# APPENDIX A

## Abbreviations and Units of Measure

| | |
|---|---|
| 1 carat (metric) (diamond) | = 200 milligrams |
| 1 flask (fl) | = 76 pounds, avoirdupois |
| 1 karat (gold) | = one twenty-fourth part |
| 1 kilogram (kg) | = 2.2046 pounds, avoirdupois |
| 1 long ton (lt) | = 2,240 pounds, avoirdupois |
| 1 long ton unit (ltu) | = 1% of 1 long ton or 22.4 pounds avoirdupois |
| long calcined ton (lct) | = excludes water of hydration |
| long dry ton (ldt) | = excludes excess free moisture |
| Mcf | = 1,000 cubic feet |
| 1 metric ton (t) | = 2,204.6 pounds, avoirdupois or 1,000 kilograms |
| 1 metric ton (t) | = 1.1023 short ton |
| 1 metric ton unit (mtu) | = 1% of 1 metric ton or 10 kilograms |
| metric dry ton (mdt) | = excludes excess free moisture |
| 1 pound (lb) | = 453.6 grams |
| 1 short ton (st) | = 2,000 pounds, avoirdupois |
| 1 short ton unit (stu) | = 1% of 1 short ton or 20 pounds, avoirdupois |
| short dry ton (sdt) | = excludes excess free moisture |
| 1 troy ounce (tr oz) | = 1.09714 avoirdupois ounces or 31.103 grams |
| 1 troy pound | = 12 troy ounces |

# APPENDIX B

## Definitions of Selected Terms Used in This Report

### Terms Used for Materials in the National Defense Stockpile and Helium Stockpile

**Uncommitted inventory** refers to the quantity of mineral materials held in the National Defense Stockpile. Nonstockpile-grade materials may be included in the table; where significant, the quantities of these stockpiled materials will be specified in the text accompanying the table.

**Authorized for disposal** refers to quantities that are in excess of the stockpile goal for a material, and for which Congress has authorized disposal over the long term at rates designed to maximize revenue but avoid undue disruption of the usual markets and financial loss to the United States.

**Disposal plan FY 2010** indicates the total amount of a material in the National Defense Stockpile that the U.S. Department of Defense is permitted to sell under the Annual Materials Plan approved by Congress for the fiscal year. FY 2010 (fiscal year 2010) is the period October 1, 2009, through September 30, 2010. For mineral commodities that have a disposal plan greater than the inventory, actual quantity will be limited to remaining disposal authority or inventory. Note that, unlike the National Defense Stockpile, helium stockpile sales by the Bureau of Land Management under the Helium Privatization Act of 1996 are permitted to exceed disposal plans.

**Disposals FY 2010** refers to material sold or traded from the stockpile in FY 2010.

### Depletion Allowance

The depletion allowance is a business tax deduction analogous to depreciation, but applies to an ore reserve rather than equipment or production facilities. Federal tax law allows this deduction from taxable corporate income, recognizing that an ore deposit is a depletable asset that must eventually be replaced.

# APPENDIX C—Reserves and Resources

Reserves data are dynamic. They may be reduced as ore is mined and/or the extraction feasibility diminishes, or more commonly, they may continue to increase as additional deposits (known or recently discovered) are developed, or currently exploited deposits are more thoroughly explored and/or new technology or economic variables improve their economic feasibility. Reserves may be considered a working inventory of mining companies' supply of an economically extractable mineral commodity. As such, magnitude of that inventory is necessarily limited by many considerations, including cost of drilling, taxes, price of the mineral commodity being mined, and the demand for it. Reserves will be developed to the point of business needs and geologic limitations of economic ore grade and tonnage. For example, in 1970, identified and undiscovered world copper resources were estimated to contain 1.6 billion metric tons of copper, with reserves of about 280 million metric tons of copper. Since then, about 400 million metric tons of copper have been produced worldwide, but world copper reserves in 2010 were estimated to be 630 million metric tons of copper, more than double those in 1970, despite the depletion by mining of more than the original reserves estimate.

