A Cultural Resources
Study of the Proposed
Hayden Island Marine Industrial Park
Multnomah County, Oregon

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Executive Summary

Portland General Electric Company has proposed development of a marine industrial park on west Hayden Island. The island is situated between Portland, Oregon, and Vancouver, Washington, in the Columbia River just above the mouth of the Willamette River. The most direct impact of the project would be extensive fill placed to raise areas to be developed above flood levels. The existing vegetation in the project area would be cleared prior to placement of the fill. A cultural resources evaluation was made of the project area as part of the environmental review process.

The existing area environment is one of ash-cottonwood woodlands on higher ground and natural grasslands and pasture in old sloughs and on artificial land. This reflects the picture of the island as recorded in the early nineteenth century—a mosaic of woodlands, meadows, and old channels with ponds and marshes. The native resources in the area included a variety of small and large game, waterfowl, and abundant runs of fish in the Columbia. Since the early twentieth century, the island's form has been substantially modified by the construction of spur dikes, dredge spoils, and human efforts to change the adjacent channels.

Archaeological research has indicated human settlement in the Portland Basin extends back in time at least 3000 years and possibly 6000-9000 years. The islands of the Columbia were important centers of settlement but there is no known evidence for prehistoric settlement on Hayden Island. The ethnohistoric
data depicts the island area as the home of an affluent Chinookan culture. However, this information also provides only a brief reference to native use of Hayden Island; that reference is to an outside group in the final years of the aboriginal era. An 1850s farmstead was the first Euroamerican settlement of Hayden Island. This farm was short-lived and the project area soon developed its present use—as a holding area for livestock being marketed in Portland.

The field study of the project site recorded no significant evidence of either prehistoric or historic occupation. It is likely that there was limited native use of the island, producing little archeological data. There was no evidence of the Hayden farmstead although its site is in the project area. The early historical record has been lost to later development, especially dredge disposal.

It is concluded that no significant cultural resources would be affected by the proposed development. No further work is recommended at this time.
Acknowledgments

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Cover: Mary Jane and Gay Hayden, probably about 1880  
      (Photos courtesy of the Oregon Historical Society)
I. Introduction

A. Project description

Portland General Electric Company (PGE) of Portland, Oregon, has proposed development of a marine industrial park on west Hayden Island in Multnomah County, Oregon. Hayden Island extends for about 7 km (4.4 miles) in the Columbia River, between Vancouver, Washington, to the north and Portland, Oregon, to the south (Figure 1). The island lies outside the city limits of Portland, but the Portland Basin (with a population of about 1.2 million) is very urbanized. The western portion of Hayden Island is included within the region's Urban Growth Boundary and has been designated an urban area by Multnomah County. The county's designation limited future development of west Hayden Island to marine industrial uses. The area proposed for development by PGE is between the Burlington Northern Railroad line on the east and the Pacific Power & Light/Bonneville Power Administration (PP&L/BPA) transmission corridor on the west (Figure 2). It consists of 496 acres in the SW 1/4, section 28; section 29; NE 1/4, section 32; and the NW 1/4, section 33, T. 2N., R. 1E., Willamette Meridian.

Four alternative development proposals have been defined (PGE 1985: II-1 - II-13). All four alternatives would involve filling substantial acreage for flood protection. In Alternatives A and B, 480 acres would be filled to elevation 9.8
Figure 2: Project site

- Project site boundary
- Transmission line
- Sewer line
- Road/track
- Dredge spoils
- Pasture/grassland
- Seasonal marsh
- Open woodland
- Ash-cottonwood woodland
- Pond
m (32') MSL. The depth of the fill would generally vary from about 7.0 m (23') in the lower tracts of the island to 1.0 m (3.3') or less over the existing higher ground. The remaining 16 acres would be left undeveloped. In Alternative C, only the perimeter of the property would be filled; 150 acres in the center of the area would remain undeveloped. In Alternative D, the perimeter would be filled to 9.8 m (32'); but the interior would be filled only to the 7.3 m (24') elevation. A basin of 64.4 acres would be dredged in the southeast portion of the property. The remaining 7.9 acres would not be developed. The fill would be derived from dredging new access channels to the island in both the main channel of the Columbia and Oregon Slough, a new turning basin in the Columbia just below the Burlington Northern railroad bridge, and—in Alternative D—from the proposed southeastern basin. For Alternatives A and B, additional sources of fill would be sought.

The filling would be phased, probably in 75-100-acre increments. The filled land would be divided into smaller lots for marine terminal berths and industrial warehouse sites. In all four alternatives, marine terminal berths would occupy most of the acreage; no industrial warehouse sites are provided in Alternatives B and C. Shoreline treatment would vary with user needs, ranging from dolphins and piers to pile-supported structures to bulkheads. Elements of the development would also include provision of utilities and transportation access. The
latter would include a rail line from the existing Burlington Northern track. To separate industrial traffic from the residential and commercial use of east Hayden Island, a bridge would be constructed to connect the west island with Marine Drive on the south shore. The bridge would probably be placed just downstream of the Burlington Northern bridge across Oregon Slough.

