CHAPTER 21

An Early Period Occupation at *Lelachen* (DkRn-1) in the Lower Lillooet River Valley

Peter Vigneault
BC Hydro

Ryan Dickie
Amec Foster Wheeler

Introduction and Background

For thousands of years prior to European arrival in the area, the Lower Lillooet Valley served as an important trade route between the Coastal and Interior Plateau First Nations groups. While only small local populations live along Harrison Lake and lower Lillooet River today, the past cultural importance of this valley is evident in the rich archaeological record that attests to an intense and lengthy occupation. Initial archaeological studies in the valley indicated a fairly late human presence with the earliest occupations dating to the last 2000 years. However, our research has identified secure evidence for an early occupation and use of the lower Lillooet region (Figures 1 to 3) dating as early as 9000 years before present (BP), a result supported by other recent studies (Hudson et al. 2000) (Chapter 20).

Our archaeological investigations at Lelachen (DkRn-1) have secured a large and diverse artifact assemblage and a series of radiocarbon dates from well-stratified deposits that provide evidence for initial occupation of this locality as early as 8000 years ago. While few faunal remains were encountered, stone artifacts such as retouched flakes, cores and lithic waste were abundant. The material diversity represented in the lithic artifact assemblage indicates a reliance on locally procured river cobbles supplemented by imported regionally available materials such as Garibaldi obsidian and crystalline quartz. Analysis of stone tools and material preferences evident in the artifact assemblage provides important insights into technological traditions present in the lower Lillooet Valley over many millennia. Radiocarbon samples confirm a presumption of long term occupation. One of the most interesting aspects of this project was the discovery and excavation of a portion of a pithouse that is one of the oldest known for the Lower Fraser Valley region. These dates highlight the scientific significance and cultural importance of this site, and have enhanced our understanding of the Lower Lillooet Valley and the broader Lower Fraser River and its tributaries.

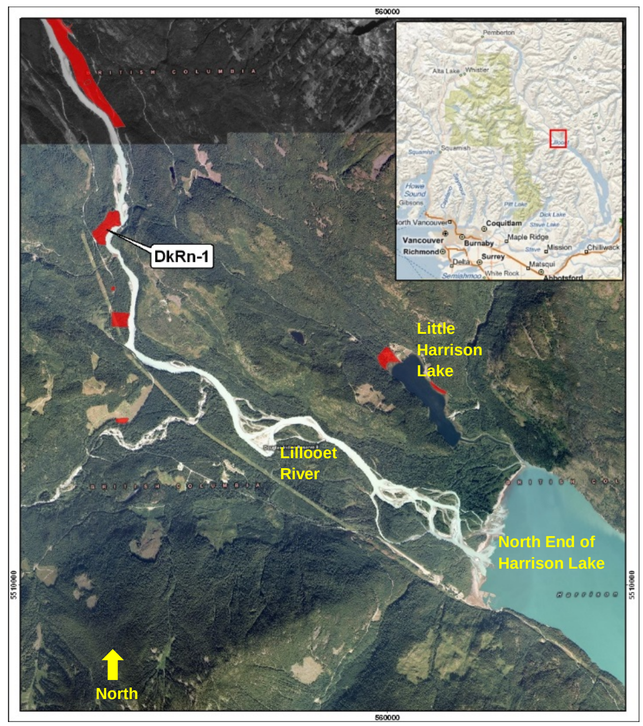

Figure 1. Location of Lelachen (DkRn-1) in the Lillooet River Valley. Google Earth image 2016.

Project Description

In 2008, AMEC Earth and Environmental (AMEC) conducted an archaeological impact assessment (AIA) for the proposed BC Hydro Southern Community Grid Connection project in the Lillooet River Valley (Vigneault 2009). Numerous sites were identified and avoided, however, due to challenging environmental and physical constraints, the river crossing at Lelachen offered one feasible approach which resulted in a conflict with cultural deposits at DkRn-1 (Figures 2 and 3). In an effort to mitigate negative impacts to the intact cultural deposits of DkRn-1 as a result of the project, an excavation program was undertaken prior to construction.

