Text and references accompanying Nevada Bureau of Mines and Geology Open-File Report 2023-05

Geologic Map of the Hogum Quadrangle, White Pine County, Nevada

by

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ABSTRACT

The Hogum quadrangle represents the northwesternmost exposures of rocks in the southern Snake Range. Bedrock exposure is minor compared to alluvium. Neoproterozoic to Cambrian age strata all display original bedding compared to strata of the same age beneath the Snake Range detachment fault in the northern Snake Range. These same rocks in the northern Snake Range have been thinned by ductile processes and have a strong mylonitic foliation and lineation (Miller et al., 1999a). Strata in the Hogum quadrangle are intruded by a Jurassic pluton and cut by normal faults. Poorly exposed biotite granite and associated pegmatite and aplite underlie the region from Strawberry Creek to the east to Weaver Creek on the west. This pluton has been informally named the Strawberry Creek granite and is dated at 160 Ma. It is coeval with the development of an east-dipping (with respect to bedding) cleavage in country rocks of appropriate composition and exhibits a contact metamorphic aureole, where staurolite and locally sillimanite and andalusite are developed. Extensive faulting prevents knowledge of specific unit thicknesses in the Hogum quadrangle. Values given are those listed in Miller et al. (1999b) that are based on all previous stratigraphic work in the region.

DESCRIPTION OF MAP UNITS

Stratified Rocks

Qal Active alluvium (Quaternary) Generally unconsolidated veneer of sand and gravel deposited within modern drainage systems.

Qla Lacustrine/alluvial deposits, undivided (Quaternary) Poorly consolidated veneer of lacustrine and alluvial deposits located at the western base of the southern Snake Range.

Qlg Lacustrine gravels (Quaternary) Lacustrine gravel, sand, and pebbly sand with some sandy marl deposited in beach, embankment, or sand bar setting.

Qlf Fine-grained lacustrine deposits (Quaternary) Veneer of fine-grained clay, silt, and some sand and marl, playa and lake deposits.

Qol Older alluvium (Quaternary) Flat-lying or gently dipping consolidated to unconsolidated, alluvial fan, sand and gravel deposits that form pediment surfaces, rest in sharp angular discordance on older rocks, and are incised by present-day drainages. Clast types and morphology of these deposits reflect derivation from the present-day drainage systems developed in flanking mountain ranges.

Tc Conglomerate (Tertiary, in cross section only) Tilted alluvial-fan conglomerates exposed in low hills to the northeast of the quadrangle in the Sacramento Pass region and shown in cross section A–A′. Described in detail by Grier (1983, 1984). Tc is present in the hanging wall of an east-dipping normal fault, where it is faulted against undivided rocks of the McCoy Creek Group. Tc deposits in the quadrangle are buried by Quaternary older alluvium (Qol). The total thickness of this unit in the Sacramento Pass region is greater than 2 km, and it accumulated as part of the syntectonic basin fill associated with the normal faults that flank the eastern sides of the northern and southern Snake Range in the early-mid Miocene (Martinez et al., 1998).

Ꞓn Notch Peak Formation (Upper Cambrian) The Notch Peak Formation is medium-gray, fine- to medium-grained, cliff- to ledge-forming, thin-bedded, cherty limestone. Typically, the limestone contains 1- to 2-cm-thick, rust- to brown-colored chert nodules in layers 2 to 4 cm apart. In some intervals, the chert occurs as isolated nodules that are sporadically distributed in thin-bedded to massive limestone or is entirely absent. Bedding, defined by silty limestone interlayers, can be irregular to well

developed. This unit is 1200–1400 m thick in the southern Snake Range.

Ꞓl Lincoln Peak Formation (Upper Cambrian) The Lincoln Peak Formation is a medium- to dark-gray, very thinly bedded, platy, slope-forming limestone. Silty intervals and chert stringers weather distinctly brown. The limestone contains sparse trilobite hash and oncolites. The unit is estimated to be 1200–1400 m thick in the southern Snake Range but is only exposed in a small area at the northern edge of this quadrangle.

Ꞓpc Pole Canyon Limestone (Middle Cambrian) The Pole Canyon Limestone consists of thick alternating beds of light- to bluish-gray limestone and darker cliff-forming limestone. Parts of the unit exhibits fenestral fabric and the lower part of the unit contains abundant Girvanella fossils and oolitic layers. Members A and C as described by Whitebread (1969) are dark gray and contain discontinuous silty partings. Members A and C as described by Whitebread are light gray massive cliff formers and E is light gray with argillaceous partings and varicolored shale near its top. The Pole Canyon Limestone is 500 m thick, and intertongues with the underlying Pioche Shale, and the contact is placed at the top of the highest silty shale in the gradational zone between the two.

Ꞓpi Pioche Shale (Lower Cambrian) Regionally, the Pioche Shale forms an important lithologic transition between dominantly clastic Early Cambrian and older strata and the overlying clastic-absent Middle Cambrian limestone section. The Pioche Shale is a slope-forming unit of dark, sandy siltstone and shale that is greenish-gray to khaki-colored, mostly thin-bedded, and includes some cross-bedded sandstone at the base. The unit is 100–140 m thick in this region.

Ꞓpm Prospect Mountain Quartzite (Lower Cambrian) The regional reported thickness of the Prospect Mountain Quartzite is approximately 1200–1500 m. The unit is a cliff-forming quartzite that weathers rust-brown, tan or purple with consistent bedding thicknesses (.3–1 m). Beds have cross-beds defined by dark laminations. In hand specimen, the quartzite is white to gray, well sorted, fine- to medium-grained, and consists of 90–95% quartz, 5% feldspar and lesser muscovite, chlorite, and opaque oxides. The abundance of cross-beds and the regular bedding help to distinguish the Prospect Mountain Quartzite from the underlying McCoy Creek Group. Pelitic intervals and pebble conglomerates are rare compared to the McCoy Creek Group. The Prospect Mountain Quartzite is best exposed beneath Wheeler Peak to the south, but good sections that are easily accessible are present in the northern and central part of the Hogum quadrangle.

p€mu McCoy Creek Group, undivided (Neoproterozoic) The McCoy Creek Group is the formal designation given throughout east-central Nevada to a thick interval of alternating quartzite and shale that underlies the Lower Cambrian Prospect Mountain Quartzite (Misch and Hazzard, 1962). It is generally assumed to be Neoproterozoic. Detrital zircon studies confirm its Neoproterozoic age (Hoiland et al., 2022).

In adjacent ranges, this interval has been divided into 6 to10 informal quartzite and shale members, but the regional correlation of these members is not clear. The stratigraphically highest pelite within the McCoy Creek Group rock is the Osceola Argillite (pCm_0) (following the nomenclature of Misch and Hazzard, 1962), and lower quartzite and pelite intervals into informal units 1 (pCm_1) to 5 (pCm_5) in descending order. There is up to 4 km of McCoy Creek Group strata present in the southern Snake Range.

p€m$_0$ Osceola Argillite (Neoproterozoic) The Osceola Argillite is well exposed in the Hogum quadrangle, where it derives its name from the mining town of Osceola. The Osceola Argillite is about 200 m thick and consists of well-bedded to laminated slates and siltstones that are distinctively green to gray-blue, although locally, maroon colors are common.

p€m$_1$ Unit 1, quartzite (Neoproterozoic) The unit 1 quartzite forms resistant cliffs of grayish-white to buff, slightly feldspathic quartzite that weathers buff to orange. Thin conglomeratic horizons are present only at the top of the unit.

p€m$_2$ Unit 2, quartzite and schist (Neoproterozoic) Quartzite and schist assigned to the McCoy Creek Group Unit 2 rest in gradational contact with the underlying Unit 1. The unit is a brown-weathering slope former with ledge to cliff exposures of more feldspathic or quartz sand-rich intervals. The unit is distinguished from the Osceola Argillite in that it is more variable in composition and grain size distribution and has abundant unsorted, quartzo-feldspathic, grit-bearing horizons.

Intrusive Rocks

Jgr Granite (Jurassic) Poorly exposed biotite granite and related aplite and pegmatite underlie the region extending from Strawberry Creek to the headwaters of Weaver Creek. This granitic pluton has been informally named the Strawberry Creek granite and has been dated as 160 Ma (Miller et al., 1988)

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