science for a changing world

Preliminary Catalog of the Sedimentary Basins of the United States

By James L. Coleman, Jr., and Steven M. Cahan

Open-File Report 2012–1111

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

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2012

Suggested citation:
Coleman, J.L., Jr., and Cahan, S.M., 2012, Preliminary catalog of the sedimentary basins of the United States: U.S. Geological Survey Open-File Report 2012–1111, 27 p. (plus 4 figures and 1 table available as separate files) Available online at http://pubs.usgs.gov/of/2012/1111/.

Contents

Figures

Table

Conversion Factors

Inch/Pound to SI

Multiply	By	To obtain
mile (mi)	1.609	kilometer (km)
mile, nautical (nmi)	1.852	kilometer (km)

SI to Inch/Pound

kilometer (km)	0.6214	mile (mi)
kilometer (km)	0.5400	mile, nautical (nmi)
meter (m)	1.094	yard

Preliminary Catalog of the Sedimentary Basins of the United States

By James L. Coleman, Jr., and Steven M. Cahan

Abstract

One hundred forty-four sedimentary basins (or groups of basins) in the United States (both onshore and offshore) are identified, located, and briefly described as part of a Geographic Information System (GIS) data base in support of the Geologic Carbon Dioxide Sequestration National Assessment Project (Brennan and others, 2010). This catalog of basins is designed to provide a check list and basic geologic framework for compiling more detailed geologic and reservoir engineering data for this project and other future investigations.

Introduction

The purpose of this GIS data base and derivative maps is to provide an initial listing of sedimentary basins of the United States and a preliminary reference map for current and future geologic carbon dioxide (CO_2) sequestration national assessment studies. One hundred forty-four sedimentary basins (or groups of basins) are identified, located, and briefly described (table 1). Figures illustrating the basins according to geologic age are included to show the distribution and size of the basins (figs. 1–4). However, the reader is referred to the GIS to locate any specific basin. All of the basins within this catalog are shown on each figure. The line color, which delimits each basin, does not signify any geologic or geographic attribute. The color fills, however, do correspond to the plate tectonic setting and geologic era of each basin. In some instances, basin polygons may overlie one another. In these cases, the smaller basin is placed on top of the larger basin. If superimposed basins are of different ages, it may be difficult to distinguish a basin with no polygon color fill from the underlying basin with a polygon color fill. The reader is urged to examine table 1 or the accompanying GIS to determine the category of each basin.

Both onshore and offshore basins are recognized in this compilation. As research continues on this topic, it is expected that a revised version of this study will follow, including more details on basin volume, geologic history, fluid flow characteristics, and CO_2 storage potential.

The text accompanying this catalog gives a very brief synopsis of the age and style of the listed sedimentary basins and is not intended to be a substantial discussion of all of the factors involved in sedimentary basin creation, fill, and preservation or of the full-cycle evolution of the sediments and sedimentary rocks contained within the basin. The processes of plate tectonics and sedimentary basin formation and preservation are more complex than that described here. The reader interested in a more complete discussion of sedimentary basin processes, origin, and evolution are urged to review Dickinson (1976), Bally and Snelson (1980), Klemme (1980), Kingston and others, (1983), and the collection of Foster and Beaumont (1987). More detailed discussions of many of the basins or composite basins reviewed in this report can be found in the Geological Society of America “Decade of North America” (DNAG) volumes (especially Sloss, 1988; Bally and Palmer, 1989; Hatcher and others, 1989; Winterer, 1989; Salvador, 1991; Burchfiel and others, 1992; Reed and others, 1993; Plafker and Berg, 1994) and “The Sedimentary Basins of the United States and Canada” (Miall, 2008). Recent basin analyses in many areas have not been incorporated into this initial report. Specifically, new interpretations by Bird and Houseknecht (2011), K.J. Bird and D.W. Houseknecht (unpub. data, 2010), Houseknecht and Bird (2011), Houseknecht and Till (2011), Houseknecht and others (2011), and Houseknecht and Bird (2012, in press a, b) in Arctic Alaska and adjacent Arctic Canada will likely result in an improved understanding and a reinterpretation of the basins listed herein.

For the purposes of this discussion, a sedimentary basin is considered to be that volume of sedimentary rocks within a three dimensional container, the boundaries of which are definable geologic features such as fault zones, closing structural contours, or up stratigraphic dip pinchout of wedges or sediments or sedimentary rocks. These sedimentary containers have an areal extent that is recorded in the accompanying GIS shapefile. The classification terms used in the text were created by the authors to help explain the nature and association of individual sedimentary basins with other similarly formed and preserved basins. Most basins have an evolutionary history and advance from one style to another throughout their life.

Sedimentary basins in their most simplistic form are containers in which a preserved volumetric accumulation of sediments may over time and exposure to elevated temperature and pressure be lithified into sedimentary rocks. Many basins form as the result of plate tectonic activity through a variety of structural processes. These processes generate relief necessary for erosion, carbonate deposition (where possible), and the accommodation space for the accumulation and preservation of sediment.

The surface of the Earth can be divided into cratons (tectonically stable interior areas of continents, with thick lithospheric roots overlying anomalously cold mantle), cratonic margins (variably tectonically active areas of crust transitional in nature between the thick crust of the craton and the relatively thin crust of the oceans), and ocean basins (variably tectonically active areas of thin crust, generally overlying hot mantle). At times in the Earth's history, sea level was higher than today, and vast, shallow seas covered the cratons, leaving behind thick accumulations of sediments and sedimentary rock termed here platform (or shelf) sediments. Typically, these platform sediments increase in thickness into basins within or peripheral to the cratons. In complete sedimentary basin sequences, platform sediments transition seaward through several depositional facies mosaics ranging from continental to shallow water marine to marine slope finally ending in marine accumulations of potentially deep water settings.

Sedimentary processes may fill the basins with a variety of siliclastic and carbonate sediments, the character of which is determined in part by the proximity of older, relatively high standing sedimentary, metamorphic, or igneous rocks, which can be eroded and the resulting sediment deposited into the basin. Additional factors controlling the character of accumulated sediments are the areal extent and hydraulic gradients of erosional and depositional systems delivering sediments to the basin, climate throughout the erosional and depositional systems, the time involved in sediment transport to a final depositional site, extra-basinal influences (such as volcanic ash contributions, bolide impacts, and tsunamis), and post-depositional diagenetic, igneous, and metamorphic activity. These basins can form just about anywhere on a tectonic plate where tectonic forces permit and may vary in size from small "pocket basins" of a few acres in size to large ocean basins. Continued plate tectonic activity may preserve many of these basins, but likewise, many basins are destroyed by plate convergence leading to orogenic compression, folding, metamorphism, uplift, and erosion or subduction and incorporation into deep crustal regions.

A sedimentary basin may form as one type of basin and evolve through time into another type of basin. Cratonic basins may have their origin as rift basins. Foreland basins may have earlier phases as rift basins and passive margin basins. Basins that form on active plate margins may have a highly varied history of style development, modification commonly by transpressional or transtentional tectonics, and change, even though their life spans may be geologically very short.

As indicated above, most basins may grade from one style to another through both time and space; each basin discussed in this report is placed into a single classification based on its predominant geological style as determined from published descriptions and interpretations.

For this report, the basins are grouped further by geologic age: Cenozoic, Mesozoic, Paleozoic, and Neoproterozoic, based primarily on the age of greatest basin subsidence and sediment accumulation (table 1). Pre-Neoproterozoic basins are not considered as present-day sedimentary basins.

For this study, basins are categorized in general sizes relative to one another. These categories are small, medium, large, very large, and huge. No specific size dimensions are inferred.

In some instances, sub-basins or mini-basins are grouped under a single basin name. For instance, the Gulf of Mexico sedimentary basin includes the Rio Grande Embayment, the East Texas Basin, the North Louisiana Salt Dome Basin, the Mississippi Interior Salt Dome Basin, and the Gulf Coast Salt Dome Basin. Numerous Cenozoic basins within the Basin and Range Province are included within the Basin and Range Basins. Each of these groupings will be explained in more detail in the following section on basin descriptions.

Where data were available, basins were delineated based on the shallowest closed structural contour or fault boundary if that element controls the extent of the basin's sedimentary rocks. In some areas, structural contours were not available, and published basin outlines were used. In most instances where basins extend beyond the national border or exclusive economic zone, the geologic basin outlines were truncated to coincide with the U. S. national or national maritime border.

The basin boundaries for this study were selected to represent those areas of the United States with thick accumulations of sedimentary rocks. These boundaries were not meant to coincide with the boundaries of the U.S. Geological Survey (USGS) National Oil and Gas Assessment project assessment units or total petroleum systems. Because petroleum is more buoyant than water, petroleum will naturally flow toward lower pressure regimes, displacing water as it moves. Commonly this flow direction is up structural dip. Consequently, petroleum can normally be expected to flow out of sedimentary basins into structurally high areas adjacent to the petroleum kitchen area (Magoon and Dow, 1994). Therefore, it would not be unexpected to find some petroleum fields outside of the sedimentary basins identified in this report.

In this investigation and data base, basin outlines within the contiguous 48 United States were interpreted from Cohee and others (1962), Frezon and Finn (1988), and selected volumes in the series "The Decade of North American Geology" by the Geological Society of America (1989, 1991, 1992, 1993, 1994; see individual basin references). Additional data for the contiguous 48 United States were drawn from King and Beikman (1974). Basin outlines for Alaska were taken primarily from Beikman (1980), Kirschner (1994), the U.S. Geological Survey (1997), and Troutman and Stanley (2002). The basin outline for Hawaii was adapted from Winterer (1989) and Sherrod and others (2007). The bounding elements for most of the basins described in the text are not identified by name within the GIS. The reader is referred to the cited map sources (for example, Cohee and others, 1962) for their locations.

The majority of the data used in this compilation was taken from maps at scales of 1:2,500,000 (Cohee and others, 1962; King and Beikman, 1974; Beikman, 1980; Ewing and Flores Lopez, 1991) and 1:5,000,000 (Frezon and Finn, 1988). Additional supplemental data were taken from a variety of larger scale (that is, greater detail) maps. The shapefile polygon data in this data base are reconnaissance in nature and best used at scales no larger than 1:1,000,000.

Basin Classification

Numerous schemes have been suggested for the classification of sedimentary basins such as those by Dickinson (1976), Bally and Snelson (1980), and Klemme (1980). The classification used in this study is a simple one and is based on the following scheme: intracratonic (basins formed within the boundaries of a craton), pericratonic (basins formed near or accreted to the margins of the craton), intercratonic (basins formed between cratons and extending onto oceanic crust), and oceanic (basins formed independent of the cratons mostly on oceanic crust). These are subdivided one additional step to further highlight their primary style during their geologic life.

- Intracratonic
  - Rift and Transtensional Basins (including intracratonic aulacogens)
  - Sag Basins

- Pericratonic
  - Rift Basins (proto-oceanic rifting)
  - Passive Margin Basins (including Deltaic Basins)
  - Foreland Basins and Thrust Belts
  - Borderland Basins
  - Transtensional/Transpressional Basins

- Intercratonic
  - Passive Margin Basins (extending onto mostly oceanic crust)
  - Accreted Back-Arc Basins
  - Accreted Fore-Arc Basins

- Oceanic
  - Back-Arc Basins
  - Fore-Arc Basins
  - Peripheral Volcanic Apron

Intracratonic

Rift and Transtensional Basin including Intracratonic Aulacogens

For this report, rift basins are those basins that form within continental masses as a result primarily of extensional forces, resulting in a normal-fault bounded basin. Typically the basin-bounding fault zone on one side of the rift has more offset than the zone on the other side. Because pure orthogonal extension is relatively rare, most normal faults associated with rift basins have some component of transcurrent or strike-slip faulting. Those basins with a substantial amount of strike-slip, but net extensional, faulting are termed transtensional basins. If rifting progresses long enough, proto-oceanic basins may form. Aulacogens are those rift basins that form as the failed arm of a triple junction or the point where three tectonic plates meet. As oceanic rifting leaves the failed arm behind, its inherent structural weakness may permit renewed rifting throughout its history. All three of these basins are elongated and may have very thick sedimentary accumulations. Classic modern examples of intracratonic rift and transtensional basins are those basins that formed along the East Africa Rift and the Rio Grande Rift of the western United States. The Reelfoot Rift and Anadarko Basin of the United States are considered examples of aulacogen basins.

Sag Basin

For this report, sag basins are those basins that form within continental masses, possibly as the result of asthenospheric downwelling or isostatic equilibrium following termination of rifting. They are rarely fault-bounded with major fault zones but may contain internal strike-slip faulting (Middleton, 2007). Sag basins are commonly circular to oval in shape and may have multiple histories of basin subsidence. They may be large and thick or small and thin. They may form over older basins and inherit only some of the previously existing structural grain. Many intracratonic sag basins in the United States are Paleozoic in age. Classic examples are the Michigan and Williston Basins of the United States.

Pericratonic

Rift (proto-oceanic) Basin

For this report, rift (proto-oceanic) basins are those basins that form along the margins of continents by processes that lead to the opening of an oceanic basin. These basins are elongated and have may have variable thicknesses. The Red Sea and Gulf of Suez rifts of the Middle East contain examples of this type of basin.

