December 16th, 2009

Jim Crawford  
Baynes Sound Investments Ltd.  
Via email: jcrawford@kwik.net

Dear Jim:

**Re: Summary of Archaeological Studies, Future Requirements and Opportunities – Deep Bay Development**

Further to our recent meeting in Nanaimo, following is a summary of archaeological studies completed for the above development. Recommendations for additional studies are also provided.

**Archaeological Overview Assessment – I.R. Wilson Consultants Ltd. January 2004**

This initial study of the proposed development area provided a summary of known archaeological sites in the region and within the study area. Zones of high, moderate and low archaeological potential in the study area were identified and an archaeological impact assessment (AIA) was recommended.

**Archaeological Impact Assessment – I.R. Wilson Consultants Ltd. February 2007**

In December 2006, the field component of the AIA was completed. Previously recorded intact midden deposits at DiSe 13 were located along the northern project area boundary and the extent of these deposits was determined. DiSe 13 extends along the entire shoreline of the property. In some areas, site deposits extend 120 m inland from the high-tide line. Some deposits are heavily disturbed by industrial and tectonic activity, but there are potentially scientifically and culturally significant pockets of intact deposits. The proximity of DiSe 13 to DiSe 7, a large and important site, increases the probability that this was once a continuous habitation area. Additionally, artifacts and materials recovered during monitoring at the proposed Centre for Shellfish Research (Streeter and Bond 2007) located near the northwest corner of the property indicates long-term
prehistoric habitation. Since both human remains and diagnostic artifacts have been located in potentially associated nearby sites, there is a strong possibility of similar deposits on the subject property despite areas of heavy disturbance. Because so much disturbance has occurred at sites in the area, it is important to manage any remaining significant materials. The report is attached for your review.

**Additional Studies Required**

If DiSe 13 can be avoided, no further archaeological studies will be required. However, if ground disturbing activities, including the addition of imported fill, is proposed within the boundary of DiSe 13, an alteration permit issued by the Archaeology Branch of the Ministry of Tourism, Culture and the Arts will be required. Systematic data recovery (archaeological excavation) will likely be a condition of an alteration permit if intact archaeological deposits will be disturbed.

**Opportunities**

A partnership with the Komox and Qualicum First Nations in tandem with Vancouver Island University can provide a unique opportunity to gain support for the project and meet any legal obligations that may be required under the *Heritage Conservation Act*, all in a cost effective and socially responsible manner. The archaeological site on the property may be one of the most significant in British Columbia. Managing this resource in a responsible way is manifest within the principals of sustainable development and will provide several benefits to all parties involved; highlighting Baynes Sound Investments Ltd. as a forerunner in responsible development.

**Benefits**

The proposed partnership presents an opportunity to not only navigate any potential requirements of the *Heritage Conservation Act*, but meet them head on and exceed them, in a cost effective manner that will foster support for the project. A small-scale archaeological excavation would add valuable archaeological data and provide an interpretive and educational experience. Vancouver Island University students, First Nations community members and local residents could all participate in the field program under the guidance of I.R. Wilson Consultants Ltd.; reducing labor costs and gathering support for the project.

Conducting archaeological investigations within the context of this proposed partnership constitutes more than a public relations campaign; it illustrates a genuine concern for community
wellbeing and sustainable development. This will naturally lead to support for the project. Rather than being perceived as a large-scale development intruding upon a small community, it will illustrate a genuine effort to satisfy current development needs without compromising community wellbeing and the community needs of the future. It is our understanding at I.R. Wilson Consultants Ltd. that it is important to you to proceed with this development in a sustainable fashion and that your policies are evolving based on the principles of sustainability.

Smart Growth B.C. states “In order for developments to be considered ‘smart growth’ they must adhere to all 10 Smart Growth Principles, including the protection and enhancement of our natural and cultural features” (http://www.smartgrowth.bc.ca/Default.aspx?tabid=104), which includes First Nations archaeological sites. Following is a discussion of how the proposed archaeological project fits within the social, environmental and economic dimensions of sustainable development.

Socially, the protection and enhancement of cultural features leads to create a long-term memory of a region. Co-operative archaeological investigations into the past of Deep Bay will provide a means for an integrative regional history which in turn will nurture an integrative regional community. Results from archaeological investigations could be presented in an interpretive centre or plaque program to provide a storytelling experience celebrating the regional history, giving residents a sense of place.

Environmentally, archaeological investigations can provide abundant data on the natural history of the region and explore the dynamic interaction between people and their environment. Regional resources can be examined on a temporal scale providing insight into management and land use strategies. Geological processes operating within the region over time can be examined to highlight how these processes have affected the landscape and associated communities. For example, an earthquake in 1946 resulted in the extensive slumping of Maple Guard Spit which generated a large wave that hit Deep Bay. Archaeological investigations can identify deposits left by these events and potentially reveal how these processes have affected the region in the past and how they may affect the region in the future. The management of cultural resources can also be integrated into the creation of green-spaces. Areas set aside for green-spaces can be in archaeologically sensitive areas protecting both natural and cultural resources.

Economically, an interpretive center, community museum and/or archaeological tours could provide a potential source of revenue. This could create jobs within the community for First
Nations and more recent community members. Several communities throughout British Columbia have successful tourism businesses focused on local archaeology and heritage. Sasquatch Tours in Harrison Hot Springs, B.C. is just one example of a successful business focused around local history, ethnography and archaeology.

Archaeological investigations conducted under a partnership with the Komox and Qualicum First Nations in tandem with Vancouver Island University can provide many benefits to all parties involved. The extent of archaeological investigations required at DiSe 13 will depend on the final footprint of the proposed development. Regardless of the final design, archaeology has its place within the social, environmental and economic spheres of sustainable development and presents an opportunity to bring a regional community together and foster support for the development.

Please feel free to contact me if you have any questions.

Yours truly,

I. R. WILSON CONSULTANTS LTD.

Shane Bond
Director

References Cited

Streeter, Ian and Shane Bond


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ARCHAEOLOGICAL
IMPACT ASSESSMENT
Proposed Destination Resort
Deep Bay, B.C.

Heritage Conservation Act
Site Inspection Permit 2006-418
Archaeological Impact Assessment
Proposed Destination Resort
Deep Bay, B.C.

Heritage Conservation Act
Site Inspection Permit 2006-418

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Management Summary

In December 2006, I.R. Wilson Consultants Ltd. conducted an archaeological impact assessment on a 142 ha. property proposed as a destination resort. The proposed development is located on Part of Lot A, Newcastle District Plan 44840, District Lots 1 and 66, Newcastle District, extending from the southeast side of Deep Bay adjacent to shell midden site DiSe 13, south to the Old Island Highway. The study area is located within the asserted traditional territory of the Qualicum First Nation and the Hamatla Treaty Society. Members of these communities were directly involved in the field component of the study, contributing local expertise and assistance. The field program consisted of pedestrian survey and subsurface testing. Previously recorded intact midden deposits at DiSe 13 were located along the northern project area boundary. Additional buried and surface midden deposits were identified during the field survey. The extent of these deposits was determined through test excavations.