Future supplies of minerals will come from reserves and other identified resources, currently undiscovered resources in deposits that will be discovered in the future, and material that will be recycled from current in-use-stocks of mineral or from minerals in waste disposal sites. Undiscovered deposits of minerals constitute an important consideration in assessing future supplies. USGS reports provide estimates of undiscovered mineral resources using a three-part assessment methodology (Singer and Menzie, 2010). Mineral-resource assessments have been carried out for small parcels of land being evaluated for land reclassification, for the Nation, and for the world.

### Reference Cited

Singer, D.A., and Menzie, W.D., 2010, Quantitative mineral resource assessments—An integrated approach: Oxford, United Kingdom, Oxford University Press, 219 p.

# Part A—Resource/Reserve Classification for Minerals[1]

## INTRODUCTION

Through the years, geologists, mining engineers, and others operating in the minerals field have used various terms to describe and classify mineral resources, which as defined herein include energy materials. Some of these terms have gained wide use and acceptance, although they are not always used with precisely the same meaning.

The USGS collects information about the quantity and quality of all mineral resources. In 1976, the USGS and the U.S. Bureau of Mines developed a common classification and nomenclature, which was published as USGS Bulletin 1450–A—*"Principles of the Mineral Resource Classification System of the U.S. Bureau of Mines and U.S. Geological Survey."* Experience with this resource classification system showed that some changes were necessary in order to make it more workable in practice and more useful in long-term planning. Therefore, representatives of the USGS and the U.S. Bureau of Mines collaborated to revise Bulletin 1450–A. Their work was published in 1980 as USGS Circular 831—*"Principles of a Resource/Reserve Classification for Minerals."*

Long-term public and commercial planning must be based on the probability of discovering new deposits, on developing economic extraction processes for currently unworkable deposits, and on knowing which resources are immediately available. Thus, resources must be continuously reassessed in the light of new geologic knowledge, of progress in science and technology, and of shifts in economic and political conditions. To best serve these planning needs, known resources should be classified from two standpoints: (1) purely geologic or physical/chemical characteristics—such as grade, quality, tonnage, thickness, and depth—of the material in place; and (2) profitability analyses based on costs of extracting and marketing the material in a given economy at a given time. The former constitutes important objective scientific information of the resource and a relatively unchanging foundation upon which the latter more valuable economic delineation can be based.

The revised classification system, designed generally for all mineral materials, is shown graphically in figures 1 and 2; its components and their usage are described in the text. The classification of mineral and energy resources is necessarily arbitrary, because definitional criteria do not always coincide with natural boundaries. The system can be used to report the status of mineral and energy-fuel resources for the Nation or for specific areas.

## RESOURCE/RESERVE DEFINITIONS

A dictionary definition of resource, "something in reserve or ready if needed," has been adapted for mineral and energy resources to comprise all materials, including those only surmised to exist, that have present or anticipated future value.

**Resource.—**A concentration of naturally occurring solid, liquid, or gaseous material in or on the Earth's crust in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible.

**Original Resource.—**The amount of a resource before production.

**Identified Resources.—**Resources whose location, grade, quality, and quantity are known or estimated from specific geologic evidence. Identified resources include economic, marginally economic, and sub-economic components. To reflect varying degrees of geologic certainty, these economic divisions can be subdivided into measured, indicated, and inferred.

[1]Based on U.S. Geological Survey Circular 831, 1980.

**Demonstrated.—**A term for the sum of measured plus indicated.

**Measured.—**Quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and(or) quality are computed from the results of detailed sampling. The sites for inspection, sampling, and measurements are spaced so closely and the geologic character is so well defined that size, shape, depth, and mineral content of the resource are well established.

**Indicated.—**Quantity and grade and(or) quality are computed from information similar to that used for measured resources, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for measured resources, is high enough to assume continuity between points of observation.

**Inferred.—**Estimates are based on an assumed continuity beyond measured and(or) indicated resources, for which there is geologic evidence. Inferred resources may or may not be supported by samples or measurements.

