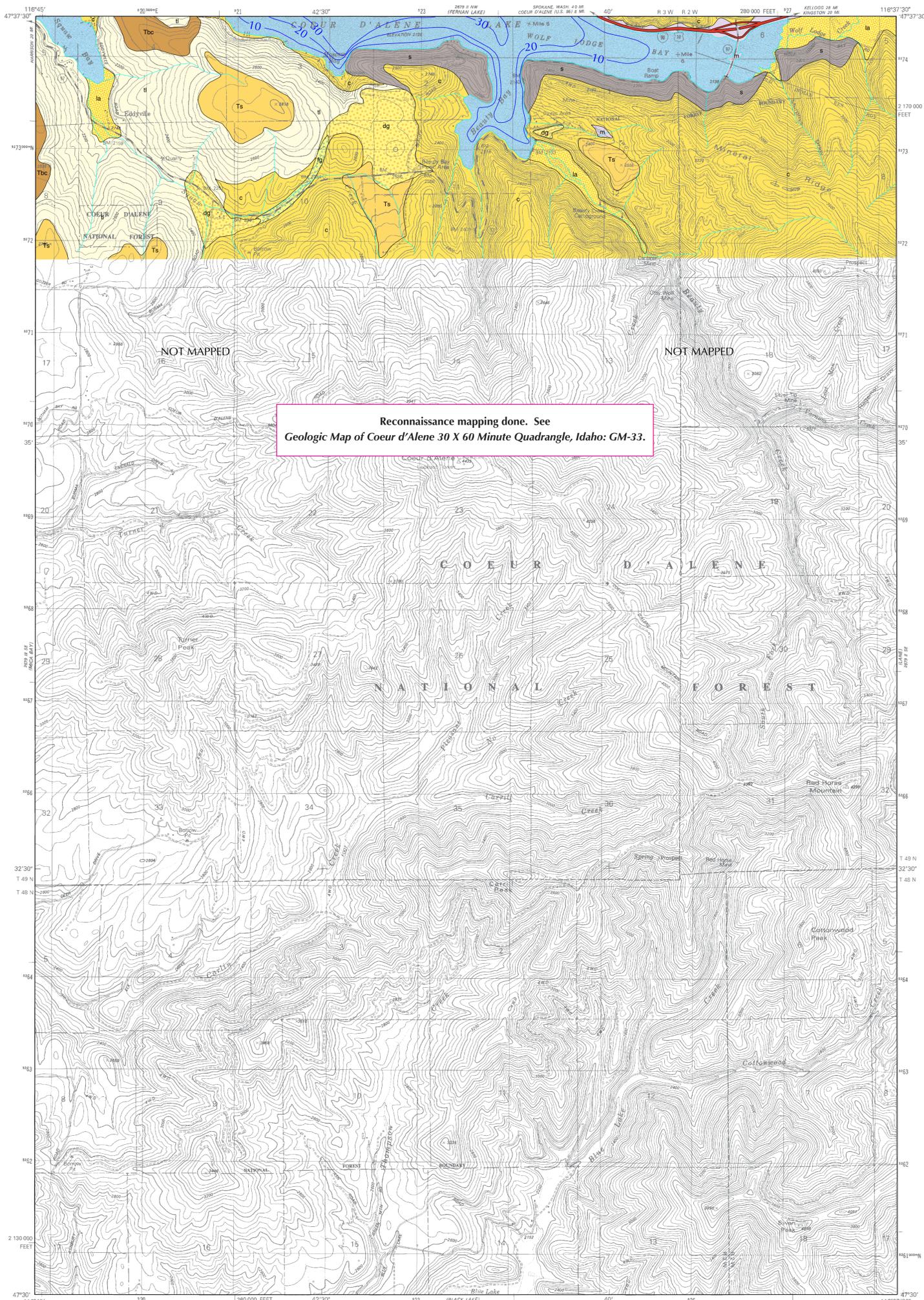


SURFICIAL GEOLOGIC MAP OF PART OF THE MOUNT COEUR D'ALENE QUADRANGLE, KOOTENAI COUNTY, IDAHO

Roy M. Breckenridge and Kurt L. Othberg
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Disclaimer: This Digital Web Map is an informal report and may be revised and formally published at a later time. Its content and format may not conform to agency standards.



