848. CALIFORNIA. Experimental digital shaded-relief maps of California, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 33° to 42°, long 115° to 124°. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 40 by 47 inches (in color); sheet 2, 40 by 47 inches.

I-1849. NEVADA. Experimental digital shaded-relief maps of Nevada, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 35° to 42°, long 114° to 120°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 23 1/2 by 35 inches (in color); sheet 2, 23 1/2 by 34 1/2 inches.

I-1850. Experimental digital shaded-relief maps of Southwestern United States, by Kathleen Edwards and R. M. Batson. 1990. Two sheets. Lat 32° to 42°, long 109° to 123°. Each sheet, scale 1:2,000,000 (1 inch = about 32 miles). Sheet 1, 34 by 27 3/4 inches (in color); sheet 2, 34 by 27 3/4 inches.

I-1853-A. Precambrian basement map of the northern Midcontinent, U.S.A., by P. K. Sims. 1990. Lat 36° to 46°, long 88° to 100°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 45 by 56 1/2 inches (in color). (Accompanied by 10-page text.) (Supersedes Open-file report 85-604.)

I-1874. CALIFORNIA. Geologic map of Yosemite National Park and vicinity, California, by N. K. Huber, P. C. Bateman and Clyde Wahrhaftig. 1989. Lat 37°28′ to 38°13′, long 119°10′ to 119°55′. Scale 1:125,000 (1 inch = about 2 miles). Sheet 33 by 43 inches (in color).

I-1887 (Jc-6). Controlled photomosaic of the Valhalla Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -22° to 22°, long 0° to 72°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 26 by 27 inches.

I-1888 (Jc-3). Controlled photomosaic of the Asgard Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat 21° to 66°, long 90° to 180°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-1897-F. ARIZONA. Hydraulic map of Granite Rapids, Grand Canyon, Arizona, by S. W. Kieffer. Prepared in cooperation with the U.S. Bureau of Reclamation and the National Park Service. 1988. Lat 35°45′ to 36°45′, long 111°45′ to 113°30′. Scale 1:1,000 (1 inch = about 83 feet). Sheet 53 3/4 by 41 1/2 inches (in color).

I-1898-A. MAINE, NEW HAMPSHIRE, VERMONT. Maps showing the distribution of chromium, molybdenum, and uranium in stream sediments, Sherbrooke and Lewiston 1° × 2° quadrangles, Maine, New Hampshire, and Vermont, by G. A. Nowlan, F. H. Howd, F. C. Canney and J. A. Domenico. 1990. Two sheets. Lat 44° to 46°, long 70° to 72°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 3/4 by 52 1/2 inches; sheet 2, 41 3/4 by 54 inches (all in color).

I-1898-B. MAINE, NEW HAMPSHIRE, VERMONT. Maps showing the distribution of copper, lead, and zinc in stream sediments, Sherbrooke and Lewiston 1° × 2° quadrangles, Maine, New Hampshire, and Vermont, by G. A. Nowlan, F. H. Howd, F. C. Canney and J. A. Domenico. 1990. Two sheets. Lat 44° to 46°, long 70° to 72°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 3/4 by 52 1/4 inches; sheet 2, 41 3/4 by 54 inches (all in color).

I-1898-C. MAINE, NEW HAMPSHIRE, VERMONT. Maps showing the distribution of tin, tungsten, arsenic, gold, and silver in nonmagnetic heavy-mineral concentrates derived from stream sediments, Sherbrooke and Lewiston 1° × 2° quadrangles, Maine, New Hampshire, and Vermont, by G. A. Nowlan, F. H. Howd, F. C. Canney and J. A. Domenico. 1990. Two sheets. Lat 44° to 46°, long 70° to 72°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 3/4 by 52 1/2 inches; sheet 2, 41 3/4 by 54 inches (all in color).

I-1901. UTAH. Geologic map of the Richfield 1° × 2° Quadrangle, west-central Utah, by T. A. Steven, H. T. Morris and P. D. Rowley. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 1/2 by 55 1/2 inches (in color). (Supersedes Open-file report 83-583.)

I-1923-A. WYOMING. Bedrock geologic map and coal sections in the Buffalo 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming, by E. N. Hinrichs, B. H. Kent and F. W. Pierce. 1990. Lat 44° to 44°30′, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 42 by 41 inches (in color).

I-1925. WISCONSIN. Geologic map of Precambrian rocks of Eau Claire and Green Bay 1° × 2° quadrangles, central Wisconsin, by P. K. Sims. 1990. Lat 44° to 45°, long 88°15′ to 91°30′. Scale 1:250,000 (1 inch = about 40 miles). Sheet 55 1/4 by 34 inches (in color).

I-1926. WISCONSIN. Geologic map of Precambrian rock of Neillsville-Stevens Point area, central Wisconsin, by P. K. Sims. 1990. Lat 44°15′ to 44°45′, long 89°30′ to 91°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 55 1/2 by 38 1/2 inches (in color). (Supersedes Open-file report 78-318.)

I-1927. MINNESOTA. Bedrock geologic map of the Rainy Lake area, northeastern Minnesota, by W. C. Day. 1990. Lat 48°30′ to 48°37′30″, long 93°02′30″ to 93°30′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 30 by 39 inches (in color). (Supersedes Open-file report 85-246.)

I-1936. COLORADO. Geologic map of the lower Piceance Creek area, northwestern Colorado, by W. J. Hail, Jr. and G. N. Pipiringos. 1990. Lat 40° to 40°15′, long 108° to 108°30′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 27 3/4 by 55 1/4 inches (in color).

I-1938. NEVADA, UTAH. Geologic map of the Leppy Peak Quadrangle and adjacent area, Elko County, Nevada, and Tooele County, Utah, by J. D. Schneyer. 1990. Lat 40°43′ to 40°52′30″, long 114° to 114°07′30″. Scale 1:24,000 (1 inch = about 2,000 feet). Sheet 29 by 46 1/4 inches (in color).

I-1947-A. IDAHO. Geologic map and profiles of the north wall of the Snake River canyon, Bliss, Hagerman, and Tuttle quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1989. Lat 42°45′ to 42°52′30″, long 114°50′ to 115°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 48 by 40 inches (in color).

I-1947-B. IDAHO. Geologic map and profiles of the north wall of the Snake River canyon, Pasadena Valley and Ticeska quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1990. Lat 42°55′ to 43°, long 115° to 115°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 34 inches (in color).

I-1948-A. NORTH CAROLINA, SOUTH CAROLINA. Geologic map of the Cape Fear region, Florence 1° × 2° Quadrangle and northern half of the Georgetown 1° × 2° Quadrangle, North Carolina and South Carolina, by J. P. Owens. 1989. Two sheets. Lat 33°30′ to 35°, long 77°53′ to 80°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 54 by 34 1/2 inches; sheet 2, 50 by 34 inches (all in color).

I-1948-B. SOUTH CAROLINA. Aeroradiometric map and geologic interpretation of part of the Florence and Georgetown 1° × 2° quadrangles, South Carolina, by J. P. Owens, A. E. Grosz and J. C. Fisher. 1989. Lat 33°30′ to 34°45′, long 78°45′ to 80°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 50 3/4 by 38 1/2 inches (in color).

I-1950. WASHINGTON. Geologic maps of pyroclastic-flow and related deposits of the 1980 eruptions of Mount St. Helens, Washington, by M. A. Kuntz, P. W. Rowley and N. S. MacLeod. 1990. Two sheets. Lat 46°11′05″ to 46°16′50″, long 122°07′30″ to 122°14′30″. Each sheet, scale 1:12,000 (1 inch = 1,000 feet). Sheet 1, 40 by 54 1/2 inches; sheet 2, 37 1/2 by 48 1/4 inches (all in color).

I-1951. ARIZONA, NEW MEXICO. Geologic map of the San Simon Quadrangle and parts of the Summit Hills and Mondel quadrangles, Cochise, Graham, and Greenlee counties, Arizona, and Hidalgo County, New Mexico, by D. H. Richter, V. A. Lawrence, Harald Drewes, T. H. Young, M. S. Enders, P. E. Damon and C. H. Thorman. 1990. Lat 32°15′ to 32°30′, long 108°57′30″ to 109°15′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 30 1/4 by 54 inches (in color).

I-1958. COLORADO, NEW MEXICO. Geologic and structure contour map of the Southern Ute Indian Reservation and adjacent areas, Southwest Colorado and Northwest New Mexico, by S. M. Condon. 1990. Lat 36°51′ to 37°17′30″, long 107° to 108°18′30″. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 34 by 49 inches (in color).

I-1959-B. WYOMING. Cross sections showing coal stratigraphy of the southeastern Powder River basin, Wyoming, by F. W. Pierce, E. A. Johnson, C. L. Molnia and W. R. Sigleo. 1990. Two sheets. Sheet 1, two maps; lat 43°30′ to 44°, long 105° to 106°; lat 42°40′ to 46°, long 104° to 107°30′. Sheet 1, scales 1:100,000 (1 inch = about 1.6 miles) and 1:500,000 (1 inch = about 8 miles). Sheet 1, 58 by 33 1/2 inches; sheet 2, 37 by 58 inches (all in color).

I-1965-B. MINNESOTA. Bedrock geologic map of the International Falls 1° × 2° Quadrangle, Minnesota, United States, and Ontario, Canada, by W. C. Day, D. L. Southwick, K. J. Schulz

and T. L. Klein. 1990. Lat 48° to 49°, long 92° to 94°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 24 by 41 inches (in color).