**Reserve Base.—**That part of an identified resource that meets specified minimum physical and chemical criteria related to current mining and production practices, including those for grade, quality, thickness, and depth. The reserve base is the in-place demonstrated (measured plus indicated) resource from which reserves are estimated. It may encompass those parts of the resources that have a reasonable potential for becoming economically available within planning horizons beyond those that assume proven technology and current economics. The reserve base includes those resources that are currently economic (reserves), marginally economic (marginal reserves), and some of those that are currently subeconomic (subeconomic resources). The term “geologic reserve” has been applied by others generally to the reserve-base category, but it also may include the inferred-reserve-base category; it is not a part of this classification system.

**Inferred Reserve Base.—**The in-place part of an identified resource from which inferred reserves are estimated. Quantitative estimates are based largely on knowledge of the geologic character of a deposit and for which there may be no samples or measurements. The estimates are based on an assumed continuity beyond the reserve base, for which there is geologic evidence.

**Reserves.—**That part of the reserve base which could be economically extracted or produced at the time of determination. The term reserves need not signify that extraction facilities are in place and operative. Reserves include only recoverable materials; thus, terms such as “extractable reserves” and “recoverable reserves” are redundant and are not a part of this classification system.

**Marginal Reserves.—**That part of the reserve base which, at the time of determination, borders on being economically producible. Its essential characteristic is economic uncertainty. Included are resources that would be producible, given postulated changes in economic or technological factors.

**Economic.—**This term implies that profitable extraction or production under defined investment assumptions has been established, analytically demonstrated, or assumed with reasonable certainty.

**Subeconomic Resources.—**The part of identified resources that does not meet the economic criteria of reserves and marginal reserves.

**Undiscovered Resources.—**Resources, the existence of which are only postulated, comprising deposits that are separate from identified resources. Undiscovered resources may be postulated in deposits of such grade and physical location as to render them economic, marginally economic, or subeconomic. To reflect varying degrees of geologic certainty, undiscovered resources may be divided into two parts:

**Hypothetical Resources.—**Undiscovered resources that are similar to known mineral bodies and that may be reasonably expected to exist in the same producing district or region under analogous geologic conditions. If exploration confirms their existence and reveals enough information about their quality, grade, and quantity, they will be reclassified as identified resources.

**Speculative Resources.—**Undiscovered resources that may occur either in known types of deposits in favorable geologic settings where mineral discoveries have not been made, or in types of deposits as yet unrecognized for their economic potential. If exploration confirms their existence and reveals enough information about their quantity, grade, and quality, they will be reclassified as identified resources.

**Restricted Resources/Reserves.—**That part of any resource/reserve category that is restricted from extraction by laws or regulations. For example, restricted reserves meet all the requirements of reserves except that they are restricted from extraction by laws or regulations.

**Other Occurrences.—**Materials that are too low grade or for other reasons are not considered potentially economic, in the same sense as the defined resource, may be recognized and their magnitude estimated, but they are not classified as resources. A separate category, labeled other occurrences, is included in figures 1 and 2. In figure 1, the boundary between subeconomic and other occurrences is limited by the concept of current or potential feasibility of economic production, which is required by the definition of a resource. The boundary is obviously uncertain, but limits may be specified in terms of grade, quality, thickness, depth, percent extractable, or other economic-feasibility variables.

**Cumulative Production.—**The amount of past cumulative production is not, by definition, a part of the resource. Nevertheless, a knowledge of what has been produced is important in order to understand current resources, in terms of both the amount of past production and the amount of residual or remaining in-place resource. A separate space for cumulative production is shown in figures 1 and 2. Residual material left in the ground during current or future extraction should be recorded in the resource category appropriate to its economic-recovery potential.

