Final Report of the Archaeological Impact Assessment and Inventory of Parksville Community Park, Parksville, British Columbia, HCA Permit 2018-0412

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This report has been redacted to remove references to specific locations of archaeological sites as directed by the BC Archaeology Branch

Prepared for: City of Parksville

Prepared by: Colleen Parsley and Steve Thompson

AQUILLA
ARCHAEOLOGY

June 1, 2021

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Credits

Report Authors..... Colleen Parsley and Steve Thompson
Report Edits……..Colleen Parsley
Artifact Analysis……. Colleen Parsley and Steve Thompson
Faunal Analysis……...Laura Termes
Fieldwork.....Colleen Parsley
Steve Thompson
Mike Edwards (Snaw-Naw-As First Nation)
GIS and Maps..... Colleen Parsley

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Cliff Arneson of Cliff's Contracting was instrumental in the success of this project through his skilful and professional excavation skills. Finally, we wish to thank Joel Kinzie of the Archaeology Branch for the permit support.

Management Summary

This report documents the results of an Archaeological Impact Assessment (AIA) and Inventory study undertaken at the Parksville Community Park, Parksville, British Columbia. This work was carried out under *Heritage Conservation Act* (HCA) Blanket Permit 2018-0412. Results from this study have identified two key findings: 1) the presence of archaeological site DhSb-2 is substantially larger and extends through the southern third of the park in a discontinuous fashion, and 2) the northern two-thirds of the park are infilled former marine-riverine-deltaic intertidal areas.

A total of five pre-contact artifacts, including a near complete basalt adze, and a metapodial awl along with 45 faunal remains representing deer (some canid gnawed) and historic fauna were recovered. Archaeological deposits were dated to nearly 1000 years ago. Seven Douglas-fir bark-chipped culturally modified trees were identified.

The boundaries of DhSb-2 have been expanded by five discontinuous polygons. This includes largest section, a newly identified continuation of the former DhSb-2 site measuring 155 m E/W and 139 m N/S. The second area is a small 10 m diameter polygon. in Area E. In Area F the third area is a polygon measuring 76 m E/W x 22.4 m N/S that includes former site DhSb-52 and consequently, it is proposed that DhSb-2 and DhSb-52 be amalgamated under the single Borden designation DhSb-2, and DhSb-52 become a legacy site. The fourth and fifth additional areas are a 10 m diameter polygon in Area F and a 23.4 m NE/SW x 10 m SE/NW polygon in Area G.

No sampling program can be assumed to have found all archaeological remains. If in the event archaeological material is unexpectedly encountered, work in the vicinity should stop and the Archaeology Branch and respective First Nation communities should be contacted immediately.

All archaeological sites, whether recorded or unidentified, are protected by legislation and may not be altered, damaged, moved, excavated in, or disturbed in any way without a permit issued under either Section 12 or Section 14 of the *Heritage Conservation Act*.

This report has been redacted to remove references to specific locations of archaeological sites under the *Heritage Conservation Act* and is therefore very general in nature. More information regarding the safeguarding of archaeological information and site locations is available at https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/archaeology/request-arch-info/info-sharing-terms

Archaeological Impact Assessment and Inventory at Parksville Community Park, Parksville, British Columbia under HCA Permit 2018-0412

1 INTRODUCTION

This report documents the results of an Archaeological Impact Assessment (AIA) and Inventory study undertaken at the Parksville Community Park in Parksville, British Columbia. This work was carried out under *Heritage Conservation Act* (HCA) Permit 2018-0412.

The Permit authorized Colleen Parsley of Aquilla Archaeology to undertake '*archaeological impact assessments for the City of Parksville to allow archaeological studies to occur in support of works conducted within the City limits'*.

The City of Parksville initiated a larger-scale project for a Stormwater Management Master Plan in the Parksville Community Park. This project aims to collect high quality data about the current status of the park in terms of known and unknown (buried) infrastructure in order to identify opportunities and possible future limitation in planning for increased storm water due to climate change. Through this, the City acknowledged there may be potential unrecorded components of archaeological sites DhSb-2 and DhSb-52 to be present within the Parksville Community Park (hereafter the Park). This project is an important shift the City of Parksville is taking to meaningfully recognise Snaw-Naw-As and Qualicum First Nations' heritage and culture within the Park. It was identified in the City's Community Park Master Plan (2018) that to-date, indigenous presence was historically omitted from the Park's physical, cultural and social history. Within the larger Stormwater Management Master Plan, the City requested an archaeological inventory and impact assessment (hereafter referred to as AIA) of the park in order to identify all archaeological components and to provide guidance on culturally sustainable future development.

The AIA was undertaken between March 2–11 and May 27, 2020 and this report is submitted as partial requirement of the HCA Permit 2018-0412.

1.1 Study Objectives

This study was carried out in accordance with the Archaeological Impact Assessment Guidelines (1998) and are as follows:

- identify and evaluate archaeological resources within the Park;
- identify and assess all impacts on archaeological resources which might result from proposed projects within the Park;
- provide recommends for managing unavoidable adverse impacts.

In British Columbia, the *Heritage Conservation Act* (BC Government 1996) protects archaeological sites from any type of disturbance unless authorized by permit. Archaeological sites are defined as locations on public or private land containing evidence of human activity pre-dating 1846.

This assessment is provided without prejudice to Aboriginal Rights and Title but is not intended to address potential impacts in regard to traditional use of the study area and does not in any part constitute consultative duty.

1.2 Organisational Format

This report is organized using the format provided in the Archaeological Impact Assessment Guidelines, Appendix A: Guidelines for Report Content (1998).

2 PROJECT

The City of Parksville is shifting its approach to land-use planning for the Parksville Community Park to include long-range and more inclusive engagement with the First Nation communities whose territory the Park lies within.

The City is currently developing a Storm Water Management Plan to proactively manage subsurface infrastructure and prepare for future developments that may occur within the Park and with this in mind, it became apparent that a better understanding of physical archaeological heritage was critical to any future work.

3 STUDY AREA

3.1 Location

Parksville Community Park is located on the north-facing east coast of Vancouver Island within the City of Parksville and to the west of the Englishman River estuary. The Park is bordered by the Island Highway 19A to the south, by Corfield Street North and Surfside RV resort to the east. To the west the study area is bordered by the Park Sands Beach Resort and to the north is Parksville Bay and the Strait of Georgia (Figures 1 & 2).

The 39 acre waterfront Parksville Community Park was established in 1963 following the acquisition of the land in 1923 and its use as a waterfront park and provides recreational facilities for the whole community, including a waterfront walkway, washroom facilities, horseshoe pits, kite field, lacrosse box, Lions Venture Land playground and waterpark, picnic shelter and gazebo, skateboard park, sports field and ball diamonds, two tennis courts and a volley ball court as well as an arboretum of about 80 trees from around the world. http://www.parksville.ca/cms.asp?wpID=204 and https://www.visitparksvillequalicumbeach.com/blog-smell-the-flowers-in-parksville-community-park.

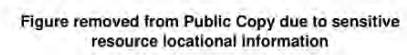

Figure 1: Project Location.

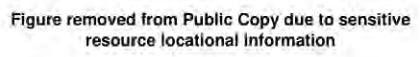

Figure 2: Midrange Project Location.

The study area is within the asserted traditional territory of the Snaw-Naw-As, K'omoks, and Qualicum First Nations and the representative organizations of the Nanwakolas Council and the Te'mexw Treaty Association.

3.2 Environment

The study area was overlain by glacial ice about 15, 000 year ago and a minor re-advance at about 11, 500 years before present (B.P.) likely made the area uninhabitable until 10,000 to 11,000 years ago (Mathews et al. 1970). Ocean fluctuations have shown a trend to gradual decline in sea levels, but fluctuations such as present higher water levels have created raised benches with some potential for sites at higher elevations than present shorelines. Inland areas were exploited throughout the prehistoric period though not as intensively as the area near the modern shoreline. Older occupations are possible in intertidal and even underwater areas associated with older lower sea levels.

The study area is located within the Coastal Douglas-Fir moist maritime (CDFmm) biogeoclimatic zone. This zone is limited to only a small area of south eastern Vancouver Island, several Gulf Islands and a portion of the adjacent BC mainland (Nuszdorfer et al. 1991: 82). The climate within the CDF zone is relatively dry with mild annual temperatures and the vegetation is diverse with species that occupy rock outcrops, seaside, aquatic and forest habitats.

The CDF is characterized by the predominance of Douglas-fir (*Pseudotsuga menziesii*), with an understorey of salal (*Gaultheria shallon*), and/or Oregon grape (*Mahonia aqua folium*). Other tree species commonly occurring in this zone include western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), Red alder (*Alnus rubra*) and, in drier areas, arbutus (*Arbutus menziesii*) and Garry Oak (*Quercus garryana*). Other less-common species include Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), shore pine (*Pinus contorta*), bitter cherry (*Prunus emarginata*), bigleaf maple (*Acer macrophyllum*), western flowering dogwood (*Cornus nuttallii*), black cottonwood (*Populus trichocarpa*), and trembling aspen (*Populus tremuloides*) (Nuszdorfer et al. 1991: 82).

Native wildlife commonly found within the Coastal Douglas Fir zone includes black-tailed deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), elk (*Cervus elaphus*), cougar (*Felis concolor*) and various other small land mammals. Birds and waterfowl known to be found in this zone include the pileated woodpecker (*Dryocopus pileatus*), blue grouse (*Dendragapus obscurus*), Stellar's jay (Cyanocitta stelleri), great blue heron (Ardea herodias), raven (Corvus corax), hooded merganser

(*Lophodytes cucullatus*), mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*) and glacous gull (*Larus hyperboreus*) (Nuszdorfer et al. 1991: 88-90).

Sea mammals known to occupy the waters near to the current study area include harbour seal (*Phoca vitulina richardi*), northern sea lion (*Eumetopias jubata*), California sea lion (*Zalophus californianus*), killer whale (*Grampus rectipinna*) and harbour porpoise (*Phocoena vomerina*). Many types of fish are also commonly found in the area, each occupying a specific local habitat such as a rocky shoreline or sandy beach. Fish species include dogfish (*Squalus suckleyi*), skate (*Raja binoculata*), Pacific herring (*Clupea harengus*), rockfish (*Sebastodes* spp.), flounder (*Atheresthes stomias*), halibut (*Hippoglossus stenolepis*), sole (numerous species), ling cod (*Ophiodon elongates*) and several species of sea perch (Mitchell 1971). Five species of salmon also reside in the ocean and rivers surrounding the study area depending on the season which include Chinook (*Onocorhynchus tshawytscha*), chum (*O. keta*), Coho (i), pink (*O. gorbuscha*) and sockeye (*O. nerka*).

Various types of shellfish can be found in specific local habitats in the Gulf of Georgia region. Species of shellfish include, but are not limited to, butter clam (*Saxidomus giganteus*), littleneck clam (*Protothaca staminea*), horse clam *Schizothaerus nuttalli*), basket cockle (*Clinocardium nutalli*), mussel (*Mytilus edulis*), native oyster (*Ostrea lurida*), whelk (*Nucella* sp.), wrinkle purple (*Nucella lamellose*),periwinkle (Littiorina sp.), limpet (*Lottidae*), and acorn barnacle (*Balanus nubilis*).

3.3 Paleoenvironmental

Geologically the study area is situated between the St. Elias Insular Belt on the west side and the Cascade Belt to the east. These belts form the two western most tectonic regions of the Canadian Cordillera.

The different bedrock geology on either side of the Strait of Georgia indicates that the strait between the two areas lies over a boundary between the two structural regions. The Strait of Georgia essentially follows the contact between the granitic rocks of the coast intrusions of Jurassic age and older rocks of the Vancouver Group.

The study area lies within the boundaries of the Nanaimo Group that consists of boulder, cobble and pebble conglomerate, coarse to fine sandstone, siltstone, shale, coal, formed during the Upper Cretaceous.

In British Columbia, the most important agent of erosion has been glacial ice as described by Holland (1964): Glaciation within the Georgia Depression was intense. Ice pouring westward from the Coast Mountains and eastward from the Vancouver Island Ranges coalesced in the strait to form a composite glacier which flowed south-eastward and southward and escaped to the sea westward through Juan de Fuca Strait. The depression in part is of structural origin, but in part was over deepened by ice erosion. Low lying rock surfaces were stripped by weathered materials and were shaped, while elsewhere glacial materials were deposited as ground moraines, or as outwash.

The unconsolidated deposits of Pleistocene and Holocene age, comprised of marine, fluvial and glacial materials are quite extensive and locally may exceed 100 metres in thickness. Elsewhere these unconsolidated deposits are found to be thin or absent with bedrock being widely exposed (Hutchinson et al. 2004; Ronneseth et al. 2005).

Successive periods of glaciation shaped the terrain of the mainland coast of British Columbia. The land surface has been carved and smoothed by massive sheets of ice formed in the alpine regions of the interior and flowing to meet with continental ice sheets and pooling in Georgia Strait. Lower elevations have filled with glacial till, and waterborne glacio-marine sediments in stratified deposits formed under the melting and floating ice sheets. Following the most recent period of glaciation which concluded about 12,000 years ago, the east coast of Vancouver Island was uplifted in a process known as isostatic rebound. This uplift resulted in an increase in stream activity producing the many “box canyons” seen in the area today (Holland 1964).

Quadra Sands are the main source of the sand covering much of this region of the Island where they deposited from the Coast mountains into a floodplain that is now the Strait of Georgia between 26,000 and 29,000 BP (Dunster 2000) or 28,800-35,400 BP (Clague 1976). These ancient sands are famously known in Parksville Bay. Parksville Bay is a low elevation bay with a small and gradual change in elevation to where the park is situated today on a former glacial beach. Further, to the south the elevation slopes up towards the Island Highway that was a glacial shoreline ca. 18,000-15,000 years ago and rapidly dropped after de-glaciation. Paleo-beach terraces were formed along what is likely now the Island Highway in the locality of Parksville Bay (Hutchinson et al. 2004). Stable paleo-

shorelines are where late Pleistocene and early Holocene people may have lived and are where archaeological sites are expected to be located. From 13,000 Radio Carbon Years Before Present (RCYBP) the east coast of Vancouver Island was ice free (Mackie et al. 2011), and by 12,000 RCYBP archaeological evidence suggests an increase in the amount and variety of terrestrial and marine mammals on and around Vancouver Island (Harington and Ross 2007;Mackie et al. 2011). Level terraces adjacent to shorelines are attributes considered favourable for archaeological potential.

3.4 Cultural Overview

The present study area is within the core asserted territories of Snaw-Naw-As and Qualicum First Nations. This project area is located at the very southern periphery of K'omoks First Nation. Snaw-Naw-As are a Hul'qumi'num speaking Coast Salish community centred around Nanoose Bay in the Central Coast Salish region of the Salish Sea. The cultural history of Snaw-Naw-As people is not well understood. Conflict and successive colonial pressures related to epidemics and alienation of lands led to a drastic decline in population and subsequent destruction of oral histories; the main conduit for the transmission of cultural knowledge in Coast Salish cultures.

Summaries of Snaw-Naw-As cultural histories are presented in (Bouchard & Kennedy, 1995; Brown & Hayman, 1989; Dewhirst, 1994; Nicholls, 1958; Rozen, 1985). Accounts of successive attacks from the Alberni Inlet area around 1836 and again in 1856 from Kwakuitl peoples (citing Walbran in Dewhirst, 1994) led to one sole survivor of the Snaw-Naw-As community, Nanoose Bob. On October 9, 1855 it is recorded in the HBC Memoranda at Nanaimo that, "…a vague report arrived that some Northern Indians had massacred all the [Nanooas?] a part of the Nanaimo tribe, their villages being about ten to twelve miles apart…(*Transcript of Hudson's Bay Company Nanaimo Memoranda 1855-1857. Transcribed by Marv Worden, 2005; Carol Hill 3013-4*).

Then on the 13th of October 1855 it is noted in the journal… "a canoe arrived from Nanoos confirming the report of the murder of three men and two women belonging to the tribe. The deed is supposed to have been committed by the Mamillillikillas…"then again in 1856 another attack is recorded as, "A Canoe arrived from Nanooa the Indians in it reported that the Sympsians, who left here yesterday [sic] had killed the Chief of that place (Nanooa)". (*Transcript of Hudson's Bay Company Nanaimo Memoranda 1855-1857. Transcribed by Marv Worden, 2005; Carol Hill 3013-4*, n.d.).

These accounts corroborate the conflict faced by this community. The works compiled by Kennedy and Bouchard were focused on addressing the question legitimacy as it related to a landmark blockade by Nanoose First Nation to protest the legality of a Heritage Conservation Act permit which was the subject of well publicized protest (Watts, 1995 among others). This permit allowed the removal of the archaeological site DhSb-8, the village site of Qilxemait the ancient Nanoose settlement and residential development now known as Craig Bay Estates. The intent of this cultural overview was to assess the relationship between the Coast Salish Pentlatch, documented as formerly occupying the lands between Comox Harbour to the vicinity of the Englishman River by Franz Boas and other ethnographers who had recorded Pentlatch histories. The result of this assessment was inconclusive as the boundaries drawn by previous ethnographies were vague in relation to Snaw-Naw-As lands.

Qualicum First Nation are descendants of both Pentlatch and other Coast Salish communities (Recalma-Clutesi in Wylie, 1992). The core cultural area of Qualicum First Nation is situated within the northern Coast Salish Pentlatch territory formerly from Cape Lazo to a debated southern boundary which is either at Parksville (Kennedy and Bouchard 1990) or around Northwest Bay at Nanoose (Boas, 1897) . Pentlatch people suffered near total population collapse from various direct and indirect colonial pressures such as epidemic disease and increased hostilities (Barnett, 1955; Brown and Hayman, 1989; Kennedy and Bouchard, 1990; (Recalma-Clutesi *in* Wylie, 1992). Due to these catastrophic tolls, one

known survivor Joe Nimnim, moved to the Comox village (Barnett, 1955) and the Pentlatch winter village at Qualicum River was re-occupied by descendants of a high-ranking Pentlatch woman previously married away (Recalma-Clutesi *in* Wylie, 1992) so it is little surprise the such sparse ethnographic information from Pentlatch people survives.

Bouchard and Kennedy recorded a traditional placename for the Englishman River as *kiwxemolh* from a K'omoks informant meaning 'steelhead' (1995). Rozen (1985) had access to Suttles fieldnotes who recorded the traditional placename of the Englishman River as *Kewxemolh* – (the repository for Suttles' field notes is the University of Washington Libraries, Special Collections and the files are closed for access until 2025) meaning 'steelhead place' which Suttles apparently recorded from a Nanoose informant.

3.5 Historical Overview

Much of the coastline of Vancouver Island had been explored and mapped by the Spanish explorers Francesco de Eliza, with pilots Juan Pantoja and José Antonio Verdía on the *San Carlos*, and José Maria Narváez commanding the smaller schooner, the *Santa Saturnina* with pilot Juan Carrasco under the command of Juan Francisco de la Bedega y Quadra before Captain George Vancouver came to explore what would become "*the Island of Quadra and Vancouver"* in 1792. The coastline was mapped by the expert cartographers Narváez, Pantoja, and Carrasco who produced the composite chart of the explorations the *'Carta que comprehende'* (Layland 2013: 47-53, Fig. 30).