Archaeology of the Lower Fraser River Region
Edited by Mike K. Rousseau, pp. 173-178
Archaeology Press, Simon Fraser University, 2017

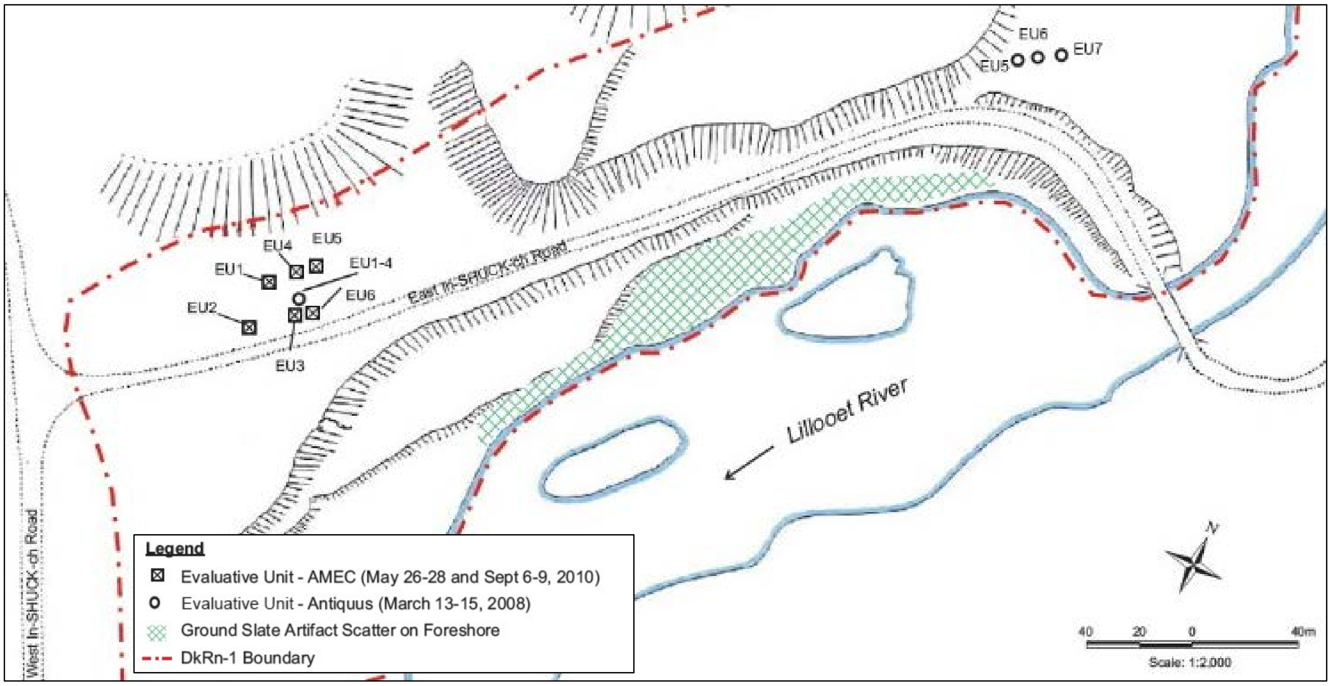

Figure 2. Map of the main occupation area at site DkRn-1 showing location of excavation units (EUs). Map adapted from AMEC 2011.

Figure 3. A view of Lelachen (DkRn-1) on the west side of the Lillooet River, looking southwest.

Nearly concurrent excavations in 2008 by Antiquus identified intact archaeological deposits, high concentrations of lithic waste, and a hearth/pit feature dating to 5210+/-60 years BP (Beta-242692; Wells et al. 2009). These results reinforced the significance of DkRn-1 and the necessity for additional investigations.

Previous Investigations

Despite its apparent proximity to the densely-populated Lower Mainland, little archaeological research was conducted in the Harrison Lake - Lillooet River Valley region until the 1990s. Most of the known and recorded archaeological sites in the Harrison Lake - Lillooet River Valley are in close proximity to major watercourses, notably the Lillooet River. Fewer sites are known on the shores of Harrison Lake.