There would be significant loss of wetlands through this development. Alternative C provides for creation of new wetlands in the property interior to mitigate losses elsewhere on the property. Off-site mitigation has been proposed for losses in Alternatives A, B, and D. Possible sites being explored include the Smith and Bybee lakes area on the south mainland floodplain, on Sauvie Island, and in the Vancouver Lake area on the northern floodplain (PGE 1985: IV-11, IV-31).

To implement any of its proposals, it is necessary for PGE to obtain permits from the U.S. Army Corps of Engineers. The proposed development therefore becomes subject to Section 106 of the National Historic Preservation Act, as amended (80 Stat. 915), the pertinent implementing regulations (36 CFR 800), and the Corps counterpart regulations (33 CFR 325). Under Section 106, federal agencies must consider the potential impacts to cultural resources of any federal project or any non-federal project assisted by federal funds, licenses, permits, etc. Cultural resources are the material remains of past human activity, both prehistoric and historic. Through the National
Historic Preservation Act, Congress placed federal agencies in the forefront of action to conserve dwindling prehistoric and historic resources.

Although the participating agency bears primary responsibility for insuring that cultural resources are considered in evaluating project impacts, agencies may delegate certain responsibilities in the evaluation process to permit applicants. The delegated responsibilities usually include field studies and literature search to determine if cultural resources are present in the project area, assessing the importance ("significance") of resources that may be present, and outlining appropriate measures to mitigate any potential impacts to significant resources. The agency may accept, reject, or modify cultural resources evaluations submitted by applicants. The agency must also coordinate evaluations with the appropriate State Historic Preservation Office(s) and, when significant resources would be impacted, with the federal Advisory Council on Historic Preservation.

To satisfy these requirements, a cultural resources evaluation of the proposed west Hayden Island development area was conducted by Willamette Associates under contract with PGE. This evaluation included a systematic examination of the project area to locate any material evidence of past human activity in that area. In addition, a comprehensive review was conducted of the available literature on the environment, archeology,
prehistory, ethnohistory, and history of Hayden Island. Individuals knowledgeable in these subjects were also consulted. This evaluation was limited to the PGE acreage on west Hayden Island. It did not include a physical examination or literature search of possible related impact areas; i.e., the possible bridge connection on the south mainland shore or off-site wetland migration locations. This report presents the results of the Willamette Associates' investigation.

B. Field methods

The field investigations were directed toward a comprehensive physical examination of the project area. No areas which might provide evidence of past human activity were excluded from consideration. The examination involves walking over the project area in a systematic manner, seeking evidence on the surface of human use. The standard for field surveys are linear walks ("transects"), the distance between each line determined by vegetation, terrain, and size of the field crew. The surface examination may be supplemented by limited subsurface testing. Testing is most effective in locating resources where the geographical setting suggests a likelihood of past human use (e.g., near springs and the confluence of streams, higher ground on floodplains), but surface and subsurface visibility is limited. Testing is also used to determine if there are subsurface cultural deposits associated with cultural materials.
on the surface.

These basic methods can be modified to fit the conditions of a particular project area while maintaining the goal of thorough coverage. On Hayden Island, two variables influenced the character of the field study. It had been established prior to the fieldwork that considerable portions of the project area had been created by artificial and natural deposition over the past 50-60 years. Studies undertaken by PGE and field observations delineated those tracts of west Hayden Island that had not existed before the early twentieth century.

It was decided to divide the project site into two areas. The middle east-west portion or core of the present west island represents the island as it existed in the nineteenth century. This area would be subject to systematic treatment with relatively narrow transect intervals (no more than 15-20 m [49-66']). The present north and south shorelines up to 300 m (985') back from the south shore and up to 200 m (655') back from the north shore have been created in the twentieth century (Figure 2). These areas were in turn subdivided into tracts known to be artificial (dredged sands and dikes) and those which appear to represent natural deposition. The former includes most of the northern shoreline, the PGE transmission corridor along the southern shore, and the large sand or spur dikes on the south shore (Figures 3, 4, 5, and 6). These artificial creations were subject to only cursory examination but no significant tracts were omitted. This area subject to limited study constituted
Looking up the Columbia from the beach along the northwestern corner of the project site.

Dredge spoils deposited along the northern edge of the project site; looking downstream near the eastern edge of the site.
Figure 5.
The PGE transmission corridor that parallels the original south shore of Hayden Island, looking east.