Much of the east coast of Vancouver Island was explored and mapped by Narváez who included not only geographical locations and points of navigation but also recorded important ethnographical information by charting *"Rancheries de Yndios"* or First Nations settlements (Layland 2013: Fig. 30).

The Spanish recorded what is now the Englishman River on the *"Carta que comprehende"* as *"Rio de las Grullas"* or the River of Cranes (Layland 2013: Fig. 30). This location is interpreted as the River of Herons, as the descriptions of plumage, eggs, and nesting habits of these 'cranes' in Spanish explorer's accounts fit with heron characteristics (Pearse 1968).

It was another 60 years before the Parksville area was named Englishman's River (now Englishman River), due to the drowning of an Englishman trying to cross around 1850 though it was still recorded as *"Rio de Grullas"* in 1860 on Edward Weller's map in Hudson's Bay Company's surveyor Joseph Pemberton's book *Facts and Figures* (Layland 2013: Fig 54). In 1855 the area was surveyed up to the Alberni Valley by Adam Grant Horne on behalf of the Hudson's Bay Company and then in the 1860's a trail was built joining Victoria to Comox. The first settler recorded in the area was John Hirst who arrived in 1870 and acquired land on both the eastern and western side of the Englishman River in 1873, where he built a house and established a cattle farm and built the first hotel called "Seaview". On the western side of the Englishman River in 1884 the Parks Brothers registered their claims to land, and two years later in 1886, a 24-mile wagon road was completed from Nanaimo to Englishman's River with construction extending to Comox (Leffler 2000, 1).

In 1887, the Englishman River Post Office was renamed the Parksville Post Office after Nelson Parks, the first postmaster. Nelson Parks lived in a small shack on the land, which is now the Parksville Community Park (Lot 13 Figure 3) and it is said that during a gathering in his humble shack is where the City gained the namesake, "Parksville" (Leffler 2000, 1).

Figure 3: Undated & untitled survey blueprint of the project area.

During this time, logging was a major industry and the extension of the Esquimalt and Nanaimo (E & N) Railway in 1910, spurred Parksville's growth and the beginning of a tourism boom, mainly Vancouver Islanders who travelled to Parksville to enjoy the incredible beaches. Motels, stores, resorts and campgrounds soon followed (Leffler 2000, 2)

The Parksville Women's Institute was founded in 1915, with a desire to aid the local men who were fighting in Europe during World War I, by sending care packages of food, knitted socks, scarves and gloves overseas and following the end of the war they assisted new war-brides who had accompanied soldiers returning from England (Leffler 2000, 79). In 1922 the Women's Institute of Parksville initiated a project to raise the funds for a cenotaph and elm trees that were planted as memorials to each fallen local WWI soldier along what is Memorial Avenue (Leffler, 2000, 79). The Women's Institute raised the funds to purchase a three-tonne slab of granite from Jervis Inlet which was transported and carved by stonemasons Wheeler and Brice (Leffler, 2000, 93). This carved cenotaph was placed in a prominent position at the west end of Memorial Avenue. Later, it was moved twice due to the pressures of Parksville's urban growth to within the Community Park (Leffler 2000, 93). In 2001 the cenotaph was moved from Community Park to its current location at the Parksville Civic and Technology Centre (A. Defoor *pers comm*.).

This group of women collectively led the way for social and patriotic activities in the district for seventy years and sparked the Community Park's beginnings. At the time the Community Park was purchased, there were two pieces of land available. A vote took place to determine which piece of land would be used for the purpose of parkland and a board was elected to carry out the project. In 1923, the Parksville Women's Institute purchased the 39 acres of waterfront property (which previously belonged to the Parks Brothers) from Joe Hirst for $3,500 and through determination, the loan was paid in three years, taking advantage of a $500 discount. After purchase of the land, change houses were constructed and

people began using the area for camping and recreation. The space became officially known as the Community Park and was maintained by the Community Park Society for more than thirty years. In 1963, the Society gave the responsibility of the park to the City of Parksville (Leffler 2000) [1].

3.6 Archaeological Overview

Chronological cultural sequences developed from previous dated archaeological work on the Northwest Coast have been established to understand cultural development and change through time. Sequences are derived by defining and describing physical and stylistic attributes of archaeological materials encountered and repeated in patterns across geographical regions. Not all researchers entirely agree on these sequences although consensus is more or less achieved in a broader sense with differences often resulting from divergent views on regional contexts. A generalized sequence for the northern Strait of Georgia presented here (Table 1) is based on Borden (1975), Mitchell (1990), Carlson (2003), Matson and Coupland (2009).

Mackie et al. (2011) have presented a synthesis of emerging data on late Pleistocene/early Holocene sites in relation the early peopling of British Columbia. Using archaeological data from Haida Gwaii, Barkley Sound, and the Stave watershed combined with detailed sea level and paleontological data they assert sites between 13,000-7,000 may exist at various elevations and coastal environments in coastal British Columbia.

Table 1: Archaeological Sequence for the Salish Sea

Years Ago	Epoch	Period	Archaeological Sequence
100-present	Late Holocene	Historic	Post-Contact
250–100		Late	Contact
1800–250			Developed Coast Salish/Gulf of Georgia
2400–1800	Mid Holocene	Middle	Marpole
3300–2400			Locarno
4500–3300			Charles/St. Mungo/Mayne
9000–4500	Early Holocene	Early	Old Cordilleran/Pebble Tool Tradition
			Archaic
Pre 10 000	Pleistocene		

Old Cordilleran 9000-4500 years ago

Until recently, this phase was associated with the first peopling of coastal British Columbia to inhabit stabilizing sea levels, landforms, and biological communities. Very few archaeological sites of this type are found in coastal British Columbia and even less in the Salish Sea. Sites of this age are limited to a handful of locations such as Namu (9,700 yrs BP) Glenrose Cannery (8,150 yrs BP), Milliken (7,050-9,080 yrs BP), Saltery Bay (7,600 yrs BP), Bear Cove (8,200 yrs BP), Stave Lake (7,000-10,000 yrs BP), and now Grace Harbour (7,500 yrs BP). At coastal sites, Old Cordilleran sites are often found on

[1] History of Parksville https://www.parksville.ca/cms.asp?wpID=554 & https://www.parksville.ca/cms/wpattachments/wpID554atID9116.pdf

paleo-beach terraces associated with shifting sea levels. Characteristics of the Old Cordilleran culture or Pebble Tool Tradition are described by Carlson as, "*defined on the basis of the co-occurrence of unifacial pebble choppers and leaf-shaped bifaces in early assemblages …but sometimes…pebble tools by themselves*" (1990:62). Pebble tools are defined as large cobbles with flakes removed on one side and are considered a cruder and simplified stone tool technology. The bifacial tools are flaked leaf-shaped lithics and often large resembling Cascade-style points found south in Washington and Oregon. Faunal assemblages from these sites indicate the diets of people living in these locations emphasized land and sea mammal subsistence and less emphasis on fish (Matson and Coupland 2009:81).

Charles Phase – 4500-3300 years ago

In the Salish Sea, again very few archaeological components from Charles Phase have been found. Charles components have been identified at Helen Point on Mayne Island (Carlson 1970) and Pender Canal on North Pender Island (Carlson 1986; Carlson and Hobler 1993), Glenrose Cannery, Tsable River and Buckley Bay (Mitchell, 1974), Deep Bay (Monks, 1977), Shell Beach in Ladysmith Harbour (Lake et al, 2004), Bliss Landing (Beattie, 1971). Ground stone technology is first seen during this period but in very limited amounts. Leaf shaped points are still present in stemmed and shoulder forms but tend to be smaller and in general flaked stone tools are dominant. Pebble tools are much less frequently found. Subsistence patterns demonstrate a strong orientation to a reliance on coastal resources, where shellfish and marine fish, particularly Pacific salmon, dominate the faunal assemblages (Matson and Coupland, 2009:100-103).

Locarno 3300-2400 years ago

Numerous sites in the Salish Sea have dated Locarno phase components. Attributes of this assemblage include the first toggling harpoon weaponry, unilateral and bilateral barbed harpoon points, faceted ground slate projectile points and knives, ground stone celts, ground stone abraders, labrets, and flaked stone projectile points (Matson and Coupland, 2009:156). Mitchell notes clay lined depressions and rock slab features are present during this period as well as small unretouched cryptocrystalline cutting blades (1990:341).

During this period subsistence patterns shift towards fish-based diets with fish found in priority sequence: salmon, herring, various other fishes and shellfish. It has been demonstrated at some Locarno phase sites that a lack of salmon cranial elements indicate storage (Matson and Coupland 2009:166-169), a marked technological change in adaptation and indication of abundance. Grave goods and cairn burials are also documented at some Locarno sites. Locarno phased sites are not well documented in the northern Salish Sea (exceptions are the Buckley Bay and Tsable River sites studied by Mitchell (1974) with most evidence sourced to archaeological sites located in the central and southern Salish Sea. An undated Locarno component is thought to be present at Shelter Point, DjSc-1 based on indirect artifact assemblage inferences of microblades and faceted ground slate points (Parsley 2013).

Marpole 2400-(1800-1500) years ago

Marpole archaeological components are perhaps the most frequently identified phase in the south Salish Sea region. Decorated objects are more frequently found in Marpole-aged sites than any other evidenced by the presence of stone sculpture in some elaborate forms such as zoomorphic and anthropomorphic bowls (Burley 1980:24). Labrets and microblades are in use during this period. House platforms are clearly definable at some excavated sites (Matson and Coupland 2009:208-209). Cranial modification is noted during this period. Flaked stone tools are still present but in less frequent numbers. According to Burley (1980:23), this period sees the florescence of heavy woodworking tools such as antler wedges, large ground stone adzes, and hand mauls with conical tops being stylistically diagnostic but plain topped and grooved topped also occurring (Mitchell 1990:345). This cultural phase is marked

by the increase of ground tool technology, and in particular slate points and knives. The composite toggling harpoon weaponry found during Locarno times is now absent and replaced with unilateral and fixed ground antler harpoons (Mitchell 1990:345).

Developed Coast Salish 1800-250 years ago

This period is difficult to discern based strictly on cultural material as artifact assemblages subtly shift in emphasis from Marpole culture to descendants of current populations of Coast Salish communities. To summarize from Matson and Coupland, *"this period is marked by the almost complete absence of chipped stone, the dominance of bone and antler objects, but with some pecked and ground occurring. The most common harpoon is the composite toggling harpoon valve, and flat-topped mauls are introduced. Bone unipoints and bipoints are very abundant and barbed bone points of various sizes are also found. A well-developed weaving technology is clearly present, as indicated by blanket pins, combs, and spindle whorls"* (Mitchell, 1990:348). According to Mitchell, intertidal features as evidence of the many well-developed fish and shellfish harvesting systems are associated with this period and states river and saltwater traps are particularly noted in the northern Strait of Georgia (1990:347).

3.7 Regional Archaeology and Previous work

There is one known and recorded archaeological sites within Parksville Community Park; DhSb-52 and a further four sites DhSb-1, DhSb-2, DhSb-3 and DhSb-4 within 1km. (Table 2).

Table 2: Archaeological Sites within 1km of Parksville Community Park

Borden No.	Site Type	Permit No. of Previous Visits
DhSb-1	Shell Midden Human Remains	1962 – no permit # 1963 – no permit # 1992-0305
DhSb-2	Shell Midden, Human Remains	1962- no permit # 1975-006 1992-001 1995-110 2004-407 2004-430 2010-042
DhSb-52	Shell Midden	2013-0118
DhSb-3	Shell Midden, Human Remains	1962-no permit # 1975-006 1995-110 2006-010 2007-117
DhSb-4	Shell Midden, Habitation Feature, Cultural Depression, Plank House.	1975-006 1979-015 1987- missing permit #

DhSb-1

DhSb-1 is described as a site of "dark organic matrix with scattered broken shell 5cm–30cm thick" (Site Form). The site was first recorded in 1962 when the uncontrolled collection of surface artifacts took place and the site was described as having "completely eroded away because of river flooding" (Site Form). The site is recorded as 152m long by 12m wide, though on RAAD map DhSb-1 is recorded as a single 1m by 1m square, an indication of the reduced size of the site due to historic development. The

site was surveyed in 1963 during a survey of the Provincial Parks by the BC Provincial Museum and then in 1992 ancestral remains in the form of a "complete right femur and tibia were recovered from an eroding bank facing the ocean" (Site Form).

DhSb-2

Several previous archaeological studies have occurred within DhSb-2.

DhSb-2 was recorded in 1975 as a 100 x 30 m sized archaeological site estimated to be 0.6 m deep. (Murton and Foster 1975) situated at the head of Parksville Bay, this work followed on from a survey in 1962 which described the midden deposits as *'quite deep in spots but generally not deeper than 6 inches*' (Site Form). In 1992 the ancestral human remains of two individuals; one male and one female were salvage excavated by Lindsay Oliver (1992). A nephrite adze was also recovered during this work.

In 1995, an AIA of approximately 26 shovel tests, several probes (~55), and a 0.5 x0.5 m evaluative unit identified cultural deposits and a fragment of sub-adult or young adult human vertebra was recovered (Dahlstrom and Wilson 1995:17).

In 2004, two archaeological projects were undertaken within DhSb-2 (Streeter and Bond 2007). Results of this project confirmed the results of the previous studies. The first identified cultural strata was found at 90 cm below surface. Four precontact artifacts, and 588 fauna were recovered, and deposits were assessed as largely disturbed but some intact portions of the site were noted (Streeter and Bond 2007).

Archaeological monitoring that followed confirmed previous findings of Dalhstrom and Wilson (1995). The second project identified the partial remains of one ancestral individual, seven pre-contact artifacts; seven historic dump features containing 1101 historic artifacts, and unknown amount of prehistoric and historic fauna were recovered.

Currently the archaeological site form for DhSb-2 accessed from RAAD (April 9, 2020) states that the boundaries of this site are currently 300 x 102 m. as they were defined in 1995. Boundary accuracy was tested by using the measurement tool in the Archaeology Branch's RAAD GIS application. The displayed digital boundaries returned measurements of 194 x 110 m. This found the boundaries of DhSb-2 are not accurately displayed in RAAD. This would suggest this archaeological site is almost a third larger than presently indicated in provincial records (approximately 104 m larger).

DhSb-52

DhSb-52 is a 20 x 5m area of observed shell midden located within Parksville Community Park. It is possible this shell midden was displaced from an undocumented archaeological site during municipal redevelopments in the Park. This material was observed to be mixed with historic debris and no artifacts or faunal material was identified (Site Form after Bond 2013).

DhSb-3

DhSb-3 is recorded as 167m long by 12m wide, though the RAAD GIS application records it as approximately 250 long by 64m wide.

The site was originally recorded in 1962 and was then recorded by Murton and Foster (1975) during a regional survey of the east coast of Vancouver Island as a shell midden site. on the northwest side of Parksville Bay on the Georgia View Auto Court property.

Dalhstrom and Wilson (1995) initially recorded the western portion of DhSb-2 as a part of DhSb-3, though this was amended in 2003 (Site Form). Excavations in 2006 revealed midden deposits as well

as at least 4 sets of ancestral remains and this work revealed that DhSb-3 was much more extensive than previously recorded and represented a long-term seasonally occupied Marpole era site dating to 1750 BP (Cal 1840-1520 BP) (Wilson et al, 2006).

DhSb-4

DhSb-4 was first recorded by Murton and Foster (1975) is noted as 65m long by 60m wide though on the RAAD GIS application, the site is recorded as three separate polygons totalling approximately 330m long by 90 m wide. Investigations in 1979 (Lawhead 1980) revealed several cultural features, including habitation hollows and post-holes from a plank house, as well as 42 artifacts including microblades, cores, a slate biface, abraders, a bone awl, a unipoint and bipoint. Further work was undertaken by Bjorn Simonsen of the Bastion Group in 1987, where four (n=4) tests were excavated and one was positive for cultural material, though the permit number is missing and no report found (Site Report).

4 METHODOLOGY

Field methods followed those set out in the application for Permit 2018-0412.

4.1 Documentary Research

The Remote Access Archaeological Data (RAAD) and Provincial Archaeological Report Library (PARL) applications provided by the Archaeology Branch were utilized to access all the existing archaeological site information and associated reports.

4.2 Surface Inspection

The pedestrian survey visually inspected the ground surface for exposures of cultural sediments and cultural features. The bases of trees, flower beds other exposed areas of ground were inspected for evidence of subsurface archaeological deposits. Traverses were spaced at 5m intervals due to the high potential. Detailed field records and observations were recorded and maintained in a field-book and all photographs were recorded in a photo log.

4.3 Subsurface Inspection

As per the application for Permit 2018-0412 areas deemed to contain potential for subsurface archaeological deposits were tested using 5 m intervals unless obstructed or other justifications warranted larger test spacing.

The field data collected was digitized using GIS software ArcMap 10.6.1 to convey all archaeological features, landforms, subsurface tests, survey coverage, existing facilities, and recent disturbances.

4.4 Culturally Modified Trees

Culturally modified trees (CMTs) were recorded in accordance with *Archaeology Branch Bulletin 27-Culturally Modified Trees Guidelines* https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/archaeology/forms-publications/bulletin_27_cmt_guidelines.pdf and the CMT Handbook (2001) with rationale and details regarding the sampling strategy following Muir and Moon (2000).

4.5 Analysis

Comparative analysis of faunal remains was conducted from representative samples whenever possible. Consulted texts included Olsen's *Mammal Remains from Archaeological Sites* (1964), Gilbert's *Mammalian Osteology* (1980), and Smart's *Carpals and Tarsals of Mule Deer, Black Bear, and Human: An Osteology Guide* (2009).

Lithic artifacts will be subjected to a technological analysis with the aim of providing an assessment of site function. Analysis will be done according to an established system (e.g. Andrefsky 1998, Magne 1983) that provides insight into lithic technologies represented at the site, such as core reduction, bipolar reduction bifacial thinning, pressure flaking for tool manufacture/maintenance, blade production, heat treatment, etc. Diagnostic tools will be measured and photographed, with technological attributes noted. Raw material sourcing will be done where appropriate.

4.6 Site Significance Evaluation

The significance of sites within the Study Area was evaluated using the Checklist of Criteria for Pre-Contact Site Evaluation (Appendix D) and Checklist of Criteria for Post-Contact Site Evaluation (Appendix E) from the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).

4.7 Impact Identification and Assessment

The potential for impacts to sites within the Study Area was examined using the Indicators for Assessing Impacts on Archaeological Sites (Appendix F), in the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).

5 RESULTS

The southern portion of the Parksville Community Park is situated at the transition of a well-defined paleo-beach slope break located at the Island Highway. This former paleo-beach terrace was formed when sea levels were much higher (ca. 12 m) than current levels between 18,000-15,000 years ago and rapidly dropped after de-glaciation (Hutchinson, James, Clague, Barrie, & Conway, 2004). At the base of the slope, the remainder of the project area is a level flat terrace formed during this Pleistocene-Holocene transition when it was the sea floor. Sea levels have continually dropped since around 11,000 years ago to modern sea levels.

