

History of Excavations, HbRf-39, 1974, 1983, 1990, 1991

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Excavations by archaeologists have taken place at Charlie Lake Cave on a number of occasions. There is also evidence for twentieth century non-archaeological disturbance in the form of relatively shallow features near the surface which contain artifacts of metal, glass and plastic, and in physical and verbal evidence that the deposits within the cave itself have been extensively disturbed by children. The site has seen five seasons of archaeological work prior to 2022. In 1974 the site was recorded by archaeologists, and Knut Fladmark, Sharon Fladmark and Richard Gilbert (all from SFU) excavated a 1 by 0.5 metre test pit in front of the cave mouth. This excavation occupies roughly the east half of unit 6. A month later, a similar sized test pit was excavated adjacent to the first test pit, forming roughly the west half of unit 6. Both test pits penetrated about 1.3 metres of sediments. This second excavation was undertaken by Richard Gilbert, Jim Burns (vertebrate paleontologist who worked on cave sites in Alberta) and Alan Bryan (Professor, University of Alberta, where Gilbert had gone to start a masters degree). A radiocarbon date of about 1800 BP (uncalibrated) was obtained from the base of this excavation unit (lab number and full information currently unknown).

In 1983 Knut Fladmark returned to the site with a larger crew, funded through a SSHRC grant. Excavations were undertaken in a series of 1 by 1 metre units designed to sample the deposits in the cave and in the gully. These excavations resulted in the discovery of the Paleoindian component at the site, as well as a long sequence of later cultural and faunal components. Fladmark oriented a 1 by 1 metre grid over the site such that the east-west axis ran roughly parallel to the gully. As a result, grid north is oriented roughly northeast. Grid lines running east-west were defined as "north" lines, and grid lines running north-south were defined as "east" lines. All units were defined in field notes using the grid line system. Thus, the most westerly unit excavated in 1983 was "N20-21 E20-21". During the analysis which followed the 1983 season each excavation unit was assigned a simple number (e.g. "unit 4" replaced "N21-22 E20-21"), which reduced cataloguing time and reduced the chance of making mistakes in unit designations. A few potential areas of confusion should be noted. First, field notes taken in 1983 refer both to the "test pit" or "test pit 1" when discussing the two small contiguous excavation units excavated in 1974. The 1983 grid was oriented slightly differently from the earlier test pits. However, most of the 1974 test pits were contained within unit 6 (N21-22 E23-24). Before unit 6 was excavated in 1983, the backdirt that filled the old 1974 test pit was cleaned out, and further excavation more than doubled its original depth. Secondly, one should note that during the analysis of artifacts and bones from the 1983 season this same unit (N21-22 E23-24) was initially defined as unit 15, and was subsequently changed to unit 6. Some of the original records from the 1983 season may still make reference to unit 15. Thirdly, in 1983 a

narrow trench was excavated on the downslope (south) side of the parapet. This was referred to as "test pit 2" or sometimes "test trench" or "TT", even though it was oriented along the site grid system and could have been given a unit designation.

Table 1. Unit designations, HbRf-39

Unit no.	Year	North	East	Notes
1	1983	19-20	24-25	Under overhang on parapet boulder
2	1983	20-21	23-24	
3	1983	20-21	24-25	
4	1983	21-22	20-21	
5	1983	21-22	22-23	
6	1983	21-22	23-24	Originally used only for the sediments excavated as part of the "clean up" of 1974 test pits, but subsequently applied to the entire unit.
7	1983	21-22	25-26	
8	1983	21-22	30-31	East block of units, with units 10 and 12
9	1983	22-23	24-25	In front of cave mouth
10	1983	22-23	30-31	East block of units, with units 8 and 12
11	1983	23-24	24-25	Mouth of cave
12	1983	23-24	30-31	East block of units, with units 8 and 10
13	1983	24-25	24-25	Inside cave
14	1983	29-30	24-25	Towards back of cave