Passive Margin Basin (including Deltaic)

For this report, passive margin basins are those basins that form on the margins of continents that are not active tectonic or fault-bounded margins. In this study, they are restricted to those passive margin basins that form over continental and transitional oceanic crust. They are typically very large and may have a substantial thickness of sedimentary rock. In many instances, the basin opens into oceanic areas away from continental crust. Here, the thickest passive margin basins may build over previously deposited mobile substrates such as massive salt or shale intervals that deform plastically and permit sedimentary intervals to slide slowly toward the open ocean. Where continental drainage delivers siliciclastic sediment to the shoreline, thick deltaic accumulations can develop, further accentuating sediment loading, resulting in gravity deformation of the basinward transported mass. Where possible, large carbonate bank complexes produced by biogenic processes may also accumulate in passive margin basins. Classic examples of these types of basins are the Gulf of Mexico and the West Atlantic Basins of the United States.

Foreland Basins and Thrust Belts

For this report, foreland basins are those basins that form adjacent to orogenic thrust belts and fault-bounded uplifts. Two types of foreland basins are included in this category: (1) foreland basins that form adjacent to decollement fault thrust and fold belts and (2) foreland basins that form adjacent to basement-cored anticlinal uplifts. Where sedimentary rocks are involved in the thrust faulting, they are included in the basin proper, as they are correlative to those undeformed rocks within the basin. Foreland basins adjacent to decollement thrust and fold belts are typically elongated and parallel to the structural grain of the orogenic belt. Foreland basins adjacent to basement-cored anticlinal uplifts are typically elliptical. Both types may have very thick accumulations of sedimentary rocks. Classic examples of these basins are the Appalachian Basin and many of the Mesozoic Rocky Mountain Basins of the United States and Canada and the Po Basin of Italy.

Borderland Basin

For this report, borderland basins are those basins that form along the margins of a continent as a result of transtensional and transpressional faulting associated with the oblique collision of tectonic plates. They form at major bends along the collisional boundary. The combination of basin forming (transtensional faulting) and mountain forming (transpressional faulting) produces relatively small basins and uplifts along the plate boundary. Classic examples of this type of basin are the California borderland basins of southern California, such as the Santa Maria and Los Angeles Basins.

Transtensional/Transpressional Basin

For this report, transtensional/transpressional basins are those basins that form at the margins of continents, typically along plate tectonic boundaries. These plate boundaries appear to have substantially fewer bends than those boundaries that produce borderland basins and associated uplifts. Transtensional/transpressional basins form along both restraining and releasing bends and may be completely surrounded by faults. Classic examples of this type of basin are the basins, which formed along the Dead Sea Rift Zone in the Middle East.

Intercratonic

Passive Margin Basin (extending onto oceanic crust)

For this report, passive margin basins, which extend onto oceanic crust, are those passive margin basins that typically develop between cratonic masses and extend onto transitional and oceanic crust. There is obviously a continuum between this type of basin and pericratonic passive margin basins (including deltaic). A possible example of this type of basin is the Canada Basin of the United States and Canada.

Accreted Back-Arc Basin

For this report, accreted back-arc basins are those basins that are hypothesized to form on oceanic crust as a result of trench roll-back beneath the landward side of a volcanic chain (on the other side of the subduction zone) and then accretion onto the continental margin. These basins typically are very long and very narrow. An example of these basins is the Bristol Bay Basin in Alaska.

Accreted Fore-Arc Basin

For this report, accreted fore-arc basins are those basins that form on oceanic crust between the subduction zone and an associated volcanic arc as a result of development and growth of an accretionary prism and then are accreted onto the continental margin. They may be deformed by faulting associated with the subduction zone. These basins are typically very long and narrow. A classic example of this type of basin is the Great Valley of California and the Cook Inlet Basin of Alaska.

Oceanic

Back-Arc Basin

For this report, back-arc basins are those basins that are hypothesized to form on oceanic crust as a result of trench roll-back beneath the landward side of a volcanic chain (on the other side from the subduction zone). These basins are typically very long and very narrow. These basins have not yet fully accreted onto the continental margin. An example of this type of basin is the Aleutian Basin in Alaska.

Fore-Arc Basin

For this report, fore-arc basins are those basins that form on oceanic crust between the subduction zone and an associated volcanic arc as a result of development and growth of an accretionary prism. These basins have not fully accreted onto the continental margin. They may be deformed by faulting associated with the subduction zone. These basins are typically very long and narrow. An example of this basin is the Western Washington–Oregon Basin of the United States.

Peripheral Volcanic Apron

For this report, peripheral volcanic aprons are those sedimentary and volcano-sedimentary accumulations proximal to volcanic uplands (usually islands) consisting of material derived by erosional, sedimentary, and volcanic activity intercalated with background sedimentation. An example of these basins is the area around the Hawaiian Islands.

Brief Description of Individual Sedimentary Basins

Intracratonic

Rift and Transtensional including Intracratonic Aulacogens

Cenozoic

Southeast Oregon–Northern California Basins 125[1]

The Southeast Oregon–Northern California Basins contain a group of sedimentary basins beneath the geologic province commonly called the Columbia River Basalt Plateau. Within this group designation are the Harney Basin, Warner Graben, Catlow Basin, and Alford Graben, plus other smaller or unnamed basins, including some basins of unmetamorphosed sedimentary rocks of Mesozoic age. The boundary for this basin is derived primarily from geology shown on Cohee and others (1962).

Snake River Downwarp 95

The Snake River Downwarp includes those sedimentary and mixed sedimentary and igneous strata beneath the Snake River Plain. The boundary for this basin is derived primarily from the geology shown on Cohee and others (1962) and King and Beikman (1974).

Ruby Basin 10

The Ruby Basin is a small basin in southern Montana. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988).

Mesilla Basin 16

The Mesilla Basin is a small rift basin in southern New Mexico that is part of the Rio Grande Rift system. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988).

Jornada Basin 15

The Jornada Basin is small rift basin in southern New Mexico that is part of the Rio Grande Rift system. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988) and modified from King and Beikman (1974).

Tularosa Basin 53

The Tularosa Basin is a basin dominated by rift development in southern New Mexico and westernmost Texas. The Cenozoic rift portion is part of the Rio Grande Rift system. The basin outline also includes Permian strata correlative with the equivalent strata of the Permian Basin to the east. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988) and Cohee and others (1962).

Estancia Basin 2

The Estancia Basin is a composite basin dominated by rift basin development in central New Mexico. The basin outline also includes Permian strata correlative with the Permian of the Permian Basin to the southeast. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988).

Albuquerque Basin 28

The Albuquerque Basin is a large rift basin that is part of the Rio Grande Rift system. The boundary for this basin is derived primarily from the basin outline shown on Cohee and others (1962).

[1] The numbers following the basin names refer to numbered basins on accompanying figures.

Espanola Basin 18

The Espanola Basin is a medium rift basin that is part of the Rio Grande Rift system. It also includes the east flank of the volcanic and volcano-sedimentary rocks of the Jemez Volcanic Field. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988).

San Luis Basin 34

The San Luis Basin is a rift basin between the Sangre de Christo Uplift and the San Juan Volcanic Field in southern Colorado and northern New Mexico. The boundary for this basin is derived primarily from the basin outline shown on Cohee and others (1962) and Frezon and Finn (1988).

Basin and Range Basins 142

Basin and Range Basins is a complex of various Cenozoic rift basins in the Basin and Range Province that are south of Snake River Downwarp volcanic and other volcanic areas to the west of the Snake River Downwarp in southern Idaho and northern Nevada. This basin complex is located between the Sierra Nevada Uplift (Mountains) and the California Transverse Range on the west and the Colorado Plateau on the east. The southern boundary is arbitrarily picked as the U.S.–Mexican national border, as the basin complex continues across that border into central Mexico. The Basin and Range Basins includes the Salton Trough Basin of southern California. The boundary for this basin is derived primarily from the basin outline shown on Frezon and Finn (1988), with the northern border drawn from Cohee and others (1962) at their zone of transition between primarily volcanic terrain to the north and primarily sedimentary basin fill to the south.

Susitna Basin 36

The Susitna Basin is a medium Cenozoic rift–transtensional basin in south central Alaska. It is bordered on the east by the Talkeetna Mountains and the Alaska Range, on the south by the Castle Mountain Fault Zone, and on the west and north by the Alaska Range. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Holitna Basin 23

The Holitna Basin is a medium Cenozoic rift-transtensional basin in south-central Alaska. It is bordered on all four sides by the Kuskokwim and older flysch belts and bifurcated by the Fairwell Fault Zone. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Hope Basin 78

The Hope Basin is a large, complex Cenozoic rift-transtensional basin in western Alaska. It is bordered on the west by the U.S.–Russian national maritime boundary, on the north by Herald Arch and the Lisburne Hills, on the east by the Colville foreland basin and Northern Brooks Range, and on the south by the Kotzebue Arch. The boundary for this basin is derived from the basin and ocean resource management outlines shown on Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Kobuk-Selawik Basin 45

The Kobuk-Selawik Basin is a composite term for the small Kobuk and Selawik Cenozoic rift-transtensional basins in west central Alaska. It is bordered on the north by the Brooks Range, on the east by the Kobuk Flysch Belt and the Hogatza Plutonic Belt, on the south by the Hogatza Plutonic Belt, and on the west by folds, which separate it from the Kotzebue Basin to the west. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Kotzebue Basin 77

The Kotzebue Basin is a medium Cenozoic rift-transtensional basin in west-central Alaska. This southern extension of the Hope Basin is bordered on the north by the western Brooks Range and the Kotzebue Arch, on the east by folds, which separate it from the Kobuk-Selawik Basin to the east, on the south by western Brooks Range structures, and on the west by the U.S.–Russian national maritime boundary. The boundary for this basin is derived from the basin and ocean resource management outlines shown on Kirschner (1994), U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Minchumina Basin 72

The Minchumina Basin is a medium Cenozoic rift-transtensional basin in central Alaska. It is bordered on the northwest by high grade igneous and metamorphic rocks and the Iditarod Fault Zone, on the southwest by the Kuskokwin Flysch Belt and older high grade metamorphic rocks, on the southeast by the Farwell Fault Zone and the Alaska Range, and on the northeast by a structural saddle between it and the Nenana Basin. The boundary for this basin is derived from the outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Nenana Basin 86

The Nenana Basin is a large, complex, Cenozoic rift-transtensional basin in central Alaska. It is bordered on the north by the Kaltag Fault Zone, the Kokrine-Hodzana Highland, the Livengood Flysch Belt, and the Yukon-Tanana Upland, on the east by the Yukon-Tanana Upland, on the south by the Alaska Range, the structural saddle between it and the Minchumina Basin, high grade metamorphic rocks and structures lateral to the Kuskokwim Flysch Belt, and on the west by the Kaiyuh Mountains. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Norton Basin 110

The Norton Basin is a large, complex Cenozoic rift-transtensional basin in western Alaska. It is bordered on the north by basin-bounding faults and high grade metamorphic rocks of the Seward Peninsula extension of the Brooks Range, on the east by the Yukon-Koyukuk Flysch Belt, on the south by the structural saddle between it and the St. Matthew Basin and the high grade metamorphic rocks of St. Lawrence Island, and on the west by basin-bounding faults and the U.S.–Russian national maritime boundary. The boundary for this basin is derived from the basin and ocean resource management outlines shown on Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Yukon Flats Basin 88

The Yukon Flats Basin is medium, complex rift-transtensional Cenozoic basin in east-central Alaska. It is bordered on the north by the Brooks Range, on the west by the Hodzana Highlands, on the south by several fault zones, including the Tintina Fault Zone, and on the east by the Kandik Flysch Belt. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Mesozoic

Newark Group Basins 70, 135

The Lower Jurassic–Triassic rift basins of the eastern United States are termed the Newark Group Basins for this report. Approximately 40 basins of variable sizes have been identified within this group, including the exposed Hartford, Newark, Gettysburg, Culpeper, Richmond, and Durham–Sanford basins and the buried South Georgia, Florence, Norfolk, and Taylorsville basins among others. These basins extend from offshore Maine to northern Florida. The boundaries for these basins are derived from King and Beikman (1974), Benson (1992), and recent unpublished USGS research associated with the National Oil and Gas Assessment (NOGA) Eastern Mesozoic Basins Oil and Gas Resource Assessment task. Some of these basins in the Southeastern United States appear to have characteristics of rift (proto-oceanic) basins.

Copper River Basin 43

The Copper River Basin is a medium Cenozoic rift-transtensional basin in central Alaska. It is bordered on the north by the Talkeetna Mountains, on the east by the Hutzotin Flysch Belt and the Wrangell Mountains, on the south by thrusted metamorphic rocks associated with the Eagle River Fault Zone, and on the west by folded flysch rocks between the Talkeetna Mountains and the Eagle River Fault Zone. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Paleozoic

Palo Duro Basin 74

The Palo Duro Basin is a large Paleozoic rift basin in the panhandle of northern Texas. It lies between the Amarillo-Wichita Uplift on the north and the Matador Arch–Red River Uplift on the south. It is the structural extension of the Hollis-Hardeman Basin to the east and the Tucumcari Basin to the west. The boundary for this basin is derived primarily from the basin outline shown on Cohee and others (1962) and Frezon and Finn (1988).