The study area was clearly historically deforested as few old growth trees are present, and of those, only a few veteran Douglas-fir trees survive, and these are located in a band bisecting the park east-west. No larger trees are present north of the arboretum. Post-deforestation and since inception as a City owned park, it has been heavily landscaped. Occasional raised areas are present and likely indicative of push-piles associated with former development activities.

The ground surface of Parkville Community Park is varied as indicated above with numerous areas of imported sand fall-protection material, gravel and asphalt parking lots. The majority of the study area is level and manicured grass and within the south-western area of the Park (between Salish Sea Drive, the Lions Venture Land playground, Park Sands Beach Resort and the Island Highway East 19A) there are numerous established Douglas-firs and very few western redcedar trees. The Park has been divided

into 8 areas (Areas A–H) for ease of discussion within the report and are annotated in a clockwise direction from the south-west corner of the Park (Figure 4).

Due to sensitive resource locational information the positions of Areas A-H have been redacted from this report.

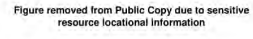

Figure 4: Assessment Areas

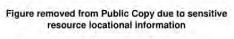

Figure 5: Results Areas B, C & D.

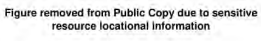

Figure 6: Results Areas A, E, F, H & G

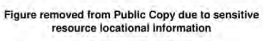

Figure 7: Results North Area C.

5.1 Surface Inspection

A pedestrian survey visually inspected all accessible areas of the Parksville Community Park. In Area A cultural deposits were observed on the surface intermixed with compact gravel and these deposits were investigated with the excavation of four (n=4) tests MT38–MT41 (Section 5.3).

During the pedestrian survey several CMTs were observed (Section 6).

5.2 Subsurface Testing

One hundred and forty-two (n=142) machine excavated subsurface tests (MTs) were placed within Parksville Community Park (Figures 5–7). Each measured on average 1m long by 60cm wide and the excavated material from these tests was reviewed by rake or screened through ¼ inch mesh. On the identification of dense *in situ* cultural deposits, machine excavation ceased, and the tests were excavated by hand.

Forty (n=40) MTs were positive for cultural deposits. Details of the stratigraphical sequences and deposits within each test are contained in Appendix 1, while a summary of the positive tests is presented below Table 4.

The City of Parksville had completed an underground service location survey prior to this study which identified a very high number of water, electrical and unknown buried infrastructure. This tangled network of underground services created challenges in achieving test coverage in some areas. The newly developed playground was not testable due to ongoing use and those tests placed around the periphery were only achievable in the early morning hours. The City of Parksville restricted testing in several areas within the park due to the sensitivity of certain tree species and we were unable to test the majority of the parking areas.

Established Douglas-firs with extensive root systems, and extensively manicured flower beds are watered by an extensive underground irrigation system, and this limited where tests could be placed even in the open areas. (Figures 8–11). The sports-fields, tennis courts and lacrosse pitches also could not be tested due to the extensive services (irrigation, drainage and electric) and the costs of replacing surface material. The playground areas could also not be tested due to the type of fall-protection material in place. The western portion of the parking lot south of the tennis court and north of the sports-field were also not tested due to the permanent surfaces that would not be feasible to repair.

Figure removed from Public Copy due to sensitive resource locational information

Figure 8: Excavation of MT33, showing site constraints, trees, and services. Area A.

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Figure 9: Excavation of MT33, showing site constraints, trees, and services. Area A.

Figure 10: Exposed service in MT107. Area F.

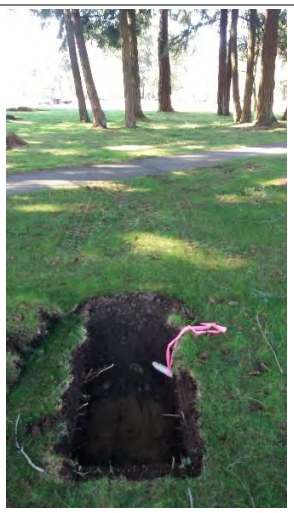

Figure 11: Exposed Irrigation pipe in MT130. Area F.

Table 3: Summary of Positive Tests, Cultural Deposits. Depth Below Surface & Thickness

Test	Area	Depth Below Surface (cm)	Deposit Type	Intact deposit thickness (cm)	Disturbed deposit thickness (cm)	FBR/Fauna/shell
MT2	A	18	Cultural	18	n/a	Shell
MT4	A	25	Cultural	11	n/a	n/a
MT5	A	20	Cultural	14	n/a	n/a
MT6	A	30	Cultural	8	n/a	n/a
MT8	A	43	'Stein'	7	n/a	n/a
MT15	A	23	Cultural	4	n/a	n/a
MT25	A	24	Cultural 'Stein'	3 8	n/a n/a	FBR (n=1) n/a
MT34	A	18	Cultural	n/a	12	FBR (n=2) Shell Historic Debris
MT38	A	4	'Stein'	36	n/a	FBR (n=4)

MT39	A	18	Cultural	18	n/a	n/a
MT40	A	30	Cultural	24	n/a	Artifact DhSb-2:19
MT41	A	24	Cultural Feature (tree throw)	19 17	n/a	FBR (=9) Artifact DhSb-2:18 Shell
MT42	A	12	Cultural	58	n/a	Fauna FBR (n=11)
MT43	A	16	Cultural	45	n/a	FBR (n=6)
MT44	A	21	Cultural Cultural	n/a n/a	9 20	Historic Debris FBR (n=9)
MT49	A	16	Cultural	10	n/a	n/a
MT51	A	35	Cultural	15	n/a	FBR (n=6)
MT57	A	30	Cultural	6	n/a	FBR (n=1)
MT70	A	35	'Stein'	10	n/a	n/a
MT80	E	62	Cultural	n/a	18	FBR (n=3) Iron nail
MT83	A	10	Cultural	10+	n/a	Shell
MT84	A	5	Cultural	43	n/a	Artifacts DhSb-2:15 & 17 Shell
MT85	A	18	Cultural 'Stein'	8 24	n/a n/a	Shell FBR (n=8)
MT86	A	10	Cultural	14	n/a	FBR (=10) Shell
MT91	A	20	Cultural	15 15	n/a n/a	Artifact DhSb-2:16 FBR (n=21) Shell
MT92	A	28	Cultural	10+	n/a	Shell
MT98	A	30	Cultural	10	n/a	Shell FBR (n=2)
MT100	A	10	Cultural	14	n/a	Shell Fauna (n=2) FBR (n=18)
MT101	A	25	Cultural	45	n/a	Shell
MT102	A	50	Cultural	15+	5	Shell
MT103	A	40	Cultural	5+	5	Shell
MT104	F	35	Cultural	18	5	Shell FBR (n=3)
MT105	F	25	Cultural	n/a	6	Shell
MT106	F	27	Cultural	n/a	8	Shell
MT107	F	30	Cultural	4	n/a	Shell
MT108	F	30	Cultural	n/a	13	n/a
MT109	F	30	Cultural	n/a	8	n/a
MT119	G	40	Cultural	n/a	20	FBR (n=3)
MT120	G	34	Cultural	5 8	5 n/a	Shell FBR (n=1)
MT125	F	16	Cultural	n/a	39	Shell Modern debris

5.3 Area A

Site Stratigraphy

As indicated above it was clear from the pedestrian surface inspection that considerable landscaping and levelling had taken place, and this was evident within the subsurface tests. Following the removal of the upper surface of sod, a layer of imported coarse yellow sand was observed, with some variation in the colour and coarseness of this deposit, it was consistent throughout this area and observed in the majority of the tests. Occasional deposits of imported fine light-yellow sand was encountered in association with this coarse landscaping material and was often exposed below the compact gravel surface of the park maintenance road. This fill material had been brought in following the stripping and removal of the previous, possibly original (post logging) ground surface.

Several of the tests revealed a remnant buried ground surface below the imported coarse yellow sand, this heavily bioturbated dark brown organic sandy loam was observed in many tests throughout Area A and was encountered at depths ranging from 13cm to 30cm dbs, though the average was 21cm dbs. The basal naturally deposited sterile sediments were observed as Quadra beach sands, laminates of light and medium coarse yellow and fine yellow sand. Deeper deposits of sterile marine sand; coarse large particle grey sand was also observed. In a number of tests there was evidence of root burn associated with forest fires.

Positive Tests

Thirty (n=30) machine excavated tests within Area A (Figure 5, Table 4) were positive for cultural material which was observed as a dark greasy silty sand with varying percentages of shell. Some tests revealed just a few shell fragments though in tests such as MT83, crushed and whole shell constituted for nearly 50% of the archaeological deposit. In many of the tests the cultural material was revealed below the imported coarse sand from historic landscaping activities at a depth of between 12cm and 30cm depth below surface (dbs) though in MT83 and MT100 this was found directly below the sod at 5cm and 10cm dbs respectively. Varying amounts of faunal remains, fire broken rock (FBR) and artifacts were recovered from these positive tests and these are discussed below (Section 7).

In five (n=5) of the tests (MT8, 25, 38, 70 and 85) an anthropogenically altered black fine sand layer colloquially known as a ‘Stein’ deposit was revealed. This deposit contained a high charcoal and organic content as a result of particles leaching from an above cultural deposit through the process of percolating precipitation. This creates a diffuse horizon/interface with the underlying sterile Quadra sand below. In MTs 25 and 85 the ‘Stein’ layer was overlain by cultural deposits though in the remaining three (n=3) tests (MTs 8, 38 & 70) the cultural deposit had been removed leaving only the ‘Stein’ layer.

Several tests will be discussed below as a representative sample of the archaeological deposits observed in Area A.

MT2

Sod and topsoil comprise the upper 10 cm from the surface, which is a medium brown sandy loam with considerable bioturbation. The next strata is an 8cm thick layer of imported sand composed of light and medium yellow-brown course sand laminates. This overlay a cultural deposit which was encountered at 18cm dbs. The cultural deposit was 18cm thick and consists of a medium dark brown-grey coarse sand with occasional rounded and sub rounded pebbles <3cm. At 25–30 cm dbs four small fragments of shell observed. The upper portion of the cultural deposit has been truncated by activity within the park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. At 36cm dbs Quadra sand was encountered. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The test was halted at 87cm dbs (Figures 12 & 13).

Figure 12: MT2 west wall. Scale 1m, 50cm.

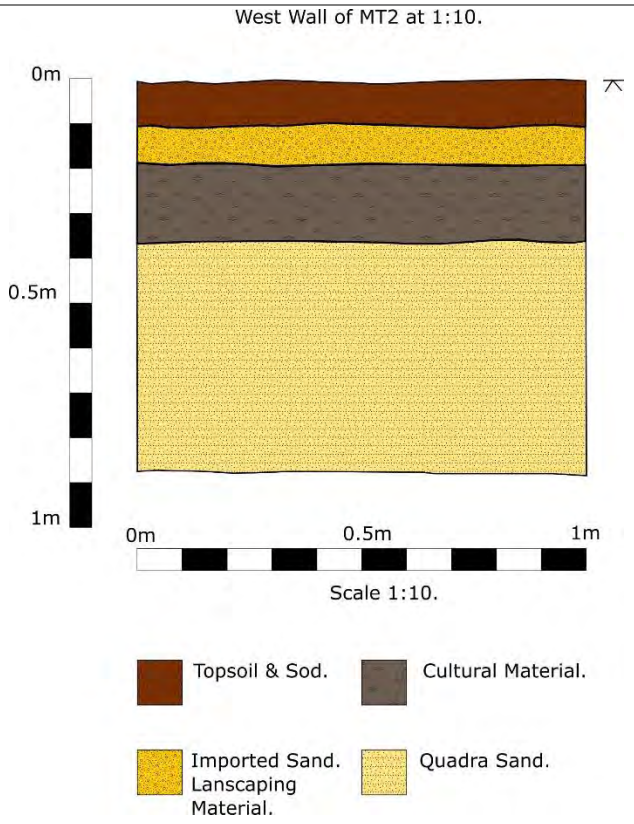

Figure 13: Profile of MT2 west wall at 1:10.

MT4

The stratigraphic profile of MT4 was almost identical to that of MT2. Following the removal of 12cm of current sod and topsoil, which was a medium brown sandy loam with considerable bioturbation a 13cm thick layer of imported sand was revealed composed of laminates of light and medium yellow brown coarse sand. This sealed a cultural deposit which was encountered at 25cm dbs. The cultural deposit was 11cm thick and a dark grey brown black silty sand with rare lenses of fine yellow sand. The upper portion of the cultural deposit has been truncated. At 36cm dbs Quadra sand was encountered. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The test was halted at 100cm dbs (Figures 14 and 15).

Figure 14: MT4 east wall. Scales 1m, 50cm.

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Figure 15: Excavation of MT4 with MT2 in foreground. View to NE.

MT41

MT41 was positioned to investigate the area of gravel roadway which led to the park's maintenance buildings in Area A where cultural deposits were observed on the surface intermixed with compact gravel of the roadway during the pedestrian visual survey. Following the removal of 10cm of compact gravel surface with small rare crushed shell fragments amongst the medium grey gravel, a 14cm thick layer of imparted coarse medium yellow brown coarse sand was revealed. At 24cm dbs a cultural deposit was revealed. The archaeological layer was 19cm thick and a black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit and so the deposit was truncated deposit but intact. Six (n=6) pieces of FBR (0.5kg) were recovered from this deposit.

Below the cultural deposit at 43cm dbs a feature was observed cutting into the underlying Quadra sands. The feature was identified due to the contrasting colour and consistency of the sediments to the sterile sands. The test was subsequently expanded (from 1m long by 50cm wide to 2m long by 1.50m wide) to investigate the feature which was an irregular amorphous shaped hollow recorded as approximately 1.20m long by 1m wide by 7cm deep with irregular concave sides and a concave base and subsequently identified as a natural tree throw hole; as opposed to a cultural feature, though it did contain anthropogenic material. The tree-throw hole was filled with a dark grey silty sand which was identical to the overlying cultural deposit and so it is unclear from what height the tree throw hole was established. At the base of the tree throw hole (50cm dbs) was a single artifact (sandstone abrader fragments - DhSb-2:18), a single shell fragment and three (n=3) pieces of FBR were also recovered. A sample of charcoal was also recovered from the base of the feature (at 50cm dbs) for radiocarbon dating. This returned an age range of 925–790 cal BP with a mean age 857 cal BP years (Figures 16–18).

Figure 16: MT41 north wall. Initial exposure of tree throw Feature 1, Scale 50cm, 20cm.

Figure 17: MT41 expanded to reveal tree throw Feature 1. View to N. Scale 1m, 50cm.

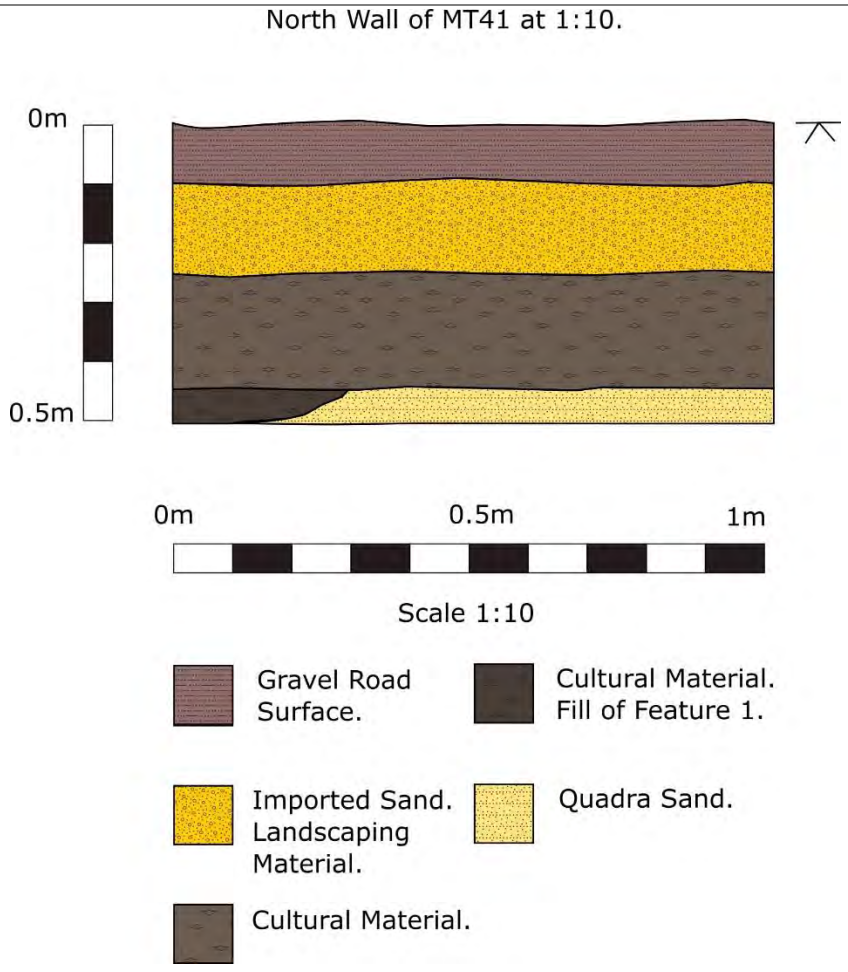

Figure 18: Profile of MT41 north wall at 1:10

MT42

The current ground surface is a12cm thick layer of sod and topsoil (a medium brown sandy loam with considerable bioturbation) which overlies a 58cm thick cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit and so the deposit was truncated but still intact. Fauna was recovered from 50–60cm dbs and numerous pieces of FBR were recovered from this deposit. One (n=1) from 12–20cm dbs, three (n=3) from 20–30cm dbs, one (n-1) from 30–40cm dbs, four (n=4) from 40–50cm dbs, two (n=2) from 50–60cm dbs. The cultural deposit was heavily bioturbated and Quadra sand was revealed at 70cm dbs (Figure 19).

MT49

An 11cm thick layer of sod and topsoil, (a medium brown sandy loam with considerable bioturbation) overlay a 5cm thick layer of imported coarse medium yellow sand. At 16cm dbs a 10cm thick cultural deposit of black greasy silty sand was revealed. The upper portion of the cultural deposit has been truncated by activity within the park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. At 26cm dbs Quadra sand was revealed and the test was halted at 50cm dbs. (Figure 20)

Figure 19: MT42 east wall. Scales 1m, 50cm.

Figure 20: MT49 west wall. Scales 1m, 50cm.

MT51

Following the removal of the 12cm thick layer of sod and topsoil, a medium brown sandy loam with considerable bioturbation a 10cm layer of imported coarse medium yellow brown sand with laminates of light grey sand was revealed. This capped a 13cm thick layer of very light fine yellow sand. The origin of this deposit is unclear, it is probably a natural deposition, the result of sand dune formation, a storm force event or perhaps sea-level rise. Though it is also possible it represents a deliberate deposition of natural material as perhaps a landscaping/levelling action. At 35cm dbs a 15cm thick cultural deposit was revealed. The archaeological layer was a black greasy sand which contained six (n=6) pieces of FBR. Quadra sand was revealed at 50cm dbs (Figure 21).