15	1983			Originally used to designate those sediments in unit 6 that were beneath the 1974 test pits.
16	1983	24.30-24.60	25.0-25.57	Eastern extension of unit 13
20	1990/91	23-24	20-21	
21	1990/91	23-24	21-22	
22	1990/91	23-24	22-23	
23	1990/91	22-23	20-21	
24	1990/91	22-23	21-22	
25	1990/91	22-23	22-23	
26	1990/91	21-22	21-22	
27	1990/91	20-21	20-21	
28	1990/91	20-21	21-22	
29	1990/91	20-21	22-23	
30				See Test Unit 3
31				See Test Unit 4
32	1990/91	22-23	23-24	This unit was not planned for excavation, but some sediments were disturbed by vandals. The resulting backdirt was screened, but artifacts and fauna were not included in analyses.
33	1990/91	19-20	23-24	Under overhang on parapet boulder
34	1990/91	19-20	22-23	Under overhang on parapet boulder
35	1990/91	18-19	23-24	Under overhang on parapet boulder

36	1991			1.0 by 0.5m unit excavated on hillside between parapet and road, in location of suspected raised beach. No cultural material or faunal material.
37	1990/91			Excavation unit behind house on property. Excavated to check natural stratigraphy, but artifacts encountered in the soil horizon above the glacial sediments.
38	1991			Small test excavation south of parapet boulder
TP1	1974			Designation in 1983 field notes for the two excavation units excavated in 1974, approximately where unit 6 was placed in 1983. TP1 is sometimes referred to as TP1+2 in field notes because the 1974 units were each 0.5 by 1.0 metres.
Test Unit 3	1990			Hillside above cave. Also referred to as Unit 30
Test Unit 4	1990			Hillside above cave. Also referred to as Unit 31
"test pit 2" or sometimes "test trench" or "TT"	1983			Narrow trench excavated without screening to the south of the parapet.

In 1983 the standard unit of excavation was the 1 by 1 metre square. As sediments were removed they were divided into both layers and levels. Layers were considered as "natural" stratigraphic divisions, numbered sequentially from top to bottom within an excavation unit.

Thus, in every unit excavated in 1983, layer 1 was the first and uppermost layer excavated. Layers could be divided internally into levels, which were usually arbitrary divisions contoured to the upper surface of the layer. Some layers only had one level, but most of the thicker layers were subdivided into levels. It is important to note that there is no necessary correlation between layers with the same number from different excavation units excavated in 1983. For example, in one excavation unit only 3 layers were defined, while in another 15 were described, even though both units reached approximately the same depth and covered roughly the same time periods. As will be seen, stratigraphic complexity varies considerably across the site, and this accounts for differences in the number of observable stratigraphic units. At the end of the 1983 season, all layers and levels from each unit were incorporated into a master stratigraphy for the excavation as a whole. While this was quite easy for contiguous units, it was difficult to link more isolated units to the main area of excavations. In particular, units 8, 10 and 12, lying to the east of the main excavation area, could not be correlated with other units.

In 1983, every layer and level from every excavation unit was described on a standard form. Each level received a record, and once all levels in a layer had been excavated a form that summarized the layer as a whole was completed. In addition, more detailed floor plans were made on standard forms, usually to map rocks or large bones. Stratigraphic profiles were drawn after excavations were completed such that a complete N-S and a complete E-W profile of the site were obtained. Only the N-S profile has been published.

In 1990 and 1991 further excavations were undertaken at the site, directed by Jon Driver, also funded by SSHRC. Building on the results of the 1983 season, it was decided to concentrate excavations in a block at the western side of the area excavated in 1983. There were a number of reasons for choosing a block excavation:

a. Given the depth of deposits, it was considered safer to open up a single relatively large excavation area. Although no accidents had occurred in 1983, it was felt to be safer to work in a larger area when it was known that excavations would be deeper than three metres in most places. (It should be noted that in the early 1990's archaeologists were not required to shore up excavations over a certain depth. This was considered at Tse'K'wa in 1990/91, but given the very stable nature of the sediments, and the fact that two sides of the excavation were composed of solid sandstone, no shoring was used. Other than a few acts of vandalism at the site, no sediments ever collapsed into the excavation area. The block excavation strategy also allowed us to designate an area of the site (east of the E26 line) as a backdirt and screening area. A wooden retaining wall was built along the slope to prevent backdirt from slumping down the very steep hillside. We also constructed a temporary roof over the block excavation area to allow us to work in the rain.