I-1971. COLORADO. Metallogenic map of stratabound exhalative and related occurrences in Colorado, by D. M. Sheridan, W. H. Raymond, R. B. Taylor, J. W. Hasler; edited by R. L. Earhart. 1990. Lat 37° to 41°, long 104° to 109°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 42 1/2 by 58 inches (in color).

I-1972. NEVADA. Geologic map of the surficial deposits of the Skull Mountain Quadrangle, Nye County, Nevada, by W C Swadley and H. E. Huckins. 1990. Lat 36°45′ to 36°52′30″, long 116°07′30″ to 116°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 30 by 28 inches (in color).

I-1973. COLORADO. Geologic map of Rocky Mountain National Park and vicinity, Colorado, by W. A. Braddock and J. C. Cole. 1990. Two sheets. Sheet 1, lat 40°07′30″ to 40°34′, long 105°27′30″ to 105°57′30″. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 56 by 42 inches; sheet 2, 30 by 23 inches (all in color).

I-1981. UTAH. Geologic map of the Price 30′ × 60′ Quadrangle, Carbon, Duchesne, Uintah, Utah, and Wasatch counties, Utah, by M. P. Weiss, Northern Illinois University; I. J. Witkind, and W. B. Cashion, U.S. Geological Survey. 1990. Lat 39°30′ to 40°, long 110° to 111°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 58 by 41 inches (in color).

I-1986-A. Map showing distribution of surficial sediment, Gulf of Maine and Georges Bank, by L. J. Poppe, J. S. Schlee, Bradford Butman and C. M. Lane. 1989. Lat 38° to 45°, long 64° to 72°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 40 by 38 inches (in color).

I-1987-B. Map showing weight percent of the total organic carbon in the surficial sediments of the mid-Atlantic continental margin, Cape Cod to Albemarle Sound, by L. J. Poppe, J. S. Schlee and C. M. Lane. 1990. Lat 36° to 42°, long 69° to 78°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 44 by 33 inches (in color).

I-1987-C. Map showing weight percent of total nitrogen in the surficial sediments of the Mid-Atlantic continental margin, Cape Cod to Albemarle Sound, by L. J. Poppe and C. M. Lane-Bostwick. 1990. Lat 36° to 42°, long 69° to 78°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 44 by 34 inches (in color).

I-1999. UTAH. Geological map of the Nevershine Hollow area, eastern Black Mountains, southern Tushar Mountains, and northern Markagunt Plateau, Beaver and Iron counties, Utah, by J. J. Anderson, P. D. Rowley, M. N. Machette, S. H. Decatur and H. H. Mehnert. 1990. Lat 38° to 38°15′, long 112°30′ to 112°45′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 41 by 33 inches (in color).

I-2000. UTAH. Geologic map of the Circleville Canyon area, southern Tushar Mountains and northern Markagunt Plateau, Beaver, Garfield, Iron, and Piute counties, Utah, by J. J. Anderson, P. D. Rowley, J. T. Blackman, H. H. Mehnert and T. C. Grant. 1990. Lat 38° to 38°15′, long 112°15′ to 112°30′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 42 by 33 inches (in color).

I-2009. NEW MEXICO. Geologic and structure contour maps of the Gallup 30′ × 60′ Quadrangle, McKinley County, New Mexico, by J. K. Dillinger. 1990. Two sheets. Lat 35°30′ to 36°, long 108° to 109°. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 55 by 30 inches; sheet 2, 38 by 29 inches (all in color).

I-2012. WYOMING. Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Piney Canyon SE Quadrangle, Weston County, southeastern Powder River basin, Wyoming, by E. A. Johnson, F. W. Pierce and W. R. Sigleo. 1990. Lat 43°32′30″, long 105°02′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 48 by 38 inches.

I-2014. Reconnaissance geologic map of the Morococala volcanic field, Bolivia, by R. G. Luedke, R. P. Koeppen, Mario Flores A. and Alfredo Espinosa O. 1990. Lat 18°30′S to 17°50′S, long 66°30′ to 67°. Scales 1:100,000 (1 inch = about 1.6 miles). Sheet 31 1/2 by 43 inches (in color).

I-2015. Geologic map of the Bach region of Mercury, by R. G. Strom, M. C. Malin and M. A. Leake. 1990. Scale 1:4,290,000 (1 inch = about 68 miles). Sheet 30 1/2 by 36 1/2 inches (in color).

I-2016. MONTANA, WYOMING. Geologic map of the Three Bar Ranch Quadrangle, Montana and Wyoming, by M. W. McLellan and L. R. Biewick. 1990. Lat 45° to 45°07′30″, long 105°37′30″ to 105°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 25 by 29 inches (in color).

I-2019. MONTANA. Geologic map and distribution of heavy minerals in Tertiary rocks of the Birney 30′ × 60′ Quadrangle, Big Horn, Rosebud, and Powder River counties, Montana, by N. M. Denson, D. L. Macke, R. R. Schumann and M. E. Durrett. 1990. Lat 45° to 45°30′, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 52 1/2 by 32 1/2 inches (in color).

I-2020. WYOMING, MONTANA. Geologic map and distribution of heavy minerals in Tertiary rocks of the Sheridan 30′ × 60′ Quadrangle, Wyoming and Montana, by N. M. Denson, D. L. Macke and R. R. Schumann. 1990. Lat 44°30′ to 45°, long 106° t0 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 33 inches (in color).

I-2021. WYOMING. Geologic map and distribution of heavy minerals in Tertiary and uppermost Cretaceous rocks of the Recluse 30′ × 60′ Quadrangle, Campbell and Crook counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1990. Lat 44°30′ to 45°, long 105° to 106°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 34 by 54 inches (in color).

I-2022. WYOMING. Geologic map and distribution of heavy minerals in Tertiary and uppermost Cretaceous rocks of the Buffalo 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1990. Lat 44° to 44°30′, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 33 inches (in color).

I-2024. WYOMING. Geologic map and distribution of heavy minerals in Tertiary and uppermost Cretaceous rocks of the Kaycee 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming, by N. M. Denson, D. L. Macke and R. R. Schumann. 1990. Lat 43°30′ to 44°, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 33 inches (in color).

I-2027. WYOMING. Geologic map and distribution of heavy minerals in Tertiary and uppermost Cretaceous rocks of the Douglas 30′ × 60′ Quadrangle, Converse and Platte counties, Wyoming, by N. M. Denson, D. L. Macke and Christine Wheeler. 1990. Lat 42°30′ to 43°, long 105° to 106°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 55 by 33 inches (in color).

I-2033. VIRGINIA. Geologic map and generalized cross sections of the coastal plain and adjacent parts of the Piedmont, Virginia. Sheet 1 by R. B. Mixon, U.S. Geological Survey; C. R. Berquist, Jr., Virginia Division of Mineral Resources; W. L. Newell, U.S. Geological Survey; and G. H. Johnson, College of William and Mary. Sheet 2 by R. B. Mixon, D. S. Powars, J. S. Schindler, U.S. Geological Survey; and E. K. Rader, Virginia Division of Mineral Resources. Prepared in cooperation with the Commonwealth of Virginia Department of Mines, Minerals, and Energy, Division of Mineral Resources. 1989. Two sheets. Sheet 1, lat about 36°45′ to 39°, long about 76°15′ to 78°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 41 by 50 inches, sheet 2, 29 by 49 inches (all in color). (Transverse Mercator projection.) (Computer technology by J. S. Schindler.) (Reprint.)

I-2035. Controlled photomosaic of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat 57°S to 57°N, long 180°E to 180°W. Scale 1:15,000,000 (1 inch = 240 miles). Sheet 42 by 39 inches.

I-2036. Controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -37.5° to -32.5°, long 265° to 270°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 23 1/2 by 38 inches.

I-2037. Controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -37.5° to -32.5°, long 260° to 265°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 23 1/2 by 38 inches.

I-2038. Atlas of Mars, controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -27.5° to -32.5°, long 270° to 275°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 24 1/2 by 38 inches. (MTM-30272.)

I-2039. Atlas of Mars, controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -27.5° to -32.5°, long 265° to 270°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 24 1/2 by 38 inches. (MTM-30267.)

I-2040. Atlas of Mars, controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -27.5° to -32.5°, long 260° to 265°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 24 1/2 by 38 inches. (MTM-30262.)

I-2042. Atlas of Mars, controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -32.5° to -37.5°, long 270° to 275°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 24 by 38 inches. (MTM-35272.)

I-2043. Atlas of Mars, controlled photomosaic of part of the Hadriaca region. 1990. Lat -37.5° to -42.5°, long 265° to 270°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 22 1/2 by 38 inches. (MTM-40267.)

I-2044. Atlas of Mars, controlled photomosaic of part of the Hadriaca region. 1990. Lat -37.5° to -42.5°, long 270° to 275°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 22 1/2 by 38 inches. (MTM-40272.)

I-2045. Atlas of Mars, controlled photomosaic of part of the Hadriaca region of Mars. 1990. Lat -37.5° to -42.5°, long 260° to 265°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 22 1/2 by 38 inches. (MTM-40262.)

I-2046. NEVADA. Geologic map of the Nevada Test Site, southern Nevada, by V. A. Frizzell, Jr. and Jacqueline Shulters. 1990. Lat 36°37′30″ to 37°22′30″, long 115°52′30″ to 116°37′30″. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 43 1/2 by 57 3/4 inches (in color).

I-2047. NEVADA. Geologic map of the surficial deposits of the Yucca Flat area, Nye County, Nevada, by W C Swadley and D. L. Hoover. 1990. Lat 36°52′30″ to 37°15′, long 115°52′30″ to 116°15′. Sheet 1:48,000 (1 inch = 4,000 feet). Sheet 34 by 40 inches (in color).