**FIGURE 1.—Major Elements of Mineral-Resource Classification, Excluding *Reserve Base* and *Inferred Reserve Base***

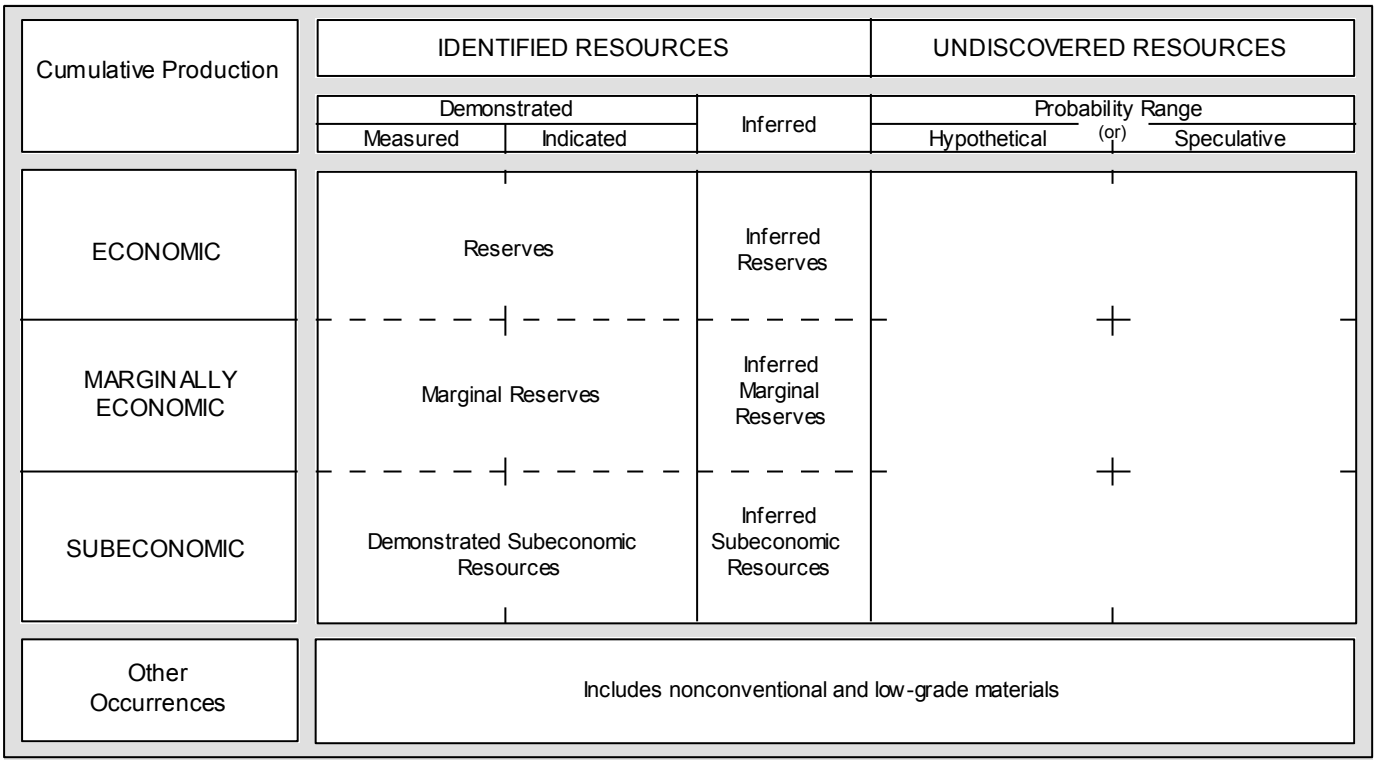
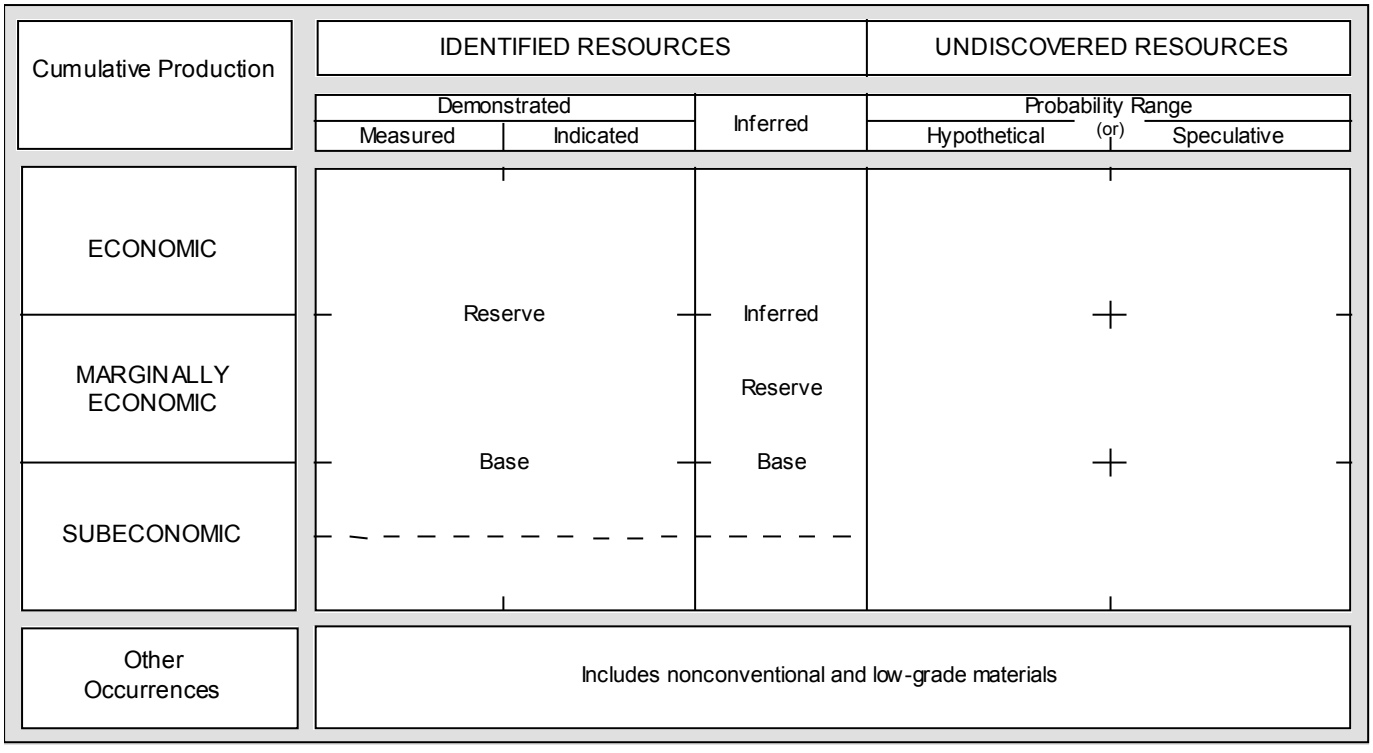