b. As a result of the 1983 excavations, we could be fairly confident that the area chosen contained good stratigraphy and well-preserved animal bone, and that it also contained evidence for the oldest occupation of the site. Unlike the exploratory excavations in 1983, the 1990/91 excavators could be fairly sure of finding something in the area selected. Thus, it was

not a "gamble" to concentrate on only one part of the site in 1990/91, whereas Fladmark's 1983 work was designed to scatter units across the site in order to locate concentrations of cultural material and to find areas with well-preserved strata.

c. During the analysis of 1983 materials it became clear that it was difficult to correlate stratigraphic units between 1 by 1 metre units excavated by different people, and sometimes separated by a number of metres. The strategy in 1990/91 was to open a single block and remove layers across the entire gully in the opposite order in which they were deposited. It was felt that this would provide better stratigraphic control, would allow features to be discovered more easily, and would allow excavators to identify and isolate areas disturbed by roots and rodents. (Incidentally, this was a mode of excavation with which Driver was familiar, having learnt excavation on complex urban sites in England, where very large open-area excavations were the norm).

d. By opening a block of units, it might be possible to examine spatial patterns of artifact and faunal distributions.

The excavation and recording methods employed in 1990/91 were relatively straightforward. Because the excavated area consisted of contiguous 1 by 1 metre units arranged in a block, stratigraphic layers could be traced from one unit to the next. Thus, the excavation strategy was to identify the most recent layer visible in the entire block and excavate it in all units in which it occurred. This meant that individual crew members were not responsible for "their" excavation unit. Instead, once a layer was identified a number of people were given the task of excavating it in all units. Even though a block excavation approach was employed, the 1 by 1 metre unit grid of the 1983 excavations was retained for the purposes of provenience. Essentially, the procedure for excavation of each layer was as follows :

1. Identify layer on basis of colour and texture.
2. If layer does not cover entire 1 by 1 unit, map its horizontal extent on the standard level form (the same "level record" as used in 1983).
3. Take Munsell colour and describe physical characteristics of layer on standard level form
4. Excavate the layer across the 1 by 1 metre unit. If layer was less than 10cm thick, excavate entire layer. If greater than 10cm thick, excavate in arbitrary (usually 10cm) levels contoured to upper surface of layer.
5. Record position of all rocks larger than 15cm, plus any artifacts and bones
6. Record depth below datum every 50 cms along unit margins and in centre of unit after layer or level completed (same process as 1983)
7. Repeat steps 2 through 6 in all other units where layer found.

Each distinct stratigraphic entity was given a separate layer number. This includes rodent burrows, features, small lenses, and well-defined thick layers. The same layer number was used for the same stratigraphic layer in every unit in which it occurred. However, because the thickness of a layer may vary from one unit to another, level numbers cannot be correlated between units. For example, a layer might be 30 cms thick in one unit but thin out to 20 cms thick in another. In the first unit it would be divided into 3 arbitrary levels, while in the second it would be divided into 2. While the whole layer is the same in the two units, one cannot correlate the levels between the two units.

This system worked relatively well, and we were able to identify and excavate more discrete layers than in 1983. As will be seen, we also identified a few features.

Units 33, 34 and 35 were an exception to the procedure used in 1990 and 1991. Originally, we had not intended to excavate these units, but we changed our approach in 1991 and decided to excavate. Because the layers in adjacent units had already been excavated in 1990, we gave separate layer numbers to the strata in those three units.

#### A summary of excavations in 1990 and 1991

Initially, in 1990, we planned to excavate units 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 (all new units) and to complete the excavation of unit 2, which was started in 1983 but never completed. In so doing, we planned to re-excavate (i.e. remove backdirt from) units 4,5,6,1 and 3, all of which had been completely excavated in 1983 and backfilled at the end of the 1983 season. This would have resulted in a large block of units running from one side of the site to another.

By the end of the 1990 season, we had excavated units 20 through 29 down to a depth of about 2 metres below surface. As a result of the shape of the bedrock on the north side of the site, units 21 and 22 had disappeared by the end of this season, and unit 20 had been reduced to a narrow strip of sediment to the south of the bedrock face. We had also removed backdirt from units 4 and 5 and part of units 2 and 6. Backdirt was piled behind a retaining wall to the east of the excavation area. At the end of the 1990 season we constructed a large wooden box in the excavation area and roofed it over. We laid empty 45-gallon drums on top of this, and covered everything with a thin layer of backdirt.