I-2048. Geologic map of the Beethoven Quadrangle of Mercury, by J. S. King and D. H. Scott. 1990. Lat -25° to 25°, long 72° to 144°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 37 1/2 inches (in color).

I-2049. NEVADA. Geologic map of the northeast quarter of the Bullfrog 15-minute Quadrangle, Nye County, Nevada, by Florian Maldonado and B. P. Hausback. 1990. Lat 36°52′30″ to 37°, long 116°45′ to 116°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 40 by 34 inches (in color).

I-2050-A. MONTANA. Map showing locations of exposures of limonitic rocks and hydrothermally altered rocks in the Butte 1° × 2° Quadrangle, Montana, by L. C. Rowan and D. B. Segal. 1989. Lat 46° to 47°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 38 by 30 1/2 inches (in color).

I-2052. IDAHO. Geologic map of the Stricker 4 Quadrangle, Cassia County, Idaho, by J. W. Mytton, P. L. Williams and W. A. Morgan. 1990. Lat 42° to 42°15′, long 114° to 114°15′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 28 by 29 inches (in color).

I-2056. WISCONSIN, MICHIGAN. Geologic map of Precambrian rocks of Iron Mountain and Escanaba 1° × 2° quadrangles, northeastern Wisconsin and northwestern Michigan, by P. K. Sims. 1990. Lat 45° to 46°, long 87°30′ to 90°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 42 inches (in color).

I-2057. Geologic map of the Bayan Obo area, Inner Mongolia, China, by L. J. Drew, U.S. Geological Survey; and Meng Qingrun, Tiangin Geological Research Academy. 1990. Lat 41°45′, long 110°E. Scale 1:50,000 (1 inch = 4,200 feet). Sheet 43 by 29 inches (in color).

I-2059. Geomorphic-geologic map of part of the northern hemisphere of Venus, by A. L. Sukhanov, A. A. Pronin, G. A. Burba, A. M. Nikishin, V. P. Kryuchkov, A. T. Basilevsky, M. S. Markov, R. O. Kuzmin, N. N. Bobina, V. P. Shashkina, E. N. Slyuta and I. M. Chernaya. Prepared for the National Aeronautics and Space Administration from data provided by the USSR Academy of Sciences and Moscow Lomonosov University. 1989. Scale 1:15,000,000 (1 mm = 15 km at 40° latitude), 1:18,261,561 at 90° latitude. Sheet 49 by 42 inches (in color). (Polar Stereographic projection.)

I-2060. Atlas of Mars, controlled photomosaic of part of the Claritas region. 1990. Lat -22.5° to -27.5°, long 105° to 110°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 25 1/2 by 38 inches. (MTM-25107.)

I-2061. Atlas of Mars, controlled photomosaic of part of the Claritas region. 1990. Lat -27.5° to -32.5°, long 100° to 105°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 38 by 24 1/2 inches. (MTM-30102.)

I-2062 (Jc-14). Controlled photomosaic of the Lempo Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -66° to -21°, long 270° to 360°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-2063. Atlas of Mars, controlled photomosaic of part of the Tyrrhena Patera region. 1990. Lat -22.5° to -27.5°, long 250° to 255°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 25 1/2 by 38 inches. (MTM-25252.)

I-2064. Atlas of Mars, controlled photomosaic of parts of the Tyrrhena Patera region of Mars. 1990. Lat -22.5° to -27.5°, long 245° to 250°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 24 by 37 1/2 inches. (MTM-25247.)

I-2065. Atlas of Mars, controlled photomosaic of part of the Tyrrhena Patera region of Mars. 1990. Lat -17.5° to -22.5°, long 245° to 250°. Scale 1:502,000 (1 inch = about 8 miles). Sheet 25 by 38 inches. (MTM-20247.)

I-2066 (Jc-13). Controlled photomosaic of the Hoenir Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -66° to -21°, long 180° to 270°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-2067 (Jc-5). Controlled photomosaic of the Askr Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat 21° to 66°, long 270° to 360°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-2068 (Jc-4). Controlled photomosaic of the Gloi Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat 21° to 66°, long 180° to 270°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-2069 (Jc-2). Controlled photomosaic of the Vestri Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat 21° to 66°, long 0° to 90°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 by 28 inches.

I-2070 (Jc-1). Controlled photomosaic of the Gipul Catena region of Callisto. Prepared for the National Aeronautics and Space Adminstration. 1990. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 20 1/2 by 29 1/2 inches.

I-2071 (Jc-12). Controlled photomosaic of the Ilma Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -66° to -21°, long 90° to 180°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 1/2 by 28 inches.

I-2072 (Jc-11). Controlled photomosaic of the Adlinda Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -66° to -21°, long 0° to 90°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 30 1/2 by 28 inches.

I-2074 (Jc-9). Controlled photomosaic of the Valfodr Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -22° to 22°, long 216° to 288°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 26 by 27 inches.

I-2075 (Jc-8). Controlled photomosaic of the Vidarr Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -22° to 22°, long 144° to 216°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 26 by 56 inches.

I-2076 (Jc-7). Controlled photomosaic of the Njord Quadrangle of Callisto. Prepared for the National Aeronautics and Space Administration. 1990. Lat -22° to 22°, long 72° to 144°. Scale 1:5,000,000 (1 inch = about 80 miles). Sheet 26 by 27 inches.

I-2078. IDAHO. Geologic map of the Stricker 1 Quadrangle, Cassia, Twin Falls, and Jerome counties, Idaho, by P. L. Williams, J. W. Mytton and H. R. Covington. 1990. Lat 42°15′ to 42°30′, long 114° to 114°15′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 29 by 28 inches (in color).

I-2081. NEVADA. Geologic map of the northern Adobe Range, Elko County, Nevada, by K. B. Ketner and R. J. Ross, Jr. 1990. Lat 41°07′30″ to 41°15′, long 115°32′30″ to 115°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 33 inches (in color). (Supersedes Open-file report 83-290.)

I-2082. NEVADA. Geologic map of the Elko Hills, Elko County, Nevada, by K. B. Ketner. 1990. Lat 40°50′ to 40°55′, long 115°35′ to 115°42′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 36 inches (in color). (Supersedes Open-file report 85-713.)

I-2093. MICHIGAN, WISCONSIN. Geologic map of Precambrian rocks, Marenisco, Thayer, and Watersmeet 15-minute quadrangles, Gogebic and Ontonagon counties, Michigan, and Vilas County, Wisconsin, compiled by P. K. Sims. 1990. Lat 46°15′ to 46°25′, long 89° to 89°45′. Scale 1:62,500 (1 inch = about 1 mile). Sheet 39 by 33 inches (in color).

I-2096. IDAHO. Geologic profiles of the canyon walls of the Snake River, from Sinker Creek to Guffey Butte, Idaho, by H. E. Malde. 1990. Lat 43°10′ to 43°17′30″, long 116°22′30″ to 116°32′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 26 by 44 inches (in color).

I-2097. NEVADA. Geologic map of the Summer Camp Quadrangle and part of the Black Butte Quadrangle, Elko County, Nevada, by J. F. Smith, Jr., K. B. Ketner, G. X. Hernandez, A. G. Harris, R. G. Stamm and M. C. Smith. 1990. Lat 41°15′ to 41°22′30″, long 114°52′30″ to 115°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 32 inches (in color).

I-2145. WYOMING, COLORADO. Composite measured section showing nonopaque heavy minerals in sedimentary rocks of middle Proterozoic to late Tertiary age in the central Rocky Mountains, Southwest Wyoming and Northwest Colorado, by H. W. Roehler, W. A. Chisholm and G. B. Schneider. 1990. Lat 41° to 41°30′, long 108°30′ to 109°. Sheet 56 by 41 inches.

MISCELLANEOUS INVESTIGATIONS SERIES MAPS—QUATERNARY GEOLOGICAL ATLAS OF THE UNITED STATES

I-1420 NH15. Quaternary geologic map of the White Lake 4° × 6° Quadrangle, United States. State compilations by D. E. Pope, W. A. Gilliland, and E. G. Wermund. Edited and integrated by G. M. Richmond, D. L. Weide, and D. W. Moore. 1990. Lat 28° to 32°, long 90° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 30 1/2 by 45 inches (in color).

I-1420 NI15. Quaternary geologic map of the Vicksburg 4° × 6° Quadrangle, United States. State compilations by D. F. Holbrook, W. A. Gilliland, K. V. Luza, D. E. Pope, E. G. Wermund, R. A. Miller, W. V. Bush, K. N. Jensen, and W. D. Fishman. Edited and integrated by G. M. Richmond, D. S. Fullerton, and D. L. Weide. 1990. Lat 32° to 36°, long 90° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 30 1/2 by 47 inches (in color).

CIRCUM-PACIFIC MAP SERIES

Multicolor equal-area maps at scales of 1:10,000,000 for the Northwest, Northeast, Southwest, Southeast quadrants of the Pacific and the Arctic and Antarctic regions, and of 1:17,000,000 for the whole Pacific Basin. The series consists of base, geographic, geodynamic, plate-tectonic, geologic, tectonic, mineral-resources, and energy-resources maps, as well as other miscellaneous maps.

CP-0035. Natural hazards map of the Circum-Pacific region; Pacific Basin sheet, by Millington Lockwood, J. D. Elms, P. A. Lockridge, G. W. Moore, S. P. Nishenko, Tom Simkin and C. G. Newhall. 1990. Lat 80°N to 80°S, long 90°E to 50°W. Scale 1:17,000,000 (1 inch = 268 miles). Sheet 41 by 54 inches (in color). (Accompanied by 31-page text.) (Lambert azimuthal equal-area projection.)