DiSe 13 was recorded prior to the assessment based on the surface exposure of shell midden stretching 450 m along the property’s shoreline and extending 20 m back from the shore. In 1975, the site was described as being in good condition with very little disturbance. During the December 2006 assessment of District Lots 1 and 66, site DiSe 13 was revisited. Prior to the 2006 AIA, the property had undergone extensive disturbance and development. During the 2006 survey, the subject property was visually inspected and was then systematically and judgementally auger and shovel tested. The site boundaries of DiSe 13 were extended. Midden deposits were found to be significantly disturbed.

In 1975, two sites were recorded along the shoreline in this area, DiSe 13 and DiSe 15. Archaeological work at the proposed Centre for Shellfish Research (Wilson 2005; Streeter and Bond 2007), which is surrounded by the present study area on three sides and extends to the northwest corner of the study area, expanded the boundaries of DiSe 13 further along the shore toward site DiSe 15 to the west/southwest. The current investigation examined a significantly larger area around DiSe 13 and indicated that the site stretches continuously along the entire 800 m shoreline of the property, including the Centre for Shellfish Research, and continues onto a series of elevated benches south/southeast up to 120 m. No previously unrecorded sites were identified during the assessment other than the large addition to site DiSe 13.
Roads, trenches, industrial logging, a cannery, a recorded earthquake and other modern disturbances have significantly altered the site. A large portion of the site identified during the present AIA is located on flat benches approximately 30 m above the shoreline. Substantial disturbance has occurred along these benches. In addition to logging and stump removal, up to 1 m of deposits have been removed from the upper stratigraphic layers. Intact or partially intact midden deposits that remain are concentrated in pockets where trees were left standing.

Pedestrian transects were conducted at 2 m intervals along the shoreline and water bodies and 5-10 m intervals through out the remainder of D.L. 1 in order to identify cultural deposits. Transects were spaced at 20-40 m intervals in D.L. 66 as archaeological potential was very low. The banks of all permanent and ephemeral water courses and the eroding shoreline along Deep Bay were also visually inspected for cultural materials. Where exposures were unsuitable to evaluate subsurface deposits, subsurface testing was conducted using a hand auger and/or shovel tests. A total of 84 subsurface tests were excavated in the present program, including 15 hand auger tests (seven positive) and 69 shovel tests (16 positive). In some locations, auger tests were placed in the bottom of shovel tests due to the potential presence of deposits deeper than 1 m. Additionally, 19 shovel tests, two 1x1 m evaluative units, trenches and mechanically dug test holes were excavated in the area covered by the proposed Shellfish Research Station (Streeter and Bond 2007). All backdirt was passed through ¼ inch (6mm) wire mesh to identify cultural materials.

Recommendations are made to avoid or mitigate impacts to cultural deposits during construction of various proposed facilities.
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1. INTRODUCTION

I.R. Wilson Consultants Ltd. conducted an archaeological impact assessment (AIA) of D.L. 1 and D.L. 66, Newcastle District. The property is located at Deep Bay between the Old Island Highway and Deep Bay on Baynes Sound (Figure 1). Currently, subdivision of the lot is proposed with development plans for a destination resort of undetermined density. An undeveloped green space, housing and other developments along with subsequent landscaping and construction activities including water, septic and hydro hook-ups are planned. Archaeological site DiSe 13 is located partially within study area boundaries. As a result, an impact assessment was deemed necessary. Work was undertaken during December 2006 under the terms and conditions of Heritage Conservation Act site inspection permit 2006-418. The objectives of the study were to determine the extent of DiSe 13 and whether additional cultural materials are located elsewhere on the subject property. If cultural materials were present, site boundaries within the property were to be established. In addition, the significance of the site(s) and the potential for impacts to the site(s) based on future development plans were to be determined. The study area is within the asserted traditional territory of the Qualicum First Nation and Hamatla Treaty Society.

Heritage sites and objects on private and Provincial Crown land in British Columbia are protected under the Heritage Conservation Act, which is administered by the Archaeology Branch of the Ministry of Tourism, Sport and the Arts. Heritage resources specifically protected by the Act include Provincial heritage sites, burial places with historical or archaeological value, aboriginal rock paintings or carvings, sites with evidence of human habitation or use before 1846 and heritage wrecks. The Lieutenant Governor in Council may also make regulations to define the extent of types of sites protected by the Act.

Heritage resources can be prehistoric in age (the time before European arrival) or they can be historic. They can be of Native Indian, European, Euro-Canadian or other ethnic affiliation. Ethnographic heritage sites are locations reported as having been used or occupied by Native Indian people in the past which may or may not contain any physical evidence for such an occupation or use. A reported ethnographic site found to contain physical evidence changes the site to an archaeological site enhanced by ethnographic
information. Ethnographic sites with no corroborative physical evidence are not treated as heritage sites according to present heritage legislation. However, ethnographic sites require proper management as a responsibility of developers.

There are usually three stages to the heritage resource impact assessment and review process including overview assessment, detailed impact assessment and impact mitigation. The overview assessment is intended to identify and assess heritage resource potential or the likelihood that sites are present. The objectives of the detailed impact assessment are the identification and evaluation of heritage resources within a proposed development area and also the assessment of possible impacts by the development on these sites. Impact mitigation is any course of action that results in the reduction or the elimination of the adverse impacts of a development. Mitigation usually involves site protection, project redesign or systematic data recovery, normally involving archaeological excavation.

The present study was designed to satisfy the objectives of a detailed impact assessment.

It should be noted that although First Nation assistance was part of the study, the results of this study do not address traditional use nor does First Nations assistance constitute aboriginal consultation. The study was conducted without prejudice to First Nations Treaty Negotiations, aboriginal rights or aboriginal title.
2. PROPOSED PROJECT

The subject property is located on the south shore of Deep Bay on the east coast of Vancouver Island north/northwest of Qualicum Beach. It consists of two areas including a lower shoreline area adjacent to Deep Bay and upper areas, elevated well above the beach. The property is intended to be a destination resort with associated living and recreation facilities.

Previously recorded archaeological site DiSe 13 is located within the subject property. According to the original site maps for DiSe 13, the entire site is located within the property (Murton and Foster 1975). The Remote Access to Archaeological Data site (RAAD) shows the location of this site on the subject property.

Construction activities associated with development of the facility could disturb archaeological deposits if they are present. Foundation excavation, road construction and other ground altering activities can severely disturb cultural deposits – even general landscaping can cause serious disturbance. A construction timetable for the project has not yet been finalized. A preliminary development concept of the proposed project is shown in Figure 2.
3. PROJECT AREA

3.1 Introduction

The study area is located along Deep Bay, south of Mapleguard Point on the south side of Baynes Sound. Deep Bay is protected to the north by Mapleguard Point, an 875 m long spit consisting of a sand and fine gravel beach. Deep Bay itself is fronted by a mixed cobble, gravel and shell beach. Residential properties extend along the length of the spit while residential properties and facilities associated with the government wharf make up most of the southern portion of Deep Bay. The property proposed for subdivision is situated southwest of the point (Plate 1).

Plate 1: View north over water from bench showing Deep Bay, Mapleguard Point and DiSe 7.

3.2 Environment

The study area was overlain by glacial ice about 15,000 years ago and a minor re-advance at about 11,500 years B.P. (before present) likely made the area uninhabitable until about 10,000 to 11,000 years ago (Matthews et al. 1970). Ocean fluctuations have shown a trend
to gradual decline in sea levels, but fluctuations such as the present higher water levels have created raised beaches 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 of the modern shoreline. Older occupations are also possible at intertidal and even underwater areas associated with older lower sea levels.