In 1991 we removed the backdirt, drums and wooden box in a few days, but decided to expand the excavations area in two ways. First, we removed all the backdirt from units 6,1 and 3 in order to prevent the collapse of backdirt into adjacent excavation areas. Second, we also decided that the remnants of sediments to the south of units 29 and 2 could not be left unexcavated without the possibility of their collapsing. This area of the site was located in the "tunnel" though the parapet, which formed a small rockshelter with about 1 metre of deposit on the south side of the site. Most of these deposits were excavated in unit 33, a full 1 by 1 metre unit. Units 34 and 35 contained the remainder of these deposits in their east and north portions respectively. Although units 33,34 and 35 were originally contiguous with deposits in

unit 29 (excavated in 1990) they were excavated as a separate entity, and most layers were given separate layer numbers from those assigned to the same deposits in unit 29.

Thus, at the start of the 1991 season we were beginning work on the lower layers of units 20 through 29, and starting on the upper layers of units 33, 34, and 35. Because the latter units were in the small southern overhang or rockshelter (often referred to as the "tunnel" and occasionally the "power tunnel" in field notes), they did not have lower layers contemporaneous with the lower layers in units 20 through 29. Backdirt in units 1 and 3 was removed to about half the depth of the units, which coincided with the upper level of the unexcavated deposits in unit 2. The ladder to enter the site was located in unit 3. From the base of the ladder one crossed the surface of deposits in unit 2 to a wooden platform in unit 6, and then down another ladder into the base of unit 5. Backdirt was removed by buckets to the platform in unit 6, and thence by rope and pulley to the surface. The east wall of unit 6 and the north wall of units 2 and 3 were shored with plywood to prevent collapse of sediments resulting from excavators climbing in and out, and buckets banging against the exposed sediments.

Shortly after the start of excavations in 1991 the excavation area was vandalized. A small area of unit 33 was disturbed. A fairly large part of the upper deposits of unit 32 were kicked into the main excavation area. We had not planned to excavate unit 32, and it was only given a unit number to record the provenience of anything recovered from the vandals' depredations. We took to visiting the site on a regular basis during the evenings, and made sure that a crew worked at the site every day in order to minimize further vandalism. An evening visit resulted in the discovery of three people excavating the sections in unit 33 and 25. We photographed them and their vehicle and reported the incident to the RCMP. No further vandalism occurred.

As the 1991 season progressed, it became obvious that we could not excavate the remaining deposits in unit 2 (which had been left partially excavated at the end of the 1983 season) without an enormous effort to remove backdirt from the base of units 6 and 3. We therefore decided to leave the deposits in unit 2 unexcavated. As excavations proceeded in units 26 and 27 it became clear that deposits in the base of unit 4 had not been completely removed in 1983, and these were excavated in 1991.

Towards the base of excavations in units 20 through 29 in 1991 very large boulders were encountered. The largest of these lay in unit 23, and could not be removed without damage to the deposits and possible danger to excavators. It was therefore decided that the large boulder deposit (Zone I) would only be excavated in units 24, 26 and 28, to form a one metre wide trench across the gully. It was only in these units that we reached what appears to be bedrock.

A summary of the units excavated in 1983, 1990 and 1991 follows.

Unit 1 (N19-20 E24-25) lies against the parapet, and is contained within the "tunnel" area. This unit was completely excavated in 1983. Due to the configuration of the parapet, this unit was fairly shallow, and no Zone II deposits were present.



Unit 2 (N20-21 E 23-24) was the last unit excavated in 1983. An attempt was made to excavate it rapidly by stratigraphic layers visible in the sections of units 6 and 3 which lay to the north and east of it. However, the base of the deposits was not reached in 1983. By the end of the 1990 season, excavations in unit 29 reached the same level as the unexcavated deposits in unit 2. Although it was planned to excavate the remainder of unit 2 deposits in 1991, this was never done, mainly for logistic reasons. Thus Zone I, Zone II and part of Zone III deposits are still awaiting excavation at the base of unit 2.

Unit 3 (N20-21 E 24-25) was completely excavated in 1983. In 1990 and 1991 backdirt in the upper half of the unit was removed to allow ladder access to the new excavations. Zone I deposits were not excavated in this unit.