Figure 6.
Looking southeast toward one of the large spur dikes along the southern edge of the project site.
about 45 acres (9% of the project area), primarily along the northern shore. Extensive portions of the south shore appear to be areas built up naturally, but in response to human modifications of the original shoreline and Oregon Slough channel in the twentieth century (Figures 7 and 8). These areas were examined more systematically than the known artificial lands but less intensively than the island "core." These southern tracts occupy about 75 acres (15% of the project area). The focus of the reconnaissance in the twentieth-century land areas was evidence of significant historic resources.

In the survey of the central portion of the island, it had been intended to employ linear transects in a general east-west direction following the orientation of most of the more apparent natural features (bars or levees, sloughs and other drainages). This approach proved feasible only in meadow/pasture areas and in open woodlands (Figures 9, 10, and 11). Even in these areas, it was decided to permit deviations from a straight line to examine nearby surface or subsurface exposures (stock trails, eroded banks, patches of bare ground). Given the overall poor surface visibility of the project area (ranging from no visibility in dense pasture and meadows to 15-20% in some open wooded areas, and averaging about 5% for the central study tract), such deviations were necessary to maximize examination of exposed ground.

Those tracts of the central area not in meadow/pasture or
Figure 7.
Oregon Slough beach in the project area; looking upstream from a western spur dike.

Figure 8.
Open woodlands on land formed in the 1920s, along the present south shore.
Near the eastern end of the large northeast pasture,
The trees in the left distance (to the north) extend along the edge of an old slough.
Figure 10:
The grassy floor of an old slough in the northwestern portion of the project site. The trees are limited to higher ground.

Figure 11:
An ash grove in the older center of the island.
open woodland are characterized by ash and cottonwood woodland with a dense understory dominated by stinging nettle, snowberry, and blackberries (Figure 12). Several attempts were made to hack transects through these areas with machetes. This work was very time-consuming and it was very difficult to maintain a straight course through the brush. It was decided to adopt a more effective approach to examination of the wooded areas. Fortunately, the central area has an extensive network of existing and abandoned roads and tracks along almost all of the higher ground (Figure 2). These roads provide access to most of the wooded areas. It was therefore decided to follow all observed tracks and trails, penetrating into the woodlands on both sides of a road or path whenever the vegetation was relatively open or there were good surface exposures (Figures 13 and 14). The field crew consisted of two people. One individual walked along one side of a path and was responsible for the woodlands on that side, the other individual was responsible for the opposite side. About 95 acres of woodland at the project site (19%) were surveyed in this manner. For the few areas not accessible by a road or trail, it was necessary to resort to slashing transects through the brush. In this manner, it was possible to achieve comprehensive examination of the island core.

A separate transect was walked along the north edge of the PGE transmission line corridor. This edge approximates the south shore of west Hayden Island in the late nineteenth century.
Figure 12.
Typical cottonwood-ash woodland on the old central island near the east edge of the project site.

Figure 13.
Old road extending east-west along a higher ridge near the old south shore of the island.
Figure 14.
One of many small, grassy openings scattered throughout the woodlands.

Figure 15.
Looking north to the remnant bank of the old south shore.
Figure 16.
Dry season growth in an old slough, now a closed pond.

Figure 17.
An eroded bank on the south side of the slough in Figure 16. The slough bank here is about 1.5 m high.
(Figure 15). Most of the original shoreline has been buried by dredge spoils but there are stretches of the old bank intact toward the eastern end of the project area. The original northern shoreline is now buried entirely beneath dredge spoils.

All existing slough banks in the central area were examined separately (Figures 16 and 17).

The results of the field investigation are presented in the concluding section of this report.
II. Environmental setting

Hayden Island is one of the larger of many islands found in the Columbia below the Sandy River. In the Portland Basin—the valley from the Sandy River to the Kalama River—the Columbia receives the waters of the Sandy, Washougal, Willamette, Lewis, and Kalama rivers, as well as those of numerous smaller streams. Although over 150 km (94 miles) from the Pacific, tidal influences in the area are significant. The result is a delta-like environment along the Columbia—a broad, swampy floodplain characterized by many sloughs, wet meadows, and small lakes and ponds. Islands in the river range from small, short-lived sand and gravel bars, barren of vegetation or with sparse grassy cover, to large bodies of land covered with forests and meadows, sometimes with lakes and ponds and islands of their own.

The islands are creations of the river. Shoals may emerge from the water and gradually become covered with grasses and brush. Sediments accumulate around the vegetation, the island grows, acquires a tree cover, and becomes a relatively permanent feature of the landscape. As the Columbia raises up some offspring, others are destroyed. The outside of bends are eaten away, channels shift and land disappears, floods scour away the deposits of centuries or sweep away forests. It is apparent that Hayden Island is in a dynamic setting.