Hollis-Hardeman Basin 30

The Hollis-Hardeman Basin is a medium Paleozoic rift basin in the panhandle of northern Texas and southwest Oklahoma. It lies between the Amarillo-Wichita Uplift on the north and the Matador Arch–Red River Uplift on the south. It is the structural extension of the Marietta Basin to the east and the Palo Duro Basin to the west. The boundary for this basin is derived primarily from the basin outline shown on Cohee and others (1962) and Frezon and Finn (1988).

Anadarko Basin 124

The Anadarko Basin is a very large Paleozoic rift basin in southwest Kansas, the northern panhandle of Texas, and central and western Oklahoma. This basin was reactivated as a foreland basin during Pennsylvanian-Permian tectonics associated with the Ancestral Rocky Mountains. The Anadarko Basin, as used in this study, includes the Hugoton Embayment (of the Anadarko Basin). It is bordered on the south by the Amarillo-Wichita Uplift, on the east by the Arbuckle Uplift and the Nemaha Uplift, on the northeast by the Central Kansas Uplift, on the northwest by the Las Animas Arch, and on the west by the Cimarron Uplift. The boundary between the Anadarko Basin and the smaller Sedgwick Basin to the northeast is arbitrarily drawn parallel to the structural contours of the Anadarko Basin, cutting off the bulge that is the Sedgwick Basin. The boundary for this basin is derived primarily from the basin outline shown on Cohee and others (1962) and Frezon and Finn (1988).

Narragansett Basin 13

The Narragansett Basin is a medium Paleozoic rift basin in eastern Massachusetts and Rhode Island. The boundary for this basin is derived from the basin outline shown on King and Beikman (1974).

Rome Trough 104

The Rome Trough is a long and narrow Paleozoic rift basin that extends from northeastern Pennsylvania to southeastern Kentucky. The Rome Trough is not exposed in the core of the Appalachian Basin and has been defined by drilling and seismic profiling. The boundary for this basin is derived from the basin outline of Ryder and others (2005).

Rough Creek Graben 55

The Rough Creek Graben is a long and narrow Paleozoic (and possibly late Neoproterozoic) rift basin that extends east-west across western Kentucky and southeastern Illinois. It is also known as the Moorman Syncline. It has a surface expression and is discernible on local and regional geologic maps of the area. It is bounded on the north by the transpressional Rough Creek Fault Zone and on the south by a series of lesser faults. The boundary for this basin is derived from the basin outline shown on Cohee and others (1962).

Reelfoot Rift 56

The Reelfoot Rift is a complex intracontinental Paleozoic rift that has a major central inversion structure of probable Mesozoic and Cenozoic age. It is bounded on the northwest and southeast by major normal faults and on the northeast by the Pascola Arch and the southwest by the Ouachita Frontal Thrust Zone. The boundary for this basin is derived from the basin outline shown in McKeown and others (1990) and Coleman (2009).

Birmingham Graben 26

The Birmingham Graben is a Paleozoic rift basin that lies beneath the Appalachian Thrust Belt in northeastern Alabama and northwestern Georgia. The rift does not have a surface expression and has been defined with gravity, aeromagnetic, seismic, and well data. The boundary for this basin is derived from the basin outline shown in Coleman (1988) and Thomas and Bayona (2005).

Neoproterozoic

Midcontinent Rift 136

The Midcontinent Rift is a large arcuate Mesoproterozoic rift zone (included with the Neoproterozoic basins for this report) that extends from southeastern Ontario, Canada, to northern Michigan and ending in northeast Kansas. For most of its extent, this rift does not have a surface expression as a rift basin; however, it is exposed in western Michigan, northern Wisconsin, and southeastern Minnesota. Its extent has been determined by aeromagnetic maps, seismic profiles, and well penetrations. The boundary for this basin is derived from the basin outline shown in Ojakangas and others (2001).

Boston Basin 1

The Boston Basin is a small Neoproterozoic to early Paleozoic rift basin in eastern Massachusetts. The boundary for this basin is derived from the basin outline shown in King and Beikman (1974).

Chuar Group Area Basin 128

Chuar Group Area Basin is the name given to an area of Neoproterozoic rift basin sedimentary rocks in the Grand Canyon area of northern Arizona, central Utah, southwestern Wyoming, and southeastern Idaho. For much of its extent, the Chuar Group Area Basin extends in the subsurface and is delineated primarily with geophysical data, supplemented with sparse well control. The boundary for this basin is simplified from the basin outlines shown in Palacas (1997) and Seeley and Keller (2003).

Sag

Cenozoic

Clarno Basin 41

The Paleocene-Eocene Clarno Basin is interpreted here as a small sag basin in central Oregon. The boundary for this basin is derived from the basin outline shown in Miller and others (1992).

Blue Mountains Basin 9

The Paleocene-Eocene Blue Mountains Basin (also considered by some to part of the Clarno Basin) is interpreted here as a small sag basin in central Oregon. The boundary for this basin is derived from the basin outline shown in Miller and others (1992).

Montgomery Creek Basin 3

The Paleocene-Eocene Montgomery Creek Basin is interpreted here as small sag basin in northern California. The boundary for this basin is derived from the basin outline shown in Miller and others (1992).

Round Valley Basin 14

The Paleocene-Eocene Round Valley Basin is interpreted here as a small sag basin in northern California. The boundary for this basin is derived from the basin outline shown in Miller and others (1992).

Clarno–John Day Basin 96

The Cenozoic Clarno–John Day Basin is interpreted here as an early post-Laramide orogeny successor sag basin developing northwest of the earlier Clarno and Blue Mountain basins in central Oregon. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Copper–Bull Run–Elko–Indian Wells Basin 101

The Copper–Bull Run–Elko–Indian Wells Basin is a grouping of four smaller early post-Laramide orogeny sag sub-basins. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Bozeman Basin 52

The Bozeman Basin is interpreted here as a small early post-Laramide sag basin in western Montana. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Bridger Basin 63

The Bridger Basin is interpreted here as a small early post-Laramide sag basin in southwestern Wyoming. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

White River–Split Rock Basin 80

The White River–Split Rock Basin is interpreted here as a small early post-Laramide sag basin in south-central Wyoming. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Claron Basin 54

The Claron Basin is interpreted here as a small early post-Laramide sag basin in southwestern Utah. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Sheep Pass Basin 66

The Sheep Pass Basin is interpreted here as a small early post-Laramide sag basin in east-central Nevada. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Brown’s Park Basin 48

The Brown’s Park Basin is interpreted here as a small early post-Laramide sag basin in northwestern Colorado. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Baca Basin 117

The Baca Basin is interpreted here as a large early post-Laramide sag basin in east central Arizona and west-central New Mexico. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Tascotal Basin 84

The Tascotal Basin is interpreted here as a medium early post-Laramide sag basin in west Texas. The boundary for this basin is derived from the basin outline shown in Christiansen and Yeats (1992).

Columbia River Plateau Basins 89

The Columbia River Plateau Basins is a collective term to include all of the sedimentary and volcanic-sedimentary basins within the Columbia River Plateau of northern Oregon and southern Washington. This grouping includes the Swauk, Yakima, Umatilla, Pasco, and Quincy Basins, plus several smaller basins. These basins are separated from each other by anticlinal folds. The boundary for this collective basin is interpreted from Cohee and others (1962) and King and Beikman (1974).

Galena Basin 37

The Galena Basin is interpreted here as a medium Cenozoic sag basin in western Alaska. It is bordered on the west by the Yukon-Koyukuk Flysch Belt, on the north by the Hogatza Plutonic Belt, on the east by the southwestern extension of the Kobuk Flysch Belt, and on the south by the Kaltag Fault Zone and the Kaiyuh Mountains. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Innoko Basin 31

The Innoko Basin is a medium Cenozoic sag basin in west-central Alaska. It is bordered on the north by the Kaiyuh Mountains, on the east and southeast by high grade metamorphic rocks, on the southwest Yukon-Koyukuk Flysch Belt, and on the west by the Kuskokwin Flysch Belt. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Noatak Basin 7

The Noatak Basin is a small Cenozoic sag basin in western Alaska. It is surrounded entirely by the Brooks Range. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Northway Lowlands 25

The Northway Lowlands is a Cenozoic sag basin in eastern Alaska. It is surrounded on the west, north, and east sides by the Yukon-Tanana Upland and on the southwest by the Denali Fault Zone and the Nutzotin Flysch Belt. The southeastern border is truncated by the U.S.–Canadian national boundary. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Mesozoic

Kennedy Basin 67

The Kennedy Basin is a medium Mesozoic sag basin in north-central Nebraska and south-central South Dakota. It is bordered on the southwest by the Chadron Arch, on the southeast by the Siouxana Arch, and by ill-defined structural saddles on the northeast and northwest. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962).

San Juan Basin 85

The San Juan Basin is a large Mesozoic sag basin in northwestern New Mexico and southwestern Colorado. It is bordered on the north by the San Juan Volcanic Area (and associated San Juan Mountains), on the west by the Defiance Uplift, on the south by the Zuni Uplift, and on the east by rift shoulder faulting associated with the Nacimiento Uplift, the Albuquerque Basin, and the Jemez Volcanic Field. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Mississippi Embayment 122

The Mississippi Embayment is interpreted here as a large Mesozoic sag basin in southernmost Illinois, western Kentucky, southeastern Missouri, western Tennessee, northwestern Arkansas, and northern Mississippi. This structural and depositional feature rests unconformably above the inverted Reelfoot Rift Basin and the Black Warrior and Arkoma foreland basins and was probably controlled by reactivation of the rift boundary faults and cross rift inversion structures (Pascola and Blytheville Arches). The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Apalachicola Embayment 98

The Apalachicola Embayment is interpreted here as large northeast-trending Mesozoic sag basin in panhandle Florida and southwestern Georgia. The basin is bordered on the northeast by a large, buried Mesozoic volcanic highland in southern Georgia, on the northwest by the rift shoulder of the underlying Newark Group South Georgia Rift Basin (Chattahoochee Arch), and on the south and southeast by the Florida Middle Ground High and a major Jurassic-age transform fault zone. The boundary for this basin is derived from the basin outline shown in Frezon and Finn (1988) and Ewing and Flores Lopez (1991).

South Florida Basin 123

The South Florida Basin is interpreted here as a large Mesozoic sag basin in the southern peninsula of Florida. It is bordered on the north and northeast by the Peninsula Arch, the southeast by the Pine Key Arch and Largo High, on the south and southwest by the Florida Escarpment, and on the northwest by the Tampa-Sarasota Arch. The boundary for this basin is derived from the basin outline shown in Frezon and Finn (1988) and Pollastro and others (2001).

Paleozoic

Holbrook Basin 46

The Holbrook Basin is a medium Paleozoic sag basin, primarily of Permian age in east-central Arizona. It is bordered on the east by the Defiance-Zuni Uplift and on the north and northwest by the Sedona Arch; the basin margins on the south are ill-defined. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Blakey (2008).

Hogeland Basin 8

The Hogeland Basin is a medium Paleozoic sag basin in northern Montana. It is bordered on the east by the Bowdoin Dome, on the south by the Little Rocky Mountains and the Bearpaw Intrusive Complex, and on the west by monoclinal dip away from the Sweetgrass Arch. The northern border is limited by the U.S.–Canadian national border. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962).

Pedregosa Basin 51

The Pedregosa Basin is a medium Paleozoic sag basin in southeastern Arizona and southwestern New Mexico that underwent modification by Early Cretaceous rifting. It is bordered on the northeast by the Florida Uplift (also known as the Burro Uplift), on the west by faults currently associated with the Basin and Range Province, and on the south by the U.S.–Mexican national border. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Salina Basin 76

The Salina Basin is a medium Paleozoic sag basin in north central Kansas and south-central Nebraska. It is bordered on the north by normal faults, which have developed south of the Siouxana Arch, on the west by the Cambridge Arch and Central Kansas Uplift, on the southeast by the Abilene Arch, and on the northeast by the closing structural contours associated with a structural high near Lincoln, Nebraska. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Sedgwick Basin 75

The Sedgwick Basin is a medium Paleozoic sag basin in south-central Kansas and north central Oklahoma that may have had its initial development as a rift basin. It is bordered on the east by the Nemaha Ridge, on the north by the confluence of the Central Kansas Uplift and the Abilene Arch, and on the west and southwest by its boundary with the Anadarko Basin. The boundary for this basin is derived from the basin outline shown in Frezon and Finn (1988).

Dalhart Basin 29

The Dalhart Basin is a medium Paleozoic sag basin in western panhandle Oklahoma and northern panhandle Texas. It is bordered on the east by the Cimarron Uplift, the south by the western extension of the Amarillo Uplift, the west by the Sierra Grande Arch, and the north by Keyes Dome and the southeastern extension of the Apishapa Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962).