Two recent archaeological investigations at DkRn-1 conducted by Antiquus Archaeological Consultants Ltd (Antiquus) in 2005 and again in 2008 (Hudson et al. 2005; Wells et al. 2009) provided initial indications of the complex nature and antiquity of Lelachen. High concentrations of cultural materials were identified and collected during mitigation excavations in areas adjacent to the forest service road. Excavation units were placed to mitigate and minimize power transmission line pole installation impacts to the site on a mid-level terrace overlooking the narrows and large back eddy of the Lillooet River.

Together, a total of nine 1 m² evaluative units and one 2 m² unit (13 m² total) were excavated by Antiquus (2008) and AMEC (2010) (Figure 2) of the estimated 125,000 m² site area, a mere 0.01% sample. Units were dug to basal sediments consisting of sterile fluvial sands and coarse grained sands with pea gravels ranging from 90 to 180 cm below surface (BS). Almost 2500 artifacts and 9000 waste flakes were recovered, and contained a wide range of materials, including chipped stone, lithic waste, formed tools, utilized flakes and cores, and exotic specialty/status items. Bone, antler and plant materials would have also been used frequently for making weapons, flaked stone, tools, handles, containers and personal adornment, however, none have been recovered to date because of the high acidity of the site sediments.

2010 Lithic Analysis

The 2010 excavations by AMEC recovered a large number of lithic artifacts (989 tools and 4088 waste flakes) with cultural deposits extending to at least 180 cm BS. The lithic assemblage recovered from DkRn-1 in 2010 resembles that of the previous 2009 investigations undertaken by Antiquus (Wells et al. 2009), that is expedient reduction of locally available river cobbles and pebbles to produce thick flakes that were used as unmodified flake tools. This pattern is made evident by the predominance of utilized flakes (n=354) which comprise approximately 36% of the total tool assemblage. Unifacially-flaked tools (n=315) are the next most common artifact type (32%). The remainder of the assemblage is comprised of more diverse and technologically sophisticated tool types, including microblades, spall tools, choppers, cores, and bifaces. Groundstone technology was notably absent from the assemblage.

Lithic raw material types represented in the assemblage are dominated by fine-grained basalts, andesites and coarse grained metasediments which include a range of locally available lithic materials. A material tentatively identified as an inferior-grade obsidian by Wells et al. (2009) may be epidote-speckled andesite as described identified by Riddell (1990), with a suspected source location near Ure Creek approximately 50 km northwest of DkRn-1. Several obsidian flakes were recovered as were a possible microblade core and a microblade mid-section fragment. X-ray fluorescence analysis of three obsidian artifacts relate them to the Garibaldi obsidian source near Squamish (Skinner and Thatcher 2010).

Thirty-three bifaces were recovered (Figure 4: A-F), four of which are nearly complete and may be projectile points used to arm spears or darts. These bifaces are leaf-shaped (foliate) and made from fine-grained basalt commonly found in Pebble Tool tradition assemblages in the lower Fraser River drainage (Carlson 1996). They likely also served as knives and cores (Kelly 1988), thus they are described as bifaces rather than the more exclusive and function specific category of projectile points. Foliate bifaces are ubiquitous throughout the culture historical sequence of the southern Salish Sea and Lower Fraser region, though they tend to be most common during the Old Cordilleran (10,000 to 5000 BP) and St. Mungo Phases (5000 to 3500 BP) as compared with the later Locarno (3500 to 2400 BP) and Marpole Phases (2400 to 1500 BP) (Chatters et al. 2010; McLaren and Steffen 2008). At DkRn-1, foliate bifaces are found in all excavated levels, reflecting the longevity of this tool form.