INTRODUCTION

This map is part of a project that addresses the increasing demand for geologic information in urban areas. The area around Coeur d'Alene Lake is experiencing some of the most rapid growth in Idaho. The geologic mapping was funded in part by STATEMAP, a national cooperative program of the U.S. Geological Survey with the state geological surveys.

The Mt Coeur D'Alene quadrangle is located on the east side of Coeur d'Alene Lake and includes part of Wolf Lodge Bay. Elevations range from 2,238 feet at the average pool of Coeur d'Alene Lake to over 4,000 feet in the Coeur d'Alene Mountains. Lake Coeur d'Alene occupies an old drainage system in the plateau lavas of the Miocene Columbia River Basalt Group and is dammed by Pleistocene flood gravels. The lake provides substantial subsurface recharge to the Rathdrum aquifer. The mountains on the east are composed of Precambrian Belt Supergroup siltites, argillites, and quartzites. Wolf Lodge Bay is probably a reflection of a major fault zone, the western end of the Lewis Clark Line. The basalt plateau rimming the lake on the east is covered by ancient soils preserved since the Miocene and exhumed by erosion mainly from the catastrophic Pleistocene floods from Glacial Lake Missoula.

The map represents the geology of the materials and soils exposed near the earth's surface. The map is useful for determining the type and characteristics of the geologic materials found at the surface and in the shallow subsurface by agricultural activities, building excavations, construction material excavations, ditches, and well holes. The information can be used by government, industry, and the public for planning, development, and resource characterization. The map can be used as a guide for site locations but is not intended as a substitute for a detailed, site-specific geotechnical evaluation. This is particularly true in the more urbanized areas where access and exposures are limited and human activity has concealed the geology.

Most users of geologic maps are familiar with traditional lithologic descriptions of bedrock units. Surficial maps show units with more diverse characteristics than rock type or lithology. Most surficial deposits are geologically young, Quaternary in age, and unconsolidated. The Quaternary units are subdivided on the basis of their physical characteristics and the boundaries between them (allostratigraphy). In many places, the boundaries between these units are manifested by morphologic features.

DESCRIPTION OF MAP UNITS

ARTIFICIAL DEPOSITS

m **Made ground (historical)**—Manmade deposits include disturbed, transported, and emplaced construction materials derived from various local sources. Includes the I-90 right-of-way and interchanges where earthmoving has changed the landscape morphology. Smaller areas of made ground have not been mapped and include berms and fills along the waterfronts and beachfronts of Coeur d'Alene Lake.

ALLUVIAL AND LACUSTRINE DEPOSITS

la **Lacustrine sediments and alluvium (Holocene)**—Silt and sand deposits in Squaw, Beauty, and Wolf Lodge bays Coeur d'Alene Lake. The deposits are mainly located within the lakes' high-water zones and are interbedded with and grade upstream into alluvium of tributary streams. Soils are deep and poorly drained and include muck of the Pywell series and silt loams of the Cald, Cougar Bay, Pywell, and Ramsdell series (Weisel, 1981).

Ts **Relict alluvium (Tertiary)**—Cobbly and pebbly sand and silt derived from Precambrian Belt Supergroup rocks. Matrix composed of weathered saproelite and clay (pinitite) paleosols (McDaniel and others, 1998a, 1998b, 1998c) of the Mokins series (Weisel, 1981). The unit forms a flat to gently sloping upland surface, 2,400-2,800 feet in elevation and is mostly underlain by Priest Rapids Basalt. Toward the mountains the unit grades into a thick colluvium and residuum (cr) overlying pre-Tertiary rocks. Some relict surfaces are as high as 2,800 feet in elevation. The alluvial deposits are probably graded to high base levels formed when the Miocene plateau basalts blocked and diverted stream drainages (Othberg and Breckenridge, 1998). The unit is finer grained than Tertiary gravels (Tg) north of Wolf Lodge Bay on the Fernan Quadrangle. Thickness ranges from several tens of feet to less than 10 feet. Generally, the deposit thins away from the foothill source areas. Where eroded, soils are cobbly silt loam of the Chatcolet series (Weisel, 1981). Thickness up to 10 feet.

