OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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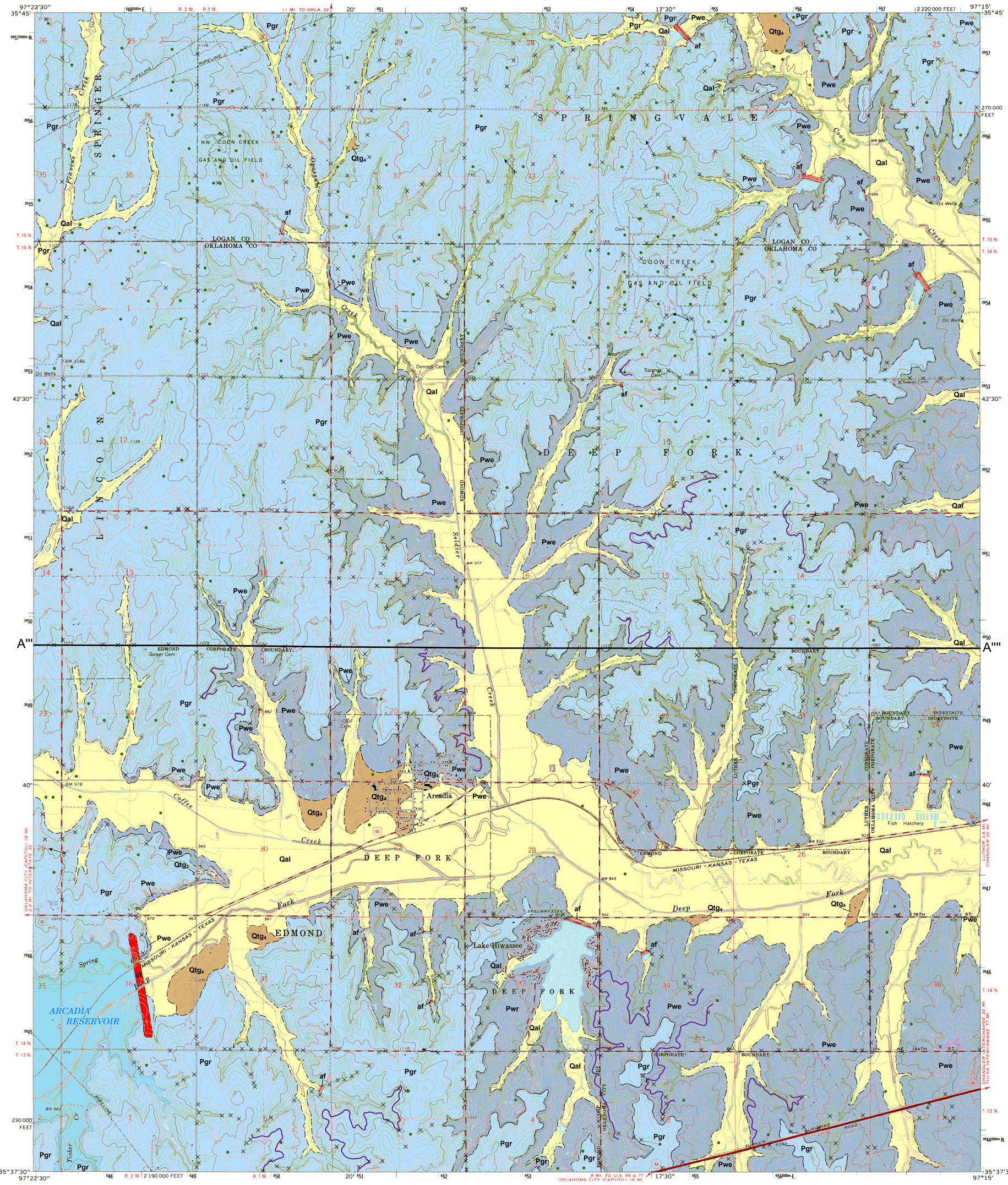
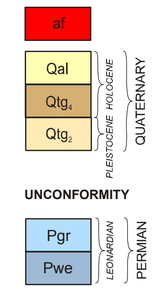
Oklahoma Geologic Quadrangle **OGQ-55**
Geologic Map of the Arcadia 7.5′ Quadrangle
(previously Open-File Report OF11-2004)



CORRELATION OF MAP UNITS



DESCRIPTION OF UNITS

af ARTIFICIAL FILL–Natural or artificial talus, slumps, and tailings covering formally exposed areas. Most deposits of this type found around man-made earthen dams and large-scale land-fills. Thickness variable.