Unit 4 (N21-22 E 20-21) was almost completely excavated in 1983. The lowest parts of Zone II were excavated in 1991. Zone I was not excavated.

Unit 5 (N21-22 E22-23) was excavated in 1983. Tests were made into Zone I but it was not completely excavated. In 1991 all backdirt was removed from this unit.

Unit 6 (N21-22 E23-24) was excavated in 1983. Tests were made into Zone I but it was not completely excavated. Test Pit 1 (excavated in two separate occasions in 1974) occupies most of the upper part of this unit. In 1991 about one half of the backdirt in this unit was removed. Shoring and a platform for site access and backdirt removal were constructed.

Unit 7 (N21-22 E25-26) was excavated in 1983 to the base of Zone II.

Unit 8 (N21-22 E30-31) was excavated in 1983. Zone II was not reached.

Unit 9 (N22-23 E24-25) was excavated in 1983 to the base of Zone II.

Unit 10 (N22-23 E30-31) was excavated in 1983. Zone II was not reached.

Unit 11 (N23-24 E24-24.50) was a half unit excavated in 1983 to link unit 9 and 13 and complete the north-south section through the site. It lies in the entrance to the cave mouth, and was quite shallow. No Zone II deposits were excavated.

Unit 12 (N23-24 E 30-31) was excavated in 1983. Zone II deposits were not reached.

Unit 13 (N24-25 E 24-25) was excavated in 1983 just inside the entrance to the cave. Only about 30 cms of deposits were present over the bedrock floor of the cave.

Unit 14 (N29-30 E24-25) was excavated in 1983 at the back of the cave, with similar results to unit 13.

Test Pit 1 was excavated in 1974 to a depth of about 1.8 metres below surface. The remainder of the unit was excavated in 1983. Most of this unit lies within the boundary of unit 6. Faunal materials from Test Pit 1 have not been analyzed.

Test Pit 2 was excavated in 1983, and is a half metre wide trench to the south of the parapet. Little documentation exists for this excavation, which was mainly a stratigraphic test to determine the relationship of the parapet to the slope. Fladmark's field notes report it was excavated by shovel and not screened. A small number of artifacts were found. It was over 1.5m deep at the foot of the parapet (i.e. the north end of the trench) and about 20 cms deep to the south.

Unit 16 was a small easterly extension of unit 13 (N24.30 to 24.60; east 25.0 to 25.57)

No units numbered 15, 17, 18, or 19 were excavated, but note that the designation "unit 15" was at one time used to designate unit 6.

Unit 20 (N23-24 E 20-21) was excavated in 1990 and 1991. Because the bedrock slopes south, this unit had almost disappeared by the end of the 1990 season. In 1991 it was excavated as part of unit 23.

Units 21 (N23-24 E21-22) and 22 (N23-24 E22-23) were excavated in 1990. The southward sloping bedrock meant that they both disappeared by the end of the 1990 season. Only Zone III and IV deposits were excavated in these units.

Unit 23 (N22-23 E20-21) was excavated in 1990 and 1991 to the base of Zone II deposits. The lower part of the unit contains some very large boulders.

Unit 24 (N22-23 E21-22) was excavated in 1990 and 1991 to the base of Zone I deposits.

Unit 25 (N22-23 E22-23) was excavated in 1990 and 1991 to close to the base of Zone II deposits.

Unit 26 (N21-22 E21-22) was excavated in 1990 and 1991 to the base of Zone I deposits. The east wall of this unit was the site of a column sample taken in 1983 from the west end of unit 5.

Unit 27 (N20-21 E20-21) was excavated in 1990 and 1991 to the base of Zone II deposits. For much of the excavation, only the northern portion of the unit was excavated, because the parapet occupied the southern part. However, in lower Zone II levels the parapet is significantly undercut, and the unit was almost full size.

Unit 28 (N20-21 E21-22) was excavated in 1990 and 1991 to the base of Zone I deposits. The lowest point in this unit was the greatest depth below surface recorded at the site. Most of the excavations took place in the northern half of the unit because of the location of the parapet to the south.

Unit 29 (N20-21 E22-23) was excavated to near the base of Zone II deposits.

Units 30 and 31 were excavated in 1990 on the slope above the cave. They contained very shallow deposits and no cultural material. (Field notes sometimes refer to these as test units 3 and 4).