One projectile point from DkRn-1 (Figure 4: G) has formal attributes consistent with points found in both Southern Interior and Coastal regions. The outline is triangular and lateral margins bear some evidence of edge-grinding and finishing by fine pressure-flaking. The base is straight with slight basal grinding, and it has deep U-shaped obliquely angled side notches. In terms of its overall style, this point generally resembles a Plateau horizon (2400 to 1200 BP) corner-notched point; however, its overall size, corner notch placement, and the presence of edge grinding indicate a possible earlier association, in particular with variants of points found in Lehman Phase contexts in the Middle Prehistoric Period (6000 to 4500 BP) (Rousseau 2008). A few comparable projectile points are reported from Lower Fraser Valley region sites but are not abundant and appear to date to the last 3500 years (McLaren and Steffen 2008). This specimen could date from the St. Mungo phase (5000 to 3500 BP) of the Lower Fraser. Given the location of DkRn-1 between the Interior Plateau and Coast, it is not surprising to find a projectile point with attributes found in both culture areas.

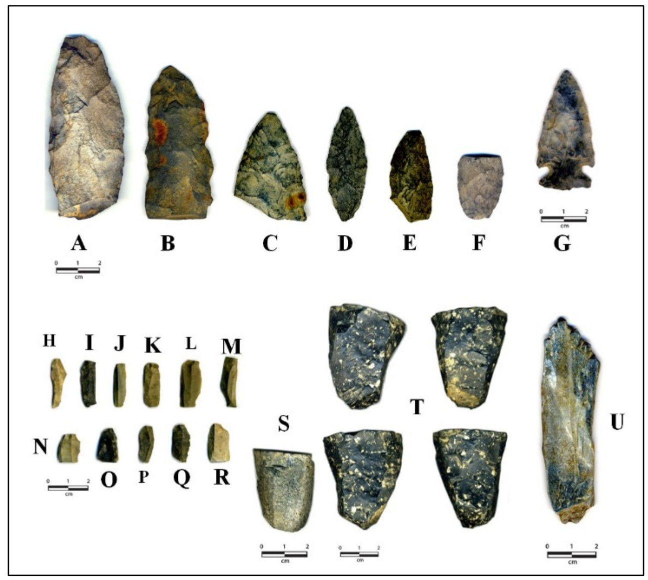

Figure 4: Artifacts collected from 2010 excavation. Items (A–F): selected bifaces from the 2010 excavations; (G): complete projectile point with both Southern Interior and Coastal technological attributes; (H–R): selected complete and fragmentary microblades; (S–T): microblade cores; and (U): a groundstone item.

Microblades (n=99) are the third most common artifact type recorded from DkRn-1, comprising approximately 10% of the total assemblage (Figure 4: H-R). Raw material types represented in the microblade assemblage include fine-grained basalts, cryptocrystalline silicates (e.g., cherts and chalcedonies), and medium-grained metasediments. Also present is a fragment of a crystalline quartz microlith or microblade.

An analysis of the platform-bearing microblades revealed some interesting technological, formal and reduction patterns. The majority of microblades have large initiation platforms with very little indication of core edge preparation, traits common on microblades and cores from the Pacific Northwest Coast. Two microblade cores (Figure 4: S and T) recovered during the 2010 investigations have intentionally prepared initiation facet protrusions created to facilitate blade removal. This method of core reduction is somewhat different than the more common approach of the Northwest Coast Microblade and Plateau Microblade traditions (Magne 1996; Sanger 1970), where the core platform edges were usually ground prior to blade removal. Core-edge grinding strengthened the initiation platform to allow well-controlled blade removal (Whittaker 2005:103). There are a few blade facet rejuvenation flakes that indicate failed blade detachment in the assemblage. Two such artifacts show evidence of multiple previous blade removals with one failed blade detachment that resulted in a step termination, and the need to rejuvenate the core by detaching a large flake to eliminate the stepped facet. Additional analysis of Lower Lillooet microblades and experimental replication and reduction of this type of microcore is needed to better understand this regional variant of microblade technology.