COAL INVESTIGATIONS MAPS

Geologic maps on topographic or planimetric bases; various scales; show bedrock geology, stratigraphy, and structural relations in certain coal-resource areas.

C-0118-A. NEW MEXICO. Geologic map of the Grants 30′ × 60′ Quadrangle, west-central New Mexico, by J. K. Dillinger. 1990. Lat 35° to 35°30′, long 107° to 108°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 40 by 44 inches (in color).

C-0122-B. MONTANA. Stratigraphy of the Fort Union Formation in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan counties, Montana, by J. K. Hardie and H. H. Arndt. 1989. Lat 48° to 48°40′, long 104°30′ to 105°15′. Sheet 35 by 35 3/4 inches.

C-0122-C. MONTANA. Stratigraphic framework of coal beds in the Fort Union Formation, eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan counties, Montana, by J. K. Hardie and H. H. Arndt. 1990. Lat 48° to 48°40′, long 104°30′ to 105°15′. Sheet 45 by 31 inches.

C-0125. WYOMING. Stratigraphic sections showing coal correlations within the lower coal zone of the Paleocene Fort Union Formation, Riner Quadrangle, Carbon and Sweetwater counties, Wyoming, by J. G. Honey. 1990. Lat 41°37′30″ to 41°45′, long 107°30′ to 107°37′30″. Sheet 29 1/2 by 41 1/2 inches.

C-0128-A. UTAH. Stratigraphic framework, coal zone correlations, and depositional environment of the Upper Cretaceous Blackhawk Formation and Star Point Sandstone in the Candland Mountain and Wattis areas, Nephi 30′ × 60′ Quadrangle, Wasatch Plateau coal field, Carbon and Emery counties, Utah, by J. D. Sanchez and E. G. Ellis. 1990. Lat 39°30′ to 39°37′30″, long 111° to 111°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 54 inches.

C-0128-B. UTAH. Stratigraphic framework, coal zone correlations, and depositional environment of the Upper Cretaceous Blackhawk Formation and Star Point Sandstone in the Scofield and Beaver Creek areas, Nephi 30′ × 60′ Quadrangle, Wasatch Plateau coal field, Carbon County, Utah, by J. D. Sanchez. 1990. Two sheets. Sheet 1, lat 39°37′30″ to 39°45′, long 111° to 111°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 43 1/2 by 34 1/2 inches (in color); sheet 2, 58 by 41 inches.

C-0129. UTAH. Geologic map and coal stratigraphy of the Needle Eye Point Quadrangle, Kane County, Utah, by H. D. Zeller. 1990. Lat 37°15′ to 37°22′30″, long 111°22′30″ to 111°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 28 inches (in color).

C-0130. UTAH. Geologic map and coal stratigraphy of the east of the Navajo Quadrangle, Kane County, Utah, by H. D. Zeller. 1990. Lat 37°15′ to 37°22′30″, long 111°15′ to 111°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 55 by 31 inches (in color).

C-0131. UTAH. Geologic map and coal stratigraphy of the Ship Mountain Point Quadrangle and the north part of the Tibbet Bench Quadrangle, Kane County, Utah, by H. D. Zeller and G. E. Vaninetti. 1990. Lat 37°13′22″ to 37°22′30″, long 111°30′ to 111°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 55 inches (in color).

C-0132. UTAH. Geologic map and coal stratigraphy of the Petes Cove Quadrangle, Kane County, Utah, by H. D. Zeller. 1990. Lat 37°22′30″ to 37°30′, long 111°30′ to 111°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 32 inches (in color).

C-0136-A. MONTANA, WYOMING. Isopach maps, perspective projections, and correlation diagrams of the Paleocene Flowers-Goodale coal resource unit in the northern Powder River basin, Birney and Broadus 30′ × 60′ quadrangles, Montana-Wyoming, by L. R. Biewick and M. W. McLellan. 1990. Two sheets. Sheet 1, lat 45° to 45°30′, long 105°22′30″ to 107°. Sheet 1, scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 54 by 41 1/2 inches; sheet 2, 26 3/4 by 41 inches.

OIL AND GAS INVESTIGATIONS CHARTS

Charts show stratigraphic information for certain oil and gas fields and other areas having hydrocarbon potential.

OC-0132. COLORADO. Thickness, oil-yield, and kriged resource estimates for the Eocene Green River Formation, Piceance Creek basin, Colorado, by J. K. Pitman, F. W. Pierce and W. D. Grundy. 1989. Six sheets. Lat 39°22′ to 40°13′, long 107°55′ to 108°45′. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 42 by 39 1/2 inches. (Accompanied by 4-page text.)

OIL AND GAS INVESTIGATIONS MAPS

OM-0222. ALASKA. Map showing the depth to the base of the deepest ice-bearing permafrost as determined from well logs, North Slope, Alaska, by T. S. Collett, K. J. Bird, K. A. Kvenvolden and L. B. Magoon. 1989. Lat 68° to 71°, long 146° to 162°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 54 by 37 inches.

MISCELLANEOUS FIELD STUDIES MAPS

Multicolor or black and white maps on topographic or planimetric bases; quadrangle or irregular areas; various scales. Pre-1971 maps show bedrock geology in relation to specific mining or mineral-deposit problems; post-1971 maps are preliminary black and white maps on various subjects such as environmental studies or Wilderness mineral investigations.

MF-0709. CALIFORNIA. Maps showing maximum earthquake intensity predicted in the southern San Francisco Bay region, California, for large earthquakes on the San Andreas and Hayward faults, by R. D. Borcherdt, J. F. Gibbs and K. R. Lajoie. 1975 (1990). Three sheets. Sheet 1, lat 37°30′ to 37°52′30″, long 122° to 122°30′; sheet 2, lat 37°15′ to 37°52′30″, long 121°45′ to 122°37′30″; sheet 3, lat 37°15′ to 37°52′30″, long 121°45′ to

122°30′. Each sheet, scale 1:125,000 (1 inch = about 2 miles). Sheet 1, 26 by 33 inches; sheet 2, 38 1/4 by 38 1/4 inches; sheet 3, 37 by 38 inches. (Accompanied by 11-page text.) (Reprint.)

MF-1058. MISSISSIPPI. Seismicity map of the State of Mississippi, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1979 (1990). Lat 30° to 35°, long 89° to 91°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 24 by 31 inches. (Reprint).

MF-1143. ILLINOIS. Seismicity map of the State of Illinois, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1979 (1990). Lat 37° to 42°, long 88° to 91°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 36 1/2 by 30 inches. (Reprint.)

MF-1155. MISSOURI. Seismicity map of the State of Missouri, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1979 (1990). Lat 36° to 40°, long 89° to 95°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 42 by 40 inches. (Reprint.)

MF-1228. MICHIGAN. Seismicity map of the State of Michigan, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1980 (1990). Lat 42° to 48°, long 83° to 90°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 41 by 31 1/2 inches. (Reprint).

MF-1229. WISCONSIN. Seismicity map of the State of Wisconsin, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1980 (1990). Lat 43° to 47°, long 87° to 92°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 40 by 25 inches. (Reprint).

MF-1324. IOWA. Seismicity map of the State of Iowa, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 41° to 43°, long 91° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 24 by 31 inches. (Reprint).

MF-1325. SOUTH DAKOTA. Seismicity map of the State of South Dakota, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1981 (1990). Lat 42° to 46°, long 97° to 104°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 42 by 24 inches. (Reprint).

MF-1326. NORTH DAKOTA. Seismicity map of the State of North Dakota, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1981 (1990). Lat 46° to 49°, long 97° to 104°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 42 by 20 inches. (Reprint).

MF-1351. KANSAS. Seismicity map of the State of Kansas, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 37° to 40°, long 95° to 102°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 35 by 28 inches. (Reprint.)

MF-1352. OKLAHOMA. Seismicity map of the State of Oklahoma, by C. W. Stover, B. G. Reagor, S. T. Algermissen and J. E. Lawson, Jr. 1981 (1990). Lat 34° to 37°, long 95° to 102°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 39 1/2 by 31 1/2 inches. (Reprint).

MF-1354-C. MONTANA, IDAHO. Map showing geochemical favorability for mesothermal base- and precious-metal veins in the Wallace 1° × 2° Quadrangle, Montana and Idaho, by D. L. Leach. 1989. Lat 47° to 48°, long 114° to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 44 by 24 inches.

MF-1354-D. MONTANA, IDAHO. Maps showing the distribution of sum of the ranks for concentrations of lead + zinc + copper + silver and lead + zinc in samples of stream sediment from the Wallace 1° × 2° Quadrangle, Montana and Idaho, by D. L. Leach and R. J. Goldfarb. 1989. Lat 47° to 48°, long 114° to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 by 44 inches.

MF-1645-F. ALASKA. Gravity contour map and interpretation of gravity data for the Chugach National Forest, by D. F. Barnes and R. L. Morin. 1990. Lat 60° to 61°, long 144° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 36 by 51 inches. (Accompanied by 5-page text.)

MF-1713. MISSOURI. Types of damage that could result from a great earthquake in the New Madrid, Missouri, seismic zone, by M. G. Hopper and S. T. Algermissen. 1984 (1990). Sheet 42 by 29 inches. (Reprint).

MF-1752. WASHINGTON. Geologic map of the Inchelium Quadrangle, Stevens and Ferry counties, Washington, by J. R. Snook, A. B. Campbell, H. E. Lucas, M. J. Abrams, John Janzen and Bruce Smith. 1990. Lat 48°15′ to 48°30′, long 118° to 118°15′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 24 by 34 inches.

MF-1856. UTAH. Seismicity map of the State of Utah, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1986 (1990). Lat 37° to 42°, long 109° to 114°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 58 by 40 inches. (Reprint.)

MF-1943. CALIFORNIA. Geologic map of the Mount Tallac roof pendant, El Dorado County, California, by G. R. Fisher. 1989. Lat 38°51′ to 38°57′, long 120° to 120°14′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 37 1/2 by 49 1/2 inches.

MF-1955. NEVADA. Map showing drill-hole depths, lithologic intercepts, and partial isopachs of basin fill in the Winnemucca 1° by 2° Quadrangle, Nevada, by B. C. Moring. 1990. Lat 40° to 41°, long 116° to 118°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 31 1/2 by 31 inches.

MF-1970-C. ALASKA. Maps and preliminary interpretation of anomalous rock geochemical data from the Petersburg Quadrangle and parts of Port Alexander, Sitka, and Sumdum quadrangles, southeastern Alaska, by S. M. Karl and R. D. Koch. 1990. Seven sheets. Lat 56° to 57°, long 132° to 134°30′. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 28 by 34 inches; sheets 2-7, 28 by 56 inches. (Accompanied by 40-page text.)

MF-1996-A. ALASKA. Metalliferous mineral resource assessment maps of the Mount Hayes Quadrangle, eastern Alaska Range, Alaska, by W. J. Nokleberg, I. M. Lange, D. A. Singer, G. C. Curtin, R. B. Tripp, D. L. Campbell and Warren Yeend. 1990. Four sheets. Lat 63° to 64°, long 144° to 147°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 34 1/2 by 47 1/2 inches; sheet 2, 30 1/2 by 43 inches; sheet 3, 33 1/2 by 34 1/2 inches; sheet 4, 29 1/2 by 43 1/2 inches. (Accompanied by 22-page text.)

MF-2007. ALASKA. Fossil locality map and fossil data for the southeastern Charley River Quadrangle, east-central Alaska, by R. T. Miyaoka. 1990. Lat 65° to 65°45′, long 141° to 142°30′. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 36 by 40 inches. (Accompanied by 46-page text.)

MF-2008-C. UTAH, COLORADO. Aeromagnetic maps of the Uinta and Piceance basins and vicinity, Utah and Colorado, by V. J. Grauch and J. L. Plesha. 1989. Two sheets. Lat 38° to 41°, long 107° to 113°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 45 by 37 1/2 inches; sheet 2, 45 by 30 1/2 inches.

MF-2008-D. UTAH, COLORADO. Complete Bouguer gravity anomaly map of the Uinta and Piceance basins and vicinity, Utah

and Colorado, by G. A. Abrams, V. J. Grauch and Viki Bankey. Prepared in cooperation with the Utah Geological and Mineral Survey and the Colorado Geological Survey. 1990. Lat 38° to 41°, long about 107° to 113°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 38 by 48 inches.

MF-2021-A. ALASKA. Geochemical map showing the distribution of selected elements determined in stream sediments from the Mount Katmai and parts of the Afognak and Naknek quadrangles, Alaska, by S. E. Church, E. A. Bailey and J. R. Riehle. 1989. Lat 58° to 59°, long 153° to 157°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 47 inches (in color). (Folio of the Mount Katmai area.)

MF-2021-B. ALASKA. Geochemical maps showing the distribution of selected leachable metals in stream sediments from Mount Katmai and parts of the Afognak and Naknek quadrangles, Alaska, by S. E. Church and J. M. Motooka. 1989. Two sheets. Lat 58° to 59°, long 153° to 158°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 54 1/4 by 35 3/4 inches; sheet 2, 39 1/4 by 26 3/4 inches (all in color). (Folio of the Mount Katmai area).

MF-2021-C. ALASKA. Geochemical maps showing the distribution of selected elements determined in nonmagnetic heavy-mineral concentrates from the Mount Katmai and parts of the Afognak and Naknek quadrangles, Alaska, by S. E. Church and B. F. Arbogast. 1989. Two sheets. Lat 58° to 59°, long 153° to 157°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 53 by 38 3/4 inches; sheet 2, 33 by 40 inches (all in color). (Folio of the Mount Katmai area.)

MF-2021-D. ALASKA. Mineralogical maps showing the distribution of selected minerals identified in nonmagnetic heavy-mineral concentrates from Mount Katmai and parts of the Afognak and Naknek quadrangles, Alaska, by S. E. Church and G. J. Bennett. 1989. Lat 58° to 59°, long 153° to 157°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 56 inches (in color). (Folio of the Mount Katmai area.)

MF-2061. UTAH. Geologic map of the North Stansbury Mountains Wilderness Study Area, Tooele County, Utah, by M. P. Foose. 1989. Lat 40°35′ to 40°42′30″, long 112°35′ to 112°40′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 35 inches.

MF-2073. NEW YORK, VERMONT, NEW HAMPSHIRE. Simplified geologic map of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by J. B. Thompson, Jr., J. M. McLelland and D. W. Rankin. 1990. Lat 43° to 44°, long 72° to 74°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 43 2/4 by 29 1/2 inches (in color).

MF-2096. CALIFORNIA. Maps showing geology and liquefaction susceptibility of Quaternary deposits in the Monterey, Seaside, Spreckels, and Carmel Valley quadrangles, Monterey, California, by W. R. Dupré 1990. Two sheets. Lat 36°27′30″ to 36°37′30″, long 121°37′30″ to 121°57′30″. Each sheet, scale 1:24,000 (1 inch = about 2,000 feet). Each sheet, 41 1/2 by 55 inches.

MF-2098-A. Map showing free-air gravity anomalies around the Cape Verde Islands, by D. W. Folger, B. J. Irwin, J. R. McCullough, R. M. Bouse, C. F. Polloni, J. E. Dodd and T. F. O'Brien. 1990. Lat 14°N to 18°N, long 22°W to 26°W. Scale 1:750,000 (1 inch = about 12 miles). Sheet 35 by 28 inches.

MF-2098-B. Map showing free-air gravity anomalies around the Canary Islands, Spain, by D. W. Folger, J. R. McCullough, B. J. Irwin, J. E. Dodd, W. J. Strahle, C. F. Polloni and R. M. Bouse. 1990. Lat 27°N to 30°N, long 13°W to 19°W. Scale 1:750,000 (1 inch = about 12 miles). Sheet 43 by 23 inches.

MF-2098-C. Map showing free-air gravity anomalies off the western coast of Africa; Western Sahara to Senegal (north of 15° north latitude), by D. W. Folger, B. J. Irwin, J. R. McCullough, G. R. Driscoll and C. F. Polloni. 1990. Lat 15°N to 26°N, long 12°W to 19°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 28 by 38 inches.

MF-2098-D. Map showing free-air gravity anomalies off the western coast of Africa; Senegal (south of 15° north latitude) to Sierra Leone, by D. W. Folger, J. R. McCullough, B. J. Irwin, G. R. Driscoll and C. F. Polloni. 1990. Lat 4°N to 14°N, long 12°W to 18°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 31 by 38 inches.

MF-2098-F. Map showing free-air gravity anomalies off the western coast of Africa; Nigeria to Gabon, by D. W. Folger, J. R. McCullough, B. J. Irwin, G. R. Driscoll, C. M. Delorey and C. F. Polloni. 1990. Lat 5°S to 7°N, long 12°E to 2°E. Scale 1:500,000 (1 inch = about 8 miles). Sheet 37 by 41 inches.

MF-2099. UTAH. Geologic map of the Deep Creek Mountains Wilderness Study Area, Tooele and Juab counties, Utah, by D. W. Rodgers. 1989. Lat 39°40′ to 40°02′, long 113°45′ to 114°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 28 by 39 1/2 inches.

MF-2101. NEW MEXICO. Preliminary geologic map of the Great Bend Quadrangle, San Juan County, New Mexico, by R. B. O'Sullivan, D. L. Weide and G. R. Scott. Prepared in cooperation with the Bureau of Indian Affairs and the Navajo Nation. 1989. Lat 36°07′30″ to 36°15′, long 108°30′ to 108°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 28 inches.

MF-2108. PUERTO RICO. Maps showing characteristics of the Escollo de Arenas sand and gravel deposit, Vieques Island, Puerto Rico, by R. W. Rodriguez and J. L. Trias. 1989. Two sheets. Lat about 18°08′ to 18°10′, long about 65°35′ to 65°37′. Scale 1:10,000 (1 inch = about 833 feet). Sheet 1, 40 by 52 inches; sheet 2, 34 by 52 inches.

MF-2109. UTAH. Preliminary surficial geologic map of the Wasatch fault zone, eastern part of Utah Valley, Utah County and parts of Salt Lake and Juab counties, Utah, by M. N. Machette. 1989. Lat 39°52′30″ to 40°30′, long 111°37′30″ to 112°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 40 1/2 by 56 1/2 inches. (Accompanied by 30-page text.)

MF-2111. High-resolution seismic stratigraphy of the upper continental rise seaward of Georges Bank, by W. W. Danforth and W. C. Schwab. 1990. Eleven sheets. Lat 39°30′ to 41°, long 66° to 71°. Scales 1:250,000 (1 inch = about 4 miles) and 1:500,000 (1 inch = about 8 miles). Sheet 1, 37 by 23 inches; sheet 2, 51 by 32 inches; sheet 3, 50 by 34 3/4 inches; sheet 4, 51 by 32 inches; sheet 5, 50 by 34 3/4 inches; sheet 6, 37 3/4 by 48 inches; sheet 7, 50 by 37 3/4 inches; sheet 8, 54 by 36 3/4 inches; sheet 9, 37 by 23 inches; sheet 10, 44 by 36 1/2 inches; sheet 11, 37 3/4 by 50 inches. (Accompanied by 10-page text.)