MT57

The current ground surface is a 14cm thick layer of sod and topsoil (a medium brown sandy loam with considerable bioturbation) which overlies a 16 cm thick layer of imported coarse dark reddish orange sand. This imported sand was revealed to overlay a 6cm thick cultural deposit, a black greasy silty sand which contained a single piece of FBR and had been heavily truncated. The deposit was on 3cm thick

in the northern wall of the test. Quadra sand was revealed at 36cm dbs and the test was halted at 70cm dbs (Figure 22).

.

Figure 21: MT51 west wall. Scales 1m, 50cm.

Figure 22: MT57 south wall. Scales 1m, 50cm.

MT84

A 5cm thick layer of current sod and topsoil overlay a 13cm thick imported layer of medium to dark brown silty loam with occasional small pebbles was revealed which in turn capped a 7cm thick layer of imported compact medium brown sand silt. At 25cm dbs a 23cm thick cultural deposit was revealed. The archaeological layer was a black greasy silty sand with 20% crushed and 10% whole littleneck and butter clam shells. Two artifacts (broken adze - DhSb-2:15 and worked slate - DhSb-2:17) were recovered from this deposit. Quadra sand was encountered at 48cm dbs (Figure 26).

Two tests were positive for post-1846 artifacts, but negative for pre-contact remains. MT 32 and 33 contained the remains of a late 19th/early 20th century bottle dump which included a complete capped glass bottle labelled *'Listerine Lambert Pharmacal Company (Canada) Limited'*. (Figure 24).

Figure 23: MT84 north wall. Scales 1m, 20cm.

Figure 24: MT32. Historical artifacts.

MT91

The uppermost horizon consisted of sod (5cm) and imported sandy loam (15 cm). At 20 cm below surface a thick cultural deposit of black greasy silty sand transitioned to a 15cm thick cultural deposit of black greasy silty sand with 50% crushed clam shells and 5% whole littleneck and butter clams. At 43cm dbs a bone awl (DhSb-2:16 Figures 39 & 40) was recovered as well as twenty-one (n=21) pieces of FBR weighing 1 kg. Sterile sands were exposed at 50 cm below surface.

This depositional pattern continued in tests MT 92, 100 and 103 where intact shell midden material of black greasy silty sand with up to 50% crushed clam shells was revealed and it became increasingly clear, that conservation of the surviving dense and intact archaeological deposits was more important (due to the density of FBR, formed artifact recovery and proximity to intact ancestral remains found in spatial proximity on the neighbouring property (Lindsay 1992). These factors led to the conclusion this area is of high significance and further excavation and destruction of this archaeological evidence at these locations further risked finding and of course impacting ancestral human remains.

The positive tests in Area A continue into Area F and form a west to east orientated zone of archaeological remains. This would appear to indicate that archaeological site DhSb-52 is a continuation of DhSb-2 (Figure 5).

5.4 Area B

Site Stratigraphy

All tests in Area B were negative, MT72–76 revealed layers of imported material below the current sod and topsoil. Though in MT74 a remnant buried ground surface layer was revealed. The sterile basal naturally deposited sediments were observed as marine coarse sand and gravels, dark grey and light-yellow large sand grains, with fragments of naturally occurring shell. In MTs 77 and 78 Quadra marine sand was revealed below imported fine yellow sand used for the annual sandcastle competition (Figures 4 & 6).

5.5 Area C

Site Stratigraphy

All tests in Area C were negative. Tests MT59, 60, 61, 64 and 65 revealed imported sand over imported grey clay containing modern debris, which had been used for fill. Further imported fill material was observed sealing compact sterile marine sands. In MT 65 the basal deposit was observed as sterile anaerobic blue gleyed clay[2]. Tests MT58, 62, 63, 66, 67 and 69 were positioned in the grassy area around the volleyball court and towards the northern tip of the park. In these tests, a series of imported fill deposits were observed below the current sod and overlying the marine sand (Figures 4 & 6). These tests indicate a former subtidal marine environment that was substantially infilled.

MT62

A 10cm thick layer of medium brown sandy loam topsoil and sod overlay a 15cm thick layer of imported sand and grey clay. The sand and clay capped a 5cm thick layer of imported medium brown sand and gravels and this overlays an imported compact orange brown silty clay layer which was at least 25cm thick. The test was halted at 55cm dbs (Figure 25).

[2] A compact sticky clay deposit which is characteristically greyish and bluish formed in waterlogged sites as a result of the reduction of iron and manganese within the material due to poor drainage and low oxygen levels. If conditions are part oxidizing and part reducing as a result of a fluctuating water table the deposit becomes mottled with iron forming yellow-brown, yellow or reddish patches within the blue grey deposit.

MT65

MT65 was positioned within the volleyball court. A 34 cm thick matrix of imported fine yellow sand formed the surface and levelling/landscaping material of the volleyball court. Beneath this, a 6 cm thick buried sod layer revealed a former surface which overlay a 50 cm thick mixed and mottled dark anaerobic gleyed blue/grey clay. It is unclear if this deposit is *in situ* or was redistributed from elsewhere. The test was halted at 90cm dbs (Figure 26).

Figure 25: MT62 east wall. Scales 1m, 50cm.

Figure 26: MT65 east wall. Scales 1m, 50cm.

MT68

Located towards the very eastern limit of Area C, MT 68 revealed a series of marine and riverine deposits. The test was positioned in a low-lying part of the site on the western shore of a tributary within the Englishman River estuary. Below the current sod and topsoil and a layer of imported material, a 20cm thick marine sands and gravel deposit was revealed at 20cm dbs, this sealed a further layer of 20cm thick marine sand layer. At 60cm dbs organic anaerobic riverine deposited sediments were revealed. This material is indicative of slow accumulation of vegetative matter which usually forms along the edge of rivers and creeks in low-energy deposition. This was a medium brown with a reddish hue (which becomes darker with depth) silty loam with no sand content and is potentially the beginnings of the formation of peat or a degraded peat gyttja-type deposit. At 85cm dbs further marine sands were encountered and the test was abandoned at 1m due to water inundation. This test revealed the only confirmed in situ stratigraphic sequence of blue-grey marine clays showing the depositional depth to be likely Pleistocene era (Figures 27 & 28) and suggests that the blue-grey marine clay at similar depths in other tests may also be *in situ*.

Figure 27: MT68 south wall. Scales 1m, 50cm.

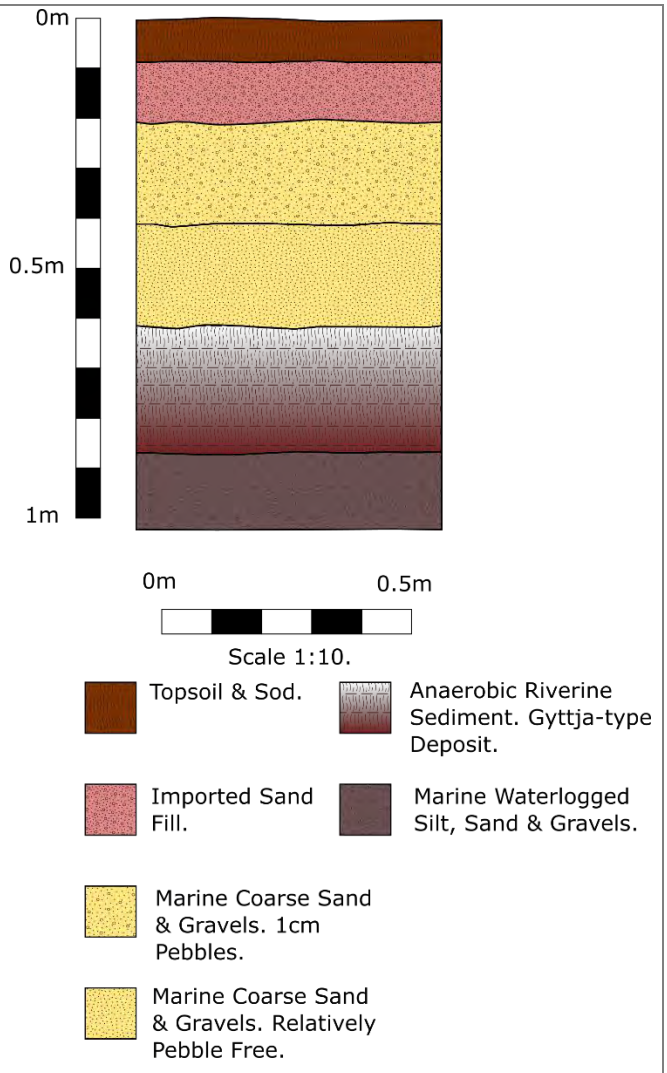

Figure 28: Profile of MT68 south wall at 1:10.

5.6 Area D

Site Stratigraphy

Three (n=3) tests (MT140, 141 and 142) were positioned in Area D, where the upper deposit consists of a compact gravel surface which continued to around 15 cm dbs. From 15 cm dbs to nearly a metre below surface, imported fill was observed as brown silts with fractured rock and boulders and modern debris interspersed with plastic and other materials.

At around 95 cm dbs. an intact undisturbed blue-grey marine clay was observed to around 115 cm dbs where the tests were halted. These tests identified that a substantial amount of fill was placed on top of deeply buried marine clays from a previous subtidal stratum. All tests here were negative for cultural materials (Figures 4 & 6).

5.7 Area E

Site Stratigraphy

Three (n=3) tests (MT79, 80 and 81) were positioned in Area E in an area of lawn to the west of the tennis courts and away from the exotic trees of the arboretum. MT79 and 80 revealed a series of imported landscaping deposits overlying Quadra sands with a remnant buried ground surface in MT79 at 70cm dbs (Figures 4 & 5).

Positive Tests

MT80

Below the current ground surface, a 10cm thick medium brown sandy loam topsoil and sod layer was a 10cm thick layer of imported fine yellow sand. This overlay a further imported layer of dark to medium grey sand and gravel with occasional large cobles (15cm thick) which in turn overlay a 27cm thick layer of imported medium reddish-brown silty sand. At 62cm dbs a 18cm thick disturbed cultural deposit of black greasy silty sand was revealed which contained three (n=3) pieces of FBR as well as an iron nail. The test was halted at 80cm dbs when Quadra sand was encountered.

5.8 Area F

Site Stratigraphy

DhSb-52 borders this area and thirty-four (n=34) tests were positioned in Area F. A treed area containing some mature Douglas-fir and western redcedar found a ground surface of sod and an area of compact gravel. An area of of asphalt could not be tested. The same imported coarse yellow sand was observed below both the sod and topsoil and the compact gravel parking lot surface as had been seen in Areas A, B, C, D, and E, and the underlying sterile naturally deposited sediments were observed as Quadra sands (Figures 4 & 5).

During the subsurface investigation of this area, Chief Michael Recalma from Qualicum First Nation visited the site and he relayed a sequence of events relating to DhSb-52 not represented in the site form records. Apparently, a Qualicum First Nation community member reported observing shell midden during a City of Parksville development project to install underground sanitary service. This led to and prompted a site visit where Chief Recalma recalled observing a large linear open trench with extensively excavated dense cultural shell midden. This discovery prompted urgent conversation with the City of Parksville, but it is unclear if the Archaeology Branch was involved, as the recollections of Chief Recalma regarding the extent of archaeological deposits and this omission in the site form for DhSb-52 is incompatible.

Positive Tests

Seven (n=10) of the thirty-four (n=34) tests in Area F were positive for cultural material which was observed as a dark greasy silty sand with varying percentages of shell from a few pieces up to 20% of whole deposit. Varying amounts of faunal remains, FBR and artifacts were recovered from these positive tests (Section 7). Throughout Area F, the positive tests showed signs of disturbance; MTs 104–109 showed evidence of disturbance from the installation of services (of which a number were identified) and the formation of the sports fields and parking lot. The positive tests within Area F are located within DhSb-52.

MT109

The upper surface is a 10cm thick layer of compact imported gravels which overlay a 20cm thick layer of imported medium coarse yellow sand; and levelling/landscaping material. At 30cm dbs a cultural deposit was revealed. It was an 8cm thick layer of black greasy silts which had been truncated by and

impacted by the creation of the parking lot and sports-field. Quadra sand was revealed at 38cm dbs and the test was halted at 50cm dbs (Figure 29).

Figure 29: MT109 east wall. Scales 1m, 50cm.

As indicated above, the archaeological deposits observed within Area F are a part of the previously known and recorded archaeological site DhSb-52. These deposits are likely to be a continuation of the archaeological deposits identified in Area A and therefore DhSb-52 and DhSb-2 are most likely part of the same site as the eastern most positive test in Area A (MT103) is only 55m from MT104 in Area F. From the tests placed around DhSb-52, the local knowledge of Chief Recalma bore out in physical evidence. It is unclear why appropriate archaeological investigations were not completed when he alerted authorities and it was unfortunate the asphalted portions of this area could not be tested during this study in an attempt to link the eastern end of the newly expanded boundary of DhSb-2 to the western boundary of DhSb-52.

5.9 Area G

Site Stratigraphy

This area contains mature Douglas-fir and western redcedar trees otherwise rare in the study area. Two (n=2) tests (MT 119 and 120) were positioned within Area G. Following the removal of the current sod layer, an imported fill deposit of yellow coarse sand was revealed capping cultural deposits (see below). The basal sterile naturally deposited sediments deposits were revealed as marine coarse sand and gravels, dark grey and light-yellow large sand grains with well sorted pebbles.

Positive Tests

MT119

The current ground surface is 20cm thick layer of sod and topsoil which overlay a 20cm thick layer of imported coarse yellow sand which was used as landscaping material. This sealed a disturbed cultural deposit which was revealed at 40cm dbs. This 20cm thick layer of black greasy silty sand contained three (n=3) pieces of FBR and was cut through by a possible service trench. Marine sands were recorded for 30cm below the base of the cultural deposit and the test was halted at 90cm dbs.

MT120

Following the removal of 18cm of current topsoil and sod and a further 16cm thick layer of imported coarse yellow sand landscaping material, two distinct cultural deposits separated by a deposit of fine yellow sand were revealed which overlay marine coarse sands and gravel (Figure 30).

The uppermost, and potentially second phase of archaeological deposition was a 10cm thick deposit of black greasy silty sand with 5% crushed shells and no whole shells revealed at 34cm dbs. It is unclear if this deposit is intact or disturbed as this then completely changes the interpretation of the archaeological deposits.

Separating this cultural deposit from the deeper and potentially earlier cultural deposit below was a natural deposition of sediments in the form of a 16cm thick layer of very light fine yellow sand. The origin of this natural deposition is unclear, it may be the result of sand dune formation, a storm force event or perhaps sea-level rise on the well-defined paleo-beach slope break.

The deepest and potentially earliest archaeological layer overlying the naturally deposited marine sand was recorded as an 8cm thick black greasy silty sand deposit with 5% crushed shells (no whole shells) and a single piece of FBR revealed at 60cm dbs.

If the upper cultural deposit is intact, then this potentially indicates two phases of occupation that were interrupted by a period of natural deposition of material. However, if the upper deposit is disturbed and redeposited, it may be originally derived from the same lower archaeological deposit from elsewhere. There have been extensive excavations in the vicinity for the installation of a septic tank and associated drainage.

Figure 30: MT120 south wall. Scales 1m, 50cm.

5.10 Area H

No tests could be positioned within Area H due to the extent of the underground services and complex field surface materials.

6 CULTURALLY MODIFIED TREES

All trees of an appropriate age (>1846) within Parksville Community Park were inspected during this study except for three (n=3) large Douglas-fir trees within the arboretum which were surrounded by

mature rhododendron that could not be assessed (Figure 32). Seven (n=7) culturally modified Douglas-fir trees were recorded, and all were located in Area A (Figures 4 & 5, Appendix 2).

Most of the cultural modification scars are from bark chipping, though some irregular bark stripping is also present. There were also some clearly historical modifications with logging cable scars and bark chipping on younger trees (these were not recorded). The type of tool mark scars, size of tree, and bark scar weathering are used as indicators of age. No trees were cored as no established methodology is known for Douglas-fir CMTs (Mathews & Dady, 2008).

The CMTs are slightly smaller in diameter in comparison to other culturally modified Douglas-firs in the vicinity (i.e. Milner Gardens and Woodland), however this smaller size is unlikely to be due to a younger age, but rather indicator of slow growth due to poor growing conditions. These Douglas-firs are situated within a nutrient poor, well-draining sand and are being strongly influenced by water availability during the late spring and summer. Spittlehouse (1996) suggested that a reduction in moisture availability in the summer could substantially reduce growth in Douglas-firs (Spittlehouse 2003).

The majority of modifications observed consist of highly weathered chipping scars for kindling removal, followed by bark slab removal, likely for the same purpose. These scars are predominately found on the 'dry' or leaning side of the tree, though in some instances they were observed on more than the just the 'dry' sides (Figures 33–38).

Two of the CMTs (CMT2 & 4) showed charred bark on the lower trunk which partially overlay the chipping scars of the modification on CMT2 and was observed above the modification on CMT4. This indicates a historic fire event following the cultural modification event. The age of this fire is unknown but is certainly prior to the establishment of the park in 1923. Large-scale forest fires from 350 years ago are documented at Cathedral Grove (Wonders 2010) that may fit with the age of tree and cultural modification events.

Figure removed from Public Copy due to sensitive resource locational information

Figure 31: View to SW of CMT 1 & 2.

Figure 32: Inaccessible Douglas-firs in the arboretum. View to N.

Figure 33: CMT1. Tool marks on the N side. Scale 20cm.

Figure 34: CMT2. Tool marks on the S side. Scale 20cm.

Figure 35: CMT3. Irregular bark stripping on the W side. Scale 20cm.

Figure 36: CMT3. Tool marks on the N side. Scale 20cm.

Figure 37: CMT4. Spray paint graffiti on N side.

Figure 38: CMT6. Tool marks on N side. Scale 20cm.

7 ARTIFACTS

Five (n=5) artifacts were recovered from this study within Parksville Community Park, this included artifacts of stone (n=3) and bone (n=2). Historic post-contact artifacts (glass and ceramics) were found in two tests (MT 32 and 33) and these were documented and then reburied within the tests.

7.1 Bone Artifacts

DhSb-2:16

DhSb-2:16 is a complete metapodial awl crafted from a longitudinally sectioned and split deer metatarsal. The awl is ground at the distal end to create the working tip, with clear grinding striations and a fine point. The artifact was found at 43cm dbs in MT 91 (Figures 39 & 40).

Figure 39: DhSb-2:16. Scale 10cm.

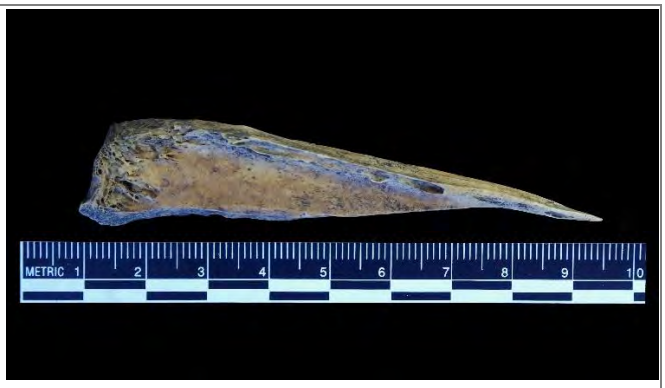

Figure 40: DhSb-2:16 Scale 10cm.