Numerous unidirectional cores were also recovered from DkRn-1, and all were prepared in a similar manner. Removal of flakes spaced at relatively equal intervals created denticulate patterns along core edges with numerous ridges marking the lateral edges of flake scars. This allowed easy removal of medium-sized and large flakes in a predictable and uniform manner. Given the range of core sizes, it would seem that large elongate blade-like flakes were the main objective, but small flakes were also intentionally struck. Many of these cores were prepared from split pebbles or cobbles while the remainder are made from thick, tabular flakes. Many have significant amounts of cortex present, especially on facets and surfaces adjacent to the striking platform margins.

Artifact densities for all six excavation units (EUs) indicated some interesting patterns. Uppermost levels of all EUs yielded relatively few artifacts, but densities markedly increase at 30/40 cm BS. By 50 to 70 cm BS, an abrupt increase in artifact density is evident but there is a noticeable decrease between 70 and 80 cm BS. Artifact frequencies increase again from 80 to 90 cm BS and peak between 90 and 100 cm BS. This depositional pattern is believed to reflect repeated intensive occupation episodes associated with a pithouse or plank house.

A surprising aspect of the lithic assemblage from DkRn-1 is the paucity of evidence for groundstone technology. Given the considerable occupational history represented at this site and its use as a primary salmon fishery (Hudson et al. 2000), we expected groundstone artifacts to be present in abundance, as they are commonly associated with fisheries elsewhere in the Northwest Coast (Graesch 2007). In the Salish Sea and Lower Fraser regions at around 5000 BP, there is a transition from a preference for chipped stone technology to artifact assemblages predominately made from ground and polished stone, bone, and antler. While this technological transition is understood to involve the adoption of groundstone concurrently with chipped stone rather than a complete technological replacement (Ames et al. 2010), the rarity of groundstone artifacts, and abraders typically associated with their manufacture are conspicuously absent at DkRn-1. In contrast, several ground slate knife fragments were observed during an inspection of the Lillooet River foreshore downstream from the FSR bridge, suggesting that this technology is likely present at DkRn-1, but is only present in later occupations (post-5000 BP).

An unusual elongate groundstone artifact of unknown function was recovered (Figure 4: U). Made from a low-grade metamorphic stone, the artifact has a single shallow groove running down the centre of one face suggesting use as a whetstone to sharpen or shape thin cutting/penetrating tools. Several ground notches with unknown function evident at either end of the artifact. It may be a piece of mobilary art which are conspicuous in Locarno/Baldwin and Marpole/Skamel phase assemblages between 3200 and 1600 BP (Borden 1983:134; Holm 1990).

While no personal decorative artifacts were recovered from DkRn-1 during the 2010 excavations, some were recovered during previous investigations, including an elongate stone pendant and a steatite labret. The size of the labret indicates it belonged to an adult (Wells et al. 2009) with high social class or status ranking (Carlson 1996).

Features

Several features have been encountered in excavation units at DkRn-1. During the 2008 and 2010 excavations at DkRn-1, five archaeological features were identified and recorded. Hearths were the most common feature (n=4) and were encountered at varying depths. Radiocarbon samples were collected from all hearths and large charcoal concentrations.

In 2008, the Antiquus excavations revealed two hearths within EU 1 (Wells et al. 2009: 26) Hearth 1 lay at approximately 50 to 75 cm BS and represents a cooking pit given the association with fire-altered rock (FAR) and scattered completed and fragmented mammal bones. Hearth 2 extended 30 to 80 cm BS, measured 2.0 m in diameter, and was associated with two anvil stones (Wells et al. 2009: 27-28).

Three features were identified during the 2010 AMEC excavations. Hearth 3 was located in EU 1 (Ferguson et al. 2011: 35) at 75 cm BS and is indicated by dark sediment, and FAR, and a charcoal concentration associated with a ring of boulders/cobbles. Hearth 4 was identified at a depth of 130 cm BS associated with high frequencies of fire-altered rocks.