The study area is within the drier maritime subzone of the Coastal Western Hemlock zone (CWHdm). On average, the CWH is the rainiest biogeoclimatic zone in British Columbia with typically cool summers with some hot spells and generally mild winters. This drier subzone tends to be dominated by Douglas fir (*Pseudotsuga menziesii*) with western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*) equally widespread. Most forests in the region have regenerated after turn of the century logging activities. Old growth forest is rare and tends to be found only in parks. Douglas fir is the most common tree species found in the upland forests with a typical understorey of salal (*Gaultheria shallon*), Oregon grape (*Mahonia aquafolium*), sword fern (*Polystichum munitum*) and red huckleberry (*Vaccinium parvifolium*). Western red cedar, grand fir (*Abies grandis*) and red alder (*Alnus rubra*) are most frequently found in wetter areas; arbutus (*Arbutus menziesii*) and Garry oak (*Quercus garryana*) trees can be found in drier, generally rocky locales. Other tree species which occur less commonly include shore pine (*Pinus contorta*), Sitka spruce (*Picea sitchensis*), bitter cherry (*Prunus emarginata*), western flowering dogwood (*Cornus nuttallii*), bigleaf maple (*Acer macrophyllum*), black cottonwood (*Populus trichocarpa*) and trembling aspen (*Populus tremuloides*) (Nuszdorfer et al. 1991:82). Ground cover is typified by various mosses, including Oregon beaked moss (*Kindbergia oregana*), step moss (*Hylocomium splendens*), lanky moss (*Rhytidiadelphus loreus*) and wavy-leaved cotton moss or flat moss (*Plasiothecium indulatum*) (Pojar et al. 1991:98).

Species of native wildlife common in this biogeoclimatic zone include black tailed deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), cougar (*Felis concolor*), and elk (*Cervus elaphus*) as well as a variety of smaller land mammals. Common birds and waterfowl include blue grouse (*Dendragapus obscurus*), pileated woodpecker (*Dryocopus pileatus*), Steller’s jay (*Cyanocitta stelleri*), raven (*Corvus corax*), great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*), hooded merganser (*Lophodytes cucullatus*), glacous gull (*Larus hyperboreus*) and Canada goose (*Branta Canadensis*).
The Deep Bay area provides access to large migrating runs of anadromous fish resources, the most significant being several species of Pacific salmon (\textit{Oncorhynchus spp.}) Other important fish species in the region include halibut (\textit{Hippoglossus stenolepis}), Pacific cod (\textit{Gadus macrocephalus}), Pacific herring (\textit{Clupea pallasii}) and various rockfish (\textit{Sebastes spp.}) among others. Shellfish such as mussels (\textit{Mytilus spp.}), barnacles (\textit{Balanus spp.}), various clams, sea urchins (\textit{Strongylocentrotus spp.}) and chitons are also abundant in the region.

\textbf{3.3 Ethnography}

The study area is within the traditional territory of the Pentlatch. Pentlatch is an Anglicization of the Sechelt and Comox term \textit{pentl’ech} by which these people were known. Pentlatch, Comox and Sechelt comprise the North Coast Salish division of the Northwest Coast Culture area. Pentlatch was part of the Central Salish branch of the Coast Salish division of the Salishan language family (Kennedy and Bouchard 1990:441-443, 451-452; Thompson and Kinkade 1990:34-37) In the early 1880s, the Pentlatch occupied the eastern shore of Vancouver Island from cape Lazo south to the vicinity of Parksville. At least four named Pentlatch subgroups have been identified, each of whom congregated in one or more winter villages from which people traveled each summer to specific resource site (Kennedy and Bouchard 1990: 442-443). Disease, battles with the West coast tribes and the southward movement of the Island Comox and Lekwiltok all contributed to the demise of the Pentlatch. By the mid-1800s, the Pentlatch had all but ceased to exist as a distinct group. Land set aside as an Indian reserve at Qualicum is now the village of a group of native people of mixed ancestry and is politically referred to as the Qualicum First Nation.

Ethnographic information concerning the Pentlatch appears in Barnett (1935-1936, 1955), Boas (1887), Bouchard (1976), Brown (1854, 1873) and Kennedy and Bouchard (1990). However, very little Pentlatch land use information has been recorded. Place names and site data that have been recorded reflect a time after the Comox domination of the Pentlatch.

Today the study area is within the asserted territory of a number of groups related to the Coast Salish Pentlatch and to the Island Comox and Lekwiltok. These groups include the Qualicum First Nation and the Sliammon Native Council who are Coast Salish. The Hamatla Treaty Society represents the Komox (Comox) Indian Band, the Wai Kum
(Campbell River Band) and We Wai Kai (Cape Mudge Band). The Hamatla Treaty Society identifies these groups as the K’omoks, Laich-Kwil-Tach and Tlowitsis.

3.4 Prehistory

Archaeological research in the Gulf of Georgia dates to the turn of the twentieth century and has remained a primary focus of archaeological research in the province ever since. A generally agreed upon prehistoric sequence in all but terminology has been formulated over the years. The following generalized sequence is based primarily on the works of Borden (1970), Clark (2000), Ham (1982), Ham et al. (1984), Matson (1976), Matson et al. (1980) and Mitchell (1971). The latter part of the sequence has been summarized by Mitchell (1990). Carlson (1990) summarized the earlier part of the sequence. The sequence pertains to the areas identified as being occupied by the Northern Coast Salish (Kennedy and Bouchard 1990) and Central Coast Salish (Suttles 1990).

3.4.1 Lithic Culture Type

The earliest period on the coast is poorly understood and even less well documented. This early period predates about 5,000 years ago and has been referred to as the Late Lithic substage by Fladmark (1982) and is also known as Old Cordilleran (Matson 1976), Lithic culture type (Mitchell 1971), Protowestern Tradition (Ham 1982) or the Pebble Tool Tradition (Carlson 1996). Evidence for this time period on the south coast is best documented at four stratified and dated sites: Glenrose Cannery in Vancouver (Matson 1976), the Milliken site in the Fraser Canyon (Borden 1968a, 1975), DiRi 14 on the Fraser River near Hope (Eldridge 1981) and Bear Cove on Vancouver Island (C. Carlson 1979). The Milliken and Hope sites are in the Lower Fraser Canyon culture area. Less well documented components pre-dating 5000 years ago have been identified along the Fraser River at Fort Langley (Porter and Copp 1993) and Hatzic (Mason 1994). Several other typologically similar but undated components have been identified elsewhere including Coquitlam Lake on the Lower Mainland (Wilson and Clark 2001; Wright 1988) and at Stave Lake (McLaren and Owens 2000). Characteristic of this period are leaf-shaped bifaces and points, flake tools and cores, large blade-like flakes, pebble tools and cortical spalls (Carlson 1990). Microblades are absent although “microblade-like” and “macroblade-like” flakes occur in the Milliken assemblage (Borden 1968b).