**FIGURE 2.—*Reserve Base* and *Inferred Reserve Base* Classification Categories**



# Part B—Sources of Reserves Data

National reserves information for most mineral commodities found in this report, including those for the United States, is derived from a variety of sources. The ideal source of such information would be comprehensive evaluations that apply the same criteria to deposits in different geographic areas and report the results by country. In the absence of such evaluations, national reserves estimates compiled by countries for selected mineral commodities are a primary source of national reserves information. Lacking national assessment information by governments, sources such as academic articles, company reports, presentations by company representatives, and trade journal articles, or a combination of these, serve as the basis for national reserves information reported in the mineral commodity sections of this publication.

A national estimate may be assembled from the following: historically reported reserves information carried for years without alteration because no new information is available, historically reported reserves reduced by the amount of historical production, and company reported reserves. International minerals availability studies conducted by the U.S. Bureau of Mines before 1996 and estimates of identified resources by an international collaborative effort (the International Strategic Minerals Inventory) are the bases for some reserves estimates. The USGS collects information about the quantity and quality of mineral resources but does not directly measure reserves, and companies or governments do not directly report reserves to the USGS. Reassessment of reserves is a continuing process, and the intensity of this process differs for mineral commodities, countries, and time period.

Some countries have specific definitions for reserves data, and reserves for each country are assessed separately, based on reported data and definitions. An attempt is made to make reserves consistent among countries for a mineral commodity and its byproducts. For example, the Australasian Joint Ore Reserves Committee (JORC) established the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) that sets out minimum standards, recommendations, and guidelines for public reporting in Australasia of exploration results, mineral resources, and ore reserves. Companies listed on the Australian Securities Exchange and the New Zealand Stock Exchange are required to report publicly on ore reserves and mineral resources under their control, using the JORC Code (http://www.jorc.org/).

Data reported for individual deposits by mining companies are compiled in Geoscience Australia's national mineral resources database and used in the preparation of the annual national assessments of Australia's mineral resources. Because of its specific use in the JORC Code, the term "reserves" is not used in the national inventory, where the highest category is "Economic Demonstrated Resources" (EDR). In essence, EDR combines the JORC Code categories proved reserves and probable reserves, plus measured resources and indicated resources. This is considered to provide a reasonable and objective estimate of what is likely to be available for mining in the long term. Accessible Economic Demonstrated Resources represent the resources within the EDR category that are accessible for mining. Reserves for Australia in Mineral Commodity Summaries 2011 are Accessible EDR. For more information, see Australia's Identified Mineral Resources 2010 (http://www.ga.gov.au/minerals/mineral-resources/aimr.html).

In Canada, the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) provides standards for the classification of mineral resources and mineral reserves estimates into various categories. The category to which a resource or reserve estimate is assigned depends on the level of confidence in the geologic information available on the mineral deposit, the quality and quantity of data available on the deposit, the level of detail of the technical and economic information that has been generated about the deposit, and the interpretation of the data and information. For more information on the CIM definition standards, see http://www.cim.org/UserFiles/File/CIM_DEFINITON_STANDARDS_Nov_2010.pdf.

Russian reserves for most minerals, which had been withheld, have been released with increasing frequency within the past 3 or 4 years and can appear in a number of sources, although no systematic list of Russian reserves is published. Russian reserves data for various minerals appear at times in journal articles, such as those in the journal Mineral'nye Resursy Rossii [Mineral Resources of Russia (MRR)], which is published by the Russian Ministry of Natural Resources. Russian reserves data are often published according to the Soviet reserves classification system, which is still in use in many countries of the former Soviet Union, but also at times published according to the JORC system based on analyses made by Western firms. It is sometimes not clear if the reserves are being reported in ore or mineral content. It is also in many cases not clear which definition of reserves is being used, as the system inherited from the former Soviet Union has a number of ways in which the term reserves is defined, and these definitions qualify the percentage of reserves that are included. For example, the Soviet reserves classification system, besides the categories A,B,C1, and C2, which represent progressively detailed knowledge of a mineral deposit based on exploration data, has other subcategories cross-imposed upon the system. Under the broad category reserves (zapasy), there are subcategories that include balance reserves (economic reserves or balansovye zapasy) and outside the balance reserves (uneconomic reserves or zabalansovye zapasy) as well as categories that include explored, industrial, and proven reserves, and the reserves totals can vary significantly depending on the specific definition of reserves being reported.

# APPENDIX D

## Country Specialists Directory

Minerals information country specialists at the U.S. Geological Survey collect and analyze information on the mineral industries of more than 170 nations throughout the world. The specialists are available to answer minerals-related questions concerning individual countries.