DhSb-2:19

DhSb-2:19 Is a fragment of bone with clear grinding striations, on one side. It is unclear if this a fragment from a broken tool, or a piece deliberately discarded during the manufacturing process of a tool. The artifact is broken in two pieces and was found at 30-35cm dbs in MT40 (Figure 41).

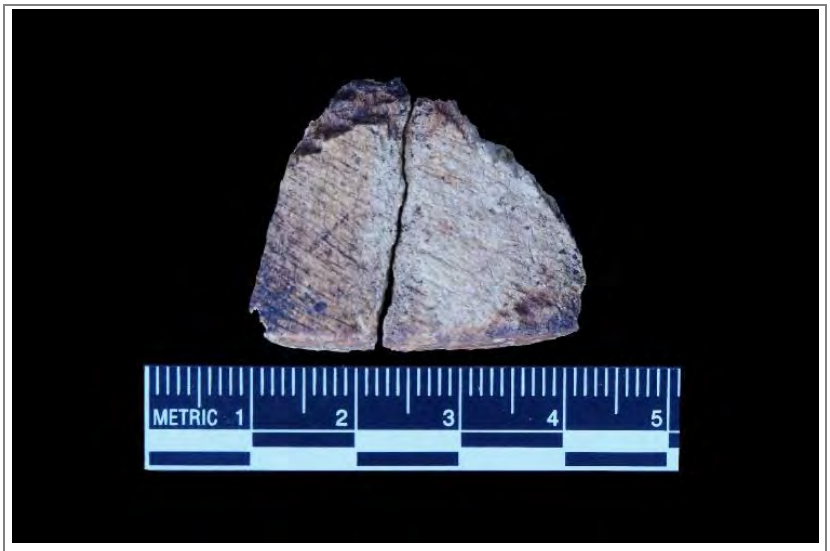

Figure 41: DhSb-2:19. Scale 5cm.

7.2 Lithic Artifacts

DhSb-2:15

DhSb-2:15 is a near complete bifacially asymmetrically bevelled adze/celt made of basalt. The longer bevelled side shows a convex profile and has had two flakes removed but there are clear grinding striations in the flaked areas (Figure 42). The shorter bevelled side is flat with clear grinding striations and the finely ground/polished blade edge has one flake removed as a result of either use wear or post-depositional damage (Figure 43). The adze was found at 38cm dbs in MT84.

Figure 42: DhSb-2:15. Scale 5cm.

Figure 43: DhSb-2:15. Scale 5cm.

DhSb-2:17

DhSb-2:17 is a thin isosceles trapezoid shaped piece of bifacially worked slate piece with incised lines and deeply scored grooves. This was ground prior, to aid in reducing this into workable pieces for the production of slate tools, such as for projectile points or knives (Figure 44). There is a deeply incised groove running approximately diagonally across the length of one surface, with earlier less deep possible 'guidelines' etched parallel to the deep groove. On the other surface and aligned with the diagonal deep groove is the beginnings of an incised groove to aid in the process of breaking it. On the lower side of artifact there is clear indication of the removal of a piece of slate, as there are remnant scoring marks, and the remains of a deep groove at the point at which the piece has been snapped. A second deep groove is located running width wise across the piece (right-hand side of the artifact in Figure 44), where a section of slate has been removed from this scoring and snapping technique. It would appear that at least two preforms were crafted from this piece of slate prior to it being deposited. This was found at 30-40cm dbs in MT84.

Figure 44: DhSb-2:17. Scale 5cm.

DhSb-2:18

DhSb-2:18 Is a fragment of a sandstone abrader, one side shows a very slight depression and grooves from use and is discoloured from heat alteration. The artifact is recorded as 36.84mm long, 34.7mm wide and 23.26mm thick and weighs 59.5g and was found at 30cm dbs in MT 41 (Figure 45).

Figure 45: DhSb-2:18. Scale 5cm.

8 FIRE BROKEN ROCK (FBR)

A total of 110 pieces of FBR weighing under 6.25kg were recovered from 18 tests (Table 5) within the Park. FBR is intrinsically linked with human activity, from its use to line hearths or ovens or used as pot boilers to heat water and food.

Table 4: Fire Broken Rock

Test #	FBR Count	FBR Weight (KG)
MT25	1	<0.10
MT34	2	<0.10
MT38	4	<0.50
MT41	1	<0.10
MT42	11	1.25
MT43	6	<0.50
MT44	9	1
MT51	6	<0.50
MT57	1	<0.10
MT80	3	<0.50

MT85	8	<1
MT86	10	1.5
MT91	21	1
MT98	2	<0.10
MT100	18	1.5
MT104	3	<0.25
MT119	3	<0.25
MT120	1	<0.10
Total	110	<6.25

9 FAUNAL REMAINS

A total of 45 animal bones and bone fragments were recovered during this study. Comprised of largely deer remains, these findings are consistent with archaeological fauna found in the Parksville and Qualicum area.

Like today, deer are ubiquitous to the area in the past and have been found in archaeological sites to the west in Qualicum (Bernick & Wigen 1990) and to the east in San Pareil (Kristensen et al. 2009, Kristensen 2012; Parsley & Thompson 2020). Despite the proximity of DhSb-2 to shore, there is a lack of marine fauna, and this is a trend seen in the local region where the emphasis is on land mammal procurement, rather than a reliance on sea mammals or fish (Willows & Wigen 2011). Northwest coast dogs are commonly found in coastal assemblages but are lacking in this one. This is likely due to the small number of bones recovered, rather than a lack of dogs at the site, as one deer innominate exhibits canid gnawing, with bite marks consistent with dog size tooth punctures.

All sizes of land fauna, from small to large were recovered but not all identifiable owing to the fragmented nature of primarily undiagnostic long bone shaft fragments. Modifications are visible on two deer bones, a scapula fragment is burned black, and a metatarsal is longitudinally split. This splitting could have intended to be for preparation for artifact manufacture where bones are used in the construction of a variety of bone points and more, or to expose the marrow cavity for nutrition extraction. There is no chop mark associated with the split, however, similarly split bones with additional butchery evidence have been found nearby (Parsley & Thompson 2020).

The assemblage is minimally disturbed, with the only historic fauna recovered a butchered pig scapula which may date to the settlement of Nelson Parks or perhaps Joe Hirst. Though of course it could be later.

Table 5: Number of identified and unidentified taxa recovered.

DhSb-2 Fauna		Quantity
Deer	*Odocoileus hemionus sp.*	13
Deer/Sheep	*Artiodactyla*	1
Pig	*Sus scrofa domesticus*	1
unidentified mammal	*Mammalia*	30
Total		**45**

10 CHRONOLOGY

A charcoal sample from MT41 at 50 cm dbs was collected. This returned a conventional date of 940 +/- 30 and a calibrated age range of 925–790 cal BP within 95.4% probability making the mean age 857 cal BP years (Appendix 5). This date indicates these deposits are from the Late Period or the Developed Coast Salish Period which ranges from 1800 years ago to Contact.

11 DISCUSSION

11.1 Subsurface

This study identified the presence of archaeological remains within the study area and substantially expands upon and enhances the understanding of this region. The work was able to detect an E-W oriented concentration of archaeological deposits which extend from known archaeological site DhSb-2 towards DhSb-52 in an almost continuous 325 m area, through areas A, E, F H, and G (Figures 4 & 5). Unfortunately, a 108m portion of asphalt covered parking lot could not be tested though it is very likely, and almost certain that the two areas identified as positive for archaeological remains (Areas A, F and H) are physically connected.

The anthropogenically altered cultural deposits include both dense concentrations of shell midden material as well as culturally altered fine black sand, the result of particles leaching from a charcoal rich deposit above through the process of percolating precipitation. The intact shell midden deposits varied in thickness from just 3cm thick (in MT3) to 58cm thick (in MT42), and such dense concentrations of shell midden material indicate potentially substantial and continuous occupation of the area over a considerable period of time by the repeated depositions of similar material (charcoal and organically rich sands and processed shellfish) resulting in thick homogenous archaeological deposits.

The archaeological deposits indicate occupation of the middle of three present terraces, the upper being the terrace on which the Island Highway (19A) is situated and the lower leading to foreshore of Parksville Bay. However, this study has shown the current shoreline is not the original shoreline. Much of this area shows extensive filling, and levelling as identified in tests placed in areas C and D where substantial infilling has expanded the land surface and buried marine and deltaic intertidal areas. The original shoreline is observable in a 1932 air photo available from the National Air Photo Library (Figure 46).

This air photo indicates the old Island Highway, the Alberni Highway and shows the treeline along the shore is substantially southward of the current shore. The treeline is the reference point for the transition to a stable terrestrial environment.

The newly identified portions of archaeological site DhSb-2 in the Parksville Community Park conforms nearly perfectly to the original shoreline marking the transition from intertidal to terrestrial environments.

Further geomorphological work should be conducted in the future to identify the relationship between the precontact riverine and marine transitions to model potential for intertidal features; however, it is unlikely intertidal weirs or traps would have extended into the current study area which is more than a kilometre distanced from the active delta. Further, any such features would be unlikely to survive the historic impacts from infilling and would be all but obliterated rendering the potential for encountering any such evidence to be low to nil.

The former and original intertidal area immediately north of the treeline could not be tested due to the onsite constraints.

At approximately 100m from the original shoreline a series of tests were excavated (MTs 58, 62, 63, 73, 74, 75, 76) and these were all negative. All tests north of the original shoreline were negative and revealed glacial clay marine deposits indicative of deep-sea floor environments (Fedje et al 2018, Hutchinson et al 2004, Mackie et al 2018) capped by imported fill material. The northern most test (MT69) was positioned over 500m from the original shoreline and revealed imported materials overlying sterile marine sands.

Area C was revealed as an infilled area of subtidal marine environment, an area which would not have been suitable for intertidal features.

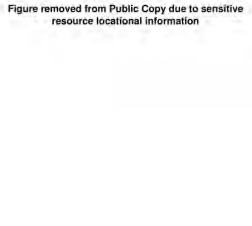

Figure 46. 1932 air photo of Parksville[3].

Further, the historic impacts to DhSb-2 have destroyed a lot of the archaeological evidence from ancient occupations but the small artifact assemblage contains a basalt adze, an instrumental tool in the 'triad' of woodworking implements that include adze, wedge, and hammer. This artifact shows that woodworking was occurring at this site, and these artifacts are often recovered from occupational sites where woodworking would have been an important activity associated with construction of housing, canoes, and all manner of everyday and ceremonial items.

The timing of this occupation relates to almost 1000 years ago, a period of time where large settlements within the Coast Salish region were densely distributed across the shores of eastern Vancouver Island and particularly larger settlements expected near larger river systems such as *Kewxemolh*, the placename meaning 'steelhead' for the Englishman River that Suttles recorded from a Nanoose informant (cited in Rozen, 1985). The archaeological knowledge of the Parksville region has been very sparse, with cultural histories all but nearly omitting indigenous presences, but current studies on the east bank of the Englishman River (Parsley and Thompson, 2020) along with this one, we are beginning to identify that in fact, *Kewxemolh* was a core area of ancient occupation during precontact times, and this represents the oldest archaeological date in the Parksville region for occupation along the river. This study and those recently completed to the east, show that when linked within a landscape perspective, connect these ancient spaces together along a spatial and chronological continuum which

[3] Due to Covid-19, the National Air Photo Library is closed. This photo (thumbnail version shown) is on order and copyright permission is pending.

is more useful for understanding past landforms and how people occupied them, rather than viewing development specific archaeological studies in isolation.

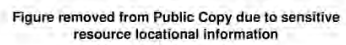

Figure 47. Georeferenced 1932 air photo.

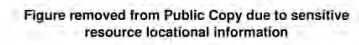

Figure 48. Original shoreline and historically filled areas.

11.2 Culturally Modified Trees

The Douglas-fir CMTs within Parkville Community Park are clearly associated with the subsurface archaeological deposits of the newly identified portions of DhSb-2 and co-occur with the former original shoreline. This pattern of Douglas-fir CMT spatial association within other archaeological evidence such as shell midden found at other archaeological sites such as Milner Gardens (Parsley, 2019); and burial cairns near Ladysmith (Parsley, 2008); and around Victoria in the south of Vancouver Island (specific location removed) (Mathews, 2014) and is the most common context in which these CMTs are found. The Douglas-fir CMTs located within DhSb-2 at Parksville Bay are considered to be from the pre-Contact period as these modifications exhibit the typical very weathered toolmarks on mature Douglas-firs found at other sites however, the diameter of trees at Parksville Bay are slightly smaller. It is assumed, the ground conditions at Parksville Bay are poor, consisting of fast draining marine sand, a type of sediment challenging for the delivery of needed nutrients and water for tree growth is thought to be the cause of the smaller diameters.

Mathews and Dady (2008) have studied the use of Douglas-fir within the Pacific Northwest and have shown that perhaps due to its utilitarian use as a fuel that it is often overlooked. It is clear however that that this fuel was not just used for domestic activities but that it was also likely used in funerary ceremonies from the identification of Douglas-fir bark within the burnt mounds at Scowlitz (DhRl-16) [as communicated to Mathews and Dady by Dana Lepofsky].

Mathew and Dady also state that "*Douglas fir is perhaps the most abundant tree species in the Coast Salish Territory. Everywhere the bark is considered to be a top-quality fuel because it burned with a hot smokeless flame"* (Turner and Bell 1973:71). Indeed, *"all coastal groups within the range of the tree*

considered Douglas-fir wood and bark to be an excellent fuel" (Turner 1998:96). For example, this has been reported among the Clallam (Fleisher 1980:195), Nitinaht (Turner, et al. 1983:73) and Nuu-Chah-Nulth (Drucker 1951:107) and the Hesquiat people used pitch, heavy limbs and bark for excellent fuel (Turner and Efrat 1982) (Mathew & Dady 2008).

The CMTs at Parksville Community Park were identified according to the bark-stripping and kindling-removal scar attributes outlined by Dady and Mathews (2008). These scars have identifiable and predictable scar patterns and can be differentiated from natural injury scars:

"When humans strip bark from a living Douglas-fir tree, the outer bark comes off and appears to leave the cambium and a layer of smooth inner bark on the scar face. The tree continues to grow and the inner bark layer, now the smooth outer layer of the stripping scar, develops characteristic narrow vertical fissures. These resemble the stretch marks on human skin. As the tree grows, the new bark fissures stretch or spread apart, creating "ribbons". As the cells grow behind the thin fissured layer and push it outwards. The tree grows further and as those strips weather, they can eventually fall off" (2008:10). Age of the tree, degree of weathering and morphology of the toolmarks are all the variables used to estimate whether a modified Douglas-fir pre-dates 1846.

As it is accepted that it is difficult to date CMTs given the cultural scars are on the bark which does not produce annual growth rings, the diameter at breast height (DBH) of a tree has been used to provide an approximate age range for the trees, however when growing conditions are not favourable, trees that are shorter and with a narrower diameter can be misinterpreted as being of a younger age, and thus any modifications could be viewed as historic as opposed to pre-contact in origin. The approximate age of a Douglas-fir = DBH x Growth Factor (which is 5 for Douglas-fir) see Table 7 below.

Table 6: CMT Approximate Age Range

CMT	DBH (cm)	DBH (inches)	Approximate Tree Age [4]	10% DBH (inches) increase[5]	10% DBH age increase	30% DBH (inches) increase[6]	30% DBH age increase	Mean Age (measured, 10% & 30% increase)	Approximate date range
CMT 1	75	29.5	147	32.45	162.25	38.35	191.75	167	AD 1829–1873
CMT 2	115	45.2	226	49.72	248.6	58.76	293.8	256	AD 1727–1794
CMT 3	115	45.2	226	49.72	248.6	58.76	293.8	256	AD 1727–1794
CMT 4	104	41	205	45.1	225.5	53.3	266.5	232	AD 1754–1815
CMT 5	125	49	245	53.9	269.5	63.7	318.5	277	AD 1702–1775
CMT 6	100	39	195	42.9	214.5	50.7	253.5	221	AD 1767–1825
CMT 7	85	33.4	167	36.74	183.7	43.42	217	187	AD 1803–1853

[4] Approximate Tree Age = DBH (inches) x 5 (the Growth Factor for Douglas-fir). See https://intownhawk.com/estimate-tree-age/; and supported by Poage and Tappeiner, 2002.

[5] Spittlehouse 2003:673

[6] Spittlehouse 2003:673

The effect of water availability and Douglas-fir growth has been studied by analyzing the relationship between available water and Douglas-fir yield from field measurements and the Ministry of Forests timber production and recovery analysis system (Spittlehouse 2003) and from this work is clear that "*a change in water availability through a 10 % reduction in rainfall or a 6% increase in potential evaporation over the life of the stand could result in a reduction in stand volume by up to 80 m3 ha-l at harvest, 10 to 30 % of current merchantable volume"*. (Spittlehouse 2003:673) This work is looking at stands of trees for harvesting and not individual trees however the results are the same. Well-draining sediments such as sand, that don't hold water well within the root zone, and nutrient poor sediments such as sand reduce the growth rate of Douglas-fir.

The author was fortunate to receive training by Pete Dady (an authority on Douglas-fir CMTs) on the identification of Douglas-fir CMTs during an AIA near Ladysmith (Parsley, 2008). A total of 42 culturally modified Douglas-fir trees were recorded These trees had similar unfavourable growing conditions of alluvial sand, silt and gravel and were recorded as having a DBH which ranged from 45cm – 120cm (with an average of 102cm) however if one trims the two largest diameter trees with 120cm DBH which skews the average, then the average DBH is 87cm. This clearly demonstrates the CMTs at Parksville Bay are within an established range of DBH for pre-contact CMTs.

Studies in an area of southern Vancouver Island identified 34 sites with a Douglas fir CMT totalling 317 Douglas fir CMTs (Mathews 2004). At one particular site, twenty Douglas fir CMTs were recorded with a total of 31 anthropogenic features and a mean diameter of 135 cm. At Parksville Community Park the modified trees have a DBH range of 75cm –125cm and an average DBH of 103cm.

Although the site in southern Vancouver Island (specific location removed) is within a tree stand with a mean age dating between AD 1505-1570, the oldest trees may be approximately a thousand years old.

The tool marks observed on the CMTs within at Parksville Community Park have been made with a tool of indeterminate material and as indicated by Mathews and Dady (2008: 14) "*Given the distinctiveness of metal tool marks……it is expected that they would be more recognizable and better preserved than bone, antler and stone tool marks, which are presumably older and leave a less-clean cut, typified by a rough surface with a mass of splinters (Archaeology Branch 2001). As such, some or most Douglas fir CMTs with no definite metal tool marks may pre-date European contact".*

11.3 Site Significance Evaluation

The significance of sites was evaluated using the Checklist of Criteria for Pre-Contact Site Evaluation (Appendix D) and Checklist of Criteria for Post-Contact Site Evaluation (Appendix E) from the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).