Williston Basin 132

The Williston Basin is a large Paleozoic sag basin in western North Dakota, northwestern South Dakota, and eastern Montana. It is bordered on the west by Bowdoin Dome, Porcupine Dome, and Miles City Arch, on the south by the Black Hills Uplift, on the east by an arbitrary structural contour coming off of the Precambrian structural high in Minnesota, and to the north by the U.S.–Canadian national border. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Paradox Basin 82

The Paradox Basin is a medium Paleozoic sag basin in southeastern Utah and southwestern Colorado. Late Paleozoic intrabasinal salt deposition and subsequent intrabasinal and extrabasinal structural movement during the Ancestral Rocky Mountain development and Laramide Orogeny significantly modified the character of the sedimentary rocks within the basin. It is bordered on the northeast by the Uncompahgre Uplift, on the east by the Needle Mountain Uplift, on the southeast by a structural saddle between it and the San Juan Basin, on the south by the north plunge of the Defiance Uplift, and on the west by the Monument Uplift and the San Raphael Swell. The Paradox Basin in this report includes the Blanding Basin. The boundary for the Paradox Basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and Nuccio and Condon (1996).

Permian Basin 115

The Permian Basin is a large Paleozoic basin in west Texas and southeastern New Mexico. For this study, it is included with other Paleozoic sag basins, although it is clear that its pre-Permian geologic history is structurally complex. It is bordered on the north by the western extension of the Matador Arch, on the northwest by the Sacramento Uplift, on the southwest by the Diablo Platform and the Van Horn Uplift, on the south by the Marathon Uplift and Thrust Belt, and on the east by structural contours coming off of the Edwards Arch and the Bend Arch in central Texas. The Permian Basin is divided into two major sub-basins, the Midland Basin to the east and the Delaware Basin to the west by the Central Basin Platform and the northwestward extension of the Pecos Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Forest City Basin 94

The Forest City Basin is a medium Paleozoic sag basin in northeastern Kansas, southeastern Nebraska, northwestern Missouri, and southwestern Iowa. It is bordered on the west by the Nemaha Ridge, on the north by closing contours coming off of the Precambrian structural high in southern Minnesota and eastern South Dakota, on the east by closing contours coming off of the Mississippi River Arch, and on the south by the Bourbon Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and the Kansas Geological Survey (2005).

Cherokee Basin 69

The Cherokee Basin is a medium Paleozoic sag basin in southeastern Kansas, southwestern Missouri, and northeastern Oklahoma. It is bordered on the north by the Bourbon Arch, on the east by the Ozark Uplift, on the south by the Seminole Arch, and on the west by closing structural contours coming off of the Nemaha Ridge. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), Tully (1996), and the Kansas Geological Survey (2005).

Michigan Basin 131

The Michigan Basin is a large Paleozoic sag basin that occupies most of Michigan's "mitten" and extends into easternmost Wisconsin, northeastern Indiana, northwestern Ohio, and southwestern Ontario. It is bordered on the southeast by the Findlay Arch in Ohio and the Algonquin Arch in Ontario, on the east, northeast, and north by closing contours coming off of the Canadian Shield, on the west by closing contours coming off of the Precambrian Shield in the Upper Peninsula of Michigan and northern Wisconsin, on the west by the Wisconsin Arch, and on the southwest by the Kankakee Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Illinois Basin 133

The Illinois Basin is a large Paleozoic sag basin in Illinois, western Indiana, western Kentucky, northwestern Tennessee, and a narrow zone along the Mississippi River in Missouri and Iowa. It is bordered on the northeast by the Kankakee Arch, the east and southeast by the Cincinnati Arch and the Nashville Dome, the southwest by the Pascola Arch, the west by the Precambrian core of the Ozark Uplift, the Lincoln Anticline, and the Mississippi River Arch, and the north by the Savanna Anticline and the Ashton Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Post-Ouachita Successor Basin 168

The post-Ouachita successor basin contains that volume of rock that lies south of the Ouachita Thrust Belt and is stratigraphically younger than the folded rocks of Ouachita Thrust Belt. The basin area is defined to the north by the updip stratigraphic pinchout of the post-Ouachita strata in Arkansas and northeast Texas and within structurally elevated areas of the Arkansas–Louisiana–Texas (ARKLATEX) salt basin where deep wells have penetrated Paleozoic sedimentary strata. In all likelihood, post-Ouachita sedimentary rocks are present in places outside the basin area, but there is no geophysical or geological evidence for their occurrence. The boundary for this basin is derived from the basin outline shown in Coleman (2009).

Neoproterozoic

Belt Basin 120

The Belt Basin comprises that volume of Neoproterozoic rocks included within the Belt Supergroup in western Montana, northern Idaho, and eastern Washington. Following initial deposition, the rocks of the Belt Supergroup were heavily deformed by thrust faulting and folding during the Mesozoic. As defined here, the Belt Basin also includes the Helena Embayment. The Belt Basin is bordered on the east by the eastern extent of Belt Supergroup rocks within the Montana Thrust Belt, on the north by the U.S.–Canadian national boundary, and on the west where Belt Supergroup rocks plunge beneath the Columbia River Basalt Plateau. The Belt Basin extent also includes several areas disconnected from the main basin area in order to include isolated occurrences of Belt Supergroup rocks. In all likelihood, Belt Supergroup rocks and their stratigraphic equivalents extend beyond the boundaries of this basin as currently drawn. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Miall and Blakey (2008).

Pericratonic

Rift (proto-oceanic)

Cenozoic

At present, there are no recognized pericratonic proto-oceanic rift basins of Cenozoic age within the United States.

Mesozoic

Nuwuk–Dinkum–Kaktovik Basin 97

The Nuwuk–Dinkum–Kaktovik Basin is a string of basins made up of the Nuwuk, Dinkum, and Kaktovik basins on the offshore of the north slope of Alaska. In this report, this composite basin is categorized as a proto-oceanic rift basin, although the Nuwuk and Kaktovik basins are mostly Cenozoic passive margin depocenters that also include Mesozoic strata. Additional rift basins are also present in this area, including the Kuparuk graben. The Nuwik–Dinkum–Kaktovik Basin is bordered on the north by the Beaufort Sea shelf and rift shoulder structures, on the east by the U.S.–Canadian national maritime boundary, on the south by the main rift shoulder that generally parallels the trend of the Barrow Arch, and on the west by closing structural contours. The boundary for this basin is derived from the basin and resource management area outlines shown in Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Paleozoic

At present, there are no recognized pericratonic proto-oceanic rift basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized pericratonic proto-oceanic rift basins of Proterozoic age within the United States.

Passive Margin (including Deltaic)

Cenozoic

Recent work by Bird and Houseknecht (2011) and Houseknecht and Bird (2011) indicate that the Canadian Basin within the United States has components of a passive margin (including deltaic) basin. However, the Canadian Basin is discussed in this report under passive margin (extending onto oceanic).

Mesozoic

Gulf of Mexico Basin 143

The Gulf of Mexico Basin is a very large Mesozoic and Cenozoic passive margin basin in the southern United States. For this study, the Gulf of Mexico Basin contains that volume of sedimentary rock that extends south, southwestward, and southeastward from a zone of normal faulting named variously the Balcones, Mexia-Talco, South Arkansas, and Pickens-Gilbertown fault zones in Texas, Arkansas, Louisiana, and Mississippi, and northward from the U.S.–Mexico national border and the U.S.–Mexico national maritime border within the Gulf of Mexico. The Gulf of Mexico Basin as used in this report includes the Rio Grande Embayment in Texas, the East Texas Basin (also called the East Texas Salt Dome Basin), the Houston Embayment, the North Louisiana Salt Basin, the Mississippi Salt Basin, the western portion of the Northeast Gulf Basin in Mississippi, Alabama, Florida, and Georgia, and the western portion of the Tampa Embayment, Florida, in addition to the approximate northern half of the main, deep water Gulf of Mexico Basin containing the Mississippi Fan Foldbelt and the northern extension of the Perdido Foldbelt. It also includes the underlying, but sparsely defined, Triassic-Jurassic rift basins filled with Eagle Mills (and equivalent) rift-fill sedimentary rocks. The northern, western, and eastern boundaries for this basin are simplified from a number of sources, including outlines shown in Cohee and others (1962), Frezon and Finn (1988), and Ewing and Flores Lopez (1991). The southern boundary is derived from the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010b). Sediments and sedimentary rocks probably extend for an undetermined distance beyond the southern boundary of this basin but are not included in this discussion.

West Atlantic Basin 144

The West Atlantic Basin is a very large Mesozoic and Cenozoic passive margin basin in the eastern United States. It extends from northeastern Florida to offshore Maine and is limited for this study to that volume of sedimentary rock south of the U.S.–Canadian national maritime boundary, west of the U.S. Exclusive Economic Zone (EEZ) Atlantic Ocean boundary, north of the U.S.–Bahama Islands national maritime boundary, and east of a line that approximates the beginning of down depositional dip thickening of sedimentary rocks to the east. The West Atlantic Basin includes the Southeast Georgia Embayment, the Blake Plateau Basin, the Carolina Trough, the Baltimore Canyon Trough, and the U.S. portion of the Georges Bank Basin. It lies unconformably above the Newark Group rift basins described above. The northern, western, and southern boundaries for this basin are simplified from a number of sources, including outlines shown in Cohee and others (1962) and Frezon and Finn (1988). The eastern boundary is derived from the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010c). Sediments and sedimentary rocks probably extend for an undetermined distance to east of the eastern boundary of this basin but are not included in this discussion.

Paleozoic

West Nevada Permian-Triassic Basin 102

The West Nevada Permian-Triassic Basin is a passive margin evolutionary successor basin to the Paleozoic Havallah accreted back-arc basin in western Nevada. The boundaries for this basin are adapted from Seismic Exchange (2003).

Neoproterozoic

At present, there are no recognized passive margin basins exclusively of Neoproterozoic age within the United States.

Foreland Basins and Thrust Belts

Cenozoic

Jackson Hole Basin 11

The Jackson Hole Basin is a small foreland basin developed east of the Teton Uplift in western Wyoming. It is bordered on the west by the frontal thrust faults of the Teton Uplift, on the south by the Gros Ventre Uplift, on the east by the westward plunge of the Wind River Uplift and the Washakie Uplift, and on the north by Yellowstone Park Volcanic Area. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Hanna Basin 5

The Hanna Basin is a small Cenozoic and Mesozoic foreland basin developed south of the Sweetwater Uplift in south central Wyoming. It is bordered on the north by the frontal thrust faults of the Sweetwater Uplift, on the east by a complex of faults separating the Carbon sub-basin of the Laramie Basin and propagating westward from the Laramie Uplift, on the south by the northern extent of the Medicine Bow Uplift, and on the west by the Rawlins Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Shirley Basin 4

The Shirley Basin is small Cenozoic and Mesozoic foreland basin east of the Sweetwater Uplift in south central Wyoming. It is bordered on the west by the eastern plunge of the Sweetwater Uplift, on the northwest by a structural saddle between it and the Wind River Basin, on the northeast by closing structural contours coming off of the Laramie Mountains, on the southeast by a small thrust faulted anticline separating it from the Laramie Basin to the southeast, and on the southwest by a high-angle reverse fault that separates the Hanna Basin from the Shirley Basin. The boundary for this basin is derived from the basin outline shown in Dyman and Condon (2007).

Middleton-Yakataga Basin 99

The Middleton-Yakataga Basin is a collective term for these two medium Cenozoic foreland basins and the Yakutat Terrain, which lie in the Gulf of Alaska, southern Alaska. They are bordered on the north by a series of thrust faults associated with the Kenai-Chugach Mountains and the St. Elias Mountains, on the east by the Fairweather Fault Zone, on the south by the Transition Fault Zone (of Kirschner, 1994), and on the west by thrust faulted and highly deformed strata that underlie Prince William Sound. The three basin areas are compartmentalized by major fault zones. The boundary for this basin is derived from the basin outline shown in Kirschner (1994) and the U.S. Geological Survey (1997).