**Africa and the Middle East**

| | |
|---|---|
| Algeria | Mowafa Taib |
| Angola | Omayra Bermúdez-Lugo |
| Bahrain | Mowafa Taib |
| Benin | Omayra Bermúdez-Lugo |
| Botswana | Harold R. Newman |
| Burkina Faso | Omayra Bermúdez-Lugo |
| Burundi | Thomas R. Yager |
| Cameroon | Harold R. Newman |
| Cape Verde | Harold R. Newman |
| Central African Republic | Omayra Bermúdez-Lugo |
| Chad | Philip M. Mobbs |
| Comoros | Harold R. Newman |
| Congo (Brazzaville) | Philip M. Mobbs |
| Congo (Kinshasa) | Thomas R. Yager |
| Côte d'Ivoire | Omayra Bermúdez-Lugo |
| Djibouti | Thomas R. Yager |
| Egypt | Mowafa Taib |
| Equatorial Guinea | Philip M. Mobbs |
| Eritrea | Harold R. Newman |
| Ethiopia | Thomas R. Yager |
| Gabon | Omayra Bermúdez-Lugo |
| The Gambia | Omayra Bermúdez-Lugo |
| Ghana | Omayra Bermúdez-Lugo |
| Guinea | Omayra Bermúdez-Lugo |
| Guinea-Bissau | Omayra Bermúdez-Lugo |
| Iran | Philip M. Mobbs |
| Iraq | Mowafa Taib |
| Israel | Thomas R. Yager |
| Jordan | Mowafa Taib |
| Kenya | Thomas R. Yager |
| Kuwait | Philip M. Mobbs |
| Lebanon | Mowafa Taib |
| Lesotho | Harold R. Newman |
| Liberia | Omayra Bermúdez-Lugo |
| Libya | Mowafa Taib |
| Madagascar | Thomas R. Yager |
| Malawi | Thomas R. Yager |
| Mali | Omayra Bermúdez-Lugo |
| Mauritania | Mowafa Taib |
| Mauritius | Harold R. Newman |
| Morocco & Western Sahara | Harold R. Newman |
| Mozambique | Thomas R. Yager |
| Namibia | Omayra Bermúdez-Lugo |
| Niger | Omayra Bermúdez-Lugo |
| Nigeria | Philip M. Mobbs |
| Oman | Mowafa Taib |
| Qatar | Mowafa Taib |
| Reunion | Harold R. Newman |
| Rwanda | Thomas R. Yager |
| São Tomé & Principe | Omayra Bermúdez-Lugo |
| Saudi Arabia | Philip M. Mobbs |
| Senegal | Omayra Bermúdez-Lugo |
| Seychelles | Harold R. Newman |
| Sierra Leone | Omayra Bermúdez-Lugo |
| Somalia | Thomas R. Yager |
| South Africa | Thomas R. Yager |
| Sudan | Thomas R. Yager |
| Swaziland | Harold R. Newman |
| Syria | Mowafa Taib |
| Tanzania | Thomas R. Yager |
| Togo | Omayra Bermúdez-Lugo |
| Tunisia | Mowafa Taib |
| Turkey | Philip M. Mobbs |
| Uganda | Harold R. Newman |
| United Arab Emirates | Mowafa Taib |
| Yemen | Mowafa Taib |
| Zambia | Philip M. Mobbs |
| Zimbabwe | Philip M. Mobbs |

**Asia and the Pacific**

| | |
|---|---|
| Afghanistan | Chin S. Kuo |
| Australia | Pui-Kwan Tse |
| Bangladesh | Yolanda Fong-Sam |
| Bhutan | Lin Shi |
| Brunei | Pui-Kwan Tse |
| Burma (Myanmar) | Yolanda Fong-Sam |
| Cambodia | Yolanda Fong-Sam |
| China | Pui-Kwan Tse |
| East Timor | Pui-Kwan Tse |
| Fiji | Lin Shi |
| India | Chin S. Kuo |
| Indonesia | Chin S. Kuo |
| Japan | Chin S. Kuo |
| Korea, North | Lin Shi |
| Korea, Republic of | Lin Shi |
| Laos | Yolanda Fong-Sam |
| Malaysia | Pui-Kwan Tse |
| Mongolia | Susan G. Wacaster |
| Nauru | Pui-Kwan Tse |
| Nepal | Lin Shi |
| New Caledonia | Susan G. Wacaster |
| New Zealand | Pui-Kwan Tse |
| Pakistan | Chin S. Kuo |
| Papua New Guinea | Susan G. Wacaster |
| Philippines | Yolanda Fong-Sam |
| Singapore | Pui-Kwan Tse |
| Solomon Islands | Chin S. Kuo |
| Sri Lanka | Chin S. Kuo |
| Taiwan | Pui-Kwan Tse |
| Thailand | Lin Shi |
| Tonga | Chin S. Kuo |
| Vanuatu | Chin S. Kuo |
| Vietnam | Yolanda Fong-Sam |