Tg **Fluvial gravels (Pleistocene and Holocene)**—Sandy gravel and sandy silt in abandoned drainages of the last Lake Missoula floods. The Coeur d'Alene Lake basin was inundated by the largest releases from glacial Lake Missoula (Dort, 1965; O'Connor and Baker, 1992), and erosion by flood water was limited. This unit is mostly reworked Miocene sediments and colluvium that were deposited by the lower energy floodwaters in slackwater areas. Includes varied thicknesses of Holocene alluvium and wetland bog deposits. Soils mainly are poorly drained silt loams of the Potatch series (Weisel, 1981). Thickness up to 10 feet.

dg **Distal gravels undivided (Pleistocene)**—Latest Wisconsin flood and outwash gravels and sands deposited in channelways cut into high energy fans and bar features. Moderately sorted and stratified from lower flow regimes. The channels are commonly developed at the margin of the prairie because the larger boulders armor the center of the flood path. Locally includes angular basalt columns derived from the basalt rimrock. Surface soils are gravelly loam of the McGuire, Marble, and Kootenai series (Weisel, 1981). Thickness 10 to 40 feet.

COLLUVIUM AND LANDSLIDE DEPOSITS

tl **Talus and landslide deposits of Columbia River Basalt Group (Holocene and late Pleistocene)**—Poorly sorted and poorly stratified angular basalt cobbles and boulders mixed with silts and clays. Mass-movement slope deposits mainly associated with basalt rimrock and the interbedded sediments. Locally may include basalt columns from either mass movements or Lake Missoula floods. Gradations from talus to smaller landslide deposits are present and difficult to distinguish. Thickness as much as 40 feet.

c **Colluvium and common small rock outcrops (Quaternary)**—Colluvium is composed of angular pebble and cobble gravel in a sandy silt matrix that overlies relatively unweathered argillite, siltite, and quartzite. Includes areas of bedrock that form linear, erosion-resistant ridges. Where slopes are steep, the unit may include landslide and debris flow deposits. Typically lacks a mantle of loess and well-developed soil horizons (Ardenvoir and Tekoa series of Weisel, 1981). Thickness of colluvium up to 6 feet.

FLOOD-SCoured BEDROCK

Tbc **Basalt scoured by Missoula Floods (Miocene)**—Columbia River Basalt Group. Forms sporadic rimrock along the margins of Rathdrum Prairie and around Coeur d'Alene Lake. Mostly eroded by Pleistocene glaciation and repeated Lake Missoula Floods. May be present in the subsurface of Rathdrum Prairie (Breckenridge and others, 1997a). The Priest Rapids Basalt and Grande Ronde Basalt are recognized in the area. Shallow surface soils are stony clay loam of the Lacey-Bobbitt association (Weisel, 1981). Locally scattered flood erratics are common. Surface deposits are 2 to 15 feet thick and grade into flood-modified surface of Tertiary alluvium (Ts).

s **Precambrian metamorphic rocks of the Belt Supergroup scoured by Missoula Floods (Precambrian)**—Mapped as the Burke Formation and Pritchard Formation by Griggs (1973). Soils are shallow to bedrock and have characteristics similar to the Ardenvoir and Tekoa series (Weisel, 1981).

SYMBOLS

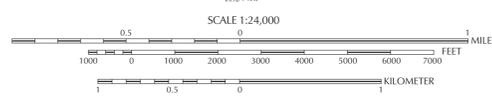
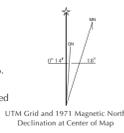
Contact: dashed where approximately located.
Bathymetric contours in meters (Woods and Berenbrock, 1994).

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Reconnaissance mapping done. See
Geologic Map of Coeur d'Alene 30 X 60 Minute Quadrangle, Idaho: GM-33.

Base map from USGS digital raster graphic 1996.
Revised by U.S. Forest Service.
Areas outside the National Forest System may not have been revised.
Topography by compiled 1975. Planimetry derived from imagery taken 1987. Public Land Survey System and survey control current as of 1996.
Partial field check by U.S. Forest Service 1996.
1927 North American Datum. Projection and 10,000-foot grid ticks based on Idaho coordinate system, west zone (transverse Mercator).
1000-meter Universal Transverse Mercator grid ticks, zone 11.



Field work conducted 1999-2000.
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Digital cartography by Jane S. Freed at the Idaho Geological Survey's Digital Mapping and GIS Lab.
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CORRELATION OF MAP UNITS