Over the past 150 years, humans have increasingly influenced the character of this environment. Dam and dike construction has mitigated the influence of the Columbia. Some land has been lost.
to dredging and aggregate mining but some land has been created by the same actions. At the mouth of the Willamette, Coon Island and Pearcy's Island have become part of the mainland through human action.

The western portion of Hayden Island is a creature of both natural and human processes. In the earliest descriptions of the island, its character often changes. The first description is provided by Lt. William Broughton, who explored the lower Columbia in late October 1792. Just above the mouth of the "River Munnings" (the Willamette), he passed "a small wooded island, about three miles in extent." He named the island "Menzie's Island" in honor of Archibald Menzies, the noted botanist. Sailing up the Oregon Slough past "Menzie's Island," Broughton also noted a small, sandy, wooded island at the upper end of the larger island. This smaller island was occupied by wild geese at the time of Broughton's visit (Vancouver 1801: 3: 104).

Thirteen years later, Lewis and Clark passed by the island in early November. They (Thwaites 1904-05: 3: 197-198) described the island as nine miles long, with two smaller islands along the northern edge of the island and three small islands at its lower end. An encounter at the lower tip of the island with a group of natives in an elaborately carved canoe led Lewis and Clark to name the island "Image Canoe Island." They provide no further description of the island.

The first recorded visit by Euroamericans to the island occurred in May 1825. The naturalists David Douglas and Dr. John
Scouler made a brief excursion to Menzies Island from Fort Vancouver. Douglas (Lavender 1972: 135) described the island: "low, sandy shores, rich vegetable soil in the middle, frequently inundated when the river is much swollen." Scouler (Young 1905: 173-174) reported that he and Douglas collected a number of plant specimens on the island. One plant was a new species—*Myosotis Hookeri*; the "most beautiful nondescript [previously undescribed?] plant we had yet seen." The species name *Hookeri* has not been retained; it is likely that this plant is the small forget-me-not (*Myosotis laxa*), which is still to be found on the island (PGE 1985: Appendix B).

There are no further descriptions of Menzies Island in the early nineteenth century.

The varying pictures of Hayden Island, as evidenced in the descriptions of Broughton and Lewis and Clark, indicate how shifting shoals and river level influenced individual perceptions of the area. Nineteenth century charts of the Columbia (e.g., Hudson's Bay Company *ca.* 1840-1845, U.S. Coast and Geodetic Survey 1888, U.S. Exploring Expedition 1841) show Hayden Island surrounded by extensive shoals on all sides. A drop in river level of only 1-2 m (3.3-6.6') would have exposed a sand bar from the lower tip of the island downstream to the mouth of the Willamette. There was an extensive shoal along the south-central shore of the island. Ship access to Fort Vancouver in the 1840s was possible only in a narrow channel along the northwestern shore of Hayden Island, then abruptly north to the northern
Columbia shore, and continuing upriver to the vicinity of the fort. The two islands reported by Lewis and Clark along the north side of "Image Canoe Island" were either sand bars exposed at low water or peninsulas separated from the main island by high water. The three islands below Hayden Island probably included Coon Island and Nigger Tom Island, once found at the mouth of the Willamette. Lewis and Clark appear to have attached Pearcy's Island to Hayden Island, accounting for part of their estimated nine-mile length for the island.

Unfortunately, there is little information on the vegetation of the island in the early nineteenth century. Broughton (Vancouver 1801: 3: 104) merely described it as "wooded"; Scouler and Douglas reported only the plant specimens they collected. On the basis of these cursory records, the low elevation of the original island (few elevations above 4.6 m [15'] MSL), and early nineteenth-century descriptions of the Columbia floodplain in the area, a reconstruction of vegetation will be attempted. The western area appears to have been composed of a network of shoals and sandbars which emerged, coalesced, and developed sufficient vegetation to become a fairly permanent feature. Once established as an island, the land was further modified by the Columbia into a series of sloughs or high-water channels, between which were higher ridges or levees. There probably were also levees along the northern and southern shores, forming banks back from broad, sandy beaches. The higher ground was wooded in cottonwood and ash with a dense understory of brushy vegetation. There may have been a few scattered "prairies," small in extent.
When the river level was normal or low, the sloughs probably supported a luxuriant growth of high grasses ("wet meadows") or marshy vegetation. Some depressions in the sloughs probably held water year-round, forming small, scattered ponds. During the spring freshets, the island was probably completely inundated. This flooding might shape the island; there is evidence that a portion of the north shore of the project area was lost in the 1894 flood.

The mosaic of woodland, grasslands, marsh, and pond probably attracted a variety of wildlife in the past. Black-tailed deer (*Odocoileus hemionus*) still occur in small numbers on the island. In the past, Hayden Island also offered ideal habitat for the Columbia River white-tailed deer (*Odocoileus virginianus*). Black bears (*Ursus americanus*) in search of prey may have occasionally been found on the island, as well as other predators such as bobcