

**U.S. Department of the Interior
U.S. Geological Survey**

Publications of the U.S. Geological Survey, 2003

**U.S. Department of the Interior
U.S. Geological Survey**

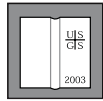
Publications of the U.S. Geological Survey, 2003

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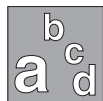
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* No new publications in this series for this year.

AVAILABILITY OF USGS CATALOGS

This catalog is a list of (1) books and maps¹ that were published during 2003 and (2) articles by U.S. Geological Survey personnel in non-U.S. Geological Survey journals and books that came to our attention in 2003; it supplements the permanent catalogs “Publications of the Geological Survey, 1879–1961,” “Publications of the Geological Survey, 1962–1970,” and “Publications of the U.S. Geological Survey, 1971 through 1981.” These permanent catalogs, as well as some others, are available under the conditions indicated below from USGS Information Services, Box 25286, Federal Center, Denver, CO 80225. A \$5 handling charge is applicable on each order. The catalogs are also available over the counter at any of the U.S. Geological Survey offices that sell books.

Permanent catalogs “Publications of the Geological Survey, 1879–1961” and “Publications of the Geological Survey, 1962–1970” may be purchased in paperback book form for \$6.

Permanent catalog “Publications of the U.S. Geological Survey, 1971 through 1981” may be purchased in paperback book form (two volumes, publications listing and index) for \$15.

Supplements for 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, and 2000 may be purchased in paperback book form and are priced as follows: 1982, \$3; 1983, \$3; 1984, \$3.25; 1985, \$3.75; 1986, \$4.25; 1987, \$4; 1988, \$3.75; 1989, \$4; 1990, \$4.50; 1991, \$4.25; 1992, \$5; 1993, \$7.50; 1994, \$7.50; 1995, \$7.50; 1996, \$7.50; 1997, \$7.50; 1998, \$7.50; 1999, \$7.50; 2000, \$7.50. The 2001 and 2002 Annual Supplements are free and available online only, at <http://pubs.usgs.gov/publications/>.

Prices of available publications, except reports released through the National Technical Information Service (NTIS), are given in current issues of the monthly catalog “New Publications of the U.S. Geological Survey.” Limited quantities of Circulars and publications of general interest are free.

“New Publications of the U.S. Geological Survey” is available electronically through the USGS at <http://pubs.usgs.gov/publications/>.

The U.S. Geological Survey Publications Data Base includes comprehensive bibliographic information on USGS reports and maps published from 1880 to the present and references for non-USGS publications with USGS authors published from 1983 to date—a total of approximately 110,000 publications. Free public access to the data base is provided as a public service by the U.S. Geological Survey at <http://usgs-georef.cos.com> and through the USGS home page at <http://www.usgs.gov>.

¹Individual topographic quadrangle maps are not listed; they are shown on State indexes to topographic maps, which are free on application to USGS Information Services, Box 25286, Federal Center, Denver, CO 80225, and to offices where books and maps are sold over the counter. These indexes also show commercial dealers in each State.



AVAILABILITY OF USGS PRODUCTS BY MAIL

Ordering information for USGS products is provided in each monthly catalog. In ordering books give the series designation and number, such as U.S. Geological Survey Circular 1178, and the full title. In ordering maps give name or series designation and number, such as Fairfax, Va., 7.5-minute or GQ-851. Include your full address and ZIP Code, plainly printed. Payment (check, money order, purchase order, VISA, MasterCard, American Express, or Discover Card information, or Government account) must accompany order. Make all drafts payable to Department of the Interior - USGS. **Do not send cash.** Customers outside the United States, please send an international money order or check drawn on a U.S. bank in U.S. dollars. VISA, MasterCard, American Express, or Discover Card is also accepted.

Prices listed in the catalogs include cost of domestic surface transportation. Delivery is by a Government-selected courier. For international delivery, actual shipping costs will be billed. Please designate a preferred international carrier (FedEx, DHL, or UPS) and provide the USGS with a carrier account number and telephone number to use when making shipment. A \$5.00 handling charge is applicable on each order.

Digital Data Series, Professional Papers, Bulletins, Water-Supply Papers, Techniques of Water-Resources Investigations, Circulars, Fact Sheets, single copies of the annual catalog "Publications of the U.S. Geological Survey," topographic and thematic maps, and some miscellaneous reports, including some from the foregoing series that have gone out of print at the Superintendent of Documents, are obtainable by mail from

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Open-file reports should be ordered according to instructions under appropriate headings in this announcement.

AVAILABILITY OF USGS PRODUCTS OVER THE COUNTER

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Books, maps, and other products of the U.S. Geological Survey are available over the counter at the following USGS Earth Science Information Centers (ESIC's):

ANCHORAGE, Alaska—Rm. 101, 4230 University Dr.

DENVER, Colorado—Bldg. 810, Federal Center

MENLO PARK, California—Rm. 3128, Bldg. 3, 345
Middlefield Rd.

RESTON, Virginia—Rm. 1C402, USGS National Center,
12201 Sunrise Valley Dr.

Maps Only

Maps may be purchased over the counter at the following U.S. Geological Survey office:

ROLLA, Missouri—1400 Independence Rd.

USGS maps are also sold by commercial dealers throughout the United States. For the nearest authorized USGS Business Partner, call 1-888-ASK-USGS or check http://mapping.usgs.gov/esic/map_dealers/ on the World Wide Web.

AVAILABILITY OF USGS PRODUCTS BY TELEPHONE

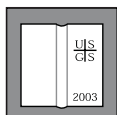
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IMPORTANT NOTICE

Prices of Government publications are subject to change. Increases in costs make it necessary for the Superintendent of Documents to increase the selling prices of many publications offered. As it is not feasible for the Superintendent of Documents to correct the prices manually in all previous announcements and publications stocked, the prices charged may differ from the prices in the announcements and publications.

The minimum for any USGS book publication is \$1.50 with the exception of Circulars, which are free in limited quantities. This minimum applies to all publications previously advertised.





FORMAL REPORTS

DIGITAL DATA SERIES

The Digital Data Series encompasses a broad range of digital data, including computer programs, interpreted results of investigations, comprehensive reviewed data bases, spatial data sets, digital images and animation, and multimedia presentations that are not intended for printed release. Scientific reports in this series cover a wide variety of subjects on all facets of U.S. Geological Survey investigations and research that are of lasting scientific interest and value. Releases in the Digital Data Series offer access to scientific information that is available in digital form; the information is primarily for viewing, processing, and (or) analyzing by computer.

DDS-0069-B. UTAH, COLORADO. Petroleum systems and geologic assessment of oil and gas in the Uinta-Piceance Province, Utah and Colorado, by U. S. Geological Survey, Uinta-Piceance Assessment Team. 2003. One CD-ROM. Available on the web at <http://pubs.usgs.gov/dds/dds-069/dds-069-b/>

This CD-ROM has been produced in accordance with the ISO 9660 Standard and is therefore capable of being read on any computing platform that has appropriate CD-ROM driver software installed. Use of the CD-ROM requires Adobe Acrobat Reader, version 5.0. Acrobat Reader installer for Windows and for Macintosh is included on this disc. MAC OS: Power PC processor, Mac OS 8.6, 9.0.4, 9.1, or OS X; 64 MB of RAM; and 24 MB of available hard drive space for installation. WINDOWS: Microsoft Windows Me, Windows 2000, or Windows NT 4.0 with Service Pack 5 or later, Windows 98 Second Edition, or Windows 95 Service Release 2; 64 MB of RAM; and 24 MB of available hard disk space.

1. UTAH, COLORADO. Executive summary; assessment of undiscovered oil and gas resources of the Uinta-Piceance Province of Utah and Colorado, 2002, by U. S. Geological Survey, Uinta-Piceance Assessment Team. 3 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_1.pdf

2. The Uinta-Piceance Province; introduction to a geologic assessment of undiscovered oil and gas resources, by U. S. Geological Survey, Uinta-Piceance Assessment Team. 27 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_2.pdf

3. Petroleum systems of the Uinta and Piceance Basins; geochemical characteristics of oil types, by P. G. Lillis, Augusta Warden and J. D. King. 25 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_3.pdf

4. UTAH, COLORADO. Thermal maturity and oil and gas generation history of petroleum systems in the Uinta-Piceance Province, Utah and Colorado, by V. F. Nuccio and L. N. R. Roberts. 35 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_4.pdf

5. UTAH, COLORADO. Geology, depositional models, and oil and gas assessment of the Green River total petroleum system,

Uinta-Piceance Province, eastern Utah and western Colorado, by R. F. Dubiel. 41 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_5.pdf

6. UTAH, COLORADO. Geologic assessment of undiscovered oil and gas resources of the Mancos/Mowry total petroleum system, Uinta-Piceance Province, Utah and Colorado, by M. A. Kirschbaum. 42 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_6.pdf

7. UTAH, COLORADO. The Mesaverde total petroleum system, Uinta-Piceance Province, Utah and Colorado, by R. C. Johnson and S. B. Roberts. 63 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_7.pdf

8. UTAH. Petroleum assessment of the Ferron/Wasatch Plateau total petroleum system, Upper Cretaceous strata, Wasatch Plateau and Castle Valley, Utah, by M. E. Henry and T. M. Finn. 39 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_8.pdf

9. UTAH, COLORADO. Geologic assessment of the Phosphoria total petroleum system, Uinta-Piceance Province, Utah and Colorado, by E. A. Johnson. 37 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_9.pdf

10. UTAH, COLORADO. Depositional framework of the Upper Cretaceous Mancos Shale and the lower part of the Upper Cretaceous Mesaverde Group, western Colorado and eastern Utah, by R. C. Johnson. 24 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_10.pdf

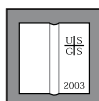
11. UTAH. Northwest to southeast cross section of Cretaceous and lower Tertiary rocks across the eastern part of the Uinta Basin, Utah, by R. C. Johnson. 6 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_11.pdf

12. UTAH, COLORADO. Stratigraphy of the Upper Cretaceous Mancos Shale (upper part) and Mesaverde Group in the southern part of the Uinta and Piceance Basins, Utah and Colorado, by R. D. Hettinger and M. A. Kirschbaum. 21 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_12.pdf

13. UTAH. Depths to selected stratigraphic horizons in oil and gas wells for Upper Cretaceous and lower Tertiary strata of the Uinta Basin, Utah, by R. C. Johnson and L. N. R. Roberts. 30 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_13.pdf

14. UTAH, COLORADO. Subsurface pressures from drill-stem tests, Uinta and Piceance Basins, Utah and Colorado, by P. H. Nelson. 32 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_14.pdf

15. COLORADO. A review of the multiwell experiment, Williams Fork and Iles Formations, Garfield County, Colorado, by P. H. Nelson. 24 p. Available on the web at



http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_15.pdf

16. UTAH, COLORADO. Structure contour map of the top of the Dakota Sandstone, Uinta-Piceance Province, Utah and Colorado, by L. N. R. Roberts. 11 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_16.pdf

17. U. S. Geological Survey assessment concepts for continuous petroleum accumulations, by J. W. Schmoker. 7 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_17.pdf

18. U. S. Geological Survey input-data form and operational procedure for the assessment of continuous petroleum accumulations, by T. R. Klett and J. W. Schmoker. 8 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_18.pdf

19. U. S. Geological Survey assessment concepts for conventional petroleum accumulations, by J. W. Schmoker and T. R. Klett. 6 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_19.pdf

20. U. S. Geological Survey input-data form and operational procedure for the assessment of conventional petroleum accumulations, by T. R. Klett, J. W. Schmoker and R. R. Charpentier. 7 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_20.pdf

21. A Monte Carlo simulation method for the assessment of undiscovered, conventional oil and gas, by R. R. Charpentier and T. R. Klett. 5 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_21.pdf

22. Analytic resource assessment method for continuous petroleum accumulations; the ACCESS assessment method, by R. A. Crovelli. 10 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_22.pdf

23. Calculation of estimated ultimate recovery (EUR) for wells in continuous-type oil and gas accumulations of the Uinta-Piceance Province, by T. A. Cook. 5 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_23.pdf

24. Data sources and compilation, by T. R. Klett and J. W. Schmoker. 6 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_24.pdf

25. Glossary, by T. R. Klett, J. W. Schmoker, R. R. Charpentier, T. S. Ahlbrandt and G. F. Ulmishek. 2 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_25.pdf

26. Abbreviations and acronyms, compiled by T. R. Klett. 2 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_26.pdf

27. Conversion factors (approximate), compiled by T. R. Klett. 2 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_27.pdf

28. Tabular data and graphical images in support of the U. S. Geological Survey National Oil and Gas Assessment; the Uinta-Piceance Province (5020), compiled by T. R. Klett, R. R. Charpentier and Phuong Anh Le. 16 p. Available on the web at http://pubs.usgs.gov/dds/dds-069/dds-069-b/REPORTS/Chapter_28.pdf

DDS-0074. MASSACHUSETTS. Long-term oceanographic observations in western Massachusetts Bay offshore of Boston, Massachusetts; data report for 1989-2000, by Bradford Butman, M. H. Bothner, F. L. Lightsom, B. T. Gutierrez, P. S. Alexander, M. A. Martini, and W. S. Strahle; with significant contributions from R. W. Barton, D. S. Blackwood, Jonathan Borden, M. A. Casso, J. M. Cote, R. E. Davis, P. W. Gill, J. S. Newell, C. M. Parmenter, Andree Ramsey, R. R. Rendigs, and R. P. Signell; and with at-sea support from the U.S. Coast Guard Cutter *White Heath* and the U.S. Coast Guard Cutter *Marcus Hannah*. 2002. One DVD-ROM.

This disc has been produced in accordance with the UDF Standard and is therefore capable of being read on any computing platform that has a DVD drive.

DDS-0076. HAZPAC; an interactive map of Pacific Rim natural hazards, population, and infrastructure, by B. L. Bemis, H. V. Goss, E. S. Yurkovich, J. T. Perron and D. G. Howell. Prepared in cooperation with American Red Cross, Circum-Pacific Council, and Stanford University. 2002. One CD-ROM.

This CD-ROM has been produced in accordance with the ISO 9660 Standard and is therefore capable of being read on any computing platform that has appropriated CD-ROM driver software installed. The PDF (Portable Document Format) files require Adobe Acrobat Reader 5.0 (included on this CD-ROM). Both the HAZPAC ArcExplorer and ArcView projects require a Windows PC (an "industry-standard personal computer with at least a Pentium or higher Intel-based microprocessor and a hard disk") with 24 MB of RAM (32 MB recommended) and a CD-ROM drive. Only PCs running Windows 98/2000/NT/XP may run the ArcExplorer version of HAZPAC. The ArcExplorer version of HAZPAC requires ESRI's ArcExplorer 2.0 software (included on this CD-ROM). Only PCs running Windows 98/Me, NT 4.0, or 2000 may run the ArcView versions of HAZPAC (ArcView 3.x also is supported with limitations on Windows XP). Both ArcView versions of HAZPAC require ESRI's ArcView 3.x software. The ArcView Spatial Analyst version of HAZPAC also requires ESRI's Spatial Analyst extension.

DDS-0080. Selected images of the Pu'ū 'Ō'ō-Kūpaianaha eruption, 1983-1997, by T. J. Takahashi, Christina Heliker and M. F. Diggles. 2003. One CD-ROM. Available on the web at <http://geopubs.wr.usgs.gov/dds/dds-80/>

This CD-ROM has been produced in accordance with the ISO 9660 Standard and is therefore capable of being read on any computing program that has appropriate CD-ROM driver software installed. System requirements: Macintosh (1) PowerPC processor, (2) Mac OS software version 9.1, 9.2, or OS X, and (3) 64 MB of RAM. Windows (1) Intel Pentium or compatible R-class processor-based personal computer, (2) Microsoft Windows, Windows 98 SE, Windows Millennium, Windows NT 4.0



with Service Pack 5 or 6 (Service Pack 6 recommended), Windows 2000, or Windows XP Professional or Home Edition, and (3) 64 MB of RAM; UNIX: Almost any UNIX system-based or Linux workstation can read these files.

PROFESSIONAL PAPERS

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 1386-J. Satellite image atlas of glaciers of the world; North America, edited by R. S. Williams, Jr., and J. G. Ferrigno, U.S. Geological Survey. 2002. p. J1-J405. Available on the web at <http://pubs.usgs.gov/prof/p1386j/>
- Glaciers of Canada; introduction, by R. S. Williams, Jr. and J. G. Ferrigno, U.S. Geological Survey. p. J1-J26.
- History of glacier investigations in Canada, by C. S. L. Ommanney, International Glaciological Society. p. J27-J82.
- Mapping Canada's glaciers; with a section on mapping glaciers in the Interior Ranges and Rocky Mountains with Landsat data, by C. S. L. Ommanney, International Glaciological Society; R. D. Wheate, R. W. Sidjak, and G. T. Whyte, University of Northern British Columbia. p. J83-J110.
- Glaciers of the High Arctic islands, by R. M. Koerner, Geological Survey of Canada. p. J111-J146.
- Ellesmere Island ice shelves and ice islands, by M. O. Jeffries, University of Alaska. p. J147-J164.
- Glaciers of Baffin Island; with sections on Barnes ice cap; geomorphology and thermodynamics; and late 20th century change at the Barnes ice cap margin, by J. T. Andrews, University of Colorado; Gerald Holdsworth, University of Calgary; and J. D. Jacobs, Memorial University of Newfoundland. p. J165-J198.
- Glaciers of the Canadian Rockies, by C. S. L. Ommanney, International Glaciological Society. p. J199-J289.
- Glaciers of the Coast Mountains, by G. K. C. Clarke, University of British Columbia; and Gerald Holdsworth, University of Calgary. p. J291-J300.
- Glaciers of the St. Elias Mountains; with a section on quantitative measurements of Tweedsmuir Glacier and Lowell Glacier imagery, by G. K. C. Clarke, University of British Columbia; Gerald Holdsworth, University of Calgary; P. J. Howarth, University of Waterloo; and C. S. L. Ommanney, International Glaciological Society. p. J301-J328.
- MONTANA. Glaciers of the Western United States; with a section on glacier retreat in Glacier National Park, Montana, by R. M. Krimmel, C. H. Key, D. B. Fagre, U.S. Geological Survey; and R. K. Menicke, U.S. National Park Service. p. J329-J381.
- Glaciers of Mexico, by S. E. White, Ohio State University. p. J383-J405.
- P 1411-B. Hydrologic properties and ground-water flow systems of the Paleozoic rocks in the upper Colorado River Basin in Arizona, Colorado, New Mexico, Utah, and Wyoming, excluding the San Juan Basin, by A. L. Geldon. 2003. p. B1-B153. 13 plates in pocket. (Regional Aquifer-System Analysis; upper Colorado River basin, excluding San Juan Basin.)
- P 1416-E. TEXAS. Hydrology of the Texas Gulf Coast aquifer systems, by P. D. Ryder and A. F. Ardis. 2002. p. E1-E77. 8 plates in pocket. (Regional Aquifer-System Analysis; Gulf Coastal Plain.)
- P 1419. PUERTO RICO, VIRGIN ISLANDS. Geology and hydrogeology of the Caribbean Islands aquifer system of the Commonwealth of Puerto Rico and the U.S. Virgin Islands, by R. A. Renken, U.S. Geological Survey; W. C. Ward, University of New Orleans; I. P. Gill, University of Puerto Rico; Fernando Gómez-Gómez, Jesús Rodríguez-Martínez, U.S. Geological Survey; and others. 2002. 150 p., 5 plates in pocket. (Regional Aquifer-System Analysis; Caribbean Islands.) Available on the web at <http://water.usgs.gov/pubs/pp/2002/pp1419/>
- Introduction, by R. A. Renken, U.S. Geological Survey. p. 2-14. Available on the web at <http://water.usgs.gov/pubs/pp/2002/pp1419/>
- PUERTO RICO. Geology of the South Coast ground-water province of Puerto Rico, by R. A. Renken, U.S. Geological Survey. p. 14-45.
- PUERTO RICO. Geology of the North Coast ground-water province of Puerto Rico, by W. C. Ward, University of New Orleans; R. A. Scharlach, Texas Commission on Environmental Quality; and J. R. Hartley, U.S. Corps of Engineers. p. 45-76.
- VIRGIN ISLANDS. Geology of central St. Croix, U.S. Virgin Islands, by I. P. Gill, University of Puerto Rico; D. K. Hubbard, Oberlin College; P. P. McLaughlin, Delaware Geological Survey; and C. H. Moore, Louisiana State University. p. 76-97.
- Hydrogeologic framework of the U.S. Caribbean Islands, by R. A. Renken, Fernando Gómez-Gómez, Jesús Rodríguez-Martínez, U.S. Geological Survey. p. 97-119.
- PUERTO RICO. Controls on porosity and permeability in carbonate aquifers of northern Puerto Rico, by W. C. Ward, University of New Orleans. p. 119-121.
- VIRGIN ISLANDS. U. S. Virgin Islands, by R. A. Renken, U.S. Geological Survey. p. 121-123.
- Distribution and types of porosity within the Kingshill aquifer, by I. P. Gill, University of Puerto Rico; D. K. Hubbard, Oberlin College; P. P. McLaughlin, Delaware Geological Survey; and C. H. Moore, Louisiana State University. p. 123-125.
- Alluvial aquifers, by R. A. Renken, U.S. Geological Survey. p. 125-127.
- P 1530-B. Analysis of thermal data and nonisothermal modeling of short-term test cycles, by R. T. Miller, Groundwater Investigations; G. N. Delin, U.S. Geological Survey. Prepared in cooperation with the University of Minnesota; Minnesota Geological Survey. 2002. p. B1-B66. (Cyclic injection, storage, and withdrawal of heated water in a sandstone aquifer at St. Paul, Minnesota.) (Supersedes Open-File Report 93-345.)
- P 1530-C. Analysis of thermal data and nonisothermal modeling of long-term test cycles 1 and 2, by G. N. Delin, U.S. Geological Survey; M. C. Moyer, University of Minnesota; T. A. Winterstein, U.S. Geological Survey; and R. T. Miller, Groundwater Investigations. Prepared in cooperation with the University of Minnesota;

Minnesota Geological Survey. 2002. p. C1-C80. (Cyclic injection, storage, and withdrawal of heated water in a sandstone aquifer at St. Paul, Minnesota.) (Supersedes Open-File Report 99-241.)

- P 1590. Habitat and environment of islands; primary and supplemental island sets, by N. C. Matalas and B. F. Grossling. 2002. 97 p., 1 plate, 1 CD-ROM, and 20 p. pamphlet in pocket. Available on the web at <http://water.usgs.gov/pubs/pp/2002/pp1590/>

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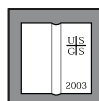


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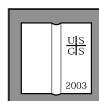
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The GNIS CD-ROM may be ordered from Information Services, U.S. Geological Survey, DFC, Building 810, MS 306, Denver, CO 80225, or by telephoning 1-888-ASK-USGS. Prepayment is required. Please make check or money order payable to Department of the Interior—USGS. VISA, MasterCard, American Express, and Discover Card are accepted. Prices are subject to change.

Information and Technical Specifications may be requested from U.S. Geological Survey, Manager GNIS, 523 National Center, Reston, VA 20192. 703-648-4544.

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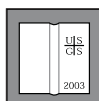
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Many Information Periodicals products are available through the systems or formats listed below:

CD-ROM: The U.S. Geological Survey's Minerals and Materials Information CD-ROM is updated three times a year (February, June, and October) and is sold by the U.S. Government Printing Office's Superintendent of Documents. The CD-ROM includes Minerals Yearbook chapters, Mineral Commodity Summaries, Statistical Compendium, Metal Prices in the United States, and other publications. For information on CD-ROM products in this series, contact Roger Loebenstein at 703-648-4752.



Internet/World Wide Web: Text and graphics. Access via PC-based browsing software such as Netscape or Mosaic. The URL is <http://minerals.usgs.gov/minerals/>

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METAL INDUSTRY INDICATORS

The Metal Industry Indicators (MII) is a monthly online newsletter that analyzes and forecasts the economic health of five metal industries with composite leading and coincident indexes. These industries are primary metals, steel, copper, primary and secondary aluminum, and aluminum mill products. Each month, these indexes are analyzed along with any economywide occurrences that would affect the metal industries. The MII also contains a leading index of metal prices that anticipates changes in the growth rate of a composite non-ferrous metals price index for primary aluminum, copper, lead, and zinc. The MII is available on the Internet at <http://minerals.usgs.gov/minerals/pubs/>. For more information contact Gail James 703-648-4915 or Ken Beckman 703-648-4916.

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The Nonmetallic Mineral Products Industry Indexes is a monthly report that analyzes and forecasts the economic health of this broad manufacturing industry using composite leading and coincident indexes. These indexes are similar to the ones in the newsletter, Metal Industry Indicators. This report is available on the Internet (<http://minerals.usgs.gov/minerals/pubs/>). Historical data for the indexes are available back to 1948. For more information contact Gail James 703-648-4915 or Ken Beckman 703-648-4916.

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The Mineral Industry Surveys (MIS) are periodic online statistical and economic reports designed to provide timely statistical data on production, distribution, stocks, and consumption of significant mineral commodities. The surveys are issued monthly, quarterly, annually, or at other regular intervals, depending on the need for current data. The MIS are published by commodities as well as by States. MIS are available on the Internet at <http://minerals.usgs.gov/minerals/pubs/>.

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Published on an annual basis, the Mineral Commodity Summaries is the earliest Government publication to furnish estimates covering nonfuel mineral industry data. Data sheets contain information on the domestic industry structure, Government programs, tariffs, and 5-year salient statistics for over 90 individual minerals and materials. The Mineral Commodity Summaries for 1996 to 2003 are available online at <http://minerals.usgs.gov/minerals/pubs/mcs/>.

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The Minerals Yearbook discusses the performance of the worldwide minerals and materials industry during a calendar year, and it provides background information to assist in interpreting that performance. Content of the individual Minerals Yearbook volumes follows:

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For information on the latest products, please contact Gloria Ruggiero 703-648-7790. Information is also available on the Internet (<http://minerals.usgs.gov/minerals/pubs/>).



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- Applicability and limitations, by J. B. Atkins and K. G. Ries, III. p. 16.
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MASSACHUSETTS. Baird & McGuire Superfund Site, Holbrook, Massachusetts, by J. G. Savoie and M. G. Taylor. p. 34-36.

RHODE ISLAND. Allen Harboro Landfill, Davisville Naval Construction Battalion Center Superfund Site, North Kingstown, Rhode Island, by F. P. Lyford, W. C. Brandon and C. A. P. Williams. p. 37-40.

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Appendix 1; Laboratory and field testing of passive-vapor-diffusion sampler equilibration times, temperature effects, and sample stability, by D. A. Vroblesky. p. 63-72.

Appendix 2; Field screening of volatile organic compounds collected with passive-vapor-diffusion samplers with a gas chromatograph, by Scott Clifford. p. 73-79.

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- OF 03-0355. TENNESSEE. Volatile organic compound data from three karst springs in middle Tennessee, February 2000 to May 2001, by S. D. Williams and J. J. Farmer. Prepared in cooperation with the Tennessee Department of Environment and Conservation, Division of Superfund. 2003. 69 p. (NC, Da, M.) Available on the web at <http://water.usgs.gov/pubs/of/2003/ofr03355>
- OF 03-0356. MONTANA. Water-quality, bed-sediment, and biological data (October 2001 through September 2002) and statistical summaries of data for streams in the upper Clark Fork Basin, Montana, by K. A. Dodge, M. I. Hornberger and I. R. Lavigne. Prepared in cooperation with the U.S. Environmental Protection Agency. 2003. 95 p. (NC, Da, M.)
- OF 03-0360. Shaded relief aeromagnetic map of the Santa Clara Valley and vicinity, California, by C. W. Roberts and R. C. Jachens. 2003. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-360/>
- OF 03-0363. Publications of the Western Earth Surface Processes Team 2002, compiled by C. L. Powell, II and R. W. Graymer. 2003. 22 p. (NC, Da, M; USGS, Library, 2255 North Gemini Dr., Flagstaff, AZ 86001.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-363/>
- OF 03-0367. ALASKA. Surficial geologic map of parts of the Misheguk Mountain and Baird Mountains quadrangles, Noatak National Preserve, Alaska, by T. D. Hamilton. 2003. 12 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-367/>
- OF 03-0369. Geologic and hydrogeologic framework of the Española Basin; proceedings of the 2nd annual Española Basin workshop, Santa Fe, New Mexico, March 4-5, 2003, edited by M. R. Hudson. 2003. 28 p. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/ofr-03-369/>
- NEW MEXICO. Geologic mapping in the Española Basin by the New Mexico Bureau of Geology and Mineral Resources, by P. W. Bauer and A. S. Read. p. 2.
- Deformation bands in non-welded ignimbrites; petrophysical controls on their occurrence and implications for fluid flow, by J. E. Wilson, L. B. Goodwin and C. J. Lewis. p. 3.
- NEW MEXICO. Fault-zone properties and potential from compartmentalization of groundwater aquifers in poorly lithified, Rio Grande Rift-related, Santa Fe Group sediments, New Mexico, by J. S. Caine, S. A. Minor, V. J. S. Grauch, M. R. Hudson and C. E. Heywood. p. 4.
- Regional survey of fault-zone structural properties and cementation patterns in the northern Albuquerque Basin, by S. A. Minor, M. R. Hudson and J. S. Caine. p. 5.
- Mineralogic determination of pre-Bandelier sediment sources in the southwestern Española Basin, by David Vaniman, David Broxton, Steve Chipera, R. G. Warren and Giday WoldeGabriel. p. 6.
- NEW MEXICO. Periodicity and distribution of volcanism in the Pajarito Plateau, Rio Grande Rift, north-central New Mexico, by Giday WoldeGabriel, R. G. Warren, Greg Cole, Fraser Goff, David Broxton, David Vaniman, Lisa Peters and Amanda Naranjo. p. 7.
- NEW MEXICO. Geologic map and structure of the Frijoles Quadrangle, Los Alamos and Sandoval Counties, New Mexico, by Fraser Goff, J. N. Gardner and S. L. Reneau. p. 8.
- NEW MEXICO. Depositional trends of the upper Tesuque Formation, Española Basin, N.M., and inferred tectonic and climatic influences on aggradation, by D. J. Koning. p. 9.
- Sedimentologic and structural framework of the southern and central Española Basin; insights from recent STATEMAP and EDMAP reports, by D. J. Koning, Adam Read and Claudia Borchert. p. 10.
- NEW MEXICO. Geology of the Horcado Ranch 7.5-minute quadrangle, Santa Fe County, north-central New Mexico, by D. J. Koning and Florian Maldonado. p. 11.
- Subsurface mapping and hydrologic characteristics of Bishop's Lodge Member of the Tesuque Formation, by Meghan Hodgins, Jason Hall and Jay Lazarus. p. 12.
- NEW MEXICO. Preliminary aeromagnetic interpretations for understanding the hydrogeologic framework of the southern Española Basin, New Mexico, by V. J. S. Grauch and Viki Bankey. p. 13.
- NEW MEXICO. Magnetotelluric surveys near the Cerrillos Uplift and La Bajada constriction, for hydrogeologic framework studies in the Española Basin, Rio Grande Rift, New Mexico, by B. D. Rodriguez, D. A. Sawyer, V. J. S. Grauch and J. M. Williams. p. 14.
- NEW MEXICO. Hydrogeology of the Santa Fe Group aquifer system, southern Española Basin, New Mexico; report on recent deep test wells in the Santa Fe Community College District, by J. W. Hawley and C. W. Cook. p. 15.
- NEW MEXICO. Hydrogeologic studies in the Española Basin by the New Mexico Bureau of Geology and Mineral Resources, by P. S. Johnson, J. M. Sigda and J. P. Frost. p. 16.
- NEW MEXICO. Ground-water flow near Tesuque Village, Santa Fe County, New Mexico, by Claudia Borchert. p. 17.
- Use of repeated gravity measurements to estimate aquifer recharge in the Española Basin, by A. H. Cogbill, J. F. Ferguson, E. H. Keating, G. M. Kramer and Joel Duran. p. 18.



Subsidence at the Buckman well field observed by interferometric synthetic aperture radar, by D. R. Thomsen and Yuri Fialko. p. 19.

Developing a groundwater flow model to evaluate hydrologic effects of pumping from the Buckman wellfield, by G. N. McCurry, Dale Doremus, Leah Smerud and John Shomaker. p. 20.

NEW MEXICO. Investigation of streamflow, infiltration, and recharge processes in the Arroyo Hondo, New Mexico, by S. J. Moore and J. E. Constantz. p. 21.

NEW MEXICO. Comparison of seepage investigations in the Rio Grande reach from Otowi Bridge to White Rock, New Mexico, by J. E. Veenhuis. p. 22.

Preliminary pre-development water-level map in the Santa Fe area with water-level trends and pumping zones of influence, by J. P. Frost and P. S. Johnson. p. 23.

Groundwater chemistry in the Española Basin; relation to geologic and hydrologic influences, by E. H. Keating, Velimir Vesselinov, E. M. Kwicklis and R. G. Warren. p. 24.

Ground-water contamination at Los Alamos National Laboratory (LANL), by Dennis McQuillan, Michael Dale, John Young and Kim Granzow. p. 25.

A summary of water resources in the Rio Chama watershed, northern region of the Española Basin, by L. J. Fluk and David Morgan. p. 26.

Jemez y Sangre water plan overview, by A. C. Lewis, Joanne Hilton and Bob Vocke. p. 27.

Using scenario analysis to assist in resource planning under conditions of uncertainty, by Sigmund Silber. p. 28.

OF 03-0372. NEW YORK. Topography, shaded relief and backscatter intensity of the Hudson Shelf Valley, offshore of New York, by Bradford Butman, T. J. Middleton, E. R. Thieler and W. C. Schwab. 2003. 13 p., 2 over-size sheets. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-372/>

OF 03-0373. NEW HAMPSHIRE. Available sand and gravel resources in southern New Hampshire, by J. S. Duval, D. M. Sutphin and H. A. Pierce. 2003. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-373/>

OF 03-0374. LOUISIANA. Preliminary geochemical, microbiological, and epidemiological investigations into possible linkages between lignite aquifers, pathogenic microbes, and kidney disease in northwestern Louisiana, by J. E. Bunnell, R. N. Bushon, D. M. Stoeckel, A. M. Gifford, Marisa Beck, H. E. Lerch, Runhua Shi, Benton McGee, B. C. Hanson, Jonathan Kolak and P. D. Warwick. 2003. 59 p. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-374/>

OF 03-0377. Empirical modified Mercalli intensity site corrections for towns in eastern North America, by W. H. Bakun and M. G. Hopper. 2003. 33 p. (NC, Da, M; USGS, Library, 2255 North Gemini Dr., Flagstaff, AZ 86001.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-377/>

OF 03-0383. CALIFORNIA. Bathymetric and geophysical surveys of Englebright Lake, Yuba-Nevada Counties, California, by J. R.

Childs, N. P. Snyder and M. A. Hampton. 2003. 20 p. (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-383/>

OF 03-0384. COLORADO, NEW MEXICO. Digital archive; previously unpublished expedition sketches by Henry W. Elliott united with the "Preliminary field report of the United States Geological Survey of Colorado and New Mexico," 1869, by F. V. Hayden, edited by K. C. McKinney. 2003. One CD-ROM. (NC, Da, M.)

This CD-ROM has been produced in accordance with the ISO 9660 Standard and is therefore capable of being read on any computing platform that has appropriate CD-ROM driver software installed.

OF 03-0398. LOUISIANA. Shoreline change posters of the Louisiana barrier islands 1885 to 1996, by Shea Penland, Chris Zganjar, K. A. Westphal, Paul Connor, A. D. Beall, Jeff List and S. J. Williams. 2003. 8 sheets. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-398/>

OF 03-0399. PENNSYLVANIA. Description of borehole geophysical and geologist logs, Berks Sand Pit Superfund Site, Longswamp Township, Berks County, Pennsylvania, by D. J. Low and R. W. Conger. Prepared in cooperation with the U.S. Environmental Protection Agency. 2003. 29 p. (NC, Da, M.) Available on the web at <http://pa.water.usgs.gov/reports/of03-399.pdf>

OF 03-0403. Station corrections for the Katmai Region Seismic Network, by C. K. Searcy. 2003. 14 p. (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-403>

OF 03-0404. ALASKA. Alaska Resource Data File; McCarthy Quadrangle, Alaska, by T. L. Hudson. 2003. 442 p. (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska, Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-404/>

OF 03-0408. OREGON. Maps showing inundation depths, ice-rafted erratics, and sedimentary facies of late Pleistocene Missoula floods in the Willamette Valley, Oregon, by J. M. Minervini, J. E. O'Connor and R. E. Wells. 2003. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles.) (NC, Da, M; Oregon Dep. of Geol. & Mineral Industries, Suite 965, 800 NE Oregon St. #28, Portland, OR 97232.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-408/>

OF 03-0409. OHIO, PENNSYLVANIA. Composition of crude oil and natural gas produced from 14 wells in the Lower Silurian "Clinton" Sandstone and Medina Group, northeastern Ohio and northwestern Pennsylvania, by R. C. Burruss and R. T. Ryder. 2003. 64 p. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-409/>



- OF 03-0411. ALASKA. Preliminary hydrodynamic analysis of landslide-generated waves in Tidal Inlet, Glacier Bay National Park, Alaska, by E. L. Geist, Matthias Jakob, G. F. Wieczorek and Peter Dartnell. 2003. 20 p. (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-411/>
- OF 03-0421. ALASKA. $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of igneous rocks in the Taylor Mountains and Dillingham quadrangles in SW Alaska, by Alexander Iriondo, M. J. Kunk and F. H. Wilson. 2003. 32 p. (NC, M, Da, A; Division of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645; U.S. Dep. of Interior, Alaska Resources Library, 3150 C St. #100, Anchorage, AK 99503-3916.) Available on the web at <http://pubs.usgs.gov/of/2003/ofr-03-421/>
- OF 03-0429. CALIFORNIA. Location and age database for selected foraminifer samples collected by Exxon petroleum geologists in California, compiled by E. E. Brabb and J. M. Parker. 2003. 5 p. (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-429/>
- OF 03-0430. HAWAII. Coastal circulation and sediment dynamics along West Maui, Hawaii; Part II, 2003 hydrographic survey cruises A-3-03-HW and A-4-03-HW report on the spatial structure of currents, temperature, salinity and turbidity along western Maui, by C. D. Storlazzi, J. B. Logan, M. A. McManus and B. E. McLaughlin. 2003. 50 p. (NC, Da, M; USGS, Library, 2255 North Gemini Dr., Flagstaff, AZ 86001; USGS, Library, Hawaiian Volcano Observatory, P.O. Box 51, Hawaii National Park, 96718-0051.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-430/>
- OF 03-0431. VERMONT. Geochemical characteristics of TP3 mine wastes at the Elizabeth Copper Mine Superfund Site, Orange Co., Vermont, by J. M. Hammarstrom, N. M. Piatak, R. R. Seal, II, P. H. Briggs, A. L. Meier and T. L. Muzik. 2003. 88 p. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/of03-431>
- OF 03-0437. NEW MEXICO. Geologic map of Van Bremmer Park Quadrangle, Colfax County, New Mexico, by C. L. Pillmore. 2003. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet.). (NC, M, Da; New Mexico Bur. of Mines & Mineral Resources, Campus Station, Socorro, NM 87801.) Available on the web at <http://pubs.usgs.gov/of/2003/ofr-03-437/>
- OF 03-0438. NEW MEXICO, COLORADO. Geologic map of the Vermejo Park Quadrangle, Colfax County, New Mexico, and Las Animas County, Colorado, by C. L. Pillmore. 2003. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M; Vicki J. Cowart, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203-2277; Chief, Geotechnical Services Branch, Office of the State Engineer, 1313 Sherman St., Room 818, Denver, CO 80203-2277; New Mexico Bur. of Mines & Mineral Resources, Campus Station, Socorro, NM 87801.) Available on the web at <http://pubs.usgs.gov/of/2003/ofr-03-438/>
- OF 03-0441. HAWAII. Data report; geology of reef-front carbonate sediment deposits around Oahu, Hawaii, by M. A. Hampton, C. T. Bly, Christopher Murray, L. Z. Torresan, C. S. Frazee, B. M. Richmond and C. H. Fletcher. 2003. (NC, Da, M; USGS, Library, 2255 North Gemini Dr., Flagstaff, AZ 86001; USGS, Library, Hawaiian Volcano Observatory, P.O. Box 51, Hawaii National Park, HI 96718-0051.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-441/>
- OF 03-0446. ALASKA. Alaska Resource Data File; Nebesna Quadrangle, Alaska, by T. L. Hudson. 2003. 229 p. (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-446/>
- OF 03-0447. ALASKA. Alaska Resource Data File; Wiseman Quadrangle, Alaska, by J. M. Britton. 2003. 331 p. (NC, Da, M, A; Alaska Resource Library Information Services [ARLIS], 3150 "C" St., Suite 100, Anchorage, AK 99503; Alaska Dep. of Natural Resources, Div. of Geol. & Geophys. Surv., 794 University Ave., Suite 200, Fairbanks, AK 99709-3645.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-447/>
- OF 03-0449. CALIFORNIA. Photomosaics and logs of trenches on the San Andreas Fault, Thousand Palms Oasis, California, by T. E. Fumal, W. T. Frost, Christopher Garvin, J. C. Hamilton, Monique Jaasma and M. J. Rymer. 2003. 2 over-size sheets. (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-449/>
- OF 03-0450. CALIFORNIA. Photomosaics and logs of trenches on the San Andreas Fault at Arano Flat near Watsonville, California, by T. E. Fumal, G. F. Heingartner, Laura Samrad, T. E. Dawson, J. C. Hamilton and J. N. Baldwin. 2003. 3 over-size sheets. (NC, Da, M; California Dep. of Conservation, Div. of Mines and Geol., Mail Stop 14-34, Library, 801 K St., Sacramento, CA 95814-3532; 185 Berry St., Suite 210, San Francisco, CA 94107-1728; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) Available on the web at <http://geopubs.wr.usgs.gov/open-file/of03-450/>
- OF 03-0458. Questa baseline and pre-mining ground water investigation; 11, Geochemistry of composited material from alteration scars and mine-waste piles, by P. H. Briggs, S. J. Sutley and K. E. Livo. Prepared in cooperation with the New Mexico Environment Department. 2003. 16 p. (NC, Da, M.) Available on the web at <http://pubs.usgs.gov/of/2003/ofr-03-458/>
- OF 03-0460. Surface Water Quality-Assurance Plan for the Indiana District of the U. S. Geological Survey, by J. A. Stewart and D. V. Arvin. 2003. 64 p. (NC, Da, M.) Available on the web at <http://water.usgs.gov/pubs/of/2003/ofr03460/>





THEMATIC MAPS AND CHARTS

GEOLOGIC QUADRANGLE MAP

GQ-1800. MARYLAND, VIRGINIA. Geologic map of the Buckeystown Quadrangle, Frederick and Montgomery Counties, Maryland, and Loudoun County, Virginia, by Scott Southworth, U.S. Geological Survey; and D. K. Brezinski, Maryland Geological Survey. Prepared in cooperation with Maryland Geological Survey. 2003. Lat 39°15' to 39°22'30", long 77°22'30" to 77°30'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 40 by 57 inches (in color). Available on the web at <http://pubs.usgs.gov/gq/gq-1800/>

GEOLOGIC INVESTIGATIONS SERIES

In August 1996, the I-map series name was changed from Miscellaneous Investigations Series Maps to Geologic Investigations Series. All geologic maps approved for publication after August 1996 will be published in the Geologic Investigations Series. The series definition remains the same. 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-2600-F. Coastal-change and glaciological map of the Bakutis Coast area, Antarctica; 1972-2002, by Charles Swithinbank, University of Cambridge; R. S. Williams, Jr., J. G. Ferrigno, K. M. Foley, C. E. Rosanova, U.S. Geological Survey. Prepared in cooperation with the University of Cambridge, Scott Polar Research Institute, United Kingdom. 2003. Lat 78°S to 72°54'S, long 104°W to 130°W. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 42 by 29 inches (in color). (Accompanied by 10 page text.)

I-2600-G. Coastal-change and glaciological map of the Saunders Coast area, Antarctica; 1972-1997, by Charles Swithinbank, University of Cambridge; R. S. Williams, Jr., J. G. Ferrigno, K. M. Foley, C. A. Hallam, and C. E. Rosanova, U.S. Geological Survey. Prepared in cooperation with the University of Cambridge, Scott Polar Research Institute, United Kingdom. 2003. Lat 81°S to 74°S, long 130°W to 158°30'W. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 43 by 37 inches (in color). (Accompanied by 9 page text.)

I-2668. NEVADA. Geologic map of the Izzenhood Spring Quadrangle, Lander County, Nevada, by D. A. John and C. T. Wrucke. 2002. Lat 40°45' to 40°52'30", long 116°45' to 116°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 37 by 33 inches (in color). Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2668>

I-2676-A. MASSACHUSETTS. Sea floor topography of the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, J. L. Baker and T. S. Unger. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 2003. Lat 42°05' to 42°45', long 70°05' to 70°35'. Scale 1:60,000 (1 inch = 5,000 feet). Sheet 33 by 57 1/2 inches (in color).

I-2676-B. MASSACHUSETTS. Sun-illuminated sea floor topography of the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, T. S. Unger and J. L. Baker. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 2003. Lat 42°05' to 42°45', long 70°05' to 70°35'. Scale 1:60,000 (1 inch = 5,000 feet). Sheet 33 by 57 1/2 inches (in color).

I-2676-C. MASSACHUSETTS. Backscatter intensity and sun-illuminated sea floor topography of the Stellwagen Bank National Marine Sanctuary off Boston, Massachusetts, by P. C. Valentine, T. S. Unger and J. L. Baker. Prepared in cooperation with the National Oceanic and Atmospheric Administration. 2003. Lat 42°05' to 42°45', long 70°05' to 70°35'. Scale 1:60,000 (1 inch = 5,000 feet). Sheet 38 by 57 1/2 inches (in color).

I-2731-A. MASSACHUSETTS. Sea floor topography of Quadrangle 1 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°13'N to 42°19'N, long 70°36'W to 70°47'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 28 by 34 inches (in color). Available on the web at <http://pubs.usgs.gov/imap/i-2731a/>

I-2731-B. MASSACHUSETTS. Shaded relief and sea floor topography of Quadrangle 1 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°13'N to 42°19'N, long 70°36'W to 70°47'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 28 by 35 inches (in color). Available on the web at <http://pubs.usgs.gov/imap/i-2731b/>

I-2731-C. MASSACHUSETTS. Backscatter intensity, shaded relief, and sea floor topography of Quadrangle 1 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°13'N to 42°19'N, long 70°36'W to 70°47'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 28 by 35 inches (in color). Available on the web at <http://pubs.usgs.gov/imap/i-2731c/>

I-2732-A. MASSACHUSETTS. Seafloor topography of Quadrangle 2 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°20'N to 42°26'N, long 70°36'W to 70°53'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 40 by 33 inches (in color). Available on the web at <http://pubs.usgs.gov/imap/i-2732a/>

I-2732-B. MASSACHUSETTS. Shaded relief and sea floor topography of Quadrangle 2 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°20'N to 42°26'N, long 70°36'W to 70°53'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 40 by 35 inches (in color). Available on the web at <http://pubs.usgs.gov/imap/i-2732b/>

I-2732-C. MASSACHUSETTS. Backscatter intensity, shaded relief, and sea floor topography of Quadrangle 2 in western Massachusetts Bay offshore of Boston, Massachusetts, by Bradford Butman, Laura Hayes, W. W. Danforth and P. C. Valentine. 2003. Lat 42°20'N to 42°26'N, long 70°36'W to 70°53'W. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 40 by 35 inches (in color).



color). Available on the web at
<http://pubs.usgs.gov/imap/i-2732c/>

- I-2738. COLORADO. Geologic and aeromagnetic maps of the Fossil Ridge area and vicinity, Gunnison County, Colorado, by Ed Dewitt, R. S. Zech, U.S. Geological Survey; C. G. Chase, University of Arizona; R. E. Zartman, R. P. Kucks, U.S. Geological Survey; Bruce Bartelson, Western State College; G. C. Rosenlund, GRG Corporation; and Drummond Earley, III, Daniel B. Stephens and Associates. 2002. Lat 38°35' to 38°47'30", long 106°27'30" to 106°45'. Scale 1:30,000 (1 inch = 2,500 feet). Sheet 54 by 40 inches (in color). (Accompanied by 42 page text.) Available on the web at <http://pubs.usgs.gov/imap/i-2738/>
- I-2744. MISSOURI. Geologic map of the Scott City 7.5-minute quadrangle, Scott and Cape Girardeau Counties, Missouri, by R. W. Harrison, U.S. Geological Survey; J. R. Palmer, David Hoffman, J. D. Vaughn, Missouri Department of Natural Resources; J. E. Repetski, N. O. Frederiksen, U.S. Geological Survey; and S. L. Forman, University of Illinois at Chicago. Prepared in cooperation with the Missouri Department of Natural Resources, Geological Survey and Resource Assessment Division. 2002. Two sheets. Sheet 1, lat 37°07'30" to 37°15', long 89°30' to 89°37'30"; sheet 2, lat 37°07'57.6" to 37°08'17.6", long 89°30' to 89°30'25.9". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 48 by 32 inches; sheet 2, 56 by 40 inches (both in color). (Accompanied by 12 page text.)
- I-2761. HAWAII. Atlas of natural hazards in the Hawaiian coastal zone, by C. H. Fletcher, III, E. E. Grossman, B. M. Richmond and A. E. Gibbs. Prepared in cooperation with the University of Hawaii, State of Hawaii Office of Planning, and National Oceanic and Atmospheric Administration. 2002. 182 p. Variable but mostly lat 18°52' to 22°14', long 154°45' to 160°15'. Scale variable to 1:50,000 (1 inch = about 4,200 feet). Pages 17 by 11 inches (in color). Available on the web at
<http://geopubs.wr.usgs.gov/i-map/i2761/>
- I-2763. Geologic map of MTM-45252 and -45257 quadrangles, Reull Vallis region of Mars, by S. C. Mest and D. A. Crown. Prepared for the National Aeronautics and Space Administration. 2003. Lat -47.5° to -42.5°, long 250° to 260°. Scale 1:1,004,000 (1 mm = 1.004 km) at 255° longitude. Sheet 43 by 39 inches (in color). (Transverse Mercator projection.) Available on the web at
<http://geopubs.wr.usgs.gov/i-map/i2763/>
- I-2765. IDAHO. Geologic map of the Salmon National Forest and vicinity, east-central Idaho, compiled by K. V. Evans and G. N. Green. 2003. Two sheets. (Accompanied by 19 page text.) Available on the web at
<http://pubs.usgs.gov/imap/2003/i-2765/>
- SHEET 1. Geologic map of the western part of the Salmon National Forest, by R. G. Tysdal, K. I. Lund and K. V. Evans. Lat 45° to 45°30', long 114° to 115°. Scale 1:100,000 (1 inch = about 1.6 miles) Sheet 41 by 58 inches (in color).
- SHEET 2. Geologic map of the eastern part of the Salmon National Forest, by K. I. Lund, K. V. Evans, R. G. Tysdal and G. R. Winkler. Lat 44°30' to 45°30', long 113° to 114°. Scale 1:100,000 (1 inch = about 1.6 miles) Sheet 34 1/2 by 58 inches (in color).
- I-2766. ARIZONA. Geologic map of the Mount Trumbull 30' × 60' Quadrangle, Mohave and Coconino Counties, northwestern Arizona, by G. H. Billingsley and J. L. Wellmeyer. Prepared in cooperation with the National Park Service and the Bureau of Land Management, Arizona Strip District. 2003. Lat 36° to 36°30', long 113° to 114°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 38 by 54 inches (in color). (Accompanied by 36 page text.) Available on the web at
<http://geopubs.wr.usgs.gov/i-map/i2766/>
- I-2767. MISSOURI. Geologic map of the Stegall Mountain 7.5-minute quadrangle, Shannon and Carter Counties, south-central Missouri, by R. W. Harrison, R. C. Orndorff and D. J. Weary. 2002. Lat 37° to 37°07'30", long 91°07'30" to 91°15'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 54 by 40 inches (in color).
- I-2768. Regional stratigraphy and petroleum systems of the Appalachian Basin, North America, by C. S. Swezey. 2002. Lat 35°N to 45°N, long 75°W to 85°W. Sheet 47 by 29 inches (in color). Available on the web at
<http://pubs.usgs.gov/imap/i-2768/>
- I-2773. MONTANA. Geologic map of the Hogback Mountain Quadrangle, Lewis and Clark and Meagher Counties, Montana, by M. W. Reynolds. 2003. Lat 46°45' to 46°52'30", long 111°37'30" to 111°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 48 by 40 inches (in color). Available on the web at
<http://pubs.usgs.gov/imap/2003/i-2773/>
- I-2774. MONTANA. Geologic map of the Nelson Quadrangle, Lewis and Clark County, Montana, by M. W. Reynolds and W. H. Hays. 2003. Lat 46°45' to 46°52'30", long 111°45' to 111°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 45 by 40 inches (in color).
- I-2776. Geologic map of the southern Ivrea-Verbano Zone, northwestern Italy, by J. E. Quick, U.S. Geological Survey; Silvano Sinigoi, Università di Trieste; A. W. Snoke, T. J. Kalakay, University of Wyoming; Adriano Mayer and Gabriella Peressini, Università di Trieste. 2003. Lat 45°42' to 45°54', long 08°20' to 08°05'. Scale 1:25,000 (1 inch = about 2,083 feet). Sheet 40 by 57 inches (in color). (Accompanied by 22 page text.)
- I-2781. The North American tapestry of time and terrain, by K. E. Barton, D. G. Howell and J. F. Vigil. 2003. Lat 170°E to 55°W, long 7°N to 83°N. Scale 1:8,000,000 (1 inch = 126 miles). Sheet 56 by 44 inches (in color). Available on the web at
<http://geopubs.wr.usgs.gov/i-map/i2781/>
- I-2782. Topographic and color-coded contour maps of Mars. Prepared for the National Aeronautics and Space Administration. 2003. Two sheets.
- SHEET 1. Topographic map of Mars M 25M RKN. Lat -57° to 57°, long 180°E to 180°E; and lat 55° to 90°, long 0° to 0°; and lat -55° to -90°, long 180° to 180°. Scale 1:25,000,000 (1 mm = 25 km) at 0° latitude Mercator Projection and scale 1:15,196,708 (1 mm = 15,196,708 km) at 90° latitude Polar Stereographic Projection). Sheet 36 by 32 inches (in color).
- SHEET 2. Color-coded contour map of Mars M 25 MRKT. Lat -57° to 57°, long 180°E to 180°E; and lat 55° to 90°, long 0° to 0°; and lat -55° to -90°, long 180° to 180°. Scale 1:25,000,000 (1 mm = 25 km) at 0° latitude Mercator Projection and scale 1:15,196,708 (1 mm = 15,196,708 km) at 90° latitude Polar Stereographic Projection). Sheet 36 by 32 inches (in color).



- I-2785. Topographic map of the Northwest Loire Valles region of Mars MTM 500k-15/337E OMKT. Prepared for the National Aeronautics and Space Administration. 2003. Lat -17.5° to -12.5°, long 340°E to 335°E. Scale 1:502,000 (1 mm = 502 m) at 330° E (30° W) longitude. Sheet 28 by 40 inches (in color). (Transverse Mercator projection.) Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2785/>
- I-2786. Topographic map of the Southeast Loire Valles region of Mars MTM 500k -20/347E OMKT. Prepared for the National Aeronautics and Space Administration. 2003. Lat -22.5° to -17.5°, and 350° E to 345° E. Scale 1:502,000 (1 mm = 502 m) at 350° E (10° W) longitude. Sheet 28 by 40 inches (in color). (Transverse Mercator projection.) Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2786/>
- I-2787. Topographic map of the Parana Valles region of Mars MTM 500k -25/337E OMKT. Prepared for the National Aeronautics and Space Administration. 2003. Lat -27.5° to -22.5°, long 350° E to 345° E. Scale 1:502,000 (1 mm = 502 m) at 350° E (10° W) longitude. Sheet 28 by 40 inches (in color). (Transverse Mercator projection.) Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2787/>
- I-2788. ALASKA. Geologic map of the Big Delta B-2 Quadrangle, East-Central Alaska, by W. C. Day, J. N. Aleinikoff, U.S. Geological Survey; Paul Roberts, Moira Smith, Teck Cominco Limited; B. M. Gamble, U.S. Geological Survey; M. W. Henning, Alaska Department of Natural Resources; L. P. Gough, and L. C. Morath, U.S. Geological Survey. Prepared in cooperation with the Alaska Department of Natural Resources and Teck Cominco Limited. 2003. Lat 64°15' to 64°30', long 144°30' to 145°. Scale 1:63,360 (1 inch = 1 mile). Sheet 39 by 33 inches (in color).
- I-2789. Map of surficial deposits and materials in the eastern and central United States (east of 102° west longitude), by D. S. Fullerton, C. A. Bush and J. N. Pennell. 2003. Lat 25° to 48°, long 67° to 102°. Scale 1:2,500,000 (1 inch = about 40 miles). Sheet 51 by 47 inches (in color). (Accompanied by 46 page text.) Available on the web at <http://pubs.usgs.gov/imap/i-2789/>
- I-2790. Crater Lake revealed, by D. W. Ramsey, Peter Dartnell, C. R. Bacon, J. E. Robinson and J. V. Gardner. 2003. Lat 121°55' to 122°20', long 42°43' to 43°09'. Sheet 38 by 25 inches (in color). Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2790/>
- I-2809. HAWAII. Hawaii's volcanoes revealed, by B. W. Eakins, J. E. Robinson, U.S. Geological Survey; Toshiya Kanamatsu, Jiro Naka, Japan Marine Science and Technology Center; J. R. Smith, University of Hawaii; Eiichi Takahashi, Tokyo Institute of Technology, Earth and Planetary Sciences; and D. A. Clague, Monterey Bay Aquarium Research Institute. Prepared in cooperation with the Japan Marine Science and Technology Center; University of Hawaii, School of Ocean and Earth Science and Technology; and the Monterey Bay Aquarium Research Institute. 2003. Lat 18°N to 23°N, long 154°W to 161°W. Sheet 38 by 25 inches (in color). Available on the web at <http://geopubs.wr.usgs.gov/i-map/i2809/>
- geology in relation to specific mining or mineral-deposit problems; the majority of post-1971 maps are preliminary black and white maps on various subjects such as environmental studies or Wilderness mineral investigations.
- MF-2327-C. NEVADA. Geochemistry, geochronology, mineralogy, and geology suggest sources of and controls on mineral systems in the southern Toquima Range, Nye County, Nevada; *with geochemistry maps of* gold, silver, mercury, arsenic, antimony, zinc, copper, lead, molybdenum, bismuth, iron, titanium, vanadium, cobalt, beryllium, boron, fluorine, and sulfur; *and with a section on* lead associations, mineralogy and paragenesis, and isotopes, by D. R. Shawe, J. D. Hoffman, D. R. Shawe, B. R. Doe, U.S. Geological Survey; E. E. Foord; H. J. Stein, Colorado State University; and R. A. Ayuso, U.S. Geological Survey. 2003. 5 sheets. Lat 38°30' to 38°45', long 116°45' to 117°07'30". Sheets 1-4, scale 1:48,000 (1 inch = 4,000 feet); sheet 5, scale 1:24,000 (1 inch = 2,000 feet). Sheets 1 and 2, 88 by 54 inches (in color); sheets 3 and 4, 66 by 54 inches (in color); sheet 5, 66 by 54 inches. (Accompanied by 65 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2327-C>
- MF-2339. NEVADA, CALIFORNIA. Geologic map of the Mound Spring Quadrangle, Nye and Clark Counties, Nevada, and Inyo County, California, by S. C. Lundstrom, S. A. Mahan, R. J. Blakely, J. B. Paces, O. D. Young, J. B. Workman and G. L. Dixon. Prepared in cooperation with the Nye County Nuclear Waste Repository Project Office. 2003. Lat 36° to 36°07'30", long 115°52'30" to 116°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 31 inches (in color). (Accompanied by 8 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2339/>
- MF-2375. COLORADO. Geologic map of the Vail East Quadrangle, Eagle County, Colorado, by K. S. Kellogg, Bruce Bryant and M. H. Redsteer. 2003. Lat 39°37'30" to 39°45', long 106°15' to 106°22'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 38 inches (in color). (Accompanied by 12 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2375/>
- MF-2381-A. NEVADA, CALIFORNIA. Geologic map of the Death Valley ground-water model area, Nevada and California, by J. B. Workman, C. M. Menges, W. R. Page, Emily Taylor, E. B. Ekren, P. D. Rowley, G. L. Dixon, R. A. Thompson and L. A. Wright. Prepared in cooperation with the Nevada Operations Office, National Nuclear Security Administration, and U.S. Department of Energy. 2002. Two sheets. Lat 35° to 38°15', long 115° to 118°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 46 by 63 inches; sheet 2, 26 by 36 inches (both in color). (Accompanied by 26 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2381/>
- MF-2390. COLORADO. Geologic map of the Dillon Quadrangle, Summit and Grand Counties, Colorado, by K. S. Kellogg. 2002. Lat 39°37'30" to 39°45', long 106° to 106°07'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 33 inches (in color). (Accompanied by 11 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2390/>
- MF-2397. NEW MEXICO. Geologic map of the Rio Puerco Quadrangle, Bernalillo and Valencia Counties, New Mexico, by Florian Maldonado. 2003. Lat 34°45' to 34°52'30", long 106°52'30" to 107°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 35 by 29 inches (in color). (Accompanied by 7 page text.) (Map-on-demand.)

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



Available on the web at
<http://pubs.usgs.gov/mf/2003/mf-2397/>

- MF-2401. HAWAII. Maps showing lava inundation zones for Mauna Loa, Hawai'i, by F. A. Trusdell, P. Graves and C. R. Tincher. Prepared in cooperation with the County of Hawai'i and Federal Emergency Management Administration. 2002. 10 sheets. Sheet 1, lat 19° to 20°, long 155° to 156°; sheet 2, lat 19°30' to 19°37'30", long 155° to 155°30'; sheet 3, lat 19°22'30" to 19°30', long 155°15' to 155°37'30"; sheet 4, lat 19°07'30" to 19°22'30", long 155°30' to 155°37'30"; sheet 5, lat 19° to 19°15', long 155°30' to 155°45'; sheet 6, lat 19° to 19°07'30", long 155°37' to 155°45'; sheet 7, lat 19° to 19°15', long 155°45' to 155°52'30"; sheet 8, lat 19°15' to 19°22'30", long 155°37'30" to 156°; sheet 9, lat 19°30' to 19°37'30", long 155°37'30" to 156°; sheet 10, lat 19°30' to 20°, long 155°30' to 155°52'30". Sheet 1, scale 1:275,000 (1 inch = about 4.3 miles); sheet 2, scale 1:85,000 (1 inch = about 1.3 miles); sheet 3, scale 1:55,000 (1 inch = about 4,580 feet); sheets 4 and 5, scale 1:60,000 (1 inch = 5,000 feet); sheets 6 and 7, scale 1:50,000 (1 inch = 4,200 feet); sheet 8, scale 1:55,000 (1 inch = about 4,580 feet); sheet 9, scale 1:65,000 (1 inch = about 1.3 miles); sheet 10, scale 1:95,000 (1 inch = about 1.5 miles). Sheets 1, 4, 5, 6, 7, and 10, 23 by 34 inches; sheets 2, 3, 8, and 9, 34 by 23 inches (all in color). (Accompanied by 12 page text.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2401/>
- MF-2402. CALIFORNIA. Geologic map and map database of western Sonoma, northernmost Marin, and southernmost Mendocino Counties, California, by M. C. Blake, Jr., R. W. Graymer and R. E. Stamski. 2002. Lat 38°15' to 38°45', long 122°45' to 123°37'30". Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 34 by 51 inches (in color). (Accompanied by 43 page text.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2402/>
- MF-2403. CALIFORNIA. Geologic map and map database of northeastern San Francisco Bay region, California; most of Solano County and parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties, by R. W. Graymer, D. L. Jones and E. E. Brabb. 2002. Lat 38° to 38°45', long 121°30' to 122°30'. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 46 by 36 inches (in color). (Accompanied by 28 page text.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2403/>
- MF-2404. NEW MEXICO. Geologic map of the Bernalillo NW Quadrangle, Sandoval County, New Mexico, by D. J. Koning and S. F. Personius. 2002. Lat 35°22'30" to 35°30', long 106°37'30" to 106°45'. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 53 by 34 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2404/>
- MF-2405. NEW MEXICO. Geologic map of the Santa Ana Pueblo Quadrangle, Sandoval County, New Mexico, by S. F. Personius. 2002. Lat 35°22'30" to 35°30', long 106°30' to 106°37'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 34 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2405/>
- MF-2406. COLORADO. Ferricrete, manganocrete, and bog iron occurrences with selected sedge bogs and active iron bogs and springs in the upper Animas River watershed, San Juan County, Colorado, by D. B. Yager, S. E. Church, P. L. Verplanck and Laurie Wirt. 2003. Lat 37°45' to 38°, long 107°30' to 107°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 54 by 42 inches (in color). (Accompanied by 10 page text.) (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2002/mf-2406/>
- MF-2407-A. NEVADA. Map showing scandium concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-A.pdf>
- MF-2407-B. NEVADA. Map showing iron concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-B.pdf>
- MF-2407-C. NEVADA. Map showing cobalt concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-C.pdf>
- MF-2407-D. NEVADA. Map showing nickel concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-D.pdf>
- MF-2407-E. NEVADA. Map showing copper concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-E.pdf>
- MF-2407-F. NEVADA. Map showing zinc concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-F.pdf>
- MF-2407-G. NEVADA. Map showing arsenic concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-G.pdf>
- MF-2407-H. NEVADA. Map showing selenium concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and



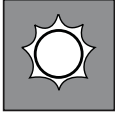
- H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-H.pdf>
- MF-2407-I. NEVADA. Map showing silver concentrations for stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-I.pdf>
- MF-2407-J. NEVADA. Map showing antimony concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-J.pdf>
- MF-2407-K. NEVADA. Map showing cerium concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-K.pdf>
- MF-2407-L. NEVADA. Map showing gold concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-L.pdf>
- MF-2407-M. NEVADA. Map showing lead concentrations from stream sediments and soils throughout the Humboldt River Basin and surrounding areas, northern Nevada, by D. B. Yager and H. W. Folger. 2003. Lat 38° to 42°, long 114° to 120°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 44 by 42 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2407/MF-2407-M.pdf>
- MF-2408. ALASKA. Surficial geologic map of the Hughes Quadrangle, Alaska, by T. D. Hamilton. 2002. Lat 66° to 67°, long 153° to 156°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 25 inches (in color). (Accompanied by 10 page text.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2408/>
- MF-2409. ALASKA. Surficial geologic map of the Bettles Quadrangle, Alaska, by T. D. Hamilton. 2002. Lat 66° to 67°, long 150° to 153°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 24 inches (in color). (Accompanied by 9 page text.) (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2409/>
- MF-2411. UTAH. Surficial geologic map of the Loop and Druid Arch quadrangles, Canyonlands National Park, Utah, by G. H. Billingsley, D. L. Block and T. J. Felger. Prepared in cooperation with the National Park Service. 2002. Lat 38° to 38°15', long 109°45' to 109°52'30". Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 51 inches (in color). (Map-on-demand.) Available on the web at <http://geopubs.wr.usgs.gov/map-mf/mf2411>
- MF-2412. ARKANSAS. Geologic map of the Ponca Quadrangle, Newton, Boone, and Carroll Counties, Arkansas, by M. R. Hudson and K. E. Murray. 2003. Lat 36° to 36°07'30", long 93°15' to 93°22'30". Scale 1:24,000 (1 inch = 2000 feet). Sheet 50 by 39 inches (in color). (Map-on-demand.) Available on the web at <http://pubs.usgs.gov/mf/2003/mf-2412/>
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HYDROLOGIC INVESTIGATIONS ATLAS

These are multicolored or black and white maps on topographic or planimetric bases presenting a wide range of geohydrologic data; they cover both regular and irregular areas.



44°37'30", long 104°07'30" to 104°22'30"; sheets 2 and 4, lat 43°30' to 44°, long 104°07'30" to 104°22'30". Scale 1:100,000 (1 inch = about 1.6 miles). All sheets 42 by 34 inches (in color). Available on the web at <http://water.usgs.gov/pubs/ha/ha748/>



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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-USGS personnel who share authorship in abstracts with USGS 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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ABBREVIATIONS USED

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

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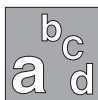
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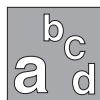
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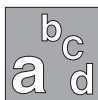
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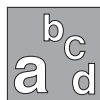
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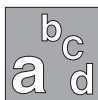
California *see also* Amargosa Desert; Antelope Valley; California Current; Cascade Range; Chocolate Mountains; Coast Range Ophiolite; Coast Ranges; Colorado River; Death Valley National Park; Eel River; Forbes Formation;

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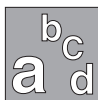
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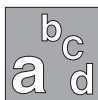
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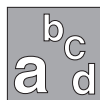
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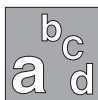
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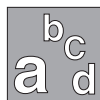
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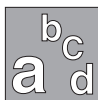
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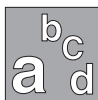
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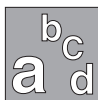
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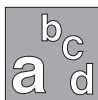
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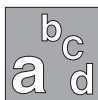
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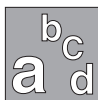
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Georgia OP-2213

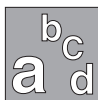
Iberian Peninsula *see* Portugal; Spain

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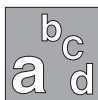
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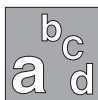
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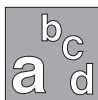
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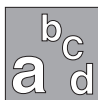
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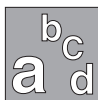
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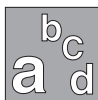
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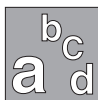
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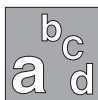
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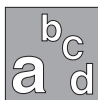


- Montana** *see also* Beartooth Mountains; Carlile Shale; Clark Fork; Clark's Fork Basin; Disturbed Belt; Eagle Sandstone; Fort Union Formation; Glacier National Park; Greenhorn Limestone; Hebgen Lake earthquake 1959; Judith River Formation; Niobrara Formation; Powder River basin; Revett Quartzite; Stillwater Complex; Williston Basin.
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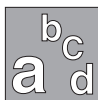
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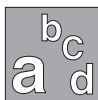
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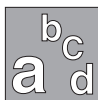
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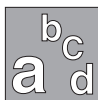
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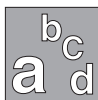
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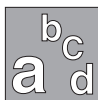
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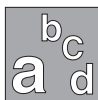


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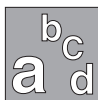
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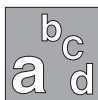


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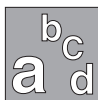
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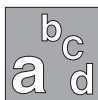
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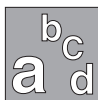
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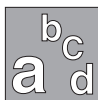
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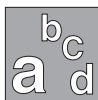
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Mexico OP-441

Travis Peak Formation B 2184-E; FS 0085-03;
 OP-1813; OP-2439

Treasure Island P 1658; OP-1578; OP-1598

tree rings

OP-1448; OP-1494; OP-1495
 Alaska OF 03-0100
 Atlantic Coastal Plain OP-437
 California OP-1253
 Canada P 1386-J
 Colorado OP-2668
 Massachusetts OP-1493
 Montana OP-182
 New Mexico OP-102; OP-1875
 Oregon OP-883; OP-2212; OP-2406

Tremadocian

Nevada OP-732

Trench Camp Mine OP-1603

trenches

OP-2455
 Japan OP-973

trenching

Alaska OP-506
 California OF 03-0449; OF 03-0450; OP-2497
 Colorado OP-1738
 Missouri I-2744
 Nevada OP-2240; OP-2366
 New Mexico OP-1051
 Oregon OP-2366
 Washington MF-2420; MF-2423; OP-976

trend-surface analysis WRI 02-4217

Trenton Group OF 02-0302

triangle zones

Alaska OP-2272; OP-2395

Triassic *see also* Nikolai Greenstone.

California OP-1271; OP-1272
 China OP-1103
 Chinle Formation OP-331; OP-2022
 Dinwoody Formation OP-866
 Moenkopi Formation OP-2022
 Montana OP-1488
 Norian, Alaska P 1662
 Pennsylvania WRI 03-4159
 Petrified Forest Member OP-1122
 Shublik Formation OF 03-0039; OF 03-0040;
 OF 03-0326; OF 03-0328; OF 03-0329;
 OP-1038; OP-2347; OP-2348; OP-2395;
 OP-2466

triazines *see also* atrazine; cyanazine; RDX;
 simazine.

OF 03-0173; OP-176; OP-245
 Michigan OP-1323
 Nebraska OP-1377

trichloroethane

WRI 02-4173
 Georgia WRI 02-4153; OP-467
 Idaho OF 98-0051
 Maine WRI 02-4085
 Maryland OF 01-0420
 New Jersey OP-1161
 Pennsylvania OF 03-0399
 Wisconsin WRI 02-4085

trichloroethylene

WRI 02-4079; OP-991
 Arizona OP-1910
 Connecticut WRI 02-4186
 Delaware WRI 02-4121
 Idaho OF 98-0051
 Maine WRI 02-4186
 Massachusetts WRI 02-4186
 Rhode Island WRI 02-4186
 Tennessee WRI 03-4175; OF 02-0089;
 OP-1481; OP-1548; OP-1696
 Texas OP-792

trichloromethane *see* chloroform

Trichoptera

Illinois OP-308
 Minnesota OP-2158; OP-2160

trihalomethane

OF 02-0089; OP-415
 California WRI 03-4062; OF 02-0089; OP-99;
 OP-2374

Trimmers Rock Sandstone OP-1667

trinitrotoluene OP-995

trinitrotrimethylenetriamine *see* RDX

Trinity Aquifer WRI 03-4072; WRI 03-4081

Trinity River basin OF 03-0082

triple junctions *see also* Chile Margin Triple
 Junction; Mendocino fracture zone.

OP-2455
 Alaska OP-128; OP-508; OP-749; OP-1133
 British Columbia OF 02-0328; OP-508
 California OF 02-0328
 Canada OP-1933
 Chile OF 02-0328
 United States OP-1933
 Washington OF 02-0328

tripolite *see* diatomaceous earth

triterpanes *see* hopanoids

tritium

WRI 02-4112; WRI 03-4035; OP-160;
 OP-1654
 Arizona WRI 03-4189; OP-2612
 California WRI 02-4259; OF 02-0089
 Canadian Shield OP-932
 Florida OP-1074
 Great Lakes OP-932
 Idaho OF 02-0185; OF 03-0168
 Illinois WRI 02-4062; WRI 02-4213
 Indiana WRI 02-4213
 Nebraska WRI 02-4049; OP-2561
 New Mexico OF 03-0369
 New York OF 01-0232
 Pennsylvania WRI 03-4035
 South Africa OP-1296
 Texas OF 02-0093; FS 0020-02
 Utah WRI 03-4028
 Virginia OF 03-0246
 Wisconsin OP-2111

Trochammina

California OP-2222

Trochammina pacifica OP-2222

Tropic Shale OP-1812

Tropical Storm Alberto OP-551; OP-560;
 OP-1258

Trout Creek C 1260; OP-2155; OP-2313

Trout Lake Aquifer OP-1624

Truckee River OP-1599; OP-2693

Truth or Consequences New Mexico OP-185

Tsaidam Basin *see* Qaidam Basin

Tschicoma Formation OF 03-0369

Tsinling Mountains *see* Qinling Mountains

tsunamis

OP-443; OP-1891
 Alaska OP-1011; OP-1890
 Atlantic Coastal Plain OP-2385
 California P 1658
 Canada OF 03-0013
 East Pacific Ocean Islands OP-2335
 Japan OP-562; OP-973; OP-1890
 Oregon OF 03-0190; OP-2334
 Papua New Guinea OP-1766
 Polynesia OP-2335
 Russian Federation OP-562
 United States OF 03-0013
 Washington OP-976

tubes, lava *see* lava tubes

Tucson Arizona C 1260; OP-1561; OP-1562;
 OP-1563; OP-1564; OP-1565; OP-1617;
 OP-1797; OP-1798; OP-1858; OP-1910;
 OP-1999; OP-2000; OP-2164

Tucson Basin OF 03-0116; OP-1565; OP-1848

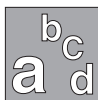
Tucson Quadrangle OF 01-0275

tufa

Michigan OF 03-0342

tuff *see also* volcanoclastics.

OP-1611
 Alaska OP-2644
 Alberta OP-1438
 California OP-1800
 Colorado OF 01-0472; OP-1008; OP-2404
 Idaho OP-1714; OP-2126
 Nevada WRI 02-4141; OP-404; OP-405;
 OP-1774; OP-1863; OP-2157; OP-2299;
 OP-2345; OP-2651
 New Mexico OP-2427



- Oregon OP-1734
Utah OP-1774
Washington OP-2516
tuff lava *see* welded tuff
tuft *see* tufa
- Tulare Basin** OP-1697
- Tularosa Basin** OP-185; OP-498; OP-975;
OP-1878; OP-2018
- tundra**
Alaska OP-898; OP-1282; OP-1401; OP-1516
Colorado OP-1401
Yukon Territory OP-1516
- tungsten**
Florida OP-853
- tungsten ores**
Alaska OP-1608
Australia OP-1608
China OF 03-0063; OF 03-0064
Great Britain OP-2545
Yukon Territory OP-1608
- tunnels** *see also* seismic response.
Kazakhstan OP-799
Nevada OP-169; OP-1659; OP-1862; OP-1864
- turbidite** *see also* turbidity currents.
Alaska OP-595
California OP-1432; OP-2660
Canada OP-296
Louisiana OP-2297
Mexico OP-2319
Oregon OP-2318; OP-2435
Russian Federation OP-977; OP-2297
Spain OP-2297
Texas OP-2439
- turbidity currents** *see also* submarine canyons.
Antarctica OP-373
California OP-788; OP-1414
Great Lakes OP-1000
- Turkey**
OF 97-0470-I; OP-29; OP-464; OP-526;
OP-735; OP-1024; OP-1131; OP-1961
Istanbul Turkey OP-1750
North Anatolian Fault OP-62; OP-90; OP-769;
OP-1596; OP-1597
Taurus Mountains OP-1025
- Turonian**
Gulf Coastal Plain OP-802
North Carolina OP-2508
South Carolina OP-2508
Utah OP-1812
- Tuscaloosa Formation** OP-1807
- Tuscarora Formation** OP-1156
- Tutu Formation** P 1631
- Twin Mountain-Travis Peak Aquifer**
OF 03-0164
- Two Medicine Formation** OP-569
- two-and-a-half-dimensional models**
Antarctica OP-88
Arizona OF 03-0116
Iraq OF 03-0192
- two-mica granite**
New Hampshire OP-2269
- Tyughton Basin** OP-296
- Tyonek Formation** OP-937
- Tyumen Field** B 2201-G
- U**
- U *see* uranium
U-234/U-238 *see* U-238/U-234
U-238 OP-1089; OP-1291
U-238/U-234
OP-1291
Arizona OP-2664
Nevada OP-2304
New Mexico OP-2664
- U. S. Bureau of Land Management** OP-1545
- U. S. Bureau of Mines** OP-311
U. S. Geological Survey *see* U.S. Geological Survey
- U. S. Rocky Mountains *see* Absaroka Range; Big Belt Mountains; Bitterroot Range; Flint Creek Range; Gore Range; Gravelly Range; Little Belt Mountains; San Juan Mountains; Sangre de Cristo Mountains; Spanish Peaks; Tendoy Range; Wind River Range
- U. S. Virgin Islands** *see also* Saint Croix.
P 1419; P 1631
U.S. Bureau of Mines *see* U. S. Bureau of Mines
- U.S. Geological Survey** *see also* NAWQA.
DDS-0069-B; C 1242; C 1248; C 1250;
WRI 02-4222; WRI 03-4079; WRI 03-4139;
OF 02-0089; OF 02-0223; OF 02-0293;
OF 02-0436; OF 02-0462; OF 02-0481;
OF 03-0010; OF 03-0014; OF 03-0029;
OF 03-0173; OF 03-0213; OF 03-0261;
OF 03-0363; FS 0017-03; FS 0022-03;
FS 0053-03; FS 0056-01; FS 0062-03;
FS 0077-02; FS 0105-02; FS 0130-01; OP-118;
OP-201; OP-292; OP-311; OP-343; OP-483;
OP-504; OP-505; OP-632; OP-685; OP-710;
OP-987; OP-1016; OP-1263; OP-1369;
OP-1478; OP-1601; OP-1643; OP-1655;
OP-1831; OP-1854; OP-1885; OP-1938;
OP-1966; OP-2004; OP-2059; OP-2343;
OP-2472; OP-2512; OP-2537; OP-2538;
OP-2640; OP-2649
Alaska P 1662; OP-2295
Arizona OP-109; OP-2535
California OF 01-0190; OP-1452
Chile OP-2336
Colorado DDS-0069-B; OF 03-0384; OP-220;
OP-1619
Florida OF 00-0449; OP-1923
Georgia OP-251
Idaho OF 03-0042; OP-682
Indiana OF 03-0460
Nevada OP-682
New Hampshire FS 0050-03
New Jersey OP-1866
New Mexico OF 03-0384; OP-564
Pennsylvania OP-2172
Puerto Rico OP-2464
Russian Federation OP-2295
South Carolina OP-1923
Texas OP-345
United Arab Emirates OF 98-0018
United States OP-2336
Utah DDS-0069-B; OP-586
Washington OP-1803; OP-2645
- U/Pb** *see also* Pb/Pb.
OF 02-0490; OP-234; OP-1611; OP-2679
Alaska P 1662; OP-1121; OP-1518
Antarctic Ocean OF 03-0065
Antarctica OF 03-0065
Arabian Peninsula OP-2661
Arizona OP-614; OP-1122; OP-2320
- California OP-73; OP-295; OP-2517
Canada OP-934; OP-2282
Chile OP-388
China OP-1103
Colorado OP-2139
Connecticut OP-1477
Great Britain OP-2545
Idaho OP-838
Israel OP-46
Italy OP-2139
Massachusetts OP-1477
Mexico OP-614; OP-2320
Nevada OP-2204; OP-2304
New Zealand OP-949
Northwest Territories OP-521
Norway OP-503
Pacific Ocean OF 03-0065
Russian Federation OP-1518
Saudi Arabia OP-1445
United States OP-934; OP-2282
Vermont OP-2421
Wyoming OP-520
- U/Th *see* Th/U
- U/Th/Pb**
California OP-1785
- Ugashik** OP-2179
- UHP (ultrahigh pressure) *see* ultrahigh pressure
- Uinta Basin** DDS-0069-B; FS 0157-02;
FS 0158-02; OP-803; OP-2467; OP-2468
- Uinta-Piceance Province** FS 0157-02
- Uintah Basin *see* Uinta Basin
- Ukraine** *see also* Donets Basin.
OF 03-0097
- Ulan Nuur Basin** OP-1549
- Ultisols**
Georgia OP-418
- ultrahigh pressure**
Norway OP-503
- ultramafics** *see also* kimberlite; komatiite;
ophiolite; peridotites; pyroxenite.
Montana OP-1506
- ultrametamorphism**
China OP-1103
Norway OP-503
- ultrapotassic composition**
California OP-1978
Hawaii OP-315
Iceland OP-315
- ultraviolet spectroscopy** OP-2442
- Uma inornata** WRI 02-4013; OP-1919
- Umnak Island** OP-2199
- Unalakleet Quadrangle** OF 02-0095
- Unalaska Island *see* Makushin
- uncertainty**
OF 02-0089; OF 02-0223; OF 03-0097;
OF 03-0369; OP-253; OP-478; OP-558;
OP-621; OP-1458; OP-1483; OP-1583;
OP-1748; OP-2614
Alaska OP-1186
Arizona OP-1543
California OP-1437; OP-1950
Montana OF 02-0370
Nevada OP-1543
Oregon OF 02-0229
Sweden OP-442
Washington OF 02-0229
- unconformities *see* angular unconformities; erosional unconformities



unconformity-type deposits

Turkey OP-1025

underground installations *see also* tunnels.

OP-456

Nevada WRI 02-4141

underground mining

OP-895

Ohio WRI 02-4041

underground water *see* ground water**Unimak Island** OP-1011**Union Wash Formation** OP-1271**Unionidae**

New York OF 02-0104

United Arab Emirates

Abu Dhabi OF 98-0018; OF 98-0410; OP-2674

United Kingdom *see* Great Britain**United Nations** OF 03-0308; OP-1310

United States *see also* Alabama; Alaska; Arizona; Arkansas; Atlantic Coastal Plain; California; Colorado; Colorado Plateau; Columbia Plateau; Connecticut; Delaware; District of Columbia; Florida; Georgia; Great Basin; Great Lakes; Gulf Coastal Plain; Hawaii; Idaho; Illinois; Indiana; Iowa; Kansas; Kentucky; Louisiana; Maine; Maryland; Massachusetts; Michigan; Midwest; Minnesota; Mississippi; Mississippi River basin; Mississippi Valley; Missouri; Montana; Nebraska; Nevada; New England; New Hampshire; New Jersey; New Mexico; New York; North Carolina; North Dakota; Ohio; Oklahoma; Oregon; Pennsylvania; Rhode Island; Rocky Mountains; South Carolina; South Dakota; Tennessee; Texas; Utah; Vermont; Virginia; Washington; West Virginia; Wisconsin; Wyoming.

P 1655; B 2172-D; B 2172-F; C 1143; C 1196-C; C 1196-D; C 1196-E; C 1196-F; C 1196-G; C 1196-H; C 1196-I; C 1196-J; C 1196-K; C 1196-L; C 1196-M; C 1196-N; C 1196-O; C 1244; C 1245; C 1247; C 1248; C 1249; C 1250; WRI 02-4079; WRI 02-4084; WRI 02-4168; WRI 02-4173; WRI 03-4027; OF 01-0322; OF 02-0328; OF 02-0370; OF 03-0028; OF 03-0033; OF 03-0049; OF 03-0065; OF 03-0094; OF 03-0097; OF 03-0137; OF 03-0232; OF 03-0236; OF 03-0282; OF 03-0294; OF 03-0300; OF 03-0307; OF 03-0343; OF 03-0377; I-2768; I-2789; FS 0009-03; FS 0012-03; FS 0015-03; FS 0017-03; FS 0027-02; FS 0056-01; FS 0077-02; FS 0097-02; FS 0106-02; FS 0108-02; FS 0130-01; OP-33; OP-43; OP-55; OP-118; OP-130; OP-158; OP-201; OP-311; OP-320; OP-321; OP-327; OP-337; OP-343; OP-452; OP-461; OP-514; OP-539; OP-563; OP-580; OP-582; OP-608; OP-729; OP-730; OP-735; OP-737; OP-738; OP-739; OP-773; OP-777; OP-863; OP-889; OP-901; OP-906; OP-907; OP-922; OP-923; OP-925; OP-927; OP-939; OP-944; OP-957; OP-1007; OP-1017; OP-1018; OP-1019; OP-1070; OP-1075; OP-1090; OP-1156; OP-1160; OP-1192; OP-1248; OP-1250; OP-1255; OP-1261; OP-1263; OP-1270; OP-1275; OP-1283; OP-1314; OP-1327; OP-1371; OP-1372; OP-1375; OP-1380; OP-1382; OP-1383; OP-1389; OP-1391; OP-1408; OP-1415; OP-1436; OP-1448; OP-1455; OP-1483; OP-1545; OP-1586; OP-1595; OP-1606;

OP-1612; OP-1630; OP-1767; OP-1779; OP-1787; OP-1829; OP-1851; OP-1854; OP-1861; OP-1902; OP-1927; OP-1938; OP-1966; OP-2059; OP-2090; OP-2096; OP-2105; OP-2106; OP-2146; OP-2153; OP-2237; OP-2314; OP-2336; OP-2472; OP-2519; OP-2537; OP-2538; OP-2553; OP-2558; OP-2620; OP-2640; OP-2647; OP-2700

Alamosa River OP-1575

Albuquerque Basin WRI 02-4235; OF 03-0321; OF 03-0369; OP-103; OP-2259; OP-2370

Allegheny Plateau OP-2291

Amargosa Desert OP-1170; OP-1786; OP-2397; OP-2551

Anacostia River basin OF 03-0073

Anadarko Basin OP-342

Aquia Aquifer OF 03-0255

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Bighorn Basin OP-840; OP-1426

Bighorn River WRI 03-4055

Black Warrior Basin FS 0038-03

Blue Ridge Mountains OF 00-0263; OP-349; OP-571

Bronson Hill Anticlinorium OP-934; OP-1476; OP-1477; OP-2663

Canadian River OP-1730; OP-2617

Carolina Terrane OP-2213

Chattahoochee River OP-31; OP-166; OP-258; OP-307; OP-475; OP-490; OP-864; OP-1303; OP-1308; OP-1811; OP-1874; OP-2151; OP-2634

Chesapeake Bay GN ; WRI 03-4035; WRI 03-4123; OF 03-0097; OP-236; OP-264; OP-916; OP-1078; OP-1198; OP-1504; OP-2046; OP-2385; OP-2507; OP-2527

Chicot Aquifer OF 02-0134; OF 02-0377; OF 03-0308; OP-672; OP-828; OP-1336; OP-2077; OP-2488

Choptank River OF 03-0071; OF 03-0072

Clark's Fork Basin OF 02-0336; OF 02-0472; OF 03-0356

Coeur d'Alene mining district OP-126

Columbia River estuary OF 02-0229

Connecticut River WRI 03-4012; OP-809

Connecticut Valley OP-2421

Culpeper Basin OF 03-0056

Delaware Basin OP-1707

Delaware Bay OP-1407

Delaware River C 1250; OP-191; OP-1707; OP-1831; OP-2669

Delaware River basin WRI 01-4066; FS 0116-02; OP-1643; OP-1707

Delmarva Peninsula WRI 03-4035; OP-1080; OP-1198

Denver Basin FS 0002-03; OP-553; OP-988; OP-1008; OP-2350

Dunkard Basin OP-366

Evangeline Aquifer OF 02-0134; OF 02-0377; OF 03-0308; OP-672; OP-2077

Flint Creek Range OP-2328

Floridan Aquifer WRI 02-4207; WRI 02-4244; WRI 02-4295; OF 00-0449; OF 02-0089; OF 02-0434; OF 02-0466; OF 03-0142; OF 03-0209; OP-4; OP-260; OP-376;