MF-2112. VIRGINIA. Hydrogeologic setting of springs on Short Hill Mountain, Loudoun County, northern Virginia, by C. S. Southworth. 1990. Lat 39°07′30″ to 39°22′30″, long 77°37′30″ to 77°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 40 inches.

MF-2113. COLORADO. Geologic map of the South Mamm Peak Quadrangle, Garfield and Mesa counties, Colorado, by J. R. Donnell, Warren Yeend and M. C. Smith. 1990. Lat 39°15′ to 39°22′30″, long 107°45′ to 107°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 34 inches.

MF-2114. UTAH. Preliminary surficial geologic map of the Salt Lake City segment and parts of adjacent segments of the Wasatch fault zone, Davis, Salt Lake, and Utah counties, Utah, by S. F. Personius and W. E. Scott. 1990. Lat 40°27′ to 40°52′30″, long 111°45′ to 112°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 56 3/8 by 41 1/8 inches.

MF-2115. CALIFORNIA. Geologic map of the San Andreas Fault in the Parkfield 7.5-minute Quadrangle, Monterey and Fresno counties, California, by J. D. Sims. 1990. Lat 35°52′30″ to 36°, long 120°22′30″ to 120°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 44 inches.

MF-2116. MONTANA, WYOMING. Correlation chart of Frontier Formation from Greenhorn Range, southwestern Montana, to Mount Everts in Yellowstone National Park, Wyoming, by R. G. Tysdal, T. S. Dyman, D. J. Nichols and W. A. Cobban. 1990. Sheet 51 1/2 by 42 inches. (Accompanied by 16-page text.)

MF-2117. CALIFORNIA. Geologic map of southern Avawatz Mountains, northeastern Mojave Desert region, San Bernardino County, California, by J. E. Spencer. 1990. Lat about 35°20′ to about 35°30′, long about 116°15′ to about 116°20′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 45 1/2 by 43 inches.

MF-2118. MASSACHUSETTS. Maps showing the geology of the inner continental shelf, Cape Cod Bay, Massachusetts, by R. N. Oldale and C. J. O'Hara. 1990. Four sheets. Lat 41°40′ to 42°10′, long 70° to 70°40′. Each sheet, scale 1:125,000 (1 inch = about 2 miles). Sheet 1, 53 by 40 1/2 inches; sheets 2 and 3, 45 by 41 1/4 inches; sheet 4, 51 by 32 inches.

MF-2119. MONTANA. Correlation chart of Lower and Upper Cretaceous Blackleaf Formation, Lima Peaks area to eastern Pioneer Mountains, southwestern Montana, by T. S. Dyman and R. G. Tysdal. 1990. Two sheets. Sheet 1, 44 by 36 inches; sheet 2, 54 by 40 1/2 inches. (Accompanied by 13-page text.)

MF-2120. Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico, by S. T. Algermissen, D. M. Perkins, P. C. Thenhaus, S. L. Hanson and B. L. Bender. 1990. Two sheets. Scale 1:7,500,000 (1 inch = about 118 miles). Sheet 1, 33 1/2 by 43 inches; sheet 2, 26 1/4 by 40 3/4 inches.

MF-2121. OREGON. Geologic map of the Diablo Mountain Wilderness Study Area, Oregon, by M. F. Diggles, J. E. Conrad and G. A. Soreghan. 1990. Lat 42°45′ to 43°07′30″, long 120°22′30″ to 120°45′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 31 by 38 inches.

MF-2122. CALIFORNIA. Maps of California continental borderland showing compositions and ages of bottom samples acquired between 1968 and 1979, compiled by J. G. Vedder. 1990. Three sheets. Sheet 1, lat 32°30′ to 34°30′, long 120° to 121°; sheet 2, lat 32° to 34°30′, long 118° to 120°; sheet 3, lat 32° to 34°, long 117° to 118°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 25 by 46 1/2 inches; sheet 2, 32 1/2 by 53 inches; sheet 3, 19 1/2 by 43 inches.

MF-2123. ARIZONA. Geologic map of the Pine 7.5′ Quadrangle, Coconino and Gila counties, Arizona, by M. K. Weisman and G. W. Weir. 1990. Lat 34°22′30″ to 34°30′, long 111°22′30″ to 111°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 32 inches.

MF-2124. MASSACHUSETTS. Maps showing the results of a subbottom acoustic survey of Boston Harbor, Massachusetts, by R. R. Rendigs and R. N. Oldale. 1990. Two sheets. Lat 42°16′ to 42°24′, long 70°48′ to 71°04′. Each sheet, scale 1:47,520 (1 inch = 3,960 feet). Sheet 1, 40 by 45 inches; sheet 2, 43 by 35 inches.

MF-2126. IDAHO. Geologic map of the Sheep Creek West Wilderness Study Area, Owyhee County, Idaho, by Bill Bonnichsen, J. L. Bernt and M. D. Jenks. 1990. Lat 42° to 42°07′30″, long 115°47′30″ to 116°. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 37 by 21 inches.

MF-2127. IDAHO. Geologic map of the Jarbidge River Wilderness Study Area, Owyhee County, Idaho, by Bill Bonnichsen and M. D. Jenks. 1990. Lat 42° to 42°15′, long 115°22′30″ to 115°45′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 39 by 36 inches.

MF-2128. IDAHO. Geologic map of the Bruneau River Wilderness Study Area, Owyhee County, Idaho, by M. D. Jenks and Bill Bonnichsen. 1990. Lat 42°15′ to 42°47′30″, long 115°30′ to 115°52′30″. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 36 by 51 inches.

MF-2129. Geologic map of Harrat Hutaymah, with petrologic classification and distribution of ultramafic inclusions, Saudi Arabia, by C. R. Thornber. 1990. Lat 26°35′ to 27°25′, long 42° to 42°45′. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 55 by 39 inches.

MF-2130. CALIFORNIA. Map showing geologic structures of the Northern California continental margin, by S. H. Clarke, Jr. 1990. Lat 40° to 42°, long 124° to 125°30′. Scale 1:250,000 (1 inch = about 4 miles). Sheet 22 by 44 inches.

MF-2131. MISSOURI, ILLINOIS, KENTUCKY. Aeromagnetic anomaly map of the Paducah 1°×2° Quadrangle, Missouri, Illinois, and Kentucky, by R. P. Kucks. 1990. Lat 37° to 38°, long 88° to 90°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2132. UTAH. Preliminary surficial geologic map of the Weber Segment, Wasatch fault zone, Weber and Davis counties, Utah, by A. R. Nelson and S. F. Personius. 1990. Lat 40°50′ to 41°20′, long 111°50′ to 111°58′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 37 by 53 1/2 inches. (Accompanied by 22-page text.)

MF-2133. IDAHO. Geologic map and phosphate resources of the northeastern part of the Lower Valley Quadrangle, Caribou County, Idaho, by Peter Oberlindacher. 1990. Lat 42°47′30″ to 42°52′30″, long 111°22′30″ to 111°26′30″. Scale 1:12,000 (1 inch = 1,000 feet). Sheet 28 by 49 inches.

MF-2134. COLORADO. Geologic map of the Texas Creek Quadrangle, Rio Blanco County, Colorado, by R. W. Scott, Jr. and M. P. Pantea. 1990. Lat 39°45′ to 39°52′30″, long 108°52′30″ to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 33 inches.

MF-2136. PUERTO RICO. Maps showing characteristics of the Isabela offshore sand deposit, northwestern Puerto Rico, by J. L. Trias. 1990. Lat 18°31′ to 18°33′, long 67°01′ to 67°07′. Scale 1:20,000 (1 inch = 1,667 feet). Sheet 53 by 39 inches.

MF-2137-A. UTAH. Map showing distribution of cadmium and antimony in the nonmagnetic fraction of heavy-mineral concentrations, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2137-B. UTAH. Map showing distribution of silver in the nonmagnetic fraction of heavy-mineral concentrates, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-A. UTAH. Map showing distribution of barium in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-B. UTAH. Map showing distribution of bismuth and cadmium in the stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-C. UTAH. Map showing distribution of copper in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 24 inches.

MF-2138-D. UTAH. Map showing distribution of gold in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-E. UTAH. Map showing distribution of lead in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-F. UTAH. Map showing distribution of molybdenum in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 24 inches.

MF-2138-G. UTAH. Map showing distribution of silver in the stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-H. UTAH. Map showing distribution of thorium in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-I. UTAH. Map showing distribution of tin in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2138-J. UTAH. Map showing distribution of uranium in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet, 42 by 25 inches.

MF-2138-K. UTAH. Map showing distribution of zinc in stream-sediment samples, Richfield 1° × 2° Quadrangle, Utah, by W. R. Miller, J. M. Motooka and J. B. McHugh. 1990. Lat 38° to 39°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches.

MF-2140-A. WYOMING, MONTANA. Isopach map of the interval from surface elevation to the top of the Pennsylvanian and Permian Minnelusa Formation and equivalents, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1990. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 34 inches.

MF-2140-B. WYOMING, MONTANA. Map showing contours on the top of the Pennsylvanian and Permian Minnelusa Formation and equivalents, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1990. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 41 by 36 inches.

MF-2141. WASHINGTON. Preliminary surficial geologic map of the Chewelah Quadrangle, Stevens County, Washington, by P. E. Carrara. 1990. Lat 48°15′ to 48°22′30″, long 117°37′30″ to 117°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 29 by 30 inches.