Unit 32 (N22-23 E 23-24) was not excavated, but deposits from the upper part of this unit were disturbed by vandals. The resulting backdirt was screened, and artifacts and bones were kept. No analysis of these materials was undertaken.

Unit 33 (N19-20 E 23-24) was excavated in 1991. It is located under an overhang on the north side of the parapet. This unit only contains deposits of Zone IV and III. Below this is a sandstone ledge.

Unit 34 (N19-20 E22-23) and Unit 35 (N18-19 E23-24) include small areas of deposits under the overhang on the north side of the parapet which were not included in units 33 and 1. Only the eastern edge of unit 34 and the northern edge of unit 35 contained deposits, mainly of Zone IV.

Unit 36 was a 1 by 0.5 metre excavation unit excavated on the site of a possible raised beach near the road below the site. No cultural material was recovered.

Unit 37 was a 1 by 1 metre unit excavated to the north of the house on the slope above the site. The unit was soon converted to a 1 by 0.5 metre unit. It was excavated mainly to test for glacial and periglacial stratigraphy. However, lithics were recovered from the modern soil. Below the soil glacial lake silts were found.

Unit 38 was a test unit excavated to the south of the rock outcrop south of the parapet. It was excavated to test for the presence of raised beach deposits. No cultural material was located.

In addition to these excavation units we also observed the excavation of a backhoe trench (for replacing a water line) at a house on the north side of Butte Lane (see field notes 10 August 1991).

#### Primary excavation records

There are a few hand-written field notes from the two test excavations made in 1974.

In 1983 the basic record for excavation of a level was a standard form. Once each level in a layer was excavated, the excavator filled out a second standard form describing the layer as a whole. If the excavator needed to make a larger plan of the unit they could use a third standard form.

In 1990/91 excavators continued to use the standard form for levels, but did not use the summary form for layers. The standard form for more detailed plans was also used. In addition, a form was added for mapping clusters of faunal remains in 1991, as was a more formalized method for describing sediment characteristics.

In 1983 each excavator kept a separate field notebook. In 1990/91 there was a single field notebook. This was kept mainly by Driver, but on days when he wasn't on site notes were taken by crew members.

Photographs and colour transparencies were taken at regular intervals, especially in 1990/91. Digital cameras were not used.

Drawings of stratigraphy were made in 1983, 1990 and 1991, usually towards the end of the excavation season. In 1991 drawings were made of the profile of the bedrock and the “parapet” as revealed by excavations in the gully; these were done at 50cm intervals.

#### Screening and sampling

In 1983, 1990 and 1991, all excavated sediment was screened through 1/8” (3mm) hardware cloth. In 1983 a column sample was taken from one unit. In 1990 and 1991 sediment samples were taken from selected layers. In 1991 a few small sediment samples were taken when clusters of microfauna (mouse-sized) were identified. These were then water screened, to allow recovery of very small specimens. As of 2022 a number of sediment samples are archived and available for further research.

#### Field crews

Although every effort has been made to list those involved in the excavations, some people may have been omitted inadvertently.

1974 (summer): Knut Fladmark, Sharon Fladmark, Richard (Dick) Gilbert (Simon Fraser University)

1974 (fall): Dick Gilbert, James (Jim) Burns, Alan Bryan (University of Alberta)

1983: Knut Fladmark, Oslynn Benjamin, Diana Alexander, Sylvia Weeks, Jon Driver (all Simon Fraser University), Dick Gilbert (independent researcher), Joe D. Stewart (Lakehead University)

1990: Jon Driver, Knut Fladmark, Martin Handly, Gyles Iannone, John Breffitt, Greg Sullivan (all Simon Fraser University), Dick Gilbert (independent researcher), Dawn Andrews and Becky Wheat (summer students, Fort St. John)

1991: Jon Driver, Knut Fladmark, Greg Sullivan, Sue Montgomery, Martin Handly, Randall Preston (all Simon Fraser University), Dick Gilbert (independent researcher).

In 1983, 1990 and 1991 the Fladmark and Gilbert families were at the field camp, and Driver’s family was there in 1990 and 1991. Sharon Fladmark, Jude Gilbert and Cathy Driver all contributed to the success of the fieldwork, and our children ran wild.