Faunal remains from the Old Cordilleran component at the Glenrose Cannery site (DgRr 6), located on the South Arm of the Fraser River south of Annacis Island, reflect
an economic pattern directed toward the hunting of land mammals, with deer (*Odocoileus hemionus*) and wapiti (*Cervus elaphus*) the two most important animals. Seals, salmon (*Oncorhynchus* sp.), sticklebacks (*Gasterosteus aculeatus*), eulachon (*Thaleichthys pacificus*), flatfish and bay mussel (*Mytilus edulis*) were also obtained (Matson 1976, 1992). Marine resources, particularly porpoise, were prominent in the Bear Cove assemblage (C. Carlson 1979).

3.4.2 Charles Culture Type

Charles (5,500–3,300 B.P.) may be the earliest archaeological culture type directly ancestral to the ethnographically documented Northern and Central Coast Salish pattern of exploitation of river and marine resources supplemented by diversified hunting and gathering (Mitchell 1990). This culture type saw a continuation of some tool types from the previous culture type as well as the introduction of new types. As well as ground slate, bone and antler implements, new tool types include chipped stone scrapers, drills and stemmed bifaces (Ham *et al.* 1984). A well-developed woodworking technology is inferred from the presence of adzes and wedges (Ham *et al.* 1984) and the remains of several residential structures located along the Fraser River at Agassiz (Schaeppe 1998) and Hatzic (Mason 1994) and possibly at Fort Langley (James 1990).

Pratt (1992) suggests Charles culture faunal remains are indicative of a mixed economy where land and sea mammals were exploited. Although salmon were exploited to some extent, specialization had not yet begun (Pratt 1992; see also Matson 1992). Thus, Pratt (1992) views the Charles culture as essentially a hunting population. Mason (1994) has argued that the presence of several large residential structures at sites located along the Fraser River suggests specialized salmon exploitation had occurred by this period. It is doubtful that a hunting population would have required, or invested the necessary time and energy into the structures found at the Hatzic Rock (DgRn 23) and Maurer (DhRk 8) sites.

Eldridge (1991) argues for intensive salmon harvesting, processing and storage at the mouth of the Fraser River by 4,600 B.P. based on the presence of intertidal stakes, thought to represent the remains of fish weirs, at the Glenrose Cannery site. Eldridge further suggests that the Northwest Coast pattern was likely well established during the Charles culture and salient elements such as massive architecture, wealth accumulation, hereditary status and status inequality were in place at this time. Cannon (1993) has
argued for the presence of salmon specialization and storage technology at Namu on the central coast prior to 6,000 B.P. suggesting similar data may be waiting to be uncovered along the Fraser River, given the high importance of salmon in both regions and the importance of the Fraser as a spawning river.

Ham *et al.* (1984) argued that a broader economic base may have directly led to a stratification in social status as evidenced by burial practices, the use of labrets and possibly cranial deformation. In contrast, Pratt (1992) suggests an egalitarian society existed despite the possible presence of status differentiation as reflected in burial remains at Tsawassen and possibly Pender Canal.

Charles components have been identified on the Gulf Islands at Helen Point (Carlson 1970; McMurdo 1974) and on Denman Island (Eldridge 1987). Three Charles occupations have been identified on Vancouver Island including one at Duke Point in Nanaimo (Murray 1982), one at Chemainus (Wilson *et al.* 2004) and at the Deep Bay site DiSe 7 (Monks 1977; Wilson *et al.* 2003).

### 3.4.3 Locarno Culture Type

The Locarno culture type (ca. 3,500/3,300–1,500 B.P.) is typified by a varied resource base showing an increasing reliance on sea mammals, shellfish and birds (although land mammals and fish still are of prime importance). The Locarno toolkit reflects its broad based subsistence strategy with a generalized artifact assemblage. Although many artifact types continue from the preceding Charles culture type, there are several key additions, most notably composite toggling harpoon valves, microblades and Gulf Islands Complex artifacts. Evidence of cordage, basketry and other wood items have been recovered from water saturated sites in the Lower Mainland (Archer and Bernick 1990; Bernick 1991; Borden 1976; Patenaude 1983).

The only evidence of housing dating to the Locarno period is two small pithouse structures from Crescent Beach (Matson *et al.* 1991; Matson 1992) and Sequim in Washington state (Morgan 1998, 1999) and possible postmold features from Shoemaker Bay on Vancouver Island (McMillan and St. Claire 1982) and Long Harbour on Saltspring Island (Johnstone 1991). The distribution of sites shows a strong orientation to offshore rather than riverine resources with many sites on the Gulf Islands and on Vancouver Island.
Interpersonal status differentiation is present and expressed by labret wear and burial inclusions (Carlson 1987; Cybulski 1991). The scale of status differentiation seems to be not as pronounced in Locarno Beach than in the preceding Charles and subsequent Marpole period. The nature of these status differences are not clear, although Burley and Knusel (1989) argue that there is no clear indication of ascribed status during the Locarno time period.

Locarno components are known for many sites on Vancouver Island (Capes 1977; Kenny 1974; McMurdo 1974; Mitchell 1974, 1979, 1988; Monks 1977; Wilson 1988; Wilson and Smart 1992) and from the Gulf Islands (Haggarty and Sendey 1976; Wilson 1992; Wilson et al. 2006). The Deep Bay site also has Locarno deposits (Monks 1977).

3.4.4 Marpole Culture Type

The Marpole culture type (Burley 1980; Clark 2000; Mitchell 1971) spans the period between 2,000 and 1,500/1,100 B.P. Marpole artifact assemblages mark a shift away from chipped stone to ground and pecked stone. There is also a noticeable rise in non-lithic, bone and antler industries and increasing reliance on composite tools. Important artifact types are handmauls, unilaterally barbed non-toggling harpoons and thin ground slate knives. During Marpole, a rich artistic tradition develops which is expressed in stone and antler sculpture, slate and shell disc beads and decorated items of native copper.

Marpole settlement is relatively well known. Large house platforms have been discovered at Garrison (Kornbacher 1989), Beach Grove (Matson et al. 1980), False Narrows (Burley 1989), Whalen Farm (Smith 1921), Dionisio Point (Mitchell 1971), and possibly Tualdad Altu (Chatters 1989). Site distribution shifts to riverine locations, many of which are located on the Fraser River.

Past studies (Burley 1980; Clark 2000; Matson et al. 1980) have shown significant geographic and temporal variation within the Marpole culture type. Two subphases of Marpole have been proposed to explain this diversity. These subphases have been interpreted as a result of unequal access to the Fraser River fishery (Clark 2000).
Ascribed status differentiation is clearly present with the rise of cranial deformation around 2,000 B.P. (Burley and Knusel 1989; Cybulski 1991). Rich burial inclusions are also present during Marpole times (Burley and Knusel 1989; Matson 1976).

Many sites on Vancouver Island contain Marpole components, including the Deep Bay site.

3.4.5 Gulf/Strait of Georgia Culture Type

The Gulf (or Strait) of Georgia culture type (Borden 1962; Ham 1982; Mitchell 1990) (2,000/1,400 – 200 B.P.) is directly ancestral to ethnographic Coast Salish culture and contains a single culture type, though several regional variants or phases have been proposed. These include Late (Fladmark 1982; Matson 1992), San Juan (Carlson 1960), Strait of Georgia (Mitchell 1971, 1990), Gulf of Georgia (Ham 1982) and Stselax (Borden 1954). The trend away from lithic industry continues, as does the increase in composite tool technology. Large village sites with longhouse platforms oriented towards riverine resources continue from Marpole. The economy continues to be directed towards intensive salmon processing and storage. This period is well represented in the archaeological record of Vancouver Island.