The site is evaluated according to the specified criteria:

- Scientific
- Public
- Ethnic
- Economic

Since the initial recording of DhSb-2 in 1975 (Murton and Foster 1975) there have been few permitted investigations into the site, though the presence of shell midden, mortuary features and a nephrite adze have been recorded. (see Section 4.7)

This study has increased our understanding of not only DhSb-2 and identified deposits covering an area over 22,000 square metres, but also of the geophysical landscape. This new portion of DhSb-2 contains intact and stratified deposits of substantial depth and up to 58cm thick in some areas (Figure 49) and is therefore a more significant and site than previously known. This work identified valuable information about an extensive ancient nearly 1000-year-old occupation in the core urban space and heart of the City of Parksville on a now much altered ancient landform. This occupation was sustained over a considerable period of time as evidenced from the repeated depositions of similar material (charcoal and organically rich sands and processed shellfish) resulting in thick homogenous archaeological deposits and the anthropogenically altered black sand below.

A number of specific artifacts were recovered which are indicative of a specific socio-economic activity i.e. wood-working and with the associated CMT evidence, there is a clear indication of the utilization of natural resources, likely associated with settlement activity and the mortuary features located ~20 m west on the neighbouring property increases the significance of this site and the potential for additional associated funerary activity to be identified in the future.

Though the upper portions of the site have suffered truncation and some damage, the underlying surviving portions are intact and have the potential to enhance our understanding of the local and regional archaeological landscape, which survives within a now heavily developed urban landscape.

Therefore, the scientific significance for portions of this archaeological site (Figure 49 annotation 1) can be viewed as **high.**

The areas not observable during this study but now identified on the original landform and in the vicinity of DhSb-2 should be considered **moderate** until such time these locations may be tested and significance ascertained (Figure 49 annotation 2).

All areas north of the newly identified DhSb-2 boundary, what was the original shoreline are in-filled and considered to be of **low** significance. The northern most areas of the park are former deep marine environments and unsuitable for intertidal features, hence the low significance rating (Figure 49 annotation 3).

The ethnic significance of the site may be referred to Snaw Naw As and Qualicum First Nations for their evaluation**.**

The location of the site within the extremely popular and busy Parksville Community Park increases the public significance of the site and with appropriate guidance, potential opportunities exist to provide public interpretation and education about the ancient activities of the Snaw-Naw-As, Qualicum, and K'omoks, First Nations on whose asserted traditional territory the Parksville Community Park is situated and therefore the public significance of the site can be viewed as **high**.

The economic significance can also be viewed as **low**.

11.4 Impact Identification and Assessment

The potential for impacts to the sites was examined using the Indicators for Assessing Impacts on Archaeological Sites (Appendix F), in the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998) and the Ministry of Forests' Memorandum of Agreement on Trails (1995).

The impacts affecting a site are assessed according to the specified criteria:

- Magnitude
- Severity
- Duration
- Range
- Frequency
- Diversity
- Cumulative Effect
- Rate of Change

The impacts to the site have been infrastructure related within the Parksville Community Park; the roads, drainage, parking lots, buildings, landscaping and levelling, playing fields and playgrounds that have destroyed substantive amounts of this archaeological site and had a detrimental effect on any surviving underlying archaeological remains. However, on the other hand, the formation of the park has allowed for the preservation of the underlying archaeological remains by preventing extensive building development. The in-filling of the former shoreline represents nearly two-thirds of the entire Park and given the total historic impact of this area, it is the region within the park where future developments can be situated without having any archaeological impacts.

The southernmost third of the Community Park, however, contains a mix of disturbed and intact archaeological remains of significance.

12 RECOMMENDATIONS

Area of Significance 1 – Red Areas on Figure 49:

- Avoidance to this portion of DhSb-2 is the priority recommendation.
- If impacts to this portion of the site are unavoidable and there are no alternatives, a section 12.4 HCA Alteration Permit is required to minimize impacts and if necessary, record and collect archaeological data. (Figure 49 annotation 1)

Area of Significance 2 – Blue Areas on Figure 49:

- Avoidance to this portion of DhSb-2 is the priority recommendation.
- If avoidance is not achievable, and because these areas were not testable during this study, further subsurface testing should take place in advance of any proposed impacts.
- If further testing reveals additional archaeological evidence and impacts to the portion of the park are unavoidable, then a section 12.4 HCA Alteration Permit is required to minimize impacts and if necessary, record and collect archaeological data. (Figure 49 annotation 1)
- For areas of moderate potential, those areas that could not be tested (Figure 49 annotation 2), additional assessment under an HCA Assessment Permit is recommended prior to development, any subsequent discoveries would require archaeological monitoring under an HCA Alteration Permit is required to minimize impacts and if necessary, record and collect archaeological data.

Area of Significance 3 Green Areas on Figure 49:

- No further archaeological work is required in these areas.
- Follow the Chance Find Procedure (Parsley, 2019).

Avoidance may be achieved by focusing future development activities in the green areas, i.e. the northern two-thirds of the park in the area of low potential (Figure 49 annotation 3), however a Chance Finds Plan is recommended in the unlikely event that site remains are encountered.

13 CONCLUSIONS

The boundaries of DhSb-2 have been expanded by five discontinuous polygons.

- The largest section, a newly identified continuation of the former DhSb-2 site measures 155 m E/W and 139 m N/S in Area A.
- In Areas E a small 10 m diameter polygon in Area E centred on positive test MT80.
- In Area F a polygon measuring 76 m E/W x 22.4 m N/S that includes former site DhSb-52. Consequently, it is proposed that DhSb-2 and DhSb-52 be amalgamated under the single Borden designation DhSb-2, and DhSb-52 is recommended to become a legacy site.
- In Area F (SE corner) a 10 m diameter polygon centred on positive test MT125.
- in Area G a 23.4 m NE/SW x 10 m SE/NW polygon centred on positive tests MTs 119 & 120.

No sampling program can be assumed to have found all archaeological remains. If in the event archaeological material is unexpectedly encountered, work in the vicinity should stop and the Archaeology Branch and respective First Nation communities should be contacted immediately.

Figure removed from Public Copy due to sensitive resource locational information

Figure 49. New DhSb-2 archaeological site boundaries.

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Appendix 1: Subsurface Test Log

Test #	Area	Depth Below Surface dbs (cm)	Cultural	Intact	Matrix Description
MT1	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–30	N	N	Imported sand. Laminates of light and medium yellow brown coarse sand. Imported material which has been used to level and landscape the south western corner of the Community Park.
		30–36	N	N	Buried ground surface. Very dark brown organic sandy loam. Heavily bioturbated.
		36–86	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand. Patches of dark silty sand (decayed roots) evident, as are lenses of coarse sandy and gravel. Test halted at 86cm dbs.
MT2	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–18	N	N	Imported sand. Laminates of light and medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		18–36	**Y**	**Y**	**Cultural deposit of medium dark brown grey coarse sand with occasional rounded and sub rounded pebbles <3cm. At 25–30 cm dbs four small fragments of shell observed. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit.**
		36–87	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 87cm dbs.
MT3	A	0–8	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		8–18	N	N	Imported sand. Laminates of light and medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		18+	N	N	At 18cm dbs a compact deposit of medium grey gravel was encountered that is potentially the backfill within a service trench. Test abandoned at 18cm dbs.
MT4	**A**	0–12	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		12–25	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		25–36	**Y**	**Y**	**Cultural deposit of dark grey brown black silty sand with occasional lenses of fine yellow sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit.**

		36–100	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 100cm dbs.
MT5	**A**	0–8	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		8–20	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		20–34	**Y**	**Y**	**Cultural deposit of dark grey brown black silty sand with occasional lenses of fine yellow sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit but is otherwise intact.**
		34–100	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 100cm dbs.
MT6	**A**	0–16	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		16–30	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		30–38	**Y**	**Y**	**Cultural deposit of dark grey brown black silty sand with occasional lenses of fine yellow sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit but is otherwise intact. This deposit is thinner than in MT5.**
		38–100	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 100cm dbs.
MT7	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–25	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		25–37	N	N	Disturbed buried ground surface. Dark grey brown black silty sand with laminates of fine yellow sand. The upper portion of the buried surface has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit.
		37–100	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 100cm dbs.
MT8	**A**	0–16	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		16–26	N	N	Medium brown fine sandy loam.
		26–36	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		36–43	N	N	Imported light to medium yellow fine sand.

		43–50	**Y**	**Y**	**Anthropogenically altered black fine sand. High charcoal content and the result of particles leaching from a cultural deposit above (now removed) through the process of percolating precipitation. This creates a diffuse horizon/interface with the underlying sterile Quadra sand below.**
		50–100	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 100cm dbs.
MT9	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel and clear rooting in the wall face. Test halted at 80cm dbs.
MT10	A	0–18	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		18–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel and clear rooting in the wall face. Test halted at 80cm dbs.
MT11	A	0–24	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		24–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Evidence of root burn at 70cm dbs. Test halted at 80cm dbs.
MT12	A	0–22	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		22–90	N	N	Quadra sand. Disturbed, heavily bioturbated laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 90cm dbs.
MT13	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–18	N	N	Mixed and mottled medium brown and light yellow bioturbated sand. This is likely to be imported.
		18–26	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the mixed and mottled medium brown and light yellow bioturbated sand above.
		26–100	N	N	Quadra sand. Some bioturbation observed of laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 90cm dbs.
MT14	A	0–18	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		18–90	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. Test halted at 90cm dbs.
MT15	**A**	0–16	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		16–23	N	N	Medium brown fine sandy loam.

		23–27	**Y**	**Y**	**Cultural deposit of black greasy silty sand. No shell or FBR observed. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. This has resulted in a thin truncated deposit that is otherwise intact.**
		27–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT16	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–20	N	N	Medium brown fine sandy loam.
		20–55	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 55cm dbs.
MT17	A	0–14	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		14–24	N	N	Medium brown fine sandy loam.
		24–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 55cm dbs.
MT18	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–20	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		20–34	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the mixed and mottled medium brown and light yellow bioturbated sand above. Evidence of root burning.
		34–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT19	A	0–14	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		14–22	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		22–36	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the mixed and mottled medium brown and light yellow bioturbated sand above.
		36–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT20	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.

		15–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT21	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT22	A	0–14	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		14–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT23	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT24	A	0–16	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		16–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT25	**A**	0–12	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		12–24	N	N	Medium brown fine sandy loam.
		24–27	**Y**	**Y**	**Cultural deposit of black greasy silty sand. Very small shell fragments observed and a single (n=1) piece of FBR. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. This has resulted in a thin truncated deposit that is otherwise intact.**
		27–35	**Y**	**Y**	**Anthropogenically altered black fine sand. High charcoal content and the result of particles leaching from a cultural deposit above (now removed) through the process of percolating precipitation. This creates a diffuse horizon/interface with the underlying sterile Quadra sand below.**
		35–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT26	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.

MT27	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–27	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		27–45	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above.
		45–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT28	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT29	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–27	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		27–45	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above.
		45–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT30	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–27	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		27–45	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above.
		45–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT31	A	0–16	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		16–80	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 80cm dbs.
MT32	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.

		15–63	N	N	Historic deposit. Bottle dump with numerous broken bottles and sherds of industrial whiteware (transfer printed) ceramics. Two complete glass vessels were recovered, one an undecorated cylindrical glass jar while the second was a "Listerine" complete with plastic screw cap and embossed with *'Listerine Lambert Pharmacal Company (Canada) Limited'*. Test halted at 63cm dbs.
MT33	A	0–18	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		18–29	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		29–37	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above. Contains historic/modern debris - broken bottle glass and iron nails.
		37–75	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 75cm dbs.
MT34	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–18	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		18–30	**Y**	N	**Disturbed cultural deposit. Black greasy silty sand. Very small shell fragments observed and two (n=2) pieces of FBR as well is historic debris - broken bottle glass, and plaster with paint on it. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit.**
		30–60	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 60cm dbs.
MT35	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–60	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The sand is slightly darker in the upper portion (15–30cm dbs) which is perhaps indicative of a cultural deposit having been present above the sterile sand but now removed. The darker colour may be the result of percolating precipitation, particles leaching down from above to create an anthropogenically altered sand. Test halted at 60cm dbs.
MT36	A	0–18	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		18–25	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above.

		25–54	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 75cm dbs.
MT37	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		15–60	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 60cm dbs.
MT38	**A**	0–4	N	N	Compact gravel surface of road within Park works compound. Occasional small crushed shell fragments observed within medium grey gravel.
		4–40	**Y**	**Y**	**Anthropogenically altered black fine sand. High charcoal content and the result of particles leaching from a cultural deposit above (now removed) through the process of percolating precipitation. This creates a diffuse horizon/interface with the underlying sterile Quadra sand below. This deposit contained 4 (n=4) pieces of FBR from 10–20cm dbs.**
		40–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 60cm dbs.
MT39	**A**	0–18	N	N	Compact gravel surface of road within Park works compound. Occasional small crushed shell fragments observed within medium grey gravel.
		18–36	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated deposit but intact.**
		36–48	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 48cm dbs.
MT40	**A**	0–10	N	N	Compact gravel surface of road within Park works compound. Occasional small crushed shell fragments observed within medium grey gravel.
		10–20	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape the south western corner of the Community Park and forms the base layer to this works access road.
		20–30			Imported dark reddish-brown silty sand.
		30–54	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated deposit but intact. A single bone artifact (DhSb-2:19) was recovered from this deposit.**

		54–65	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 48cm dbs.
MT41	**A**	0–10	N	N	Compact gravel surface of road within Park works compound. Occasional small crushed shell fragments observed within medium grey gravel.
		10–24	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape and forms the base layer to this works access road.
		24–43	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated deposit but intact. six (n=6) pieces of FBR (0.5kg) recovered from this deposit.**
		43–50	**Y**	**Y**	**An irregular amorphous shaped area recorded as approximately 1.20m long by 1m wide by 7cm deep with irregular concave sides and a concave base was found cutting into the underlying sterile Quadra sand. This amorphous area was interpreted as a tree throw hole. It was filled with a dark grey silty sand which was identical to the overlying cultural deposit and so it is unclear from what height the tree throw hole was cut. At the base of the feature (50cm dbs) was a single artifact (DhSb-2:18), a single shell fragment and three (n=3) pieces of FBR. A sample of charcoal was also recovered from the base of the feature (50cm dbs) for radiocarbon dating. This returned a conventional date of 940 +/- 30 and a calibrated age range of 925–790 cal BP within 95.4% probability making the mean age 857 cal BP years.**
		43–55	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 55cm dbs.
MT42	**A**	0–12	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		12–70	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated deposit but intact. Fauna was recovered from 50–60cm dbs. Numerous pieces of FBR recovered from this deposit. One (n=1) from 12–20cm dbs, three (n=3) from 20–30cm dbs, one (n-1) from 30–40cm dbs, four (n=4) from 40–50cm dbs, two (n=2) from 50–60cm dbs.**
		70–77	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 77cm dbs.
MT43	**A**	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.

		15–60	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated deposit but intact. Two (n=2) pieces of FBR from 15–20cm dbs, four (n=4) from 20–30cm dbs.**
		60–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 70cm dbs.
MT44	**A**	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–21	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		21–30	**Y**	N	**Disturbed and reworked cultural deposit. Black greasy silty sand mixed with medium brown sand and fine yellow sand. This deposit has been truncated and disturbed by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit. Truncated and disturbed deposit. This deposit contains fragments of clam shell and historical broken bottle glass sherds.**
		30–50	**Y**	N	**Disturbed cultural of medium brown grey with occasional black lenses of greasy silty sand. Six (n=6 pieces of FBR from 30–40cm dbs, three (n=3) pieces of FBR from 30–40cm dbs.**
		50–74	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 74cm dbs.
MT45	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–16	N	N	Imported sand. Coarse medium yellow brown coarse sand. Imported material which has been used to level and landscape.
		16–30	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and the upper portion has been stripped/removed prior to the laying down of the imported sand above. Test halted at 30cm dbs following the identification of black plastic irrigation pipe
MT46	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–18	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated.
		18–50	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 50cm dbs.
MT47	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–40	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and root matt at the horizon with the underlying sterile sand.

		40–50	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 50cm dbs.
MT48	A	0–6	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		6–14	N	N	Imported sand. Coarse medium yellow brown coarse sand.
		14–23	N	N	Buried ground surface. Medium brown organic sandy loam. Heavily bioturbated and root matt at the horizon with the underlying sterile sand.
		23–50	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 50cm dbs.
MT49	**A**	0–11	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		11–16	N	N	Imported sand. Coarse medium yellow brown sand.
		16–26	**Y**	**Y**	**Cultural deposit of black greasy silty sand. The upper portion of the cultural deposit has been truncated by activity within the Park as indicated by the sharp interface/horizon between it and the overlying imported sand deposit.**
		26–50	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 50cm dbs.
MT50	A	0–14	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		14–34	N	N	Imported sand. Coarse medium yellow brown coarse sand.
		34–45	N	N	Compact grey gravel which appears to be covering above a possible service. Test abandoned at 45cm dbs.
MT51	**A**	0–12	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		12–22	N	N	Imported sand. Coarse medium yellow brown coarse sand with laminates of light grey sand.
		22–35	N	N	Very light fine yellow sand, unclear if this is a natural deposition (sand dune, storm force event) or a redeposited material, it however seals cultural material.
		35–50	**Y**	**Y**	**Cultural deposit of black greasy silty sand which contains six (n=6) pieces of FBR.**
		50–60	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 60cm dbs.
MT52	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		13–40	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 40cm dbs.
MT53	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.

		15–25	N	N	Light grey sand. An old tree stump was encountered, and the test was abandoned at 25cm dbs.
MT54	A	0–9	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		9–15	N	N	Imported sand. Coarse medium yellow brown coarse clay sand.
		15–28	N	N	Buried ground surface. Dark brown organic sandy loam. Heavily bioturbated and root matt at the horizon with the underlying sterile sand.
		28–60	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 60cm dbs.
MT55	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–20	N	N	Very fine light grey sand.
		20–74	N	N	Imported sand. Coarse dark reddish (orange) brown sand and gravel (as seen in MT56).
		74–90	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 90cm dbs.
MT56	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–15	N	N	Imported mottled laminates of medium and light-yellow sand.
		15–19	N	N	Imported sand. Coarse dark reddish (orange) brown sand and gravel (as seen in MT55).
		19–32	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		32–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 70cm dbs.
MT57	**A**	0–14	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		14–30	N	N	Imported sand. Coarse dark reddish (orange) brown sand and gravel (as seen in MT55).
		30–36	**Y**	**Y**	**Cultural deposit of black greasy silty sand which contains one (n=1) piece of FBR. This stratum thins from 6cm in the southern wall to just 3cm thick in the northern wall of MT57.**
		36–70	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The upper portion of this deposit is slightly darker indicative of the leaching of particles from above. Test halted at 70cm dbs.
MT58	C	0–4	N	N	Thin layer of sod with virtually no topsoil.
		4–28	N	N	Light grey sand with occasional pebble which contains blocks of broken concrete and asphalt. Imported materials.