Colville Basin and Foldbelt 138

As used herein, the Colville Basin and Foldbelt is a very large Mesozoic foreland basin and thrust belt that extends across the entire north slope of Alaska from the U.S.–Canadian national boundary to the U.S.–Russian national maritime boundary. Its northern border is a closing structural contour downdip from the crest of the Barrow Arch and its structural extension to the east. Its southern border is the northern thrust fault zone of the main Brooks Range. In the southwest, its border is the boundary between the Hope Basin and the Herald Arch–Lisburne Hills thrusted area. The boundary for this basin is derived from the basin and resource management area outlines shown in Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Zuni Basin 24

The Zuni Basin is a small Cenozoic and Mesozoic foreland basin that developed southwest of the Zuni Uplift in west central New Mexico. It is bordered on the northeast by the Zuni Uplift, on the northwest by the Defiance Uplift, and on the southwest, south, and southeast by the White Mountains Volcanic Area and the Datil Volcanic Area. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Crazy Mountains Basin 35

The Crazy Mountains Basin is a small Cenozoic and Mesozoic foreland basin that developed northeast of the Beartooth Mountains. It is bordered on the northeast by a complex set of structural highs, which include Little Elk Dome, Big Elk Dome, Shawmut Anticline, Hailstone Dome, and the Lake Basin Fault Zone, to the southeast by Golden Dome and the structural saddle between the Crazy Mountains Basin and the Bighorn Basin, to the south and southwest by the Beartooth Mountains, and to the northwest by the Battle Ridge monocline. For this report, the Crazy Mountains Basin includes the Reed Point Syncline. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

North Montana Thrust Belt 119

The North Montana Thrust Belt is a structurally deformed foreland basin, which rides over and incorporates rocks of the Belt Supergroup of the Belt Basin. The basin is bordered on the east by the eastern limit of deformation, on the southeast by the closing contour defining the Crazy Mountains Basin, on the southwest by a series of faults and anticlines, which may be the northwestern extent of the Beartooth Uplift, to the southwest and west by the Idaho Batholith and the Boulder Batholith promontory, to the northwest by the Loon Lake Batholith, and to the north by the U.S.–Canadian national border. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Powder River Basin 92

The Powder River Basin is a large Cenozoic and Mesozoic foreland basin in eastern Wyoming and southeastern Montana. It is bordered on the north by the Miles City Arch, on the east by the Black Hills Uplift, on the south by the Hartville Uplift and the Laramie Uplift, and on the west by the Bighorn Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Bighorn Basin 39

The Bighorn Basin is a large Cenozoic and Mesozoic foreland basin in northwestern Wyoming and south central Montana. It is bordered on the northeast by the Bighorn Uplift, on the south by the Owl Creek Uplift, on the west and southwest by the Yellowstone Park Volcanic Area, on the northwest by the Beartooth Uplift, and on the north by the structural saddle between the Crazy Mountains Basin (as defined herein) and the Bighorn Basin. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Wind River Basin 47

The Wind River Basin is a large Cenozoic and Mesozoic foreland basin in central Wyoming. It is bordered on the north by the Owl Creek Uplift, on the east by the Casper Arch, on the south by the Sweetwater Uplift, and on the west by the Wind River Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Uinta Basin 65

The Uinta Basin is a large Cenozoic and Mesozoic foreland basin in northeast Utah and northwest Colorado. It is bordered on the north by the Uinta Uplift, on the east by the Douglas Creek Arch, on the southeast by the Uncompahgre Uplift, on the south by the structural saddle between it and the Paradox Basin and the north plunge of the San Raphael Swell, and on the west by thrust faults associated with the Idaho-Wyoming thrust belt (western component of the Greater Green River Basin). The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Piceance Basin 40

The Piceance Basin is a large Cenozoic and Mesozoic foreland basin in northwestern Colorado. It is bordered on the north by the east plunge of the Uinta Uplift, on the east by the White River Uplift, on the south by the Gunnison and Uncompahgre Uplifts, and on the west by the Douglas Creek Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Idaho-Wyoming Thrust Belt–Greater Green River Basin 116

As described here, the Greater Green River Basin is a large Cenozoic and Mesozoic foreland basin that includes the Idaho-Wyoming thrust belt, and the thrust-faulted portion of that basin as well as the Great Divide Basin, the Washakie Basin, and the Sand Wash Basin. The Rock Springs Uplift is a large anticline near the center of the basin that separates the basin into two portions. The basin as described here is bordered on the west by Basin and Range Province, on the south by the structural saddle between it and the Uinta Basin and the Uinta Uplift, on the east by the Sierra Madre Uplift and the Rawlins Uplift, on the north by the Wind River Uplift, and on the northwest by the Snake River Downwarp. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Denver Basin 112

The Denver Basin is a large Cenozoic and Mesozoic foreland basin in eastern Colorado, southeastern Wyoming, and northwestern Nebraska. It is bordered on the northeast by the Chadron Arch, on the southeast by the Las Animas Arch, on the south by the Apishapa Uplift, on the west by the Rocky Mountain Front Range Uplift and the Laramie Uplift, and on the northwest by the Hartville Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Laramie Basin 21

The Laramie Basin is a medium Cenozoic and Mesozoic foreland basin in southeastern Wyoming and northeastern Colorado. It is bordered on the east by the Laramie Uplift, on the south by the Rocky Mountain Front Range Uplift, on the west by the Medicine Bow Uplift, and on the north by the structural saddle between it and the Hanna Basin. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Raton Basin 27

The Raton Basin is a medium Cenozoic and Mesozoic foreland basin in south-central Colorado and northeastern New Mexico. It is bordered on the northeast by the Apishapa Uplift, on the southeast by the Cimarron Arch, on the west by the Sangre de Christo Uplift, and on the north by the Wet Mountains. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Kaiparowits Basin 62

The Kaiparowits Basin is a medium Cenozoic and Mesozoic foreland basin in southwestern Utah and northwestern Arizona. It may have had its beginnings as an intracratonic sag basin. It is bordered on the north by the High Plateaus Volcanic Area, on the east by the Circle Cliffs Uplift, on the south by the Kaibab Uplift, and on the west by major north-south faults associated with the Basin and Range Province and the southwestern extent of the High Plateaus Volcanic Area. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Black Mesa Basin 58

The Black Mesa Basin is a medium Cenozoic and Mesozoic foreland basin in northeastern Arizona. It, too, may have had its beginnings as an intracratonic sag basin. It is bordered on the east by the Defiance Uplift, on the north by the Monument Uplift, on the west by the Kaibab Uplift, and on the southwest and south by closing contours coming off of the volcanic highland between the Flagstaff, Arizona, and the White Mountains Volcanic Area. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

North Park Basin 20

The North Park Basin is a medium Cenozoic and Mesozoic foreland basin in north central Colorado. It is bordered on the east by the Medicine Bow Uplift and the Rocky Mountains Front Range Uplift, on the south by a complex fault zone and uplift, which separates it from the Middle Park Basin to the south, on the west by the Sierra Madre Uplift, and on the north by the confluence of the Sierra Madre and Medicine Bow Uplifts. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Middle Park Basin 6

The Middle Park Basin is a small Cenozoic and Mesozoic foreland basin in central Colorado. It is bordered on the east by the Rocky Mountains Front Range Uplift, on the south by the Wet Mountains, on the west by the Sawatch Uplift, and on the north by a complex fault zone and uplift, which separates it from the North Park Basin to the south. The South Park Basin, the southern geomorphic basin of the three Park Basins, is not included as a foreland basin in this report, because it is considered to be part of the igneous complex at the north end of the Wet Mountains. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Judith–Wheatland–Bull Mountains Basins 50

These three small, geologically connected Cenozoic and Mesozoic foreland basins are grouped for convenience into one basin. Within these basins is also included the Ashland Syncline. These basins are bordered on the south by the Lake Basin Fault Zone, and the Big Coulee–Hailstone Dome, a series of small anticlines separating the Crazy Mountains Basin from the Wheatland Syncline portion of these basins; on the west by the Little Belt Uplift; on the northwest by the southeast plunge of the Sweetgrass Arch; on the north and northeast by the Moccasin Mountains, Big Snowy Uplift, and the structural saddle between the Bull Mountains Basin portion and the Sumatra Syncline; and on the southeast by the structural saddle between these basins and the Powder River Basin. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Paleozoic

Sweetwater Trough 59

The Sweetwater Trough is recognized as a medium Paleozoic foreland basin that lies beneath the Mesozoic fill of the Greater Green River Basin of western Wyoming. Its center is approximately the center of the Rock Springs Uplift. Its bounding elements are not well defined. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Central Colorado–Taos Trough 103

The Central Colorado–Taos Trough is a narrow, but large, Paleozoic foreland basin that developed in central Colorado and northern New Mexico between the Uncompahgre and San Luis Uplifts on the west and southwest and the Rocky Mountains Front Range, Apishapa, and Sierra Grande Uplifts on the east and northeast. The southern extent is marked by the north end of the Pedernal Uplift, and the northern extent is marked by the eastern extent of the Uinta Uplift and the Sierra Madre Uplift. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Bird Spring Basin 60

The Bird Spring Basin is a medium Paleozoic foreland basin, which lies beneath the Basin and Range Province of southern Nevada and southeastern California. Its bounding elements are not well defined. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Oquirrh Basin 113

The Oquirrh Basin is a large Paleozoic foreland basin in north-central Utah and southern Idaho. For this report, the Wood River Basin in central Idaho is included within the Oquirrh Basin. For the most part the Oquirrh Basin lies beneath the Basin and Range Province and the Snake River Downwarp. A small portion of this basin is recognized from outcrop in the Uinta Uplift and fault blocks containing upper Paleozoic strata within the Basin and Range. The boundary for this basin is derived from the basin outline shown in National Park Service (2007) and Blakey (2008).

Ely Basin 93

The Ely Basin is a medium Paleozoic foreland basin in eastern Nevada. It lies beneath the Basin and Range Province and Paleozoic Antler foreland basin. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Orogrande Basin 83

The Orogrande Basin is a medium Paleozoic foreland basin in south-central New Mexico, westernmost Texas, and northern Mexico. It lies beneath the Cenozoic Mesilla, Jornada, and Tularosa Basins and west of the Sacramento Uplift (also known as the Pedernal Uplift). The basin boundary is arbitrarily truncated at the New Mexico–Texas and New Mexico–Mexico borders. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Las Vegas Basin 17

The Las Vegas Basin is a small Paleozoic foreland basin in northwestern New Mexico. It is bordered on the east by the Sierra Grande Arch, on the north by a structural saddle between it and the Raton Basin, on the west by the Sangre de Christo Uplift, and on the south by a structural saddle between it and the Espanola Basin. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Tucumcari Basin 22

The Tucumcari Basin is a small Paleozoic foreland basin. It is bordered on the northwest by the south plunge of the Sierra Grande Arch and by structural saddles between the Tucumcari Basin and the Pedernal Uplift on the southwest, the Matador Arch on the southeast, and Bravo Dome on the northeast. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Antler Foreland Basin 137

The Antler Foreland Basin is a large Paleozoic foreland basin that extends from the Canadian border with northeast Washington and northern Idaho to disappear under Death Valley and the Sierra Nevada of southern California. It lies in the footwall and east of the Roberts Mountain Thrust Fault and west of the great Mississippian carbonate bank composed of Lodgepole, Madison, Great Blue, Leadville, Redwall, and Escabrosa limestones. The boundary for this basin is derived from the basin outline shown in Dickinson (2006).

Appalachian Basin 139

The Appalachian Basin is a large Paleozoic foreland basin and thrust belt that extends from the Canadian border with Vermont to the border area between central Mississippi and central Alabama. It is a composite basin containing Cambrian-Ordovician, Silurian, and Mississippian passive margin carbonates and Taconic (Ordovician), Acadian (Devonian), and Alleghenian (Pennsylvanian-Permian) foreland basin sedimentary wedges. For this report, it is bordered on the east and southeast by the Blue Ridge Thrust Fault (and its structural equivalents), which brings Paleozoic and Precambrian metamorphic rocks into structural contact with Paleozoic sedimentary rocks, on the southwest by a transverse fault zone that forms the structural boundary between the Ouachita Thrust Belt and Foreland Basin; on the west and northwest by the Nashville Dome, the Cincinnati Arch, the Findley Arch, and the Adirondack Uplift; and on the north by the U.S.–Canadian national border. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Mississippi Ouachita Thrust Belt–Black Warrior Basin 90

The Mississippi Ouachita Thrust Belt–Black Warrior Basin is the westward extension of the Appalachian Basin and Thrust Belt. The Mississippi Ouachita Thrust Belt is the folded and thrust faulted portion of the foreland basin, whereas the Black Warrior Basin is that portion of the area that is dominated by normal faulted and expanded Paleozoic sedimentary rocks. The Black Warrior Basin as described by most geologists extends eastward into Alabama to include the Pennsylvanian coal fields there. The Mississippi Ouachita Thrust Belt–Black Warrior Basin extends from the junction with the Appalachians along the Mississippi-Alabama border area to an arbitrary north-south line in northwestern Mississippi where it meets the Arkoma Basin–Ouachita Thrust Belt. It is bounded on the east by the transpressional fault zone that separates it from the Appalachians, on the south by a line that is down structural dip and parallel to the Mesozoic basin-forming expansion faults (Pickens-Gilbertown Fault Zone), on the west by an arbitrary north-south line roughly parallel to the Mississippi River, and on the north by the northern set of down-to-the-south normal faults that expand the Paleozoic section in the Black Warrior Basin. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Ewing and Flores Lopez (1991), and Thomas (1989).

Arkoma Basin–Ouachita Thrust Belt 126

The Arkoma Basin–Ouachita Thrust Belt is the structural extension to the west of the Mississippi Ouachita Thrust Belt–Black Warrior Basin. The Ouachita Thrust Belt is a thrusted and folded orogenic belt of foreland basin sedimentary rocks, whereas the Arkoma Basin is primarily an area of normal faulted and expanded Paleozoic sedimentary rocks. It extends from an arbitrary north-south dividing line with the Mississippi Ouachita Thrust Belt and Black Warrior Basin in western Mississippi to an arbitrary northwest-southeast dividing line in east Texas that separates this area from the Sherman Basin. The Arkoma Basin–Ouachita Thrust Belt is bounded on the east by the arbitrary north-south line in western Mississippi, on the north by the northernmost trend of normal faults that expanded the Paleozoic section, on the northwest by the Seminole Arch, on the west by the high-angle, transpressional faults that define the Ardmore Uplift and an arbitrary northwest-southeast line that separates it from the Sherman Basin, and on the south by the general trend of the Mesozoic normal faults, which define the Gulf of Mexico Basin, here termed the Mexia-Talco and South Arkansas Fault Zones. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and Ewing and Flores Lopez (1991).