MF-2142. IDAHO. Geologic map of the Little Jacks Creek, Big Jacks Creek, and Duncan Creek Wilderness Study Areas, Owyhee County, Idaho, by D. F. Kauffman and Bill Bonnichsen. 1990. Lat 42°27′30″ to 42°45′, long 115°57′30″ to 116°15′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 36 by 41 inches.

MF-2144-A. ALASKA. Generalized geologic map of the Chandler Lake Quadrangle, north-central Alaska, by J. S. Kelley. 1990. Lat 68° to 69°, long 150° to 153°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 34 by 25 inches. (Accompanied by 19-page text.)

MF-2149. WYOMING. West-east stratigraphic correlations of surface and subsurface sections of the intertongued Eocene Wasatch and Green River formations, northern Green River basin, Wyoming, by H. W. Roehler. 1990. Lat 42°, long 109° to 110°. Sheet 40 by 27 inches.

GEOLOGIC MAP INDEXES

MISSISSIPPI. Geologic map index of Mississippi, revised and updated by H. K. Fuller, G. B. Gunnells, and Ann France, 1989, from original compilation by W. L. McIntosh and M. F. Eister. 1977.

HYDROLOGIC INVESTIGATIONS ATLASES

Multicolored or black and white maps on topographic or planimetric bases presenting a wide range of geohydrologic data; both regular and irregular areas.

HA-0197. PUERTO RICO. Hydrogeologic map of Puerto Rico and adjacent islands, by R. P. Briggs and J. P. Akers. 1965. Lat about 18° to about 18°30′, long about 65°15′ to about 67°45′. Scale 1:240,000 (1 inch = about 3.8 miles). Sheet 36 by 55 inches (in color). (Reprint.)

HA-0700. MASSACHUSETTS. Water resources in the French-Quinebaug rivers basin, Massachusetts, by V. A. Eames and V. J. Epstein. 1988. Four sheets. Lat 42°05′ to 42°15′, long 71°50′ to 72°20′. Sheets 2 and 3, scale 1:48,000 (1 inch = 4,000 feet). Sheet 1, 42 by 29 inches; sheet 2, 42 by 29 inches; sheet 3, 42 by 28 inches; sheet 4, 42 by 29 inches (all in color.)

HA-0709. NEW YORK. Hydrogeologic framework of Long Island, New York, by D. A. Smolensky, H. T. Buxton and P. K. Shernoff. 1989. Three sheets. Lat 40°30′ to 41°20′, long 72°10′ to 74°10′. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 35 by 46 inches; sheet 2, 34 3/4 by 45 inches; sheet 3, 35 by 45 inches (all in color).

HA-0709. NEW YORK. Hydrologic framework of Long Island, New York, by D. A. Smolensky, H. T. Buxton and P. K. Shernoff. 1990. Three sheets. Lat 40°30′ to 41°, long 72° to 74°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Each sheet 35 by 46 inches (all in color).

HA-0710. Average annual runoff in the United States, 1951-80, by W. A. Gebert, D. J. Graczyk and W. R. Krug. 1987 (1989). Lat 18° to 70°, long 65° to 175°W. Scale 1:7,500,000 (1 inch = about 118 miles). Sheet 34 by 44 inches (in color). (Reprint.)

HA-0711-A. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes. 1990. Lat 36° to 40°, long 89° to 96°. Scale 1:750,000 (1 inch = about 12 miles). Sheet 40 by 42 inches (in color).

HA-0711-C. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; St. Francois Aquifer, by J. L. Imes. 1990. Two sheets. Lat about 34°30′ to about 39°30′, long about 89°15′ to 96°. Scale 1:750,000 (1 inch = about 12 miles). Each sheet 35 by 41 inches (in color).

HA-0711-D. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; St. Francois confining unit, by J. L. Imes. 1990. Three sheets. Lat 34°30′ to 40°, long 89° to 96°. Each sheet, scale 1:750,000 (1 inch = about 12 miles). Each sheet 35 by 40 1/2 inches (all in color).

HA-0711-E. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; Ozark Aquifer, by J. L. Imes. 1990. Three sheets. Lat about 35° to about 39°, long about 90° to about 96°. Scale 1:750,000 (1 inch = about 12 miles). Each sheet 34 by 41 inches (all in color).

HA-0711-F. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; Ozark confining unit, by J. L. Imes. 1990. Three sheets. Lat 34°30′ to 40°, long 89° to 96°. Each sheet, scale 1:750,000 (1 inch = about 12 miles.) Each sheet 35 by 41 1/4 inches (all in color.)

HA-0711-G. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; Springfield Plateau Aquifer, by J. L. Imes. 1990. Three sheets. Lat 34°30′ to 39°30′, long 89° to 96°. Scale 1:750,000 (1 inch = about 12 miles). Each sheet 35 by 41 inches.

HA-0711-H. Major geohydrologic units in and adjacent to the Ozark Plateaus Province, Missouri, Arkansas, Kansas, and Oklahoma; Western Interior plains confining system, by J. L. Imes. 1990. Three sheets. Lat 34°30′ to about 39°, long 89° to about 96°. Scale 1:750,000 (1 inch = about 12 miles). Each sheet 41 by 35 inches (all in color).

HA-0712-A. MISSOURI. Delineation of flooding within the Ozark National Scenic Riverways in southeastern Missouri, by T. W. Alexander. 1990. Three sheets. Lat 36°30′ to 38°15′, long 90°15′ to 93°. Sheet 1, scale 1:750,000 (1 inch = about 12 miles); sheets 2 and 3, scale 1:3,600 (1 inch = 300 feet). Each sheet, 41 1/2 by 54 1/2 inches.

HA-0712-B. MISSOURI. Delineation of flooding within the Ozark National Scenic Riverways in southeastern Missouri; Round Spring and Powder Mill, by T. W. Alexander. 1990. Three sheets. Lat 36°30′ to 38°15′, long 90°15′ to 93°. Sheet 1, scale 1:750,000 (1 inch = about 12 miles); sheets 2 and 3, scale 1:3,600 (1 inch = 300 feet). Each sheet, 41 1/2 by 54 1/2 inches.

HA-0714. Hydrologic characteristics of soils in the High Plains, Northern Great Plains, and central Texas carbonates regional aquifer systems, by J. T. Dugan, R. D. Hobbs and L. A. Ihm. 1990. Lat 28° to 48°, long 94° to 110°. Scale 1:3,168,000 (1 inch = 50 miles). Sheet 36 by 49 inches (in color).

HA-0715. Reconnaissance study of the thickness of the unsaturated zone in the western conterminous United States, by M. S. Bedinger and W. H. Langer. 1989. Lat 27° to 48°, long 104° to 128°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 49 1/2 by 42 inches. (Supersedes Open-file report 86-402-W.)

HA-0716. MASSACHUSETTS. Water resources of the Westfield and Farmington River basins, Massachusetts, by Anthony Maevsky and D. G. Johnson. 1990. Four sheets. Sheet 1, lat 42°22′30″ to 42°30′, long 72°52′30″ to 73°07′30″; sheet 2, lat 42°07′30″ to 42°15′, long 72°37′30″ to 73°07′30″; sheets 3 and 4, lat 42°15′ to 42°30′, long 72°45′ to 73°. Sheets 1 and 2, scale 1:48,000 (1 inch = 4,000 feet); sheet 3, scale 1:125,000 (1 inch = about 2 miles); sheet 4, scale 1:250,000 (1 inch = about 4 miles). Sheets 1 and 2, 46 by 35 inches; sheets 3 and 4, 46 by 34 inches (all in color).

HA-0717. Areal variation of suspended-sediment yield within and adjacent to the coal fields of the Eastern Coal Province and the eastern region of the Interior Coal Province, by R. E. Hickman. 1990. Three sheets. Lat 30° to 45°, long 80° to 90°. Sheet 1, scale 1:17,000,000 (1 inch = about 280 miles); sheets 2 and 3, scales 1:17,000,000 (1 inch = about 280 miles) and 1:7,500,000 (1 inch = about 118 miles). Sheets 1 and 2, 31 by 24 inches; sheet 3, 31 by 28 inches (all in color.)

HA-0718. ARIZONA. Potential for aquifer compaction, land subsidence, and earth fissures in Avra Valley, Pima and Pinal counties, Arizona, by S. R. Anderson. 1989. Three sheets. Lat 32° to 32°45′, long 111° to 111°30′. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 36 1/4 by 32 1/4 inches; sheet 2, 23 by 26 3/4 inches; sheet 3, 38 1/2 by 32 1/2 inches (all in color). (Supersedes Open-file report 87-685.)

HA-0720-A. Hydrogeology of the San Jose, Nacimiento, and Animas formations in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by G. W. Levings, S. D. Craigg, W. L. Dam, J. M. Kernodle and C. R. Thorn. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 44 by 36 inches; sheet 2, 48 by 36 inches (all in color).

HA-0720-C. Hydrogeology of the Kirtland Shale and Fruitland Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by J. M. Kernodle, C. R. Thorn, G. W. Levings, S. D. Craigg and W. L. Dam. 1990. Two sheets. Lat

34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 44 by 34 inches (all in color).

HA-0720-E. Hydrogeology of the Cliff House Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by C. R. Thorn, G. W. Levings, S. D. Craigg, W. L. Dam and J. M. Kernodle. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1,000,000 (1 inch = about 16 miles). Sheet 1, 44 by 34 inches; sheet 2, 33 by 34 inches (all in color).