		28–42	N	N	Compact mottled medium brown and light-yellow brown sand and gravels which was potentially filling a service trench. Test halted at 42cm dbs.
MT59	C	0–50	N	N	Imported fine yellow sand which forms the surface and base/levelling/landscaping layer of the volley-ball court.
		50–80	N	N	Imported grey clay containing modern debris - plastic pen top, bottle cap etc. Landscaping/levelling material for the volley-ball court.
		80–100	N	N	Compact sterile coarse mottled marine sands. Dark grey and light yellow large grained sand. Test halted at 1m.
MT60	C	0–55	N	N	Imported fine yellow sand which forms the surface and landscaping/levelling materiel of the volley-ball court.
		55–60	N	N	Imported grey clay. Landscaping/levelling material for the volley-ball court.
		60–100	N	N	Compact sterile coarse mottled marine sands. Test halted at 1m.
MT61	C	0–60	N	N	Imported fine yellow sand which forms the surface and landscaping/levelling material of the volley-ball court.
		60–70	N	N	Imported grey clay. Landscaping/levelling material for the volley-ball court.
		70–100	N	N	Compact sterile coarse mottled marine sands. Test halted at 1m.
MT62	C	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–25	N	N	Imported sand and clay deposit.
		25–30	N	N	Imported medium brown sand with occasional gravels.
		30–55	N	N	Imported compact orange brown silty clay. Test halted at 55cm dbs.
MT63	C	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–25	N	N	Imported sand and clay deposit.
		25–30	N	N	Imported medium brown sand with occasional gravels.
		30–46	N	N	Imported compact orange brown silty clay. Test halted at 46cm dbs.
MT64	C	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–25	N	N	Imported sand and clay deposit.
		25–30	N	N	Imported medium brown sand with occasional gravels.
		30–46	N	N	Imported compact orange brown silty clay. Test halted at 46cm dbs.
MT65	C	0–34	N	N	Imported fine yellow sand which forms the surface and landscaping/levelling of the volley-ball court.
		34–40	N	N	Buried sod layer.
		40–90	N	N	Mixed and mottled dark anaerobic gleyed blue/grey clay. It is unclear if this deposit is in situ or has been brought in from elsewhere to be used as landscaping/levelling material . Test halted at 90cm dbs.

MT66	C	0–8	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		8–120	N	N	Compact imported redeposited medium orange/reddish brown clay which has been deposited in layers, with occasional thin lenses of darker or lighter material. Imported landscaping material.
		120–130	N	N	Sterile beach sand, light to medium grey sand. Test halted at 130cm.
MT67	C	0–10	N	N	Current topsoil and sod. Medium brown sandy loam with considerable bioturbation.
		10–130	N	N	Compact imported redeposited medium orange/reddish brown clay which has been deposited in layers, with occasional thin lenses of darker or lighter material. Imported landscaping material. Deposit contains mix of sub-rounded and angular cobble indicating that this is imported material and not natural riverine deposited. Test halted at 130cm.
MT68	C	0–8	N	N	Current topsoil and sod. Medium brown sandy loam.
		8–20	N	N	Coarse sand and gravels with small sub-rounded pebbles. Appears similar to the levelling/landscaping and fill deposits observed across the Park though this is medium brown with a slight reddish hue in colour and not yellow.
		20–40	N	N	Marine coarse sand and gravels. Light yellow and grey large sand grains with small sub-rounded and rounded pebbles (1cm in size), with occasional larger cobbles (5cm). Natural marine deposition.
		40–60	N	N	Marine coarse sand and gravels. Light yellow and grey large sand grains with small rounded pebbles in the upper portion of this deposit, though becomes more stone-free with depth. Natural marine deposition.
		60–85	N	N	Organic anaerobic riverine deposited sediments. Slow, low energy accumulation of vegetative matter (which usually forms along the edge of rivers and creeks in low-energy deposition). Medium brown with a reddish hue (which becomes darker with depth) silty loam with no sand content. This deposit is potentially the beginnings of the formation of peat or a degraded peat gyttja-type deposit.
		85–100	N	N	Marine deposited dark grey waterlogged coarse sand. Test halted at 100cm due to water inundation.
MT69	C	0–18	N	N	Current topsoil and sod. Medium brown sandy loam.
		18–70	N	N	Imported reddish brown with orange hue silty clay with angular rocks and pebbles, indicative of a non-natural deposition.
		70–85	N	N	Marine coarse sand and gravels. Dark grey large sand grains with small sub-rounded and rounded pebbles (1cm in size), with occasional larger cobbles (5cm). Natural marine deposition. Test halted at 85cm dbs.
MT70	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–22	N	N	Imported reddish brown with orange hue silty clay with angular rocks and pebbles, indicative of a non-natural deposition.
		22–35	N	N	Orange brown imported sand and gravels, landscaping/levelling layer.

		35–45	**Y**	**Y**	**Anthropogenically altered medium brown grey fine sand. There is some charcoal content and the result of particles leaching from a cultural deposit above (now removed) through the process of percolating precipitation. This creates a diffuse horizon/interface with the underlying sterile Quadra sand below.**
		45–50	N	N	Quadra sand. Sterile laminates of medium yellow and light-yellow fine sand with lenses of coarse sandy and gravel. The deposit becomes coarser and darker with depth. Test halted at 50cm dbs.
MT71	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–30	N	N	Heavily bioturbated imported medium brown sterile sand levelling/landscaping deposit.
		30–50	N	N	Medium reddish brown organic redeposited and reworked deposit. Heavily bioturbated.
		50–70	N	N	Imported sand. Laminates of light and medium yellow brown coarse sand. Landscaping/levelling material. Test halted at 70cm dbs.
MT72	B	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–40	N	N	Imported light to medium yellow fine sand.
		40–58	N	N	Imported dark reddish-brown silty sand.
		58–73	N	N	Imported sand. Coarse medium yellow brown coarse sand. Landscaping/levelling material.
		73–90	N	N	Reworked/disturbed marine coarse sand and gravels. Dark grey and light-yellow large sand grains with small sub-rounded and rounded pebbles (1cm in size), fragments of naturally occurring shell observed. Test halted at 90cm dbs.
MT73	B	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–24	N	N	Imported medium reddish-brown silty sand.
		24–30	N	N	Imported sand. Coarse medium yellow brown coarse sand. Landscaping/levelling material.
		30–40	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		40–65	N	N	Imported sand. Coarse medium yellow brown coarse sand. Landscaping/levelling material.
		65–70	N	N	medium grey brown compact clay.
		70–90	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains with small sub-rounded and rounded pebbles (1cm in size), fragments of naturally occurring shell observed. Test halted at 90cm dbs.
MT74	B	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–15	N	N	Imported medium reddish-brown silty sand.
		15–25	N	N	Imported sand. Very fine light-yellow sand. Landscaping/levelling material.

		25–37	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		37–56	N	N	Imported dark reddish-brown silty sand which was observed on the western half of the test, stone free and looks possibly like service trench backfill.
		56+	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, fragments of naturally occurring shell observed. Test halted at 56cm dbs due to possibly service present.
MT75	B	0–5	N	N	Current topsoil and sod. Medium brown sandy loam.
		5–25	N	N	Medium reddish brown organic redeposited and reworked deposit. Heavily bioturbated.
		25–70	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, fragments of naturally occurring shell observed. Test halted at 70cm dbs.
MT76	B	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–20	N	N	Medium reddish brown organic redeposited and reworked deposit. Heavily bioturbated.
		20–80	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, fragments of naturally occurring littleneck and butter clam shell observed. Test halted at 80cm dbs.
MT77	B	0–60	N	N	Imported fine yellow sand used as the surface and levelling/landscaping of area of Park used for the sand-castle building competition.
		60–130	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Fragments of naturally occurring littleneck and butter clam shell observed. Test halted at 130cm dbs.
MT78	B	0–60	N	N	Imported fine yellow sand used as the surface and levelling/landscaping of area of Park used for the sand-castle building competition.
		60–180	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Fragments of naturally occurring littleneck and butter clam shell observed and some fragments of wood. Test halted at 180cm dbs.
MT79	E	0–14	N	N	Current topsoil and sod. Medium brown sandy loam.
		14–26	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		26–30	N	N	Imported dark grey coarse sand and gravel.
		30–40	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		40–70	N	N	Imported medium brown sand with occasional gravels.
		70–76	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		76–90	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 90cm dbs.

MT80	**E**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–20	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		20–35	N	N	Imported dark to medium grey sand and gravel with occasional large cobbles (10cm).
		35–62	N	N	Imported medium reddish-brown silty sand.
		62–80	**Y**	N	**Disturbed cultural deposit of black greasy silty sand which contains three (n=3) pieces of FBR and an iron nail.**
		80–90	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 90cm dbs.
MT81	E	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–36	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		36–150	N	N	Imported medium grey sand and gravel with occasional blocks and fragments of concrete.
MT82	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–24	N	N	Dark brown sand, which forms the base to the topsoil and sod.
		24–50	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 50cm dbs.
MT83	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10+	**Y**	**Y**	**Intact cultural deposit of black greasy silty sand with 40% crushed and 10% whole littleneck and butter clam shells. The presence of whole clams shells indicates the intact nature of the deposit, and so it was not excavated further as when asked the Snaw-Naw-As representative when asked, expressed clear opposition to pursuing this test due to the proximity to ancestral remains found in the 1990's. Test MT84 was excavated just 2m away the next day.**
MT84	**A**	5	N	N	Current topsoil and sod. Medium brown sandy loam.
		5–18	N	N	Imported medium to dark brown silty loam with occasional small pebbles.
		18–25	N	N	Imported compact medium yellow brown, with orange hue sandy silt loam.
		25–48	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 20% crushed and 10% whole littleneck and butter clam shells. Two artifacts (DhSb-2:15 And DhSb-2:17) were recovered from this deposit.**
		48+	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 48cm dbs.
MT85	**A**	0–4	N	N	Current topsoil and sod. Medium brown sandy loam.
		4–18	N	N	Imported medium to dark brown silty loam with occasional small pebbles.
		18–26	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 20% crushed clam shells.**

		26–50	**Y**	**Y**	**Anthropogenically altered dark brown grey fine sand. There is some charcoal content and the result of particles leaching from the overlying cultural deposit through the process of percolating precipitation. Eight (n=8) pieces of FBR recovered.**
		50–60	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 60cm dbs.
MT86	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–24	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 30% crushed shell fragments. Ten (n=10) pieces of FBR recovered.**
		24–40	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 60cm dbs.
MT87	A	0–9	N	N	Current topsoil and sod. Medium brown sandy loam.
		9–22	N	N	Laminates of dark brown black silty loam.
		22–28	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Fragments of naturally occurring littleneck and butter clam shell observed. Test halted at 28cm dbs due to the presence of a plastic irrigation pipe in the eastern part of the test.
MT88	A	0–8	N	N	Current topsoil and sod. Medium brown sandy loam.
		8–20	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		20–28	N	N	Imported medium to dark brown orange sand and gravels.
		28–100	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Fragments of naturally occurring littleneck and butter clam shell observed. Test halted at 52cm dbs.
MT89	A	0–8	N	N	Current topsoil and sod. Medium brown sandy loam.
		8–10	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		10–18	N	N	Imported medium to dark brown orange sand and gravels.
		18–52	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Fragments of naturally occurring littleneck and butter clam shell observed. Test halted at 52cm dbs.
MT90	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam.
		15–18	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		18–30	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		30–48	N	N	Light mixed and mottled disturbed sand.

		48–80	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Test halted at 80cm dbs.
MT91	**A**	0–5	N	N	Current topsoil and sod. Medium brown sandy loam.
		5–20	N	N	Imported dark reddish-brown sandy loam levelling/landscaping material, with a thin lens of imported fine yellow sand.
		20–35	**Y**	**Y**	**Cultural deposit of black greasy silty sand with virtually no shell.**
		35–50	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 50% crushed clam shells and 5% whole littleneck and butter clams. At 43cm dbs a bone awl (DhSb-2:16) was recovered as well as twenty-one (n=21) pieces of FBR weighing 1 kg.**
		50+	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 54cm dbs.
MT92	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–28	N	N	Imported dark reddish-brown sandy loam levelling/landscaping material.
		28+	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 50% crushed clam shells. Intact shell midden material, test halted at 28cm dbs. It became increasingly clear to us, conservation of the surviving dense and intact archaeological deposits was more important (due to the significance) than complete removal and destruction of the deposit at this location that risked finding and of course impacting ancestral human remains.**
MT93	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–30	N	N	Imported dark reddish-brown sandy loam levelling/landscaping material.
		30–40	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 40cm dbs.
MT94	A	0–15	N	N	Current topsoil and sod. Medium brown sandy loam.
		15–30	N	N	Imported fine yellow sand. Landscaping and levelling deposit. Cable/service encountered at 30cm dbs. Test abandoned.
MT95	A	0–20	N	N	Current topsoil and sod. Medium brown sandy loam.
		20–23	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		23–50	N	N	Imported coarse medium yellow brown coarse sand. Landscaping/levelling material.
		50–55	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Test halted at 55cm dbs.
MT96	A	0–8	N	N	Current topsoil and sod. Medium brown sandy loam.
		8–13	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		13–20	N	N	Imported coarse medium brown coarse sand. Landscaping/levelling material.

		20–33	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		33–70	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 70cm dbs.
MT97	A	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–20	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		20–24	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		24–80	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 80cm dbs.
MT98	**A**	0–15	N	N	Current topsoil and sod. Medium brown sandy loam.
		15–30	N	N	Imported fine yellow sand. Landscaping and levelling deposit.
		30–40	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 20% crushed clam shells. Two (n=2) pieces of FBR.**
		40–65	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 80cm dbs.
MT99	A	0–13	N	N	Current topsoil and sod. Medium brown sandy loam.
		13–24	N	N	Imported medium brown coarse sand. Landscaping/levelling material.
		24–32	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		32–50	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 50cm dbs.
MT100	**A**	0–10	N	N	Current topsoil and sod. Medium brown sandy loam.
		10–24	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 40% crushed clam shells (no whole shells). Two (n=2) pieces of fauna and eighteen (n=18) pieces of FBR weighing 1.5 kg. Test halted at 24cm dbs within the cultural deposit. It became increasingly clear to us, conservation of the surviving dense and intact archaeological deposits was more important (due to the significance) than complete removal and destruction of the deposit at this location that risked finding and of course impacting ancestral human remains.**
MT101	**F**	0–18	N	N	Current topsoil and sod. Medium brown sandy loam.
		18–25	N	N	Imported medium yellow coarse sand. Landscaping/levelling material.

		25–70	**Y**	N	**Disturbed cultural deposit of black greasy silty sand with 10% crushed clam shells (no whole shells) and lenses of light and medium brown sand.**
		70+	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 75cm dbs.
MT102	**F**	0–14	N	N	Current topsoil and sod. Medium brown sandy loam.
		14–28	N	N	Imported medium grey brown silty sand. Landscaping/levelling material.
		28–50	N	N	Imported medium yellow coarse sand. Landscaping/levelling material.
		50–70	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 20% crushed clam shells (no whole shells). The upper part of this deposit is disturbed by landscaping/levelling activity, though the remaining portion of the deposit is intact.**
		70–90	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 90cm dbs.
MT103	**F**	0–18	N	N	Current topsoil and sod. Medium brown sandy loam.
		18–20	N	N	Imported coarse dark grey sand. Landscaping/levelling material.
		20–26	N	N	Imported medium yellow coarse sand. Landscaping/levelling material.
		26–40	N	N	Imported coarse dark grey sand. Landscaping/levelling material.
		40–50	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 30% crushed clam shells (no whole shells). The upper part of this deposit is disturbed by landscaping/levelling activity, though the remaining portion of the deposit is intact. Test halted at 50cm dbs within the cultural deposit. It became increasingly clear to us, conservation of the surviving dense and intact archaeological deposits was more important (due to the significance) than complete removal and destruction of the deposit at this location that risked finding and of course impacting ancestral human remains.**
MT104	**F**	0–18	N	N	Parking lot surface. Compact imported grey gravels.
		18–35	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		35–58	**Y**	**Y**	**Cultural deposit of black greasy silty sand with laminates of dark brown sand with 5% crushed littleneck clam shells (no whole shells). The upper part of this deposit is disturbed by landscaping/levelling activity, though the remaining portion of the deposit is intact. Three (n=3) pieces of FBR.**
		58–90	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 90cm dbs.
MT105	**F**	0–18	N	N	Parking lot surface. Compact imported grey gravels.
		18–25	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.

		25–31	**Y**	N	**Disturbed cultural deposit. Thin layer of black greasy silty sand with laminates of dark brown sand with 5% crushed littleneck clam shells (no whole shells). This stratum is disturbed by landscaping/levelling activity.**
		31–60	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Plastic pipe/service encountered at 55cm dbs. Test halted at 60cm dbs.
MT106	**F**	0–20	N	N	Parking lot surface. Compact imported grey gravels.
		20–27	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		27–35	**Y**	N	**Disturbed cultural deposit. Thin layer of black greasy silty sand with laminates of dark brown sand with 5% crushed littleneck clam shells (no whole shells). This stratum is disturbed by landscaping/levelling activity.**
		35–60	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Plastic pipe/service encountered at 50cm dbs. Test halted at 60cm dbs.
MT107	**F**	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–30	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		30–34	**Y**	N	**Disturbed cultural deposit. Thin layer of black greasy silty sand with 2% crushed littleneck clam shells (no whole shells). This stratum is disturbed by landscaping/levelling activity.**
		34–53	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Plastic pipe/service encountered at 38cm dbs. Test halted at 53cm dbs.
MT108	**F**	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–24	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		24–30	N	N	Compact imported dark grey brown sand.
		30–45	N	N	Laminates of imported light-yellow coarse sand and medium brown sand.
		45–58	**Y**	N	**Disturbed cultural deposit. Thin layer of black greasy silty sand. This stratum is disturbed by landscaping/levelling activity.**
		58–70	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 70cm dbs.
MT109	**F**	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–30	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		30–38	**Y**	N	**Disturbed cultural deposit. Thin layer of black greasy silty sand. This stratum is disturbed by landscaping/levelling activity.**

		38–50	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 50cm dbs.
MT110	F	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–24	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		24–32	N	N	Compact imported medium reddish-brown sand.
		32–83	N	N	Quadra sand, laminates of fine yellow sand and medium brown coarse sand. Test halted at 83cm dbs.
MT111	F	0–18	N	N	Parking lot surface. Compact imported grey gravels.
		18–90	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot. Test halted at 90cm dbs.
MT112	F	0–8	N	N	Parking lot surface. Compact imported grey gravels.
		8–18	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		18–28	N	N	Imported compact yellow clay.
		28–66	N	N	Quadra sand, medium brown sand which becomes lighter with depth. Test halted at 66cm dbs.
MT113	F	0–8	N	N	Parking lot surface. Compact imported grey gravels.
		8–20	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		20–30	N	N	Imported medium reddish-brown silty sand. Test abandoned at 30cm dbs due to identification of possible service trench.
MT114	F	0–8	N	N	Parking lot surface. Compact imported grey gravels.
		8–20	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		20–30	N	N	Imported compact yellow clay.
		30–66	N	N	Quadra sand, medium brown sand which becomes lighter with depth. Test halted at 66cm dbs.
MT115	F	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–18	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		18–30	N	N	Imported compact yellow clay.
		30–85	N	N	Quadra sand, medium brown sand which becomes coarser and darker with depth lighter with depth. Test halted at 66cm dbs.