**Europe and Central Eurasia**

| | |
|---|---|
| Albania | Mark Brininstool |
| Armenia[1] | Richard M. Levine |
| Austria[2] | Steven T. Anderson |
| Azerbaijan[1] | Richard M. Levine |
| Belarus[1] | Richard M. Levine |

**Europe and Central Eurasia—continued**

| | |
|---|---|
| Belgium[2] | Alberto A. Perez |
| Bosnia and Herzegovina | Mark Brininstool |
| Bulgaria[2] | Mark Brininstool |
| Croatia | Mark Brininstool |
| Cyprus[2] | Harold R. Newman |
| Czech Republic[2] | Mark Brininstool |
| Denmark, Faroe Islands, and Greenland[2] | Harold R. Newman |
| Estonia[2] | Richard M. Levine |
| Finland[2] | Harold R. Newman |
| France[2] | Alberto A. Perez |
| Georgia | Richard M. Levine |
| Germany[2] | Steven T. Anderson |
| Greece[2] | Harold R. Newman |
| Hungary[2] | Mark Brininstool |
| Iceland | Harold R. Newman |
| Ireland[2] | Alberto A. Perez |
| Italy[2] | Alberto A. Perez |
| Kazakhstan[1] | Richard M. Levine |
| Kyrgyzstan[1] | Richard M. Levine |
| Latvia[2] | Richard M. Levine |
| Lithuania[2] | Richard M. Levine |
| Luxembourg[2] | Alberto A. Perez |
| Macedonia | Mark Brininstool |
| Malta[2] | Harold R. Newman |
| Moldova[1] | Richard M. Levine |
| Montenegro | Mark Brininstool |
| Netherlands[2] | Alberto A. Perez |
| Norway | Harold R. Newman |
| Poland[2] | Mark Brininstool |
| Portugal[2] | Alfredo C. Gurmendi |
| Romania[2] | Mark Brininstool |
| Russia[1] | Richard M. Levine |
| Serbia | Mark Brininstool |
| Slovakia[2] | Mark Brininstool |
| Slovenia[2] | Mark Brininstool |
| Spain[2] | Alfredo C. Gurmendi |
| Sweden[2] | Harold R. Newman |
| Switzerland | Harold R. Newman |
| Tajikistan[1] | Richard M. Levine |
| Turkmenistan[1] | Richard M. Levine |
| Ukraine[1] | Mark Brininstool |
| United Kingdom[2] | Alberto A. Perez |
| Uzbekistan[1] | Richard M. Levine |

**North America, Central America, and the Caribbean**

| | |
|---|---|
| Belize | Susan G. Wacaster |
| Canada | Philip M. Mobbs |
| Costa Rica | Susan G. Wacaster |
| Cuba | Omayra Bermúdez-Lugo |
| Dominican Republic | Susan G. Wacaster |
| El Salvador | Susan G. Wacaster |
| Guatemala | Steven T. Anderson |
| Haiti | Susan G. Wacaster |
| Honduras | Susan G. Wacaster |
| Jamaica | Susan G. Wacaster |
| Mexico | Alberto A. Perez |
| Nicaragua | Susan G. Wacaster |
| Panama | Susan G. Wacaster |
| Trinidad and Tobago | Susan G. Wacaster |

**South America**

| | |
|---|---|
| Argentina | Susan G. Wacaster |
| Bolivia | Steven T. Anderson |
| Brazil | Alfredo C. Gurmendi |
| Chile | Steven T. Anderson |
| Colombia | Susan G. Wacaster |
| Ecuador | Susan G. Wacaster |
| French Guiana | Alfredo C. Gurmendi |
| Guyana | Alfredo C. Gurmendi |
| Paraguay | Alfredo C. Gurmendi |
| Peru | Alfredo C. Gurmendi |
| Suriname | Alfredo C. Gurmendi |
| Uruguay | Alfredo C. Gurmendi |
| Venezuela | Alfredo C. Gurmendi |

[1]Member of Commonwealth of Independent States.
[2]Member of European Union.

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| Thomas R. Yager | (703) 648-7739 | tyager@usgs.gov |