The fifth feature, a possible cultural depression without any surface expression is perhaps the most intriguing. At a depth of 80 cm BS, a sediment change was indicated by an abrupt transition between two sediment layers (Figure 5), and excavation revealed a clear transition separating upper dark grey to black sands with occasional small angular pebbles and frequent charcoal from the underlying sterile basal grey silty sand. The dark upper stratum is overlain with a layer of fire-reddened sand and high frequencies of FAR. The abrupt transition between sediments extends downward at 45° starting at 80 cm BS to over 180 cm BS (Ferguson et al. 2011:35). Basal sterile deposits were not encountered along the west wall as the transition line drops beneath the terminal excavation depth. The clear contrast between the cultural deposits and the sterile sediments are the result of purposeful construction of a semi-subterranean structure of as-yet unknown size. The dark sediments situated within the structure are the result of typical activities associated with occupation of such a structure, and include high artifact counts directly overlying the sterile deposit. The greatest densities of artifacts however appear near the top of the sediment transition, often indicative of a rim midden (Schaepe 1989).

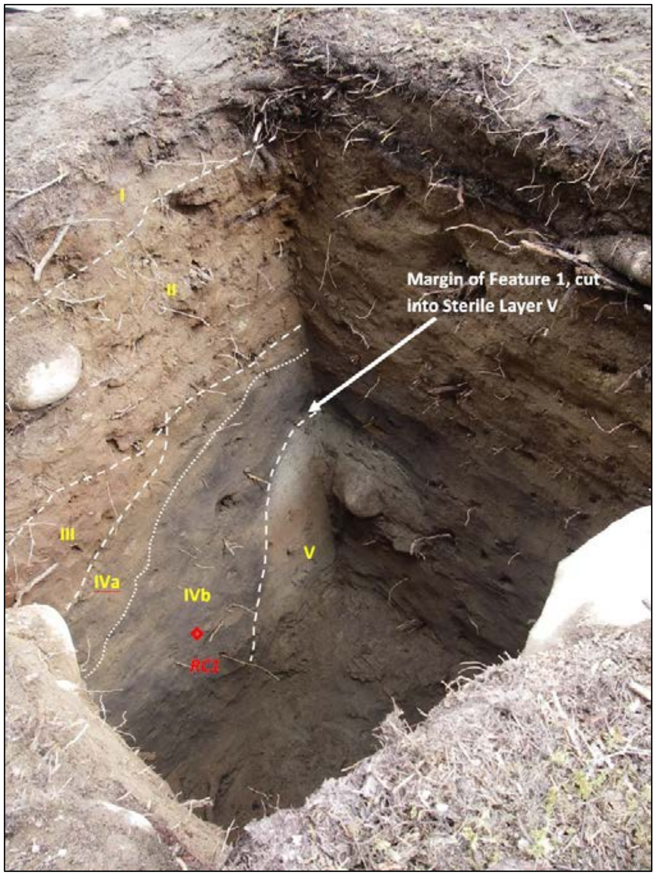

Figure 5. View of north and east wall profiles in EU 1. Stratum I: Medium brown sandy silt with occasional (<5%) sub-angular/rounded pebbles underlying a duff layer to approximately 20 cm BS; Stratum II: Light to medium brown fine silty sand with occasional small rounded and sub-angular pebbles, to 30-40 cm BS, similar to Stratum I except for inclusion of cobbles and small quantities of FAR; Stratum III: Light reddish brown burnt sand with frequent (>10%) FAR and occasional charcoal and ash; Strata IVa and IVb: Mottled reddish brown to grey (IVa) and very dark greyish brown to black (IVb) sand with occasional small angular pebbles and frequent charcoal, and no distinct interface between IVa and IVb facies but charcoal frequency increases with depth; Stratum V: Fluvial olive grey silty sand.

Teit (1906:213) indicates the Lower Lillooet Indians built and occupied pithouses, but he also describes Lelachen as being a small village with only one or two of these structures (1906:197). By the time Hill-Tout (1978:108) passed through, no pithouses remained, and he surmised that houses in the lower Lillooet Valley were primarily rectangular plank houses. According to Sneed and Smith (1977:22-24), no depressions were visible at this location during their assessment which led to an assumption that Lower Lillooet Valley groups constructed plank house structures and elevated box caches which leave little or no evidence on the landscape. By the early 19th century, First Nations populations in the Lillooet Valley declined by approximately 75% as a result of European contact that resulted in illness and impacts on fish runs (Teit 1906:199), and isolated populations congregated and settled in areas closer to the Gold Rush trail that passed through the valley.