Sherman Basin 32

The Sherman Basin is a small Paleozoic foreland basin that is located in northeast Texas. It includes both the thrust faulted and folded portion of the area as well as the normal faulted and unfaulted portion. It is bordered on the northeast by an arbitrary line that separates it from the Arkoma Basin–Ouachita Thrust Belt, on the northwest by an arbitrary line that approximates the Red River boundary between Oklahoma and Texas, on the southwest by the Muenster Arch, and on the southeast by the Mesozoic normal faults that define the Gulf of Mexico Basin, here termed the Mexia-Talco Fault Zone. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and Ewing and Flores Lopez (1991).

Fort Worth Basin 107

The Fort Worth Basin is a large Paleozoic foreland basin in east Texas. It includes both the unfaulted, normal faulted, and thrust faulted and folded components of the area. It is bordered on the northeast by the Muenster Arch, on the southeast by the Mesozoic normal faults that delimit the Gulf of Mexico Basin, here termed the Mexia-Talco Fault Zone, on the west by the Llano Uplift, the Lampasas Arch, and the Bend Arch, and on the north by the Red River Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and Ewing and Flores Lopez (1991).

Kerr Basin 57

The Kerr Basin is a medium Paleozoic foreland basin in south-central Texas. It includes both the unfaulted, normal faulted, and thrust faulted and folded components of the area. It is bordered on the east by an arbitrary northwest-southeast line separating it from the Fort Worth Basin, on the southeast by the Mesozoic normal faults of the Gulf of Mexico Basin, here termed the Balcones Fault Zone, on the west by the Devils River Uplift, on the northwest by the Edwards Arch, and on the north by closing structural contours coming off of the Llano Uplift. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and Ewing and Flores Lopez (1991).

Val Verde Basin 49

The Val Verde Basin is a medium Paleozoic foreland basin in southwest Texas. It is bordered on the south and southeast by the Devil’s River Uplift, on the south and southwest by an arbitrary line that approximates the U.S.–Mexican national border and the approximate southern extent of known Marathon (Ouachita) Thrust Belt strata, on the west by an arbitrary line that separates it from the Marathon Basin, and on the north by the Pecos Arch. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Marathon-Marfa Basins 64

The Marathon-Marfa Basins are two medium Paleozoic foreland basins in southwest Texas. Both basins are primarily a thrust faulted and folded interval of Paleozoic foreland basin sedimentary rocks. The Marfa Basin, however, has a shallow, but extensive, cover of Tertiary volcanic rocks, the Davis Mountains Volcanic Area. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Neoproterozoic

Grand Canyon Embayment 42

The Grand Canyon Embayment is the term used here for a foreland basin in northwestern Arizona containing Neoproterozoic and Paleozoic sedimentary rocks. Its borders are poorly defined, because most of the Neoproterozoic sedimentary rocks are buried beneath a thick Paleozoic cover. It is bordered on the east by the Kaibab Uplift and on the west by the Sand Wash Fault and the Basin and Range Province. The boundary for this basin is derived from the basin outline shown in Blakey (2008).

Borderland

Cenozoic

San Joaquin Basin 79

The San Joaquin Basin is a large Cenozoic borderland basin in southern California. It is bordered on the east by the Sierra Nevada batholiths and mountains, on the south by the Garlock Fault Zone, on the west by the San Andreas and other fault zones, and on the north by an arbitrary line that approximates the Stanislaus River and the southern end of the Sacramento Basin to the north. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and the California Department of Conservation (2001).

Central Coastal Basin 38

The Central Coastal Basin is a large Cenozoic borderland basin in southern California. It is bordered on the east by the San Andreas and other fault zones, on the north by an arbitrary line separating it from the Northern California Borderland Basins to the north, on the west by the Kings City, Cuyama, and other fault zones, and on the south by the Big Pine Fault Zone. The Central Coastal Basin includes the Cuyama and Ridge basins. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988).

Sonoma-Livermore Basin 19

The Sonoma-Livermore Basin is a large Cenozoic borderland basin in west central California. It is bordered on the west by the Hayward and other fault zones, on the north by structural uplifts associated with the San Andreas Fault zone, on the east by a variety of fault zones and structural features that separate it from the Great Valley Basin to the east, and on the south by structural features associated with the Calaveras Fault Zone. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), Frezon and Finn (1988), and the California Department of Conservation (2001).

Northern California Borderland Basins 91

The Northern California Borderland Basins are a collection of mostly offshore basins in northern California. It extends from near Monterey, California, to the Oregon-California state line. It includes the Santa Cruz, Bodega, Point Arena, Eel River, and Humboldt Basins. It is bordered on the north by the north end of the Eel River Basin, on the east by San Andreas and other fault zones that approximate the Pacific Coastline, on the south by the south end of Monterey Bay and the structural uplifts associated with the Kings City Fault Zone, and on the west by the base of continental slope. Sediments and sedimentary rocks probably extend for an undetermined distance to west of the western boundary of this basin but are not included in this discussion. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and Frezon and Finn (1988).

Southern California Borderland Basins 127

The Southern California Borderland Basins are a collection of mostly offshore basins in southern California. It extends from near Monterey, CA, to the U.S.–Mexico national maritime boundary. It includes the Santa Maria, Santa Barbara Channel, Ventura, Santa Monica, Santa Cruz, San Pedro, Los Angeles, Catalina, San Nicolas, Tanner, Poway, and San Diego basins. It is bordered on the east by a series of fault zones, including the Santa Ynez, San Gabriel, Mission Creek, and San Andreas fault zones, on the south by the U.S.–Mexico national and national maritime boundaries, on the west by the bathymetry isobath that approximate the base of the continental slope, and on the north by the south shoulder of Monterey Canyon. Sediments and sedimentary rocks probably extend for an undetermined distance to the west of the western boundary of this basin but are not included in this discussion. The boundary for this basin is derived from the basin and resource management area outlines shown in Cohee and others (1962), Frezon and Finn (1988), and the Bureau of Ocean Energy Management, Regulation and Enforcement (2010d).

Mesozoic

At present, there are no recognized pericratonic borderland basins of Mesozoic age within the United States.

Paleozoic

At present, there are no recognized pericratonic borderland basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized pericratonic borderland basins of Neoproterozoic age within the United States.

Transtensional/Transpressional

Cenozoic

Amak–St. George–Pribilof–Walrus Basin 118

The Amak–St. George–Pribilof–Walrus Basin is a large Cenozoic composite transtensional-transpressional basin that includes the Amak, St. George, Pribilof, Walrus, Otter, and Inner basins. This basin complex is bordered on the northeast by basin-bounding normal faults or flexures within the Bering Sea Shelf, on the east by structural saddles between it and the Bristol Bay Basin to the east, on the south and southwest by closing structural contours, and on the northwest by structural saddles between it and the Navarin Basin to the northwest and the Pribilof Ridge. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Navarin Basin 111

The Navarin Basin is a large Cenozoic composite transtensional–transpressional basin in western offshore Alaska. For this report, it also includes the smaller Zhemchug Basin. The Navarin Basin is bordered to the northwest by the U.S.–Russian national maritime boundary, to the northeast by structural contours down structural dip from the St. Matthew–Nunivak Arch, on the southeast by the structural saddle between it and the Amak–St. George–Pribilof–Walrus Basin, on the south by the general trend of the 1000-m isobath, and on the west by continuation of the 1000-m isobath and closing structural contours between the Navarin Basin and those Russian basins along trend. The boundary for this basin is derived from the basin and resource management area outlines shown on Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Mesozoic

Bethel Basin 130

The Bethel Basin is a large Cenozoic transtensional–transpressional basin in western Alaska. It also includes the unnamed and postulated "Cretaceous Low?" of Kirschner (1994). It is bordered on the north and east by a variety of folded and faulted flysch belts, including the Yukon–Koyukuk and Kuskokwim flysch belts and the Ahklun Mountains, on the east and southeast by closing structural contours off of the Goodnews Arch, on the west by an assumed structural saddle between the Bethel Basin and the Inner Basin of the Amak–St. George–Pribilof–Walrus basin complex, and on the north by closing structural contours coming off of the St. Matthew–Nunivak Arch and the structural saddle between the Bethel Basin and the St. Matthew Basin. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Paleozoic

At present, there are no recognized pericratonic transtensional/transpressional basins of Paleozoic age within the United States.

Neoproterozoic

Great Smoky Mountains Rift Basin 81

The Great Smoky Mountains Rift Basin is medium transtensional and transpressional composite basin of Neoproterozoic age. It includes the Mt. Rogers, Ocoee, and Grandfather Mountain Basins within the highly deformed Blue Ridge Allocthon. It is located east of the Appalachian foreland basin and fold belt, extending from northern Georgia to southeastern Virginia. For most of its extent, it is an inverted basin demonstrating high topographic relief and containing low- to high-grade metamorphic rocks. It is bordered on the south by the confluence of the Cartersville and Dahlonega fault zones, on the northwest by the Cartersville and Great Smoky fault zones, on the northeast by the northeastward plunge of several, large antiformal structures, and on the southeast by the Brevard and Dahlonega fault zones. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962) and King and Beikman (1974).

Intercratonic

Passive Margin (extending onto Oceanic)

Cenozoic

Canada Basin 134

The Canada Basin is huge Cenozoic passive margin basin that extends from the offshore of the Alaskan North Slope well into the international waters of the Arctic Ocean. It is bordered on the north by the northern limit of U.S. Exclusive Economic Zone for Alaska and a general straight-line extension of the northern limit of the EEZ to the U.S.–Canadian national maritime boundary, on the east by the U.S.–Canadian national maritime boundary and its northern extension, and on the southeast, south, southwest, and west by the approximate 2500-m isobath. Sediments and sedimentary rocks probably extend for an undetermined distance beyond the boundaries of this basin but are not included in this discussion. The boundary for this basin is derived from the basin and resource management area outlines shown on Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

North Chukchi Basin 68

The North Chukchi Basin is a medium Cenozoic passive margin basin in northeastern offshore Alaska. It has an early history as a Mesozoic rift basin. It is bordered on the west by the U.S.–Russian national maritime boundary, on the north by the northern extent of the U.S. Exclusive Economic Zone, and on the east and south by structural contours indicating basin development to the west and north of the Chukchi Platform. Sediments and sedimentary rocks probably extend for an undetermined distance to west and north of those basin boundaries but are not included in this discussion. The boundary for this basin is derived from the basin and resource management area outlines shown on Kirschner (1994), the U.S. Geological Survey (1997), Grantz and others (2010), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Mesozoic

At present, there are no recognized intercratonic passive margin basins extending onto oceanic crust of Mesozoic age within the United States.

Paleozoic

At present, there are no recognized intercratonic passive margin basins extending onto oceanic crust of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized intercratonic passive margin basins extending onto oceanic crust of Neoproterozoic age within the United States.

Accreted Back-Arc

Cenozoic

Bristol Bay Basin 164

The Bristol Bay Basin is a large accreted Cenozoic back-arc basin in southwestern Alaska. It is bordered on the north by closing structural contours coming off of folded and faulted flysch belts to the north and northeast, on the southeast by the Alaska Peninsula Fold Belt and a string of volcanoes, on the south by the Black Hills Ridge, on the west by the structural saddle between it and the Amak–St. George–Pribilof–Walrus Basin, and on the north and northwest by closing structural contours coming off of the Goodnews Arch. The Bristol Bay Basin includes the North Aleutian Basin of Worrall (1991). The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

St. Matthew–Hall Basin 121

The St. Matthew–Hall Basin is a composite of at least four basins within a very large area of the Bering Sea Shelf. It includes the St. Matthew Basin, the Hall Basin, and at least two unnamed basins (Kirschner, 1994). The complex is bordered on the north by a structural saddle between it and the Norton Basin to the north and closing structural contours coming off of St. Lawrence Island, on the east by a structural saddle between it and the Bethel Basin, on the southeast, south, and southwest by closing structural contours coming off of the St. Matthew–Nunivak Arch, and on the west by closing structural contours (inferred from Kirschner, 1994). The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Mesozoic

At present, there are no recognized intercratonic accreted back-arc basins of Mesozoic age within the United States.

Paleozoic

Havallah Basin 106

The Havallah Basin is a medium intercratonic accreted back-arc Paleozoic basin. It is located in western Nevada beneath the Basin and Range Province. Its bounding elements are not well defined. The boundary for this basin is derived from the basin outline shown in Li and Peters (1998).

Auld Lang Syne Basin 41

The Auld Lang Syne Basin is a small intercratonic accreted back-arc Paleozoic basin. It is located in western Nevada beneath the Basin and Range Province. It is situated west of the Golconda Thrust Front and east of the incipient Cordilleran magmatic arc. The boundary for this basin is derived from the basin outline shown in Dickinson and Gehrels (2008).

Neoproterozoic

At present, there are no recognized intercratonic accreted back-arc basins of Neoproterozoic age within the United States.

Accreted Fore-Arc

Cenozoic

At present, there are no intercratonic accreted fore-arc basins of Cenozoic age within the United States as defined above.

Mesozoic

Sacramento Basin 73

The Sacramento Basin is a large, Mesozoic accreted fore-arc basin in northern California. It is bordered on the north by the Klamath Mountains, on the east by the Sierra Nevada Mountains, on the south by the north end of the San Joaquin Basin, and on the west by structural contours dipping east off of the Franciscan metamorphic complex. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), King and Beikman (1974), and Frezon and Finn (1988).