HA-0720-F. Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by G. W. Levings, S. D. Craigg, W. L. Dam, J. M. Kernodle and C. R. Thorn. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scales 1:1,000,000 (1 inch = about 16 miles) and 1:2,000,000 (1 inch = about 32 miles). Each sheet 44 by 36 inches (all in color).

HA-0720-G. Hydrogeology of the Point Lookout Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by S. D. Craigg, W. L. Dam, J. M. Kernodle, C. R. Thorn and G. W. Levings. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 43 by 36 inches; sheet 2, 32 by 36 inches (all in color).

HA-0720-H. Hydrogeology of the Gallup Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by J. M. Kernodle, G. W. Levings, S. D. Craigg and W. L. Dam. 1989. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 42 3/4 by 34 1/2 inches; sheet 2, 43 3/4 by 34 1/2 inches (both in color).

HA-0720-J. Hydrogeology of the Morrison Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by W. L. Dam, J. M. Kernodle, G. W. Levings and S. D. Craigg. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 40 by 56 inches; sheet 2, 37 1/2 by 51 1/2 inches (all in color).

HA-0721. SOUTH DAKOTA, MISSOURI. Surface- and ground-water interaction and hydrologic budget of the Missouri River Valley Aquifer between Yankton, South Dakota, and St. Louis, Missouri, by E. R. Hedman and D. G. Jorgensen. 1990. Lat 38° to 43°30′, long 89° to 98°. Scale 1:1,500,000 (1 inch = about 24 miles). Sheet 28 by 39 inches.

HYDROLOGIC UNIT MAPS

Hydrologic unit map. 1974. Caribbean region. Lat 18° to 18°30′, long 65°15′ to 67°45′. Scale 1:240,000 (1 inch = about 3.8 miles). Sheet 54 by 30 inches (in color). (Reprint.)

SOUTH CAROLINA. Hydrologic unit map. 1974. State of South Carolina. Prepared in cooperation with the U.S. Water Resources Council. Lat 32° to 35°, long 79° to 83°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 40 by 33 inches (in color). (Reprint.)

SPECIAL MAPS

This dynamic planet; a world map of volcanoes, earthquakes, and plate tectonics, compiled by Tom Simkin, Smithsonian Institution; R. I. Tilling, J. N. Taggart, W. J. Jones, and Henry Spall, U.S. Geological Survey. 1989. Published jointly by the U.S. Geological Survey and the Smithsonian Institution to commemorate the 28th International Geological Congress in Washington, D.C., from July 9-19, 1989. This map serves as a contribution to the International Decade of Natural Disaster Reduction to begin in 1990. Scale 1:30,000,000 at the equator (1 inch = about 473 miles). Sheet 41 by 57 inches (in color). (Mercator projection.) (Second printing, 1990.)

OUTSIDE PUBLICATIONS

ARTICLES AND REPORTS

Articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1990. Non-Geological Survey personnel who share authorship in articles with U.S. Geological Survey personnel are indicated by an asterisk (*) immediately following the name. **These publications are not available from the U.S. Geological Survey.**

OP-1. P. A. Adams. LOUISIANA. Water resources publications of the Louisiana District of the U.S. Geological Survey, 1904-89. Water Resources Special Report. Report no. 5, 1989. 104 p.

OP-2. P. K. Aggarwal*, W. D. Gunter* and Y. K. Kharaka. Effect of pressure on aqueous equilibria. ACS Symposium Series, *in* Chemical modeling of aqueous systems II. (D. C. Melchior, editor and others). 416, 1990. p. 87-101.

OP-3. Nisar Ahmad* and F. O. Simon. Chemical, physical, mineralogical, and petrologic characterization of coal and their economic and environmental significance, *in* Coal development potential in Pakistan; Coalcon 1986 Pakistan; the First Pakistan national coal conference. (M. N. Khan, editor and others). Energy Plann. and Dev. Proj. Enerplan, 1986. p. 187-199.

OP-4. T. M. Albert, Jiri Hruska* and Ghassan Rassam*. International inventory of automated databases in the geosciences. Int. Union Geol. Sci. 1989. 249 p.

OP-5. J. N. Aleinikoff and R. I. Grauch. NEW YORK. U-Pb geochronologic constraints on the origin of a unique monazite-xenotime gneiss, Hudson Highlands, New York. American Journal of Science. v. 290, no. 5, May 1990. p. 522-546.

OP-6. J. J. Alford*, P. U. Clark*, W. D. McCoy*, E. A. Oches*, A. R. Nelson and B. B. Miller*. Quaternary aminostratigraphy of Mississippi Valley loess; discussion and reply. Geological Society of America Bulletin. v. 102, no. 8, August 1990. p. 1136-1138.

OP-7. S. T. Algermissen. Techniques and parameters for earthquake risk assessment. Bulletin of the New Zealand National Society for Earthquake Engineering. v. 22, no. 4, December 1989. p. 202.

OP-8. J. W. Allingham. Assessment of energy related minerals/commodities in Portugal, *in* Portugal/United States cooperative energy assessment; Volume III, Reference reports; Part 1 of 3 parts, Energy resources of Portugal. (Argonne National Laboratory). September 1981. p. D1-D13. *Available from:* U.S. Dep. Energy, Off. Ctry. Energy Assess., Washington, DC, United States.

OP-9. Belén Alonso*, M. E. Field, J. V. Gardner and Andrés Maldonado*. Sedimentary evolution of the Pliocene and Pleistocene Ebro margin, northeastern Spain. Marine Geology, *in*

The Ebro continental margin, northwestern Mediterranean Sea. (Andrés Maldonado, editor and others). v. 95, no. 3-4, 1990. p. 313-331.

OP-10. C. N. Alpers, D. L. Dettman*, K. C. Lohmann* and Dragan Brabec*. WISCONSIN. Stable isotopes of carbon dioxide in soil gas over massive sulfide mineralization at Crandon, Wisconsin. Journal of Geochemical Exploration, *in* Solid and rock gas geochemistry. (S. E. Kesler, editor). v. 38, no. 1-2, August 1990. p. 69-86.

OP-11. Z. S. Altschuler. Coal resources; a continuing assessment. Proceedings of the National Conference on Energy and the Environment, *in* Proceedings of the Fifth national conference on Energy and environment. (D. G. Nichols, editor and others). 5, 1978. p. 249-263.

OP-12. Walter Alvarez*, Thor Hansen*, Piet Hut*, E. G. Kauffman* and E. M. Shoemaker. Uniformitarianism and the response of earth scientists to the theory of impact crises, *in* Castastrophes and evolution; astronomical foundations. (S. V. Clube, editor). Cambridge: Cambridge Univ. Press, 1989. p. 13-24.

OP-13. M. H. Anders*, D. W. Rodgers*, J. P. McCalpin* and K. M. Haller. Late Tertiary and Quaternary faulting north and south of the eastern Snake River plain; introduction. Public Information Circular - Geological Survey of Wyoming, *in* Geologic field tours of western Wyoming and parts of adjacent Idaho, Montana, and Utah. (Sheila Roberts, editor). 29, 1990. p. 1-3.

OP-14. R. E. Anderson. Tectonic evolution of the Intermontane System; Basin and Range, Colorado Plateau, and High Lava Plains. Memoir - Geological Society of America, *in* Geophysical framework of the continental United States. (L. C. Pakiser, editor and others). 172, 1989. p. 163-176.

OP-15. R. E. Anderson. Tectonic evolution of the Intermontane System; Basin and Range, Colorado Plateau, and High Lava Plains. Memoir - Geological Society of America, *in* Geophysical framework of the continental United States. (L. C. Pakiser, editor and others). 172, 1989. p. 163-176.

OP-16. R. Y. Anderson*, J. V. Gardner and Eileen Hemphill-Haley. CALIFORNIA. Variability of the late Pleistocene-early Holcene oxygen-minimum zone off Northern California. Geophysical Monograph, *in* Aspects of climate variability in the Pacific and the western Americas. (D. H. Peterson, editor). 55, 1989. p. 75-84.

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ABSTRACTS

Abstracts are condensed but informative summaries of presentations made at meetings of scientific and professional organizations. Typically they summarize the principal conclusions of an author's current work but contain little supporting data. Non-Geological Survey personnel who share authorship in abstracts with U.S. Geological Survey personnel are indicated by an asterisk (*) immediately following the name. These publications are not available from the U.S. Geological Survey.

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INDEX

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ABBREVIATIONS USED

A-	Antarctic Geologic Map
B	Bulletin
C	Circular
C-	Coal Investigations Map
CAT	Catalog
CF	Coal Map
CP-	Circum-Pacific Map Series
EV	Earthquakes and Volcanoes
GN	General Interest Publication
GP-	Geophysical Investigations Map
GQ-	Geologic Quadrangle Map
HA-	Hydrologic Investigations Atlas
HUM	Hydrologic Unit Map
I-	Miscellaneous Investigations Series
L-	Land Use and Land Cover Map
MF-	Miscellaneous Field Studies Map
MR-	Mineral Investigations Resources Map
MSB	Miscellaneous and Special Books
OC-	Oil and Gas Investigations Chart
OM-	Oil and Gas Investigations Map
OF	Open-File Report
OP	Outside Publication
P	Professional Paper
PB-,ADA	Report available only through the National Technical Information Service
PDE	Preliminary Determination of Epicenters
SGM	Special Geologic Map
SGMI	Geologic Map Index
SM	Special Map
STM	State Geologic Map
TWI	Techniques of Water-Resources Investigations
W	Water-Supply Paper
WRI	Water-Resources Investigations
YR	Yearbook

Outside journals and books are not available from the U.S. Geological Survey.

GENERAL

A

absolute age *see* geochronology; isotopes

absolute age—catalogs

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