Qal ALLUVIUM (Holocene)–Clay, silt, sand, and gravel in channels and on flood plains of modern streams and rivers

Qtg_4 TERRACE DEPOSITS (Holocene)–Clay, silt, sand, and gravel on terraces immediately above and adjacent to modern flood plains. Consists entirely of locally derived sediment

Qtg_2 REMNANTS OF TERRACE DEPOSITS (Pleistocene)–Concentrations of distally derived sediment, mostly subrounded quartz and quartzite cobbles and pebbles, about 15–20 ft above modern flood plains. Probably represents part of former course of North Canadian River

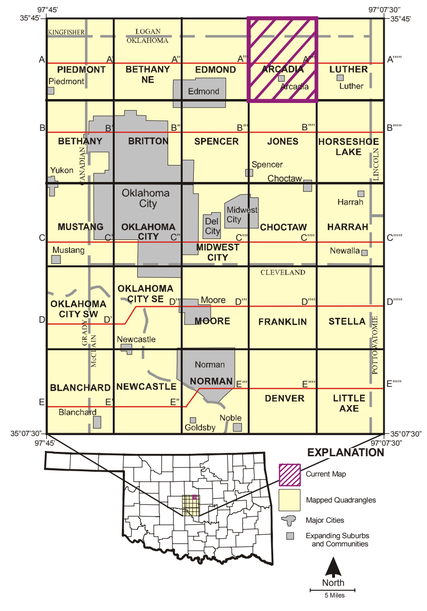
Pgr GARBER FORMATION (Permian)–Sandstone, fine-grained to medium-fine-grained, appears to be very fine grained near base; moderate reddish brown (10R4/6), moderate reddish orange (10R6/6), moderate red (5R5/4), light brown (5YR5/6), and dark yellowish orange (10YR6/6); minor sandstone- and siltstone-pebble conglomerate and/or breccia, dolomite conglomerate and/or breccia, siltstone, and shale. Sandstone typically porous and friable, although locally hard, dark-colored (grayish black [N2]), completely cemented with hematite, calcite, and/or silica. Large- and small-scale crossbeds, trough crossbeds common; many outcrops characterized by inclined beds and channelform deposits, although plane-parallel stratification also present. Shale and/or siltstone rip-up clasts uncommon; burrows extremely rare. Sandstone typically color-banded (e.g. moderate reddish brown (10R4/6), grayish red purple (5RP4/2), and grayish yellow green (5GY7/2)) or with mottled appearance. Small calcareous and iron-oxide spheres occur locally on weathered surfaces. Sandstone locally contains calcite-, dolomite-, and/or barite-cemented septarian nodules. Circular iron-reduction spots very rare. Sandstone, siltstone, and dolomite conglomerates and breccias appear to be of two types: one is clearly sedimentary, the other appears to be diagenetic and probably represents a paleosol. Conglomerates and breccias common near base of formation. Siltstone and shale sandy, color-banded (e.g., moderate reddish brown (10R4/6) and yellowish gray (5Y7/2)), stratified to unstratified, and with common iron-reduction spots as large as 2 in. in diameter. Typically soft, weather to "badlands"-type topography. Locally contain abundant septarian nodules similar to those found in sandstone. Siltstone and shale common near base of formation. Thickness: about 140 ft, but top not exposed

Pwe WELLINGTON FORMATION (Permian)–Sandstone, mostly, fine- to very fine grained, moderate orange pink (10R7/4) to moderate reddish brown (10R4/6), moderate reddish orange (10R6/6) to pale red (5R6/2); siltstone, typically color-banded consisting of, for example, pale reddish brown (10R5/4) and light greenish gray (5GY8/1); siltstone and dolomite breccia and uncommon conglomerate; and minor shale, moderate reddish brown (10R4/6) and light greenish gray (5GY8/1). Sandstone mostly porous and friable, locally with variable amounts of hematite and calcite cement. Sedimentary structures include large- and small-scale crossbeds, trough crossbeds, locally steeply inclined stratification, and less common channelform features. In places, weathers to "slickrock" appearance. Sandstone locally color-banded and multicolored. Siltstone commonly contains abundant concretions and septarian nodules with conspicuous calcite, dolomite and possible barite crystals lining radiating fractures. Siltstone and dolomite breccias and conglomerates similar to those in overlying Garber Formation; some clearly are sedimentray in origin and may represent slightly reworked paleosols, others may represent autochthonous paleosols. Shale typically is color-banded.