Radiometric Dating

Organic samples were collected from multiple occupations and features and eight (two from 2008 excavations and six from 2010) were submitted to Beta Analytic for radiocarbon age determination analysis. Conventional dates returned a temporal range from 3050±40 BP to 8000±40 BP (Table 1) and are relatively well distributed spanning the Old Cordilleran (10,000 to 5000 BP), St. Mungo (5000 to 3500 BP) and Locarno Phases (3500 to 2400 BP) (Mitchell 1990). In normal situation, where samples are collected at increased depths below surface, progressively older dates should be expected based on the law of superposition. However, in this sample group of dates, there is one exception. The discrepancy exists within samples RC 5 and RC6, both collected from approximately 50 cm BS. Sample RC5 consisted of charred organic material and was subjected to standard AMS dating techniques. Sample RC6 consisted of cremated bone lacking sufficient collagen for standard AMS analysis was subjected to the bone carbonate dating technique which allows for cremated bones to be dated using the structural carbonate remaining from the conversion of the original bone osteocalcin to structural carbonate during the cremation process. The results have the two samples separated by nearly 5000 years which cannot be easily explained. This discrepancy and uncertain validity of the sample results forced us to discard the older date.

Another small conflict between dates is associated with samples recovered from the habitation feature. Sample RC1 was collected from a depth of 135 cm BS associated with the primary charcoal rich occupation layer within the structure. The habitation feature is dated to 6000±40 BP, while the nearby hearth feature 3 at a depth of 90 to 100 cm BS is older, 6860±40 BP. However, this 850 year discrepancy can be explained, since cultural materials dated from the habitation feature were deposited subsequent to the construction of the pit for the house through deeper sterile sands. The radiocarbon date ranges recovered from DkRn-1 provide insights into the respectable length of occupation of this location, extending back 8000 years.

Table 1. Radiocarbon age estimates from DkRn-1 (sorted by depth BS)

Sample # & Unit	Lab #	Depth (cm BS)	Conventional Date[1]	Calibrated Date[2]	Context
RC5; EU Am5	Beta-284820	40-50	8000±40 BP[4]	7060-6760 B.C.	Stratum IIa
RC6; EU Am5	Beta-284819	50	3050±40 BP	1410-1210 B.C.	Stratum IIa
RC2; EU Ant2 & 4	Beta-242693	55	4720±40 BP	3630-3490 & 3470-3370 B.C.	Hearth 2
RC1; EU Ant1 & 3	Beta-242692	55	5210±60 BP[3]	4230-4190 & 4170-3940 B.C.	Hearth 1
RC4; EU Am3	Beta-284818	70-80	3750±40 BP	2290-2030 B.C.	Hearth 4
RC2; EU Am2	Beta-281708	90-100	6860±40 BP	5830-5670 B.C.	Hearth 3
RC3; EU Am3	Beta-284817	130	7100±40 BP	6040-5900 B.C.	Stratum IIa
RC1; EU Am1	Beta-281709	135	6000±40 BP	4990-4790 B.C.	Stratum IVb; Feature 1

¹ Measured radiocarbon age corrected for isotope fractionation, calculated using δ13C; minimum and maximum date ranges are provided
² Calibrated calendric dates represented at 2 sigma.
³ BP = radiocarbon years Before Present, where "present" is A.D. 1950
⁴ Considered to be date on "old wood" that does not reflect actual age of occupation.