3.5 Archaeology

A number of archeological investigations have taken place in the general vicinity of the project area. Many of these excavations have focused on large complex sites such as at the Deep Bay site, Departure Bay in Nanaimo and the False Narrows midden on Gabriola Island. Less work has been done on smaller task specific sites although these sites have the potential to provide information on details of activities not represented at larger sites. Excavations at large complex site have taken place at Craig Bay (Wilson 1994), Departure Bay (Wilson and Crockford 1994), Deep Bay (Monks 1977), False Narrows (Burley 1989), and to the southeast Little Qualicum River wet site (Bernick 1976, 1977, 1980; Bernick and Wigen 1990). Subsequent to early work at the Deep Bay site DiSe 7 (Monks 1977), the site has been revisited by I.R. Wilson Consultants Ltd. in the spring of 2003 (Wilson et al. 2003) and in the spring of 2004 (Rogers et al. 2004; Wilson et al. 2004).
DiSe 13 was recorded in the summer of 1975 during a regional inventory of the east coast of Vancouver Island between Nanaimo and Courtenay (Murton and Foster 1975). At that time it was thought to be undisturbed and was estimated to be 450 m in length and 20 m in width though because of a lack of adequate exposures, this estimate appears to be largely a guess. No estimate of site depth was provided though the site elevation was recorded to be between 2 and 39 m above sea level.

An archaeological impact assessment conducted by I.R. Wilson Consultants Ltd. in 2005 (Wilson 2005) identified a relatively small area of midden deposits within the property of the proposed Centre for Shellfish Research. These deposits represented a small part of the overall site. Deposits were observed to be undisturbed but discontinuous and relatively shallow, ranging between 25-40 cm in thickness. No artifacts or vertebrate fauna were recovered. The portion of DiSe 13 within the study property was considered to be of only moderate scientific significance. However the potential for more significant wet deposits was noted given the low-lying nature of the site and the presence of wet peat across much of the site area.

Further investigations at DiSe 13 by I.R. Wilson Consultants Ltd. (Streeter and Bond 2007) identified 75 artifacts during the salvage program including 33 flaked stone objects, 21 ground stone artifacts, six pecked stone artifacts, six bone artifacts, three antler artifacts and six made of perishable plant materials. Two radiocarbon samples provided radiocarbon ages of 2150 to 1860 B.P. and 2000 to 1730 B.P. According to the regional cultural chronology, these dates should correspond to a Marpole occupation. The artifact assemblage, though small, seems to support the interpretation of a Marpole occupation.

In addition to DiSe 13, six previously recorded archaeological sites have been recorded within 2.5 km of the proposed development, with five more identified within 5 km. Ten are coastal midden sites and one is a beach weir site. Most were identified in 1975 during a regional archaeological survey. Each site with notes extracted from site forms is listed in Table 1.
### Table 1: Previously recorded sites in vicinity of subject property

<table>
<thead>
<tr>
<th>Site</th>
<th>Distance from subject property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiSe 1</td>
<td>3 km</td>
<td>Recorded 1963, 1972, 1975. Midden site. Site is very extensive with the deepest areas being around the end of Berray Rd. where the deposit extends inland some 60 – 70 m.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At present the area is partially developed but the greater part of the site is still undeveloped. Erosion in some areas of the site to the east of Berray Road is extreme. Shoring or salvage should be provided for this area. The site is definitely worth investigation if further developed. The area should be watched and tested accordingly. 1972 form reports ‘pits slumped in’ - area has been logged.</td>
</tr>
<tr>
<td>DiSe 6</td>
<td>3.8 km</td>
<td>1975. PRECONTACT, Cultural Material, Subsurface, Shell Midden could be old.</td>
</tr>
<tr>
<td>DiSe 7</td>
<td>120 m</td>
<td>Width 50 m. Length 600 m. 1964: Site is located at Deep Bay south of Mud Bay (Fanny Bay). Site at base of spit – Mapleguard Point. First identified in 1975, this site has been extensively revisited. It includes substantial midden deposits with artifacts, faunal remains and human burials. One burial was determined to be of high status or ritual placement. Notes for this site are too voluminous to include in this table, but this site is clearly very significant. Charles, Locarno and Marpole components identified at this site.</td>
</tr>
<tr>
<td>DiSe 11</td>
<td>2.2 km</td>
<td>Length 60, width 20. 08-JUL-75, The site is very small and there is only evidence of a very thin deposit. Almost completely destroyed. 21-OCT-05, Due to a miscommunication, the installation of water meters within DiSe 11 was not monitored by First Nations or an archaeologist. Anecdotal information from Deep Bay Waterworks stated that the water meters installed within the known boundaries of DiSe 11 revealed gravel fill and no dark organic soils or archaeological material.</td>
</tr>
<tr>
<td>DiSe 12</td>
<td>740 m</td>
<td>PRECONTACT, Subsistence Feature, Fishing, Fish Trap ROCK WEIR. 22-JUL-02, In 1975 recording archaeologists noted this petroform, visible at low tide, to be “definitely a component feature of DiSe-007”.</td>
</tr>
<tr>
<td>DiSe 14</td>
<td>1.9 km</td>
<td>Length 100 m, width 10 m. 1975. PRECONTACT, Cultural Material, Subsurface, Shell Midden</td>
</tr>
<tr>
<td>DiSe 15</td>
<td>750 m</td>
<td>1975. PRECONTACT, Cultural Material, Subsurface, Shell Midden</td>
</tr>
<tr>
<td>DiSe 16</td>
<td>4.1 km</td>
<td>Length 120, width 20. July 1975. SHELL MIDDEN</td>
</tr>
<tr>
<td>DiSe 17</td>
<td>4.6 km</td>
<td>Length 200m, width 20 m. July 1975. PRECONTACT, Cultural Material, Subsurface, Shell Midden</td>
</tr>
</tbody>
</table>
## Table continued

| DiSe 18  | 4.7 km | Length 800 m, width 16 m. 1975 and 1991. PRECONTACT, Other Feature, Cultural Depression, Function Unassigned  
PRECONTACT, Cultural Material Subsurface, Shell Midden  
20-JUL-75, Habitation on the site seems to be quite settled at present. There is only one area of the site that is endangered (see sketch). Little erosion present. Possibilities of development in the undisturbed areas. Site is very large and consistently deep deposit. Endangered areas seem definitely worth salvaging.  
09-DEC-91, Although our recent field investigation of three parcels at Mud Bay did find some evidence of archaeological deposits (specifically on Lot 1, Plan 14450 and Lot A Plan 5602) none of these deposits are archaeologically significant as they are in a highly disturbed condition. The specific area within Lot 1 Plan 31304 that is proposed for warehouse construction contains no evidence of archaeological remains nor does any other part of this parcel. In addition, only scant evidence of archaeological deposits occur within Lot A, Plan 5602. It is assured that the construction of an access road coupled with the construction of any oyster processing facility destroyed any intact midden deposits within this latter period. On the basis of the above no further archaeological work is considered necessary within the subject parcels and it is recommended that the proposed warehouse project should proceed as planned. |
| DiSe 33  | 2.6 km | The site was discovered in March, 1990 during construction of a logging access road to allow logging of the site and surrounding area of DL 15. Road construction and logging operations have destroyed and scattered the site to such an extent that the original limits and depths of midden deposits cannot be ascertained. Indications of the site are midden deposits in the root masses of stumps and other debris bulldozed to the east side of the logging road and scattered midden deposits mixed with road gravel and leveled and logged surrounding the immediate vicinity of the debris pile. Presumably the site was originally a small, shallow midden. There are no apparent landform features with which it may have been associated. |