MT116	F	0–13	N	N	Parking lot surface. Compact imported grey gravels.
		13–33	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		33–90	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 90cm dbs.
MT117	F	0–13	N	N	Parking lot surface. Compact imported grey gravels.
		15–35	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		35–60	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 60cm dbs in the eastern half of the test, and at 35cm dbs in the western following the identification of a possible service trench.
MT118	F	0–10	N	N	Parking lot surface. Compact imported grey gravels.
		10–30	N	N	Compact imported medium yellow coarse sand. Landscaping/levelling material and base layer for the parking lot.
		30–66	N	N	Historic (modern) post-hole observed at 30cm dbs. Tapered post which had been driven in, and then removed (not decaying in situ) which allowed for the accumulation of modern debris (broken brown bottle glass) within the void.
		30–66	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 66cm dbs.
MT119	**G**	0–20	N	N	Current topsoil and sod. Dark brown organic sandy loam, within intact root mat.
		20–40	N	N	Imported medium yellow coarse sand. Deliberate deposition as landscaping/levelling material.
		40–60	**Y**	N	**Disturbed cultural deposit. Thick layer of black greasy silty sand. This stratum is disturbed by landscaping/levelling activity and has been impacted by a possible service trench. Three (n=3) pieces of FBR were recovered.**
		60–90	N	N	Marine coarse sand and gravels. Dark grey and light-yellow large sand grains, well sorted pebbles. Test halted at 90cm dbs.
MT120	**G**	0–18	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		18–34	N	N	Imported medium yellow coarse sand. Deliberate deposition as landscaping/levelling material.
		34–44	**Y**	N	**Disturbed cultural deposit of black greasy silty sand with 5% crushed clam shells (no whole shells). The upper part of this deposit is disturbed by landscaping/levelling activity, though the remaining portion of the deposit is intact. This stratum represents a potential second phase of activity on the site, separated from an earlier phase by the deposition of the sand deposit below.**

		44–60	N	N	Very light fine yellow sand, unclear if this is a natural deposition (sand dune, storm force event, sea-level rise) or a redeposited material, it however overlies cultural material below and is in turn overlain by cultural material. It indicates that the phase of occupation was interrupted by a period of natural deposition of material.
		60–68	**Y**	**Y**	**Cultural deposit of black greasy silty sand with 5% crushed clam shells (no whole shells). This deposit represents a potentially earlier phase of activity on the site, which was interrupted by a natural deposition of sediments. This environmental interruption was potentially the result of sand dune formation, a storm force event or sea-level change. One (n=1) piece of FBR recovered.**
		68–85	N	N	Marine coarse sand and gravels. Mixed and mottled medium yellow brown and light-yellow large sand grains, well sorted pebbles. Test halted at 85cm dbs.
MT121	F	0–15	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		15+	N	N	Imported medium yellow coarse sand. Test abandoned at 15cm dbs due to the revealing of a large metal object. Possibly old metal roof sheeting but unclear.
MT122	F	0–15	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		15–25	N	N	Imported medium yellow coarse sand. Test abandoned at 25cm dbs due to a plastic irrigation pipe.
MT123	F	0–14	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		14–18	N	N	Imported medium yellow coarse sand and gravels
		18–30	N	N	Imported grey sand and gravels.
		30–35	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		30–70	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 70cm dbs.
MT124	F	0–22	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		22–70	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 70cm dbs.
MT125	**F**	0–16	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		16–55	**Y**	N	**Mixed and disturbed dark grey brown silty sandy loam with occasional small crushed shell fragments indicative of archaeological deposits, though mixed with concrete blocks and fragments.**
		55–70	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 70cm dbs.
MT126	F	0–20	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		20–48	N	N	Imported compact medium yellow coarse sand and gravels with a reddish hue. Landscaping/levelling deposit. At the horizon with the underlying deposit is a dense root matt.
		48–65	N	N	Imported compact grey silty sand with small pebbles.

		65–68	N	N	Thin layer of machine compacted dark brown black silty sand; possible old buried surface associated with the landscaping within the Park.
		68–80	N	N	Imported compact medium yellow coarse sand and gravels. Landscaping/levelling deposit.
		80–100	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 100cm dbs.
MT127	F	0–16	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		16–40	N	N	Imported compact medium reddish-brown coarse sand and gravels. Landscaping/levelling deposit.
		40–50	N	N	Imported compact medium yellow coarse sand and gravels. Landscaping/levelling deposit.
		50–63	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated and containing modern debris/garbage - glass bottle fragments, plastic straws, plastic service pipe fragments.
		63–76	N	N	Quadra sand, laminates of light yellow and medium brown sand. Heavily rooted. Test halted at 76cm dbs.
MT128	F	0–9	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		9–23	N	N	Imported compact medium yellow coarse sand and gravels. Landscaping/levelling deposit.
		23–30	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		30–50	N	N	Quadra sand, laminates of light yellow and medium brown sand. Heavily rooted. Test halted at 50cm dbs.
MT129	F	0–8	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		8–15	N	N	Imported compact medium reddish-brown coarse sand and gravels. Landscaping/levelling deposit.
		15–55	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Heavily bioturbated.
		55+	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. A possible service trench was observed and so the test was halted at 55cm dbs.
MT130	F	0–14	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		14–20	N	N	Imported compact medium yellow coarse sand and gravels. Landscaping/levelling deposit.

		20–30	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. At 25cm dbs a white plastic irrigation pipe was observed at the western end of the test. Heavily bioturbated.
		30–40	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. A possible service trench was observed and so the test was halted at 40cm dbs.
MT131	F	0–11	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		11–25	N	N	Fine brown sand which is heavily bioturbated and there is a dense root matt between this deposit and the underlying sterile natural sands.
		25–40	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. At 25cm dbs a possible service trench was observed. Test halted at 40cm dbs.
MT132	F	0–11	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		11–18	N	N	Imported compact medium yellow coarse clay gravels. Landscaping/levelling deposit.
		18–36	N	N	Imported medium grey sand and gravels.
		36–50	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. Test halted at 50cm dbs.
MT133	F	0–11	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		11–23	N	N	Imported compact medium yellow coarse clay gravels. Landscaping/levelling deposit.
		23–33	N	N	Imported medium grey sand and gravels.
		33–56	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. Test halted at 56cm dbs.
MT134	F	0–14	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		14–26	N	N	Imported mixed laminated layers of very dark grey sand and very light-yellow sand.
		26–48	N	N	Quadra sand, laminates of light yellow and medium brown sand. Only the upper surface of the naturally deposited sand was observed. Test halted at 48cm dbs.
MT135	F	0–16	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		16–30	N	N	Heavily bioturbated medium to dark brown sterile sand which becomes lighter with depth and transitions into Quadra sand at 30cm dbs.
		30–35	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 35cm dbs.
MT136	F	0–10	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		10–21	N	N	Imported medium brown sand and gravels with lenses of fine light-yellow sand.

		21–25	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated.
		25–38	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 38cm dbs.
MT137	F	0–14	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		14–20	N	N	Imported medium brown sand and gravels with lenses of fine light-yellow sand.
		20–27	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Contains historic debris - broken bottle glass fragments.
		27–50	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 50cm dbs.
MT138	F	0–8	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		8–35	N	N	Imported compact medium yellow coarse clay gravels. Landscaping/levelling deposit.
		35–43	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated.
		43–50	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 50cm dbs.
MT139	F	0–10	N	N	Current topsoil and sod. Dark brown organic sandy loam.
		10–33	N	N	Imported compact medium yellow coarse clay gravels. Landscaping/levelling deposit.
		33–40	N	N	Buried ground surface. Dark brown organic sandy loam with a clear sharp horizon with the overlying imported sand indicating that the upper levels of the buried surface have been truncated. Historic debris - broken bottle glass observed at 25cm dbs.
		40–60	N	N	Quadra sand, laminates of light yellow and medium brown sand. Test halted at 50cm dbs.
MT140	D	0–15	N	N	Parking lot surface. Compact imported orange silts and gravels.
		15–100	N	N	Disturbed imported grey uniform silts with fractured rock and boulder fill.
		100–115	N	N	Orange silts. Test halted at 115cm dbs.
MT141	D	0–15	N	N	Parking lot surface. Compact imported orange silts and gravels.
		15–30	N	N	Imported light brown silts and gravels.
		30–35	N	N	Imported black and dark grey lens of finer silts.
		35–95	N	N	Imported brown silts with fractured rock and boulders and modern debris - plastic etc.
		95–115	N	N	Undisturbed blue marine clay. Test halted at 115cm dbs.
MT142	D	0–15	N	N	Parking lot surface. Compact imported orange silts and gravels.
		15–25	N	N	Disturbed imported orange silts with modern debris - glass.
		25–75	N	N	Disturbed marine coarse sand and gravels. Light orange large sand grains, well sorted pebbles.
		75–100	N	N	Undisturbed blue marine clay, wood fragments observed. Test halted at 100cm dbs.

Appendix 2: Culturally Modified Tree Log.

CMT	SP	CL	CON	TP	FEAT	DBH (cm)	LEN (cm)	WID (cm)	THK (cm)	HAG (cm)	SDE	TMK	NT	REMARKS
CMT1	DF	OM	SA	K	1	75	40	12	2	35	N	9	NO	Estimated 9 chipping scars (tool marks) which range between 10-12cm in length. There is a historic cable scar on the tree & numerous nails hammered in. Bright green lichen coats the tree. The tree is tagged with a numbered disc 406.
CMT2	DF	OM	SD	K	2	115	1) 35 2) 85	25 50	3 3	35 50	S	21	NO	This tree has been topped and has suffered from fire damage which post dates the modification. 1) 20 chipping scars recorded, many overlapping & recorded as 12cm in length, in association with 2) a small irregular bark strip, also for kindling gathering. The chipping potentially extends to the ground but was obscured by ivy, investigation was also difficult due to the proximity of a chain fence.
CMT3	DF	OM	SA	K	3	115	1) 40 2) 35 3) 68	25 20 23	3 3 3	90 80 45	N S W	17	NO	Three different scar windows observed, 1)nine (n=9) 12cm long tool marks on the North side, 2) seven (n=7) 12cm long tool marks on the South side; both for kindling removal. 3) irregular bark stripping scar on the Western side also for kindling. The tree is tagged with a numbered disc 380.

CMT4	DF	OM	SA	K	1	104	105	40	3	35	N & W	30	NO	Age of tree estimated as 150-200 years. Thirty (n=30) + chipping scars, many of which are overlapping concentrated on the northern and western side of the tree. The tree shows evidence of burning above the modification. Tree is affected by an old water pipe (or similar) and numerous nails hammered into it. On the south side of the tree is spray painted graffiti. The tree is tagged with a numbered disc 384.
CMT5	DF	OM	SA	K	2	125	1) 60 2) 40	20 15	2 3	45 60	N S	9	NO	Age of tree estimated as 200-300 years. Two (n=2) scar windows. 1) seven (n=7) scars (tool marks) measuring 12cm in length on the northern side of the tree and 2) two (n=2) scars measuring 10-12cm on the southern side. Tree tagged with numbered disc 393.
CMT6	DF	OM	SA	K	1	100	50	30	3	30	N	8	NO	Single observed scar window of eight (n=8) scars (tool marks) measuring 12cm in length. There is a staple for the numbered disc inserted into the scar window. No numbered disc.
CMT7	DF	OM	SA	K	1	85	110	40	3	15	N & NW	12	NO	Single scar window around the North and North-western side of the tree. Twelve (n=12) scars measuring 10-12cm in length.

Appendix 3: Artifact Catalogue

Cat#	Test	DBS (cm)	# of	Frag Type	Type	Wt (g)	Len (mm)	Wid (mm)	Dep (mm)	Man. Meth	Material	Comments
DhSb-2:15	MT84	38	1	2	adze/celt	49	50.37	47.42	12.16	flaked & ground	Basalt	Near complete adze/celt. Clear acute bevel present. The shorter beveled side is flat with clear grinding striations, the longer beveled side shows a convex profile and has had two flakes removed. Blade edge is finely polished with one flake removed from either use wear or post-depositional damage.
DhSb-2:16	MT91	43	1	1	awl	6	82.64	15.85	6.64	split & ground	Bone	Metapodial awl. Longitudinally split deer metatarsal shaft, lateral proximal facet and shaft present. Grinding of the distal end to create a fine point.
DhSb-2:17	MT84	30–40	1	2	worked slate	12.5	48.8	32.38	4.2	ground	slate	Partly sectioned fragment of ground slate with clear sawing cut marks. Incised lines and deeply scored grooves. At least two pieces have been removed as indicated by the remnant scoring marks. Deep grooves & 'guidelines' etched parallel to the deep groove. Underside shows beginnings of groove to aid breaking it. A second deep groove is located running width wise across the piece, where a section of slate has been removed, though this appears to have fractured.
DhSb-2:18	MT41	50	1	3	abrader	59.5	36.84	34.7	23.26	ground	sandstone	Fragment of a sandstone abrader, one side shows a very slight depression and grooves from its use. Heat altered.
DhSb-2:19	MT40	30–35	2	3	worked bone	2	29.41	25.62	5.85	ground	bone	A fragment of bone (broken into 2 pieces) with clear grinding striations.

Appendix 4: Faunal Remains Catalogue

Cat#	Provenience	Depth (cm dbs)	Date	Element	Common Name	Genus Species	Side	Age	Quantity	Comments
F2	MT 43	n/a	n/a	unidentified	large land mammal	*Mammalia*	n/a	A	1	Possible neck fragment of a scapula.
F3	MT 33	20-30	March 3 2020	scapula	pig	*Sus scrofa domesticus*	L	J	1	Unfused glenoid fossa, modern saw cut at neck. Five cutmarks on inferior neck.
F4	MT 42	50-60	March 3 2020	shaft	deer	*Odocoileus hemionus sp.*	n/a	n/a	1	Humerus or femur deer shaft fragment.
F5	MT 3	20-25	March 2 2020	calcaneus	deer/sheep	*Artiodactyla*	L	n/a	1	Missing proximal end. Heavily eroded.
F6	MT 100	10-20	March 9 2020	innominate	deer	*Odocoileus hemionus sp.*	L	A	1	Acetabulum portion. Canid gnawing on ascending ilium.
F7	MT 100	10-20	March 9 2020	ulna	small land mammal	*Mammalia*	L	n/a	1	Lateral facet and medial shaft present.
F8	MT 40	30	n/a	metapodial	deer	*Odocoileus hemionus sp.*	n/a	n/a	1	Fragment, deer sized.
F9	MT 91	40-50	March 3 2020	scapula	deer	*Odocoileus hemionus sp.*	R	n/a	1	Vertebral border fragment. Canid gnawing.
F10	MT 91	40-50	March 3 2020	rib	deer	*Odocoileus hemionus sp.*	n/a	n/a	1	Medial shaft fragment.
F11	MT 40	30-35	March 3 2020	calcaneus	deer	*Odocoileus hemionus sp.*	R	n/a	1	25% present, proximal facet and ascending shaft.

F12	MT 40	30-35	March 3 2020	shaft	medium land mammal	*Mammalia*	n/a	n/a	12	Fragments.
F13	MT 40	30-35	March 3 2020	shaft	small land mammal	*Mammalia*	n/a	n/a	3	Fragments.
F14	MT 41	24-30	March 3 2020	scapula	deer	*Odocoileus hemionus sp.*	n/a	n/a	2	Refits. Blade fragment. Fragment burned completely black.
F15	MT 41	24-30	March 3 2020	tooth	deer	*Odocoileus hemionus sp.*	n/a	n/a	4	Seledont enamel fragments, likely deer.
F16	MT 41	24-30	March 3 2020	epiphysis	small land mammal	*Mammalia*	n/n	J	1	Unfused epiphysis
F17	MT 41	24-30	March 3 2020	shaft	land mammal	*Mammalia*	n/a	n/a	6	Fragments.
F18	MT 41	50	March 3 2020	unidentified	land mammal	*Mammalia*	n/a	n/a	6	From Feature #1

Appendix 5: Radiocarbon Dating Results

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

Beta Analytic
TESTING LABORATORY

ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Colleen Parsley — Report Date: June 17, 2020

Aquilla Archaeology — Material Received: June 10, 2020

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 560538	**DhSb-2-Sample 1**	**940 +/- 30 BP**	IRMS δ13C: -23.6 o/oo
	(95.4%)	**1025 - 1160 cal AD**	**(925 - 790 cal BP)**

Submitter Material: Charcoal
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-Standard delivery
Percent Modern Carbon: 88.96 +/- 0.33 pMC
Fraction Modern Carbon: 0.8896 +/- 0.0033
D14C: -110.43 +/- 3.32 o/oo
Δ14C: -117.93 +/- 3.32 o/oo (1950:2020)
Measured Radiocarbon Age: (without d13C correction): 920 +/- 30 BP
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

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BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -23.6 o/oo)

Laboratory number **Beta-560538**

Conventional radiocarbon age **940 ± 30 BP**

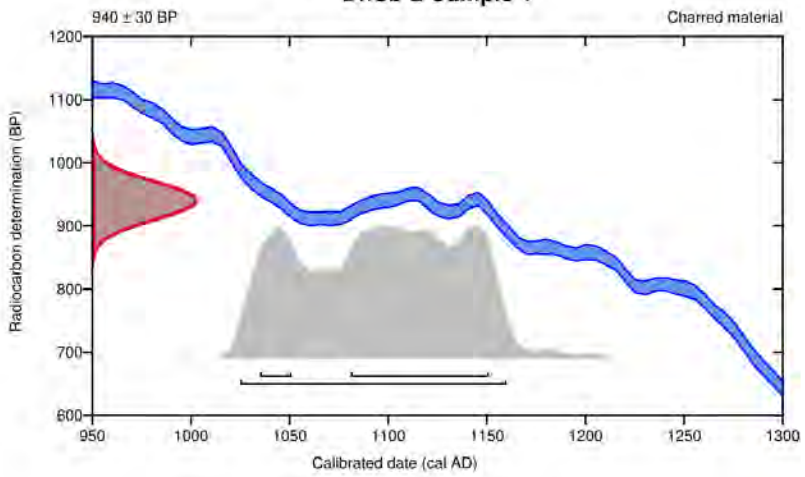
95.4% probability

(95.4%) 1025 - 1160 cal AD (925 - 790 cal BP)

68.2% probability

(55.7%) 1081 - 1151 cal AD (869 - 799 cal BP)
(12.5%) 1035 - 1051 cal AD (915 - 899 cal BP)

DhSb-2-Sample 1



Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

Beta Analytic Radiocarbon Dating Laboratory
4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

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AQUILLA
ARCHAEOLOGY

Aquilla Archaeology, 29 Commercial Street, Nanaimo, BC, V9R 5G3
Phone: 250-753-4017, Email: info@aquilla.ca, Website: www.aquilla.ca

Archaeological and Cultural Management Services for Vancouver Island and Coastal BC