Great Valley Basin 105

The Great Valley Basin is a large Mesozoic accreted fore-arc basin in central California. This name is commonly given to the Mesozoic Sacramento and Cenozoic San Joaquin Basins where they are grouped together. The term "Great Valley Basin" is probably best used to describe the true fore-arc basin that developed in Jurassic times and was later succeeded in time and space by the northern Sacramento Basin and the southern San Joaquin Basin. The Great Valley section would have suffered Nevadan orogenic deformation, whereas the younger, overlying basins would not have undergone that event. The Great Valley Basin (as used herein) is bordered on the east by the Sierra Nevada Mountains and batholiths, on the south by the confluence of the San Andreas and Garlock fault zones, on the west by a number of fault zones that form the border between the Franciscan metamorphic complex and the Great Valley, and on the north by the Klamath Mountains. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), King and Beikman (1974), Frezon and Finn (1988), Ingersoll (2008), and the California Department of Conservation (2001).

Hornbrook-Ochoco Basin 114

The Hornbrook-Ochoco Basin is medium Mesozoic accreted fore-arc basin in northern California and southern Oregon. The original basin was possibly a northward extension of the Great Valley fore-arc basin and has now been divided into the Hornbrook and Ochoco basins. The Hornbrook-Ochoco basin is bordered on the west by the Klamath Mountains, on the north by the paleogeographic position of the continental shelf-slope transition into the Paleo-Pacific Ocean, on the east by the northern extent of the Sierra Nevada Mountains (as of Late Cretaceous times), and on the south by an arbitrary line dividing the Great Valley basin from the Hornbrook-Ochoco Basin in the Lassen Peak at the southern end of the Modoc Lava Plateau. The boundary for this basin is derived from the basin outline shown in Ingersoll (2008).

Cook Inlet Basin 61

The Cook Inlet Basin is a medium Mesozoic accreted fore-arc basin in southern Alaska. It is bordered on the north by the Castle Mountain Fault Zone, on the east by the Kenai-Chugach accretionary prism, on the south and southwest by a structural saddle between it and the Shelikov Basin, and on the west by the magmatic arc of the Alaska Peninsula Fold Belt and the Bruin Bay Fault Zone. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Shelikov Basin 33

The Shelikov Basin is a medium Mesozoic accreted fore-arc basin in southern Alaska. It is bordered on the north by the structural saddle between it and the Cook Inlet Basin, on the east and southeast by closing structural contours down structural dip from thrust faults, on the southwest by a structural saddle between it and the Sanak-Shumagin-Tugidak Basins complex, and to the northwest by structural contours down structural dip from the Alaska Peninsula Fold Belt. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Paleozoic

At present, there are no recognized intercratonic accreted fore-arc basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized intercratonic accreted fore-arc basins of Neoproterozoic age within the United States.

Oceanic

Back-Arc

Cenozoic

Aleutian Basin 141

The Aleutian Basin is a huge Cenozoic oceanic back-arc basin that extends from the western Aleutian Islands and Bering Sea Shelf of southwest Alaska to the Russian continental shelf. For this report, the Aleutian Basin also includes the Bowers Basin. It is bordered on the southeast, south, and southwest approximately by the continental shelf-slope break north of the Aleutian Islands volcanic chain, on the northwest by the U.S.–Russian national maritime boundary, and on the northeast and southeast approximately by the continental shelf-slope break southwest of the Bering Sea Shelf. Sediments and sedimentary rocks probably extend for an undetermined distance to the northeast, northwest, and southeast of these basin boundaries but are not included in this discussion. The boundary for this basin is derived from the basin and resource management area outlines shown on Hall and others (1988), Kirschner (1994), the U.S. Geological Survey (1997), and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) (2010a).

Umnak Plateau Basin 44

The Umnak Plateau Basin is a small Cenozoic oceanic back-arc basin that lies at the confluence of the Aleutian Island volcanic chain and the shelf-slope break of the Bering Sea Shelf, offshore southwestern Alaska. It is bordered on the northeast by a structural saddle between it and the Amak Basin to the northeast, to the southeast by the Aleutian Island volcanic chain, and on the southwest, west, and northwest by closing structural contours within the Bering Sea Shelf. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Mesozoic

At present, there are no recognized oceanic back-arc basins of Mesozoic age within the United States.

Paleozoic

At present, there are no recognized oceanic back-arc basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized oceanic back-arc basins of Neoproterozoic age within the United States.

Fore-Arc

Cenozoic

Western Washington–Oregon Basins 129

The Western Washington–Oregon Basins is a collective term for the Cenozoic onshore and offshore fore-arc basins along the Pacific Coast of Washington and Oregon. This grouping includes the Whatcom, Tofino Fluca, West Olympic, Olympic, Willipa, Willapa Hills, Puget Sound Consolidated, Heceta, Astoria, Newport, Astoria-Nehalem, Tyee, Umpqua, Willamette Trough, and Coos Bay basins. Its border is defined on the north by the U.S.–Canadian national and national maritime boundaries, on the west by the approximate break in slope between the continental shelf and continental slope, on the south by the contact with the Gold Beach terrain near Cape Blanco, and on the east by the approximate eastern edge of the main basin sedimentary rocks and their transition or contact with the Coast Range volcanic complex. Sediments and sedimentary rocks probably extend for an undetermined distance to the west of the western boundary of this basin but are not included in this discussion. The boundary for this basin is derived from the basin outline shown in Cohee and others (1962), King and Beikman (1974), Frezon and Finn (1988), and WESTCARB (2010).

Sanak-Shumagin-Tugidak Basin 100

The Sanak-Shumagin-Tugidak Basin is a collective term for these three basins, which are divided locally by anticlines. It is bordered on the north and northwest by closing structural contours coming off of the Alaska Peninsula Fold Belt, on the east by the Kodiak Mountains, on the southeast and south by the 1000-m isobaths, and on the west by presumably closing structural contours on the continental shelf southeast of Tigalda Island, Alaska. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Stevenson-Albatross Basin 87

The Stevenson-Albatross Basin is a series of medium and small Cenozoic oceanic fore-arc basins on the Kodiak Shelf between the Kodiak Mountains and the Aleutian Trench in southern Alaska. It is bordered on the northwest by the Kodiak Mountains and associated fault zones, on the northeast by closing structural contours coming off of the Kodiak Shelf, on the southeast approximately by the 1000-m isobath, and on the southwest by the structural saddle between it and the Sanak-Shumagin-Tugidak Basins complex to the southwest. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Mesozoic

At present, there are no recognized oceanic fore-arc basins of Mesozoic age within the United States.

Paleozoic

At present, there are no recognized oceanic fore-arc basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized oceanic fore-arc basins of Neoproterozoic age within the United States.

Peripheral Volcanic Apron

Cenozoic

Amukta Basin 12

Because of its location and characteristics, the Amukta Basin is interpreted to be a small oceanic peripheral volcanic apron developed between Seguam and Amukta Island in the Aleutian volcanic chain. The boundary for this basin is derived from the basin outline shown on Kirschner (1994) and the U.S. Geological Survey (1997).

Hawaii Sedimentary Basin 140

The Hawaii Sedimentary Basin includes those Cenozoic sediments and sedimentary rocks that have accumulated on the flanks of the various volcanoes that make up the chain of Hawaiian Islands. The boundary of this basin is the 0.2-km isopach line of Winterer (1989), except where that line is truncated by the U.S. Exclusive Economic Zone boundary (NOAA, 2008). It also includes those areas of the islands containing sedimentary and volcano-sedimentary rocks described by Sherrod and others (2007).

Mesozoic

At present, there are no recognized oceanic peripheral volcanic apron basins of Mesozoic age within the United States.

Paleozoic

At present, there are no recognized oceanic peripheral volcanic apron basins of Paleozoic age within the United States.

Neoproterozoic

At present, there are no recognized oceanic peripheral volcanic apron basins of Neoproterozoic age within the United States.

Summary

One hundred forty-four sedimentary basins (or collections of basins) are presented here as a preliminary checklist and data base for the Geologic Carbon Dioxide Sequestration National Assessment Project. In addition to the list and brief basin description are accompanying shapefiles for GIS study and application. As a preliminary catalog, it is reasonable and expected that other basins will be added and some may be removed in succeeding versions of this report. Also, as more data relevant to the assessment are collected, further revisions of this report should also be expected.

Note added in review:

During review of this manuscript, several additional basins were suggested for inclusion in this initial version of the catalog. Because of time constraints on publication completion, the following basins are not discussed here and may be included in updates and revisions of this report:

Southwest Montana Thrust Belt
Sevier Orogenic Belt
East Continent Rift Basin
Fort Wayne Rift

References Cited

Bally, A.W., and Palmer, A.R., 1989, The geology of North America—An overview: The Geology of North America, v. A, Geological Society of America, 619 p.

Bally, A.W., and Snelson, S., 1980, Realms of subsidence, *in* A.D., Miall, ed., Facts and principles of world petroleum occurrence: Canadian Society of Petroleum Geologists Memoir 6, p. 9–94.

Beikman, H.M., 1980, Geologic map of Alaska: U.S. Geological Survey, Anchorage (AK), Map SG0002–1T and 2T, scale 1:2,500,000. (Also available as GIS shapefiles, accessed October 1, 2010, at *http://agdc.usgs.gov/data/usgs/geology/*.)

Benson, R.N., 1992, Map of exposed and buried early Mesozoic rift basins/synrift rocks of the U.S. Middle Atlantic continental margin: Delaware Geological Survey Miscellaneous Map Series 5, 1 sheet, scale 1:1,000,000.

Bird, K.J., and Houseknecht, D.W., 2011, Geology and petroleum potential of Arctic Alaska, *in* Spencer, A., Gautier, D., Sørensen, K., Stoupakova, A., and Embry, A., eds., Arctic petroleum geology: Geological Society of London Memoir 35, p. 485–499.

Blakey, R.C., 2008, Pennsylvanian-Jurassic sedimentary basins of the Colorado Plateau and southern Rocky Mountains, *in* Miall, A.D., ed., The sedimentary basins of the United States and Canada: Elsevier, Amsterdam, p. 245–296.

Brennan, S.T., Burruss, R.C., Merrill, M.D., Freeman, P.A., and Ruppert, L.F., 2010, A probabilistic assessment methodology for the evaluation of geologic carbon dioxide storage: U.S. Geological Survey Open-File Report 2010–1127, 31 p., accessed October 12, 2010, at *http://pubs.usgs.gov/of/2010/1127*.

Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., 1992, The Cordilleran orogen: Conterminous U.S.: The Geology of North America, v. G–3, Geological Society of America, 724 p.

Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), 2010a, Alaska OCS Region, accessed October 1, 2010, at *http://alaska.boemre.gov/*.

Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), 2010b, Atlantic Information, accessed October 1, 2010, at *http://www.boemre.gov/offshore/atlantic.htm*.

Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), 2010c, Gulf of Mexico OCS Region, accessed October 1, 2010, at *http://www.gomr.boemre.gov/*.

Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), 2010d, Pacific OCS Region, accessed October 1, 2010, at *http://www.boemre.gov/omm/pacific*.

California Department of Conservation, 2001, Oil, gas, and geothermal fields in California: California Department of Conservation, Sacramento (CA), Map S–1, 1 sheet, scale 1:500,000, accessed October 1, 2010, at *ftp://ftp.consrv.ca.gov/pub/oil/maps/Map_S–1.pdf*.

Christiansen, R.L., and Yeats, R.S., 1992, Post Laramide geology of the U.S. cordillera, *in* Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran Orogen: Coterminous U.S. Volume G–3 Decade of North American Geology (DNAG), Geological Society of America, p. 261–406.

Cohee, G.V., Applin, P.L., Bass, N.W., Bell, A.H., Billings, M.P., DeFord, R.K., Dobbin, C.E., Donnell, J.R., Forrester, J.D., Gilluly, J., Hoots, H.W., King, P.B., Longwell, C.R., Lyons, P.L., Murray, G.E., and Waters, A.C., 1962, Tectonic map of the United States exclusive of Alaska and Hawaii: U.S. Geological Survey and the American Association of Petroleum Geologists, Washington (DC) and Tulsa (OK), 2 sheets, scale 1:2,500,000.

Coleman, J.L., 1988, The geology of the Rising Fawn CSD, *in* Coleman, J.L., Jr., Groshong, R.H., Jr., Rheams, K.F., Neathery, T.L., and Rheams, L.J., eds., Structure of the Wills Valley anticline–Lookout Mountain syncline between the Rising Fawn and Anniston CSD's, northeast Alabama: Alabama Geological Society 25th annual field trip guidebook, November 18–19, 1988, p. 12–40.

Coleman, J.L., Jr., 2009, Review of Geology for a USGS Resource Assessment of Ouachita Thrust Belt, Post–Ouachita Successor Basins and Reelfoot Rift, *in* U.S. Geological Survey, Natural gas assessment of the Arkoma basin, Ouachita thrust belt, and Reelfoot rift: Oklahoma Geological Survey Technical Presentation materials, accessed October 1, 2010, at *http://www.ogs.ou.edu/MEETINGS/Presentations/USGS%20Arkoma%20Nov%2009/USGS4_OuachitasReel.pdf*.