Principal differences between Garber and Wellington Formations is generally coarser grain size of Garber, although lower part of Garber appears to contain finer-grained sandstones and more siltstone and shale than upper part. Contact between two formations more difficult to recognize south of Deep Fork. In northern part of quadrangle, the top of the Wellington consists of a mappable shale between 15 and 30 ft thick capped by a paleosol horizon. Thickness: 100 ft, base not exposed

SYMBOLS

- Unit contact; dashed where approximate
- Mappable bed
- Outcrop, geologic observation
- Outcrop, bearing of paleocurrent direction
- Outcrop, azimuth of paleocurrent direction
- Exotic (quartz, quartzite) pebbles and cobbles
- Petroleum well. Includes oil, gas, oil and gas, dry, service (water supply or injection), junked and abandoned, unknown. Modified from Natural Resources Information System database
- Test hole by Oklahoma Department of Transportation

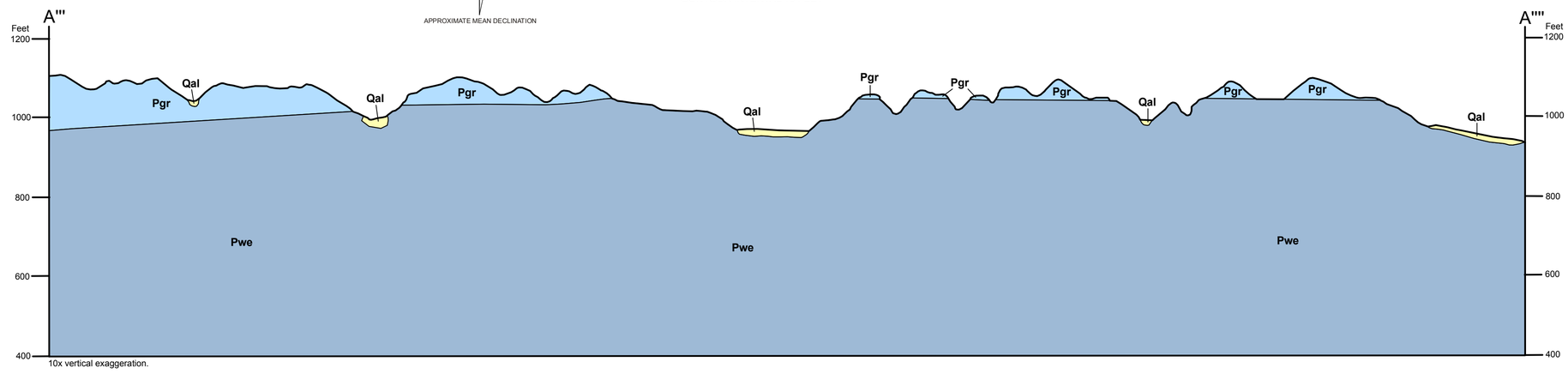


SCALE 1:24 000

1 .5 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

APPROXIMATE MEAN DECLINATION



Base Map Credits

The base map was compiled by the U.S. Geological Survey. Topography by photographic methods from aerial photographs taken 1964. Field checked 1966. Map photoinspected 1981. Universal Transverse Mercator (UTM) projection. 1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, north and south zones. 1,000-meter grid, zone 14.

Geologic Map Credits

Geology by LeRoy A. Hemish and Neil H. Suneson, 1997-1998. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 1437-HQ-97-AG-01798. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Published originally as Open-File Report 3-98 as an author-prepared, black-and-white paper map. Digitally reproduced in color as Open-File Report OF11-2004. Map revised and published as OGQ-55. Cartography and layout prepared by G. Russell Standridge, 2002.

GEOLOGIC MAP OF THE ARCADIA 7.5′ QUADRANGLE, LOGAN AND OKLAHOMA COUNTIES, OKLAHOMA

LeRoy A. Hemish and Neil H. Suneson

1998