Table 2: Radiocarbon dates for early house features investigated in the Lower Fraser River Region

Site (Name)	Structure	Lab #	Conventional Date[1]	Calibrated Date[2]
DgRn-26 (*Xáy:tem*)[4]	Structure 1	Beta-143727	5050±50 BP[3]	4229-3537 B.C.
		Beta-77758	4840±110 BP	3936-3367 B.C.
	Structure 2	Beta-46708	4800±70 BP	3706-3375 B.C.
		Nuta 1452	4420±180 BP	3628-2588 B.C.
		SFU 888	4490±70 BP	3366-2931 B.C.
	Structure 3	Beta-47260	4530±120 BP	3623-2913 B.C.
DhRk-8 (Maurer)[4]	Structure 1	GAK 4919	4220±120 BP	3089-2493 B.C.
		GAK 4922	4240±340 BP	3767-1780 B.C.
	Structure 2	GAK 4927	4780±340 BP	4329-2649 B.C.
DgRk-10 (*Iy'oythel*)[5]	Cultural Depression 3	Beta-128607	4110±40 BP	2875-2475 B.C.
DkRn-1 (*Lelachen*)[6]	Feature 1	Beta-281709	6000±40 BP	4990-4790 B.C.

1 Measured radiocarbon age corrected for isotope fractionation, calculated using δ13C; minimum and maximum date ranges are provided.
2 Calibrated calendric dates represented at 2 sigma.
3 BP = radiocarbon years Before Present, where "present" is A.D. 1950.
4 Source = Lepofsky et al. (2009).
5 Source = Stó:lō Nation/Antiquus Archaeological Consulting (1999).
6 Source = Brolly /Ferguson (2011).

Conclusions

Initial investigations at DkRn-1 indicate that this locality contains deeply stratified cultural deposits and information that could greatly increase our understanding of human occupation and past lifeways in the Lower Lillooet River Valley. The presence of a buried pit house was not expected based on early historic accounts and lack of surficially evident archaeological features (i.e., cultural depressions). It is now apparent that previous machine disturbance of the site was restricted to the upper layers, with minimal disturbance to early occupations. High densities of lithics were recovered throughout the cultural strata and indicate several distinct occupation periods. No post-molds or other evidence for a supporting structure were identified during excavations.

Based on available data, this represents one of the oldest recorded habitation features in the Lower Fraser River Region. A radiocarbon date from within the house feature secured from deposits overlying the sterile basal sediments indicate occupation of this structure as early as 6000±40 BP, confirmed while initial occupation of this site extends back to 6860±40 years BP. Similar early residential structures investigated in the region have been dated between 4000 and 5000 BP (Table 2) (Lepofsky et al. 2009; Mason 1994: Pratt 1992; Schaepe 1989) (Chapter 20). These research excavations exposed portions of residential structure and large numbers of artifacts and associated internal features. Results of excavations in 2008 and 2010 at DkRn-1 revealed several features, thousands of lithic artifacts, and a range of radiocarbon dates spanning almost 5000 years adding to the growing collection from early sites in the Lower Fraser region.

Since our work at Lelachen, Saunders and Merchant (this volume) have built upon the research on this site, thus expanding the site boundaries and collecting more data regarding the occupation of this region of the Province. This work has helped create a broader understanding of the nature of Lelachen as it relates to the occupation of the Lower Lillooet and Lower Fraser drainages. More in-depth analyses of the site sediments, features and material culture identified are needed in order to better understand the nature of the early occupation of site DkRn-1. Further detailed investigations within the site are warranted to increase our understanding of its complex occupational history, and to identify additional specific use areas to allow comparison with other sites in the Lillooet River Valley. Focused investigation of this pithouse should be undertaken to secure a larger sample of its contents and additional ^{14}C dates for its initial and subsequent continuous occupations.

The artifact analysis presented here has raised several questions regarding the technological organization and lithic economy of the ancient inhabitants of this area, in particular raw material procurement and core reduction strategies. A visit to the Ure Creek location identified by Riddell (1990) to collect reference samples of the epidote-speckled andesite would be of great value in confirming the source and geological nature of this unique material. This information could provide interesting information regarding local interaction and mobility during future studies. In addition, the microblade core reduction strategy observed in the DkRn-1 artifact assemblage appears to be unique to this locality. As such, experimental studies designed to replicate the distinctive microblade technology present at DkRn-1 are needed.