### 3.6 History

European settlers began to arrive in the Deep Bay area in the late 1800s. The government had a preemption plan stating that if a family lived on a piece of land for a specified amount of time and “improved” it, they could register ownership. In 1873, a Mr. Donaldson applied to the Government Agent to claim Lot 1, included in the present study area. He was told that a Dr. Ash had claimed this property and the entire Deep Bay spit, though it was clear he had never lived in the area (Levitz and Willott 1997). This claim jumping was not uncommon in the early years of preemptions and Dr. Ash remained owner of the property. Since that time, Lot 1 has served a variety of industrial developments including the Canadian Robert Dollar Company which ran a logging operation with associated rail lines between 1917 to 1931, fishing, development of the Grolls’ cannery and reduction plant on the spit which operated between 1917 to 1931.
The cannery was then purchased by B.C. Packers who ran it until 1951. At this time, all the B.C. Packers buildings including all the residences on the spit were removed as the company had agreed to return the land in its original condition.

Levelled areas were identified on the benches above the beach in the present study. First Nations assistants suggested there was apparently a cannery in the area that may have been the cause of the extensive disturbance. It is not known if a cannery was actually located on the benches in question. The Canadian Robert Dollar Company ran logging operations from the subject property during the time the cannery was operating. Sources report that some children from “Dollar Camp” came to the school on Mapleguard Point either by rowboat or by walking along the beach (Levitz and Willott 1997:57), so it is possible that the levelled area was the location of that camp. No other records of industrial activity on the subject property were identified, but some of the roads and trenches are clearly of recent origin.

Another historical disturbance of the land occurred June 23, 1946 due to an earthquake centered near Deep Bay. The quake measured 7.3 on the Richter scale and officially lasted for 30 seconds. According to Levitz and Willott (1997:61), “Six meters of land dropped off the end of the spit, and the sandy, gently sloping beach area was replaced by a drop-off into 30 meters of water.” This earthquake (or others) clearly altered the topography of the subject property as well, leaving slumpage from the now steep embankment leading up to the benches covering portions of the beach deposits and adding new deposits from above.

A railroad line and right-of-way were put through the property in the early 1900s and is still apparent today. It separates D.L. 1 from D.L. 66. No official records of archaeological finds during excavation of the rail bed have been located, but one primary resource reported that “When I was at Deep Bay we found skeletons when the railroad track was being built (Levitz and Willott 1997:4).” There is no indication whether this discovery was located on the subject property or if it was in the nearby area crossed by the railway.
4. METHODOLOGY

Available information concerning DiSe 13 including maps and the site form was acquired and reviewed prior to commencement of the field program in December 2006. Available information concerning other archaeological sites in the immediate vicinity of the subject property, including site forms and maps, was acquired using RAAD (Remote Access to Archaeological Data). The Qualicum First Nation and Hamatla Treaty Society were contacted prior to field study to arrange for archeological field assistants. A Heritage Conservation Act site inspection permit was applied for and fieldwork was initiated after the permit was issued. Fieldwork was undertaken over five days from December 18-22, 2006.

The focus of the impact assessment was to determine the site boundaries of DiSe 13 within the study area and determine the location and extent of possible unrecorded sites on the property. Prior to subsurface testing, the entire property was visually inspected. The shoreline investigation was aided by erosional exposures along the beach. Visual inspection of the remainder of the property was aided by exposures created by trenches, roads, uprooted trees and industrial activity (Plate 2).

Plate 2: Exposures from road cuts.
Pedestrian transects were spaced at 2 m intervals along the shoreline and adjacent to creeks and drainages. Exposures along the creek banks were also inspected for cultural deposits. Transect intervals were increased to 10-20 m in the interior of the D.L. 1 and to 20-40 m in D.L. 66, where logging debris and industrial activities are present. Standing and fallen trees were inspected for evidence of cultural modification.

In addition to surface inspection, 84 systematically and judgementally placed subsurface tests were excavated. Tests included hand held auger tests and small diameter shovel tests measuring approximately 35 cm to a side. Backdirt from the shovel and auger tests was passed through ¼ inch (6 mm) wire mesh in hand held screens.

The survey crew walked the entire length of the railway right-of-way on the subject property checking all exposures for cultural activity. A small drainage runs along the south side of the railroad tracks. Exposures related to the drainage were examined as well.

All work was conducted in accordance with provincial archaeological guidelines administered by the Archaeology Branch of the Ministry of Tourism, Sport and the Arts. Complete photographic and written documentation of the project was maintained with all pertinent records to be provided to the artifact repository as appropriate.
5. RESULTS

Pedestrian transects were walked throughout the subject property. The property has been industrially logged in the past and a cannery operating between 1917 and 1951 may have been on the property. The back (south) of the subject property has been logged as well and remnants of this activity are still readily apparent. Other than the slope that leads sharply up from the shoreline to the benches (Plate 3), the terrain in the study area is relatively level with a slight southwest slope away from the bay. No culturally modified trees were noted within the property boundaries.

![Plate 3: Slope leading up to benches.](image)

The site boundaries of DiSe 13 were found to extend into the subject property. The site contains both stratified and non-stratified shell midden deposits and is situated parallel to Deep Bay, extending inland (southwest) up to 115 m from the shore. The site has been significantly disturbed by previous property development and natural erosion. Sixty-nine shovel tests and 15 hand auger tests were excavated in the vicinity of the site. Twenty tests yielded positive results and were used to determine site boundaries for DiSe 13. No
artifacts or faunal materials other than shell were identified in any positive shovel test or surface exposure. Figure 3 illustrates the location of tests and the location of DiSe 13 relative to the study area.

Soil stratigraphy of negative tests in the lower shoreline area of the project area typically consisted of a 20 cm humic layer overlying reddish brown sand to 35 cm, grayish brown silty loam to 50 cm with blue-gray sandy glacial deposits or sand and large cobbles at the bottom. Positive tests along the shoreline included stratigraphy similar to that listed above with crushed clam and mussel shells and charcoal appearing at differing depths with deposits starting from the surface to 65 cm below surface and extending up to 1 m below surface, overlying a thin layer of pure sand with large cobbles, which prevented deeper excavation. As the lower shoreline area is only a maximum of 30 m wide, subsurface testing was focused between the waterline and the bottom of the steep slope rising to the raised bench areas above. All the positive tests along the shoreline are associated with DiSe 13. Evidence of the site in the shoreline area was also noted in exposures such as tree throws (Plate 4).