Dickinson, W.R., 1976, Plate tectonics and hydrocarbon accumulation: American Association of Petroleum Geologists Continuing Education Course Note Series 1, 56 p.

Dickinson, W.R., 2006, Geotectonic evolution of the Great Basin: Geosphere, v. 2, p. 353–368.

Dickinson, W.R., and Gehrels, G.E., 2008, U-Pb ages of detrital zircons in relation to paleogeography: Triassic paleodrainage networks and sediment dispersal across southwest Laurentia: Journal of Sedimentary Research, v. 78, p. 745–764.

Dyman, T.S., and Condon, S.M., 2007, 2005 geologic assessment of undiscovered oil and gas resources, Hanna, Laramie, and Shirley basins province, Wyoming and Colorado: U.S. Geological Survey Digital Data Series DDS–69–K, Chapter 2, 62 p., accessed October 1, 2010, at *http://pubs.usgs.gov/dds/dds–069/dds–069–k/REPORTS/69_K_CH_2.pdf*.

Ewing, T.E, and Flores Lopez, R., 1991, Principal structural features Gulf of Mexico basin, *in* Salvador, A., ed., The Gulf of Mexico basin: Geological Society of America, The Geology of North America, v. J, plate 2, 1 sheet, scale 1:2,500,000.

Foster, N.H., and Beaumont, E.A., 1987, Geologic basins I: classification, modeling, and predictive stratigraphy: American Association of Petroleum Geologists Treatise of Petroleum Geology Reprint Series 1, 458 p.

Frezon, S.E., and Finn, T.M., 1988, Map of sedimentary basins in the conterminous United States: U.S. Geological Survey Oil and Gas Investigations Map OM–223, 1 sheet, scale 1:5,000,000.

Grantz, A., Scott, R.A., Drachev, S.S., Moore, T.E., and Howard, J.P., 2010, Map showing the sedimentary successions of the Arctic region (58°–64° to 90° N) that may be prospective for hydrocarbons: American Association of Petroleum Geologists, GIS-Linked Data/Atlases, scale 1:6,760,000, 86 p., accessed October 1, 2010, at *http://www.datapages.com/Services/GISUDRIL/OpenFiles.aspx*.

Hall, R.K., Karl, H.A., Carlson, P.R., Cooper, A.K., Gardner, J.V., Hunter, R.E., Marlow, M.S., and Stevenson, A.J., 1988, Bathymetric map of the Bowers Basin and Aleutian Basin east of the U.S.–U.S.S.R. 1867 convention line, Bering Sea: U.S. Geological Survey Open-File Report 89–548, 8 p.

Hatcher, R.D., Jr., Thomas, W.A., and Viele, G.W., eds., 1989, The Appalachian-Ouachita orogen in the United States, The geology of North America: Geological Society of America, v. F–2, p. 537–553.

Houseknecht, D.W., and Bird, K.J., 2011, Geology and petroleum potential of the rifted margins of the Canada basin, *in* Spencer, A., Gautier, D., Sørensen, K., Stoupakova, A., and Embry, A., eds., Arctic petroleum geology: Geological Society of London Memoir 35, p. 509–526.

Houseknecht, D.W., Bird, K.J., and Garrity, C.P., 2012a, Assessment of undiscovered petroleum resources of the Arctic Alaska petroleum province: U.S. Geological Survey Scientific Investigations Report 2012–5147, in press.

Houseknecht, D.W., Bird, K.J., and Garrity, C.P., 2012b, Assessment of undiscovered petroleum resources of the Amerasia Basin petroleum province: U.S. Geological Survey Scientific Investigations Report 2012–5146, in press.

Houseknecht, D.W., Burns, W.M., and Bird, K.J., 2011, Thermal maturation history of Arctic Alaska and southern Canada basin, *in* Harris, N.B., and Peters, K.E., eds., Thermal history analysis of sedimentary basins: Methods and applications: Society of Economic Paleontologists and Mineralogists Special Publication, in press.

Houseknecht, D.W., and Till, A.B., 2011, Arctic Alaska basin response to Jurassic-Tertiary plate-margin tectonics (abs.): American Association of Petroleum Geologists Arctic Polar Petroleum Potential Conference (3P Conference), Halifax (NS), August 30–September 2, 2011, program with abstracts, in press.

Ingersoll, R.V., 2008, Subduction-related sedimentary basins of the USA Cordillera, *in* Miall, A.D., ed., The sedimentary basins of the United States and Canada: Elsevier, Amsterdam, p. 395–428.

Kansas Geological Survey, 2005, The stratigraphy and structural development of the Forest City Basin in Kansas—Introduction: Kansas Geological Survey, accessed October 1, 2010, at *http://www.kgs.ku.edu/Publications/Bulletins/51/02_intro.html.* (Originally published in 1943 as Kansas Geological Survey Bulletin 51 by Wallace Lee; information in the online version has not been updated.)

King, P.B., and Beikman, H.M., 1974, Geologic map of the United States: U.S. Geological Survey, Washington (D.C.), 1 sheet, scale 1:2,500,000.

Kingston, D.R., Dishroon, C.P., and Williams, P.A., 1983, Global basin classification system: American Association of Petroleum Geologists Bulletin, v. 67, p. 2175–2193.

Kirschner, C.E., 1994, Map showing sedimentary basins in Alaska, *in* Plafker, G., and Berg, H.D., eds., 1994, The geology of Alaska: Geological Society of America, The Geology of North America, v. G–1, plate 7, 1 sheet, scale 1:2,500,000. (Shape files accessed October 1, 2010, at *http://agdc.usgs.gov/data/usgs/geology/*.)

Klemme, H.D., 1980, Types of petroliferous basins, *in* Mason, J.F., ed., Petroleum geology in China: Tulsa, Oklahoma, PennWell Books. *Reprinted in* Foster, N.H., and Beaumont, E.A., eds., Geologic basins I: Classification, modeling, and predictive stratigraphy: AAPG Treatise of Petroleum Geology Reprint Series 1, p. 87–101.

Li, Z., and Peters, S.G., 1998, Comparative geology and geochemistry of sedimentary-rock-hosted (Carlin-type) gold deposits in the People's Republic of China and in Nevada, U.S.A.: U.S. Geological Survey Open-File Report 98–466, 160 p.

Magoon, L.B., and Dow, W.G., 1994, The petroleum system, *in* Magoon, L.B., and Dow, W.G., eds., The petroleum system—From source to trap: American Association of Petroleum Geologists Memoir 60, p. 3–24.

McKeown, F.A., Hamilton, R.M., Diehl, S.F., and Glick, E.E., 1990, Diapiric origin of the Blytheville and Pascola arches in the Reelfoot rift, east-central United States: Relation to New Madrid seismicity: Geology, v. 18, p. 1158–1162.

Miall, A.D., ed., 2008, The sedimentary basins of the United States and Canada: Elsevier, Amsterdam, 610 p.

Miall, A.D., and Blakey, R.C., 2008, The Phanerozoic tectonic and sedimentary evolution of North America, *in* Miall, A.D., ed., The sedimentary basins of the United States and Canada: Elsevier, Amsterdam, p. 1–29.

Middleton, M.F., 2007, A model for the formation of intracratonic sag basins: Geophysical Journal International, v. 99, p. 665–676.

Miller, E.L., Miller, M.M., Stevens, C.H., Wright, J.E., and Madrid, R., 1992, Late Paleozoic paleogeographic and tectonic evolution of the western U.S. Cordillera, *in* Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran orogen: Conterminous U.S. [Geology of North America, v. G3], Geological Society of America, p. 57–106.

National Oceanographic and Atmospheric Agency (NOAA), 2008, U.S. Maritime Limits & Boundaries [EEZ: Hawaiian Islands], accessed October 29, 2012, at *http://www.nauticalcharts.noaa.gov/csdl/mbound.htm*.

National Park Service, 2007, Natural Bridges National Monument geologic history, accessed October 12, 2010, at *http://www.nature.nps.gov/geology/parks/nabr/geol_history.cfm*.

Nuccio, V.F., and Condon, S.M., 1996, Burial and thermal history of the Paradox Basin, Utah and Colorado, and petroleum potential of the Middle Pennsylvanian Paradox Formation, *in* Huffman, A.C., Jr., project coordinator, Evolution of sedimentary basins—Paradox Basin: U.S. Geological Survey Bulletin 2000–O, p. O1–O41.

Ojakangas, R.W., Morey, G.B., and Green, J.C., 2001, The Mesoproterozoic midcontinent rift system, Lake Superior region, U.S.A.: Sedimentary Geology, v. 141–142, p. 421–442.

Palacas, J.G., 1997, Source-rock potential of Precambrian rocks in selected basins of the United States: U.S. Geological Survey Bulletin 2146–J, p. 125–134.

Plafker, G., and Berg, H.C., eds., 1994, The geology of Alaska: The Geology of North America, v. G–1, Geological Society of America, 1,055 p.

Pollastro, R.M., Schenk, C.J., and Charpentier, R.R., 2001, Assessment of undiscovered oil and gas in the onshore and state waters portion of the South Florida basin, Florida—USGS Province 50: U.S. Geological Survey Digital Data Series 69–A, 71 p.

Reed, J.C., Jr., Bickford, M.E., Houston, R.S., Link, P.K., Rankin, D.W., Sims, P.K., and Van Schmus, W.R., eds., 1993, Precambrian: Conterminous U.S.: The Geology of North America, v. C–2, Geological Society of America, 657 p.

Ryder, R.T., Harris, D.C., Gerome, P., Hainsworth, T.J., Burruss, R.C., Lillis, P.G., Jarvie, D.M., and Pawlewicz, M.J., 2005, Evidence for Cambrian petroleum source rocks in the Rome Trough of West Virginia and Kentucky, Appalachian Basin: U.S. Geological Survey Open-File Report 05–1443, 49 p.

Salvador, A., ed., 1991, The Gulf of Mexico basin: Geological Society of America, The Geology of North America, v. J, 568 p.

Seeley, J.M., and Keller, G.R., 2003, Delineation of subsurface Proterozoic Unkar and Chuar Group sedimentary basins in northern Arizona using gravity and magnetic: Implications for hydrocarbon source potential: American Association of Petroleum Geologists Bulletin, v. 87, p. 1299–1321.

Seismic Exchange, Inc., 2003, USA Map—Major Geological Features and Producing Basins, accessed October 1, 2010, at *http://www.seismicexchange.com/res/dwf/usbasin_SEI.dwf*.

Sherrod, D.R., Sinton, J.M., Watkins, S.E., and Brunt, K.M., 2007, Geologic map of the state of Hawai'i: U.S. Geological Survey Open-File Report 2007–1089, v. 1.0, 85 p., 8 plates, accessed October 1, 2010, at *http://pubs.usgs.gov/of/2007/1089/*.

Sloss, L.L., 1988, Sedimentary cover–North American craton: U.S.: The Geology of North America, v. D–2, Geological Society of America, 506 p.

Thomas, W.A., compiler, 1989, Pre-Mesozoic paleogeologic map of Appalachian–Ouachita orogen beneath Atlantic and Gulf Coastal Plains, *in* Hatcher, R.D., Jr., Thomas, W.A., and Viele, G.W., eds., The Appalachian-Ouachita orogen in the United States: Geological Society of America The Geology of North America, v. F–2, plate 6, 1 sheet.

Thomas, W.A., and Bayona, G., 2005, The Appalachian thrust belt in Alabama and Georgia: Thrust-belt structure, basement structure, and palinspastic reconstruction: Geological Survey of Alabama Monograph 16, 48 p., 2 plates.

Troutman, S.M., and Stanley, R.G., 2002, Map and digital database of sedimentary basins and indications of petroleum in the Central Alaska Province: U.S. Geological Survey Open-File Report 02–483, 1 sheet, accessed October 1, 2010, at *http://geopubs.wr.usgs.gov/open–file/of02–438/*.

Tully, J., 1996, Coal fields of the conterminous United States: U.S. Geological Survey Open-File Report 96–92, accessed October 1, 2010, at *http://pubs.usgs.gov/of/1996/of96–092/*.

U.S. Geological Survey, 1997, Polygon data from 1994 "Map showing sedimentary basins in Alaska": U.S. Geological Survey Alaska Geospatial Data Clearing House, Anchorage, accessed October 1, 2010, at *http://agdc.usgs.gov/data/usgs/geology/*.

West Coast Regional Carbon Sequestration Partnership (WESTCARB), 2010, The West Coast Regional Carbon Sequestration Partnership Interactive Map, accessed October 1, 2010, at *http://atlas.utah.gov/co2wc/viewer.htm?Title=ArcIMS%20HTML%20Viewer*.

Winterer, E.L., 1989, Sediment thickness map of the northeast Pacific, *in* Winterer, E.L., Hussong, D.M., and Decker, R.W., eds., The eastern Pacific Ocean and Hawaii: Geological Survey of America, The Geology of North America, v. N, p. 307–310.

Worrall, D.M., 1991, Tectonic history of the Bering Sea and the Evolution of Tertiary Strike-slip Basins of the Bering Sea: Geological Society of America Special Paper 257, 120 p.