OP-551; OP-655; OP-656; OP-674; OP-797; OP-853; OP-1009; OP-1044; OP-1046; OP-1073; OP-1074; OP-1337; OP-1338; OP-1718; OP-1754; OP-1768; OP-2097; OP-2642

Forest City Basin OP-982; OP-983

Four Corners OP-45

Gallatin Range OP-2601

Gila River OP-1541

Gore Range OP-966; OP-2086

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Great Smoky Mountains OP-354; OP-879; OP-880; OP-1944

High Plains Aquifer C 1243; WRI 02-4112; WRI 02-4228; OF 03-0345; OP-837; OP-902; OP-1654; OP-2393

Hudson River OP-1012; OP-1125; OP-1485; OP-1872; OP-2372

Hudson Valley OF 02-0217; OF 03-0372; OP-1658; OP-1872

Idaho Batholith OP-1945

Illinois Basin OF 03-0037; OP-486; OP-886; OP-1141; OP-1218; OP-1510; OP-1964; OP-1995; OP-2214

Kirkwood-Cohansey Aquifer WRI 02-4288; OP-620

Klamath Mountains P 1661; OF 02-0490; OF 03-0306; OP-2029; OP-2525; OP-2653

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Madison Aquifer P 1411-B; WRI 02-4094; HA-0748; FS 0046-02; OP-1688; OP-1806; OP-2412

Magothy Aquifer WRI 01-4165; WRI 02-4255; OF 03-0256

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Mississippi River C 1250; WRI 03-4154; OP-23; OP-36; OP-77; OP-144; OP-175; OP-217; OP-245; OP-257; OP-573; OP-574; OP-579; OP-583; OP-684; OP-688; OP-689; OP-1539; OP-2115

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Mojave Desert WRI 02-4264; WRI 03-4016; OF 02-0089; OF 03-0308; OP-6; OP-234; OP-247; OP-299; OP-301; OP-600; OP-614; OP-624; OP-627; OP-917; OP-1138; OP-1170; OP-1176; OP-1533; OP-1729; OP-1799; OP-1877; OP-2009; OP-2028; OP-2155; OP-2251; OP-2312; OP-2418; OP-2437; OP-2564; OP-2676; OP-2677; OP-2678

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Nemaha Ridge OP-982; OP-983

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Ogallala Aquifer C 1243; WRI 03-4043

Ohio River OP-217; OP-239; OP-245; OP-958; OP-1699; OP-2626

Ohio River basin WRI 02-4064; FS 0089-02



- Ohio River valley OP-1905
 Ouachita Belt OP-1625; OP-2017
 Ouachita Mountains WRI 03-4084; OP-2235
 Ozark Mountains WRI 02-4210; WRI 03-4084;
 OP-1021; OP-1195; OP-2162; OP-2220;
 OP-2235; OP-2409
 Pine Mountain Window OP-2213
 Potomac River basin WRI 02-4067
 Powder River basin FS 0158-02; OP-261;
 OP-987; OP-1218; OP-2305; OP-2571
 Reading Prong OP-1926
 Reelfoot Rift OP-886; OP-1141; OP-1440;
 OP-1964; OP-1965; OP-2529; OP-2619;
 OP-2702
 Rock Creek Park WRI 02-4067
 Sabine Uplift OP-802
 San Juan Mountains OP-125; OP-1613;
 OP-1816; OP-2173; OP-2533
 Sangre de Cristo Mountains OF 03-0280;
 OF 03-0369; OP-2248
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 Susquehanna River WRI 03-4123; OP-2527
 Susquehanna River basin WRI 01-4171;
 WRI 03-4035; WRI 03-4123; OF 02-0284
 Suwannee River P 1656-A; OP-674; OP-796
 Tendoy Range OP-2036
 Tennessee River WRI 02-4268; WRI 03-4006;
 OP-1947
 Tennessee Valley OP-2045; OP-2399;
 OP-2607; OP-2608
 Tombigbee River OP-1958
 Truckee River OP-1599; OP-2693
 Uinta Basin DDS-0069-B; FS 0157-02;
 FS 0158-02; OP-803; OP-2467; OP-2468
 Virgin River valley OP-213; OP-764; OP-2133
 Wabash Valley OF 03-0015; FS 0131-02;
 OP-1119
 Walker Lane OP-1289; OP-2279; OP-2684
 Wasatch Front OP-1855
 Washita River valley WRI 03-4024
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 OP-2282; OP-2676
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 OP-946; OP-1424; OP-2247; OP-2601
 United States Geological Survey *see* U.S. Geo-
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 universities *see* academic institutions
uplifts *see also* domes; exhumation.
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 OP-295; OP-371; OP-1245; OP-1589;
 OP-2042; OP-2599
 Canada OP-1410
 China OP-267; OP-635
 Colorado DDS-0069-B; OP-966; OP-1194;
 OP-2086
 Great Lakes OP-2144
 Gulf Coastal Plain OP-802
 Indian Ocean OP-52
 Japan OP-686
 Montana OP-1488; OP-2036
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 Franconia Formation; Galesville Sandstone;
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 upper Cenozoic *see* Matuyama Chron
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 Colville Group; Eagle Sandstone; Ferron Sand-
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 Formation; Fruitland Formation; Greenhorn
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 dith River Formation; K-T boundary; Kirtland
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 Mesaverde Group; Middendorf Formation; Milk
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 amo Sandstone; Peedee Formation; Pictured
 Cliffs Sandstone; Pierre Shale; Senonian;
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 cine Formation; Williams Fork Formation
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 Albany Shale
 upper Eocene *see* Barnwell Formation; Dry
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 Burro Canyon Formation; Carmel Formation;
 Chinle Formation; Colorado River; Colorado
 River basin; Cutler Formation; Four Corners;
 Great Basin; Green River; Green River basin;
 Green River Formation; Lake Powell; Mancos
 Shale; Mesaverde Group; Moenkopi Formation;
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 Juan Basin; Uinta Basin; Virgin River valley;
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Uzbekistan *see also* Kyzylkum.
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Vail East Quadrangle MF-2375

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valleys *see also* canyons; erosion features.

OP-317; OP-1169; OP-2585
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 OP-1973

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Antarctica OP-2375

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Arizona OP-2573
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Vermejo Park Quadrangle OF 03-0438

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Vermont *see also* Ammonoosuc Volcanics; Connecticut Valley; Gile Mountain Formation; Partridge Formation.

WRI 02-4238; OF 02-0494; OF 03-0225;
 OP-783; OP-908; OP-1908; OP-1944; OP-2426;
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Caledonia County Vermont OP-1209

Orange County Vermont OF 03-0260;
 OF 03-0431; OP-572

Vertebrata *see also* Pisces; Tetrapoda.

Colorado OP-1619

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very low frequency methods *see* VLF methods

Vestsptsbergen *see* Spitsbergen Island

Vesuvius OP-1332; OP-2139

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Victoria Land *see also* Lake Vanda; McMurdo
 dry valleys; Terra Nova Bay.
 OF 03-0065; OP-1631

Victorville California OP-247; OP-624; OP-993

Vieques Island P 1419

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vinyl chloride

WRI 02-4079; OP-1450
 Delaware WRI 02-4121
 Maryland WRI 02-4157; WRI 03-4119;
 OF 01-0420

vinylidene chloride *see* dichloroethenes

Virgin Islands *see also* U. S. Virgin Islands.
 OF 02-0295; OP-2464

Virgin River valley OP-213; OP-764; OP-2133

Virginia *see also* Appalachian Basin; Blue Ridge Province; Chesapeake Bay; Delmarva Peninsula; New River Formation; Piedmont; Valley and Ridge Province.
 OF 02-0437; OF 03-0246; OF 03-0308; OP-174;
 OP-215; OP-908; OP-1908; OP-2007; OP-2329;
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Albemarle County Virginia OP-349
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 OP-571

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WRI 03-4115; OP-571

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OP-1111; OP-1887

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Colorado DDS-0069-B; OP-553

Pennsylvania OF 02-0302

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Utah DDS-0069-B

vitrinte reflectance

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Nevada OP-2388

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VLF methods

Hawaii P 1676

volatile matter *see* volatiles

volatile organic compounds

WRI 02-4079; WRI 02-4084; WRI 02-4112;

WRI 02-4173; WRI 02-4186; WRI 02-4188;

WRI 03-4079; OF 03-0097; OF 03-0212;

OP-419; OP-773; OP-1248; OP-1250;

OP-1779; OP-1908; OP-2293; OP-2553

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California OP-1551; OP-1594

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Delaware WRI 02-4121

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Illinois WRI 02-4062; WRI 02-4293; OP-2277

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Kansas WRI 02-4228; OP-2393

Louisiana OF 98-0565

Maine WRI 02-4085; WRI 02-4186

Maryland WRI 03-4119

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New Jersey OF 02-0383; OF 03-0097; OP-54;
OP-1032; OP-2376; OP-2554
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OP 03-0355; OP-1481; OP-1844; OP-2045;
OP-2450; OP-2514; OP-2659
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volatiles *see also* semivolatile organic compounds.

OP-206; OP-514; OP-643; OP-785; OP-789;
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C 1248; OP-544

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volcanic breccia

Hawaii OP-216
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volcanic clouds *see* ash clouds

volcanic earthquakes

OP-996
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OP-2273
California OP-556; OP-1996; OP-2057;
OP-2071
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OP-813; OP-1013; OP-1159; OP-1480
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volcanic features *see also* calderas; cinder cones;
lava channels; lava fields; lava tubes; volcanoes.
OP-181

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Alaska OP-2494
Oregon OP-1674; OP-1734; OP-1834;
OP-1857; OP-1886; OP-1895; OP-2502;
OP-2654
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Hawaii OP-1226; OP-2550
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OF 02-0492; OP-1458; OP-1773
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volcanic rocks *see also* andesites; basalts;
dacites; glasses; pyroclastic flows; pyroclastics;
rhyodacites; rhyolites; volcanic fields; volca-
nism; volcanoes.

OP-319; OP-654
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volcanic tremors *see* volcanic earthquakes

volcanicity *see* volcanism

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Alaska P 1662; OP-1949
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volcanics *see* volcanic rocks

volcanism *see also* ash falls; calderas; cinder
cones; eruptions; explosive eruptions; fumaroles;
lahars; lava; plinian-type eruptions; pyroclastic
flows; shield volcanoes; submarine volcanoes;
volcanic earthquakes; volcanic features; volcanic
fields; volcanic risk; volcanoes.

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volcanoes *see also* Arsia Mons; ash falls; Augus-
tine; El Chichon; Haleakala; Hekla; hot spots;
Kilauea; Kohala; Krakatoa; Kusatsu-Shirane;
Makushin; Mauna Kea; Mauna Loa; Medicine
Lake; Merapi; Mono Craters; Mount Mazama;
Mount Pinatubo; Mount Rainier; Mount Saint
Helens; Mount Spurr; Newberry Volcano;
Novarupta; nuees ardentes; Pavlof; Pico de
Orizaba; Popocatepetl; Puu Oo; Redoubt;
Ruapehu; shield volcanoes; Soufriere;
stratovolcanoes; submarine volcanoes; Surtsey;
Taal; Vesuvius; volcanic earthquakes.

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OP-1810; OP-1921; OP-2631
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Italy OP-80
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OP-1834; OP-1886; OP-1895; OP-2290;
OP-2502; OP-2654
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volcanogenic processes *see* volcanism

volcanology *see also* eruptions; volcanic features;
volcanism.

Alaska OP-2295
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volcanos *see* volcanoes

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susceptibility

volumetric analysis *see* titration

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vulcanology *see* volcanology

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Wadati-Benioff Zone *see* Benioff zone

Wahmonie Formation OP-1800

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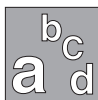
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- Colorado OP-1816
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- wall-rock alteration**
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- Walnut Creek** OP-1662
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Whatcom County Washington OP-555
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- Washita River valley** WRI 03-4024
- waste disposal** *see also* agricultural waste; bioremediation; chemical waste; disposal barriers; geologic hazards; hazardous waste; industrial waste; landfills; municipal waste; radioactive waste; solid waste; underground installations; waste disposal sites; waste rock; waste water.
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Texas OP-1170
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- waste disposal sites** *see also* radioactive waste; Yucca Mountain.
OF 03-0210; OP-2095
California OP-1647
Colorado OF 03-0149; OF 03-0317
Illinois WRI 03-4105
Massachusetts DDS-0074
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- Waste Isolation Pilot Plant** OP-1395
- waste management** *see also* waste disposal sites; waste rock.
C 1196-E; C 1196-F; C 1196-K; C 1196-L; C 1196-M; C 1196-N; C 1196-O; OF 03-0033
California C 1248; OP-1179
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- waste rock**
OF 03-0143; OF 03-0210; OF 03-0260
California OP-502; OP-1647
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C 1250; WRI 02-4270; OF 02-0223; FS 0027-02; OP-385; OP-1740; OP-1917; OP-2486; OP-2487
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