Plate 4: Midden in tree throw on lower area.
Deep Bay
Transects and Subsurface Tests

Proposed Destination Resort
Archaeological Site Boundary
Positive Shovel Test Location
Negative Shovel Test Location
Positive Auger Test Location
Negative Auger Test Location
Negative Test in Trench
Transect Coverage
Industrial Access Road
Road
Contour (5m interval)
Water Body

Scale 1:10,000

Figure 3
IRW 06-1889

I. R. Wilson Consultants Ltd.

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Auger tests in the shoreline area reflected a variety of stratigraphies. In some, midden was not visible on the surface, but appeared under only a few centimeters of sand. Other tests revealed thick midden appearing at 1 m below surface. Two tests located midden just under the surface extending to 80 cm below surface with a 3 cm layer of sand beneath, then more midden under the sand layer. Subsurface tests were excavated in areas not included in previous descriptions of site DiSe 13.

Testing in this area shows that site DiSe 13 extends along the entire shoreline of the subject property from the water to the base of the slope. The original site form describes the site as being only 20 m in width along the shore. The confusion may have resulted from slumpage caused during the 1946 or previous earthquakes. Vegetation along the shoreline consists of mature cedar, hemlock and fir trees with thick understory of ferns, alder and moss.

Soil stratigraphy on the benches in the upper areas was composed of less than 3 cm of humic layer overlying brownish orange sterile sand to 115 cm with yellowish brown sterile sand beneath. No cultural materials were located in any of tests where the brownish orange sand was just below surface. A recently excavated 135 cm deep trench in one location on an upper bench did not reveal cultural deposits. An auger test was placed in the bottom of the trench in an attempt to reach as deep as possible into deposits (Plate 5). As with the previous tests, stratigraphy included only brownish orange sand over yellowish brown sand. Deposits contained 3-5% pea-sized or smaller subangular gravel.

The benches on the subject property overlook Deep Bay and DiSe 7 on Mapleguard Point. They have been logged and leveled with all stumps removed up to 115 m back from the edge of the slope. Surface scatters of shell appeared sporadically across the benches, but no shell was found in subsurface tests on the leveled areas. A few small stands of one to three larger trees and some younger saplings remain in isolated sporadic groups on the benches. Soil deposits around these trees are about 1 m higher than the leveled areas surrounding them, indicating that roughly 1 m of soil has been removed. Broken and crushed shell is present in these upper remnants of soils at and just below the
surface extending only approximately 30 cm in depth (Plate 6). In order to accurately determine site boundaries, systematic subsurface testing on the leveled areas on the upper benches was abandoned in favour of judgementally testing the less disturbed areas.

Plate 5: Auger test in bottom of newly dug Trench 1.
Three benches were tested. Benches 1 and 2 are separated by a small unnamed creek with running water. Midden deposits are visible in the creek banks on the lower beach area where the creek empties into Deep Bay. The bench on the western side of the creek (Bench 1) is very heavily disturbed. Five shovel tests were excavated and did not yield cultural materials. On the east side of the creek, at least 1 m of material has been removed in leveled areas along Bench 2. Tests were placed judgementally in small pockets of relatively undisturbed areas. Thirty subsurface tests were excavated with four yielding cultural deposits. This area of the site measures 112 m long and 61 m wide along the edge overlooking Deep Bay. Measurements were taken from the east side of the mouth of the creek (where a white IP stake is located), up a short trail leading to the bench, then across the bench to the first negative shovel test placed in a tree stand. Midden deposits were evident on the surface from the creek and along the trail to the bench. Width measurements were taken from the edge of the bench south to the first negative test. Both

Plate 6: Midden exposure in northwest.
measurements were taken by compass and hip-chain as well as by GPS. A series of three negative tests in a row were considered to indicate the limit of cultural deposits.

On Bench 3, located east of Bench 2, surface cultural materials were observed in various areas including roads, older trees and in sporadic surface exposures. This bench measures 111 m southeast/northwest and 176 m southwest/northeast. Bench 3 is very heavily disturbed and extremely flat with only a few trees left standing. This was the area identified by First Nations assistants as the possible site of cannery or logging camp activities. Ten shovel tests were excavated around the perimeter of the bench in areas that appeared relatively undisturbed. All were negative. Ten tests were excavated in the leveled area where surface shell was visible. All sediments below surface consist of sterile sand with no traces of shell.

The remaining areas of D.L. 1 are fairly flat, but uneven. Roads, trenches and other disturbances are widespread (Plate 7). Several PVC pipes with unknown purpose were found inserted vertically into the ground in various locations. Ground surfaces and stratigraphy were exposed in numerous locations. No evidence of pre-1846 cultural activities was identified outside the areas discussed above. Vegetation was dominated by second growth hemlock, fir and cedar trees with an understory of alder, ferns, and mixed grasses.

D.L. 66 is located in the southern portion of the proposed development. It has been industrially logged and has debris from logging spread across the landscape. The entire railroad right-of-way, which separates D.L. 66 from D.L. 1, was examined as well. Although there were numerous areas of exposure, no cultural remains, other than those related to post-1846 logging and railroad activities, were identified.

The topography of the benches, combined with the presence of sterile sand at the bottom of all subsurface tests, indicates that these raised areas might contain palaeoshorelines. In order to assure that there were no locations that might have high archaeological potential for earlier occupations further south on the property, research regarding sea level change for the eastern coast of Vancouver Island was reviewed (Clague et al. 1982; Hutchinson et al. 2004). Hutchinson et al. (2004) suggests that “Relative sea level fell from 150 m
Such rapid change would not allow for shorelines stable enough to support habitation during that early period. Holocene sea levels have been near or below current sea levels in the area, thus removing palaeoshorelines at 30-35 m above sea level as indicators of early habitation on the subject property.

Plate 7: Road along cleared level bench.

Table 2 summarizes the number, location and results of shovel and auger tests excavated at each test location. “AT” indicates auger test locations and “ST” indicates shovel test locations. All locations are included on Figure 3. Previously excavated backhoe trenches are shown as “BHT” on the illustration.
<table>
<thead>
<tr>
<th>Test Location</th>
<th>Number of Tests</th>
<th>Number Positive</th>
<th>Depth Below Surface</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT-1</td>
<td>1</td>
<td>0</td>
<td>115 cm</td>
<td>On bench.</td>
</tr>
<tr>
<td>AT-2</td>
<td>2</td>
<td>0</td>
<td>224 cm</td>
<td>Test in bottom of 120 cm deep trench.</td>
</tr>
<tr>
<td>AT-3</td>
<td>2</td>
<td>0</td>
<td>155 cm</td>
<td>Test in bottom of 135 cm deep trench. Test stopped due to high water table.</td>
</tr>
<tr>
<td>AT-4</td>
<td>5</td>
<td>0</td>
<td>80 cm</td>
<td>Tests 3 m apart along west bank of creek.</td>
</tr>
<tr>
<td>AT-5</td>
<td>1</td>
<td>1</td>
<td>80 cm</td>
<td>Orange-brown sand from bench above to 30 cm, then midden to 65 cm, then 5 cm lens of sand with more midden beneath to 80 cm, large cobbles on bottom.</td>
</tr>
<tr>
<td>AT-6</td>
<td>4</td>
<td>4</td>
<td>80 cm</td>
<td>Same as AT-6</td>
</tr>
<tr>
<td>ST-1</td>
<td>1</td>
<td>0</td>
<td>80 cm</td>
<td>On bench.</td>
</tr>
<tr>
<td>ST-2</td>
<td>1</td>
<td>0</td>
<td>80 cm</td>
<td>On bench.</td>
</tr>
<tr>
<td>ST-3</td>
<td>5</td>
<td>0</td>
<td>100 cm</td>
<td>East side of creek that forms east boundary for Centre for Shellfish Research.</td>
</tr>
<tr>
<td>ST-4</td>
<td>1</td>
<td>0</td>
<td>56 cm</td>
<td>Continuing east along south side (back) of lower beach area. Hit water at 56 cm below surface.</td>
</tr>
<tr>
<td>ST-5</td>
<td>1</td>
<td>0</td>
<td>58 cm</td>
<td>Continuing east along south side (back) of lower beach area. Hit water at 58 cm below surface.</td>
</tr>
<tr>
<td>ST-6</td>
<td>1</td>
<td>0</td>
<td>80 cm</td>
<td>Orange-brown sand slumped from bench above covers beach deposits.</td>
</tr>
<tr>
<td>ST-7</td>
<td>1</td>
<td>0</td>
<td>80 cm</td>
<td>Same as ST-6, but midden deposits visible on surface less than 1 m away and extending along entire lower area to east edge of property.</td>
</tr>
<tr>
<td>ST-8</td>
<td>6</td>
<td>6</td>
<td>80 cm</td>
<td>Tests placed at 5 m intervals from AT-7 to ST-8. 37 m length along lower beach area with only 10 m width from water to bottom of slope.</td>
</tr>
<tr>
<td>ST-9</td>
<td>1</td>
<td>1</td>
<td>80 cm</td>
<td>Orange-brown sand from above to 10 cm, midden to bottom, large cobbles beneath.</td>
</tr>
</tbody>
</table>

