

LITHOSTRATIGRAPHY OF THE CATCHERS POND GROUP: SUMMARY OF THE MEMBERS IN PROPOSED FORMATIONS

Silver Pond Formation

O:CPspf

Upper felsic volcanic member: reworking of several rock formations residing lower in the group as rhyolite mega-breccias and thick size-graded fallout deposits formed during a period of explosive felsic volcanism restricted to the centre of the depositional basin

O:CPspb

Lower mafic volcanic and chert member: precursor eruptions of basaltic andesite flows and the quiescent accumulation of relatively starved hemipelagic strata in the thickest part of the depocentre

New Waters Pond Formation

O:CPnwf

Argillite and felsic volcanic member: banded argillite-chert-jasperite lithofacies deposited in a marine environment below the carbonate compensation depth prior to the Plinian – type eruption of an extensive marker horizon of crystal tuff

O:CPnwl

Limestone member: limited accumulation of bioclastic carbonate above the Floian carbonate compensation depth in the eastern part of the basin

O:CPnwb

Lower mafic volcanic member: eruption of calc-alkaline basalt – island arc tholeiite flows and basaltic andesite autobreccias coeval with limestone deposition

West Waters Pond Formation

D:CPwwf2

Upper rhyolite and mudstone member: coherent coulee-type rhyolite flows typical of juvenile continental margin arcs capped by rhyolite-derived tuffaceous wacke and laminated mudstone

O:CPwwm2 b

Upper pillowed basalt member: relatively thick and very localized eruptions of lava in the eastern part of the depositional basin within the rifted island arc

O:CPwwm1

Lower mafic volcanic member: progressive jasperitization of iron carbonate-rich andesite with increasing stratigraphic height

O:CPwwf

Lower felsic volcanic member: widespread, fine-grained, crystal-rich, highly altered pyroclastic deposits of distal origin, possibly including tholeiitic rhyolite tuff in the eastern part of the group and having calc-alkaline rock fragments probably derived from the older substrate exposed to the west

Long Pond Formation



Upper part: subordinate spherulitic flows of chloritized dacite passing upward into obsidian-rich polylithic tuff, succeeded by a very thin interval of lithophysae-bearing welded ash tuff, and capped by rhyolite flow breccia interbedded with silicified andesitic tuff



Lower part: intercalated carbonatized calc-alkaline basalt and jasperitized plagioclase-rich dacitic tuff succeeded by volcanic breccia made up of intratellurically altered bombs of mafic lava and hot-ejected pumiceous blocks of partially welded pyroclastic flows

Indian Brook Formation



Upper part: relatively thin sequence of plagioclase-porphyritic andesite flows, andesite autobreccias, and hematitic chert

Lower part: relatively thick sequence of calc-alkaline basalt in the form of variolitic pillow lava, pillow breccia and aquagene tuff that host polymineralic stockwork veins and are intruded by subvolcanic gabbro and quartz-feldspar porphyry

AN INTERPRETATION OF THE EARLY ORDOVICIAN ACCUMULATION OF THE FIVE CONSTITUENT FORMATIONS OF THE CATCHERS POND GROUP

V. The Silver Pond Event

Magmatic resurgence or structural uplift of parts of the depositional basin after a repose-related episode of distal volcanism and low energy sedimentation had ceased; a renewed period of felsic pyroclastic activity led to subbasin infilling along the collapsed margin of the depocentre (core of regional synclinorium).

IV. The New Waters Pond Event

Initially, the development of a tholeiitic andesite cap rock above a localized eruptive centre for rhyolite; secondly, the beginning of areally restrictive mafic volcanism in a part of the island arc that lay above the carbonate compensation depth and, finally, the explosive destruction of this shallow marine environment during high energy eruptions from a crystal-rich magma chamber.

III. The West Waters Pond Event

Establishment of major west-to-east facies variations within the Catchers Pond Group, possibly across an intracaldera depression or an evolving graben, to the west of which the underlying bimodal volcanic formation was uplifted; compaction-foliated ignimbrites probably erupted during a collapse phase within this local depocentre; rhyolite-derived argillaceous sedimentation at the end of a cycle of welded tuff eruption or during a pause between repetitive explosive cycles; localized sulphidation of volcanic strata typically overprinted by a regionally extensive oxidation event during progressive alteration.

II. The Long Pond Event

Formation of a relatively thin, laterally continuous and preferentially mineralized calc-alkaline suite of basalt, andesite, dacite and rhyolite, including a subaqueous interval of interstratified tholeiitic pillow breccia and flow-banded rhyolite; well preserved in the west of the group and absent in the east; the bimodal eruptions occurred above an upwelled area of the volcanic island arc but predated caldera development (or formed outside such structures); beginning of regionally extensive VHMS alteration and basemetal mineralization.

I. The Indian Brook Event

Calc-alkaline basalt flows and chert beds enriched in reduced iron become regionally updomed, silicified and oxidized during the emplacement of rift-related composite intrusions and the eruption of carbonate-rich tholeilitic andesite; a precursor volcanic regime to the felsic volcanic-dominant centre that characterizes the Catchers Pond Group and distinquishes it from the Ordovician part of the Western Arm Group.