../Table continued
In Table continued,

<table>
<thead>
<tr>
<th>Sample</th>
<th>No.</th>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-10</td>
<td>3</td>
<td>80-110 cm</td>
<td>Tests placed judgementally near bottom of slope. Shovel tests to 80 cm. Auger tests placed in bottom of shovel tests encountered thick midden deposits at 1 m below surface including shell, fire-altered rock and charcoal.</td>
</tr>
<tr>
<td>ST-11</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area). Midden from surface to 30 cm below surface.</td>
</tr>
<tr>
<td>ST-12</td>
<td>1</td>
<td>80 cm</td>
<td>On bench (levelled area). Sterile sand throughout test, orange brown on to 60 cm, yellow brown sand below.</td>
</tr>
<tr>
<td>ST-13</td>
<td>1</td>
<td>80 cm</td>
<td>Same as ST-12 above.</td>
</tr>
<tr>
<td>ST-14</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area). Midden from surface to 30 cm dbs. Same as ST-11.</td>
</tr>
<tr>
<td>ST-15</td>
<td>1</td>
<td>80 cm</td>
<td>On bench (flattened area). Sterile sand throughout test, orange brown on to 60 cm, yellow brown sand below. Same as ST 12 and 13.</td>
</tr>
<tr>
<td>ST-16</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area). Midden from surface to 30 cm below surface. Same as ST-11 and 14.</td>
</tr>
<tr>
<td>ST-17</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-18</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-19</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-20</td>
<td>2</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-21</td>
<td>2</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-22</td>
<td>2</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-23</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td>ST-24</td>
<td>1</td>
<td>80 cm</td>
<td>On raised bench (relatively undisturbed area).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>ST-25</td>
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<td>0</td>
<td>80 cm</td>
</tr>
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<td>ST-26</td>
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</tr>
<tr>
<td>ST-28</td>
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</tr>
<tr>
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<td>80 cm</td>
</tr>
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</tr>
<tr>
<td>ST-33</td>
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</tr>
<tr>
<td>ST-34</td>
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</tr>
<tr>
<td>ST-35</td>
<td>1</td>
<td>0</td>
<td>80 cm</td>
</tr>
<tr>
<td>ST-36</td>
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<td>0</td>
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</tr>
<tr>
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<tr>
<td>ST-47 to 51</td>
<td>5</td>
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</tr>
<tr>
<td>TOTAL</td>
<td>84</td>
<td>20</td>
<td></td>
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</table>
6. RESOURCE EVALUATION

DiSe 13 extends along the entire shoreline of this property and extends south/southwest up onto the benches above for at least 120 m inland from the bank edge in some places. Some deposits are heavily disturbed by industrial and tectonic activity, but there are potentially scientifically and culturally significant pockets of intact deposits. The proximity and relation of DiSe 7, a large and important site, increase the probability that this was once a continuous habitation site. Additionally, artifacts and materials recovered during monitoring at the proposed Centre for Shellfish Research (Streeter and Bond 2007), located in the northwest corner of the subject property, indicate long-term prehistoric habitation. Since both human remains and diagnostic artifacts have been located in associated and adjacent sites, there is a strong possibility of similar deposits on the subject property despite areas of heavy disturbance. Due to the high level of disturbance in some areas, it is important to manage any remaining significant materials. Most of the deposits that are within the study property have been severely disturbed. Cultural materials are not deep and no vertebrate faunal remains or artifacts were identified in the testing program.

The Qualicum First Nation and Hamatla Treaty Society should be consulted regarding ethnic significance of DiSe 13 prior to any subsequent land altering activity.
7. **IMPACT ASSESSMENT**

Although precise layout of project facilities is not finalized, construction along the shoreline and adjacent raised benches would likely severely disturb archaeological deposits at the site. The main portion of the proposed resort, including most of the construction on D.L. 1 and all of the area within D.L. 66, are outside site boundaries and would not affect cultural deposits. According to the present concept plan, the most likely area of possible disturbance is within the northwestern portion of the property as shown in Figure 2.
8. **RECOMMENDATIONS**

Based on the conceptual development plan shown in Figure 2, site deposits associated with DiSe 13 are located in areas proposed for residential subdivision on the western portion of the property and particularly the northwest portion of the property. Because testing did not yield either vertebrate faunal remains or artifacts, it appears that cultural content may be relatively limited in some areas of the site due to previous disturbance. This is most apparent in deposits on the upper benches of the site. However, the site is very large and appears to have some areas with potentially undisturbed deposits. Therefore, it is recommended that 1 m² excavation units be placed in areas of relatively undisturbed deposits within 120 m of the edge of the benches above the shoreline. No testing is recommended on the lower shoreline assuming that no development is planned for this area. Since a meter or more of the surface deposits have been removed across parts of the benches, judgementally placed excavation units in these areas would be more productive than a systematic or random sample of excavation units. It is further recommended that archaeological monitoring of activities that would disturb the ground surface be conducted in areas where cultural deposits were identified in this study. Systematic recovery of any cultural remains unearthed by these activities is recommended.

The potential for unrecorded archaeological resources is considered low. However, if archaeological materials are uncovered during any phase of ground altering activity, all work in the vicinity of the finds should be stopped and Archaeological Planning and Assessment notified. Historic and prehistoric materials older than A.D. 1846 are protected by legislation. Such materials may consist of historic refuse or structural remains and/or prehistoric materials consisting of bone, chipped stone, debitage (debris from the manufacture of stone tools), lithic scatters or shell middens.

These recommendations apply solely to physical archaeological evidence of past human activity and in no way attempt to encompass any traditional land use or heritage concerns of the various First Nations people with traditional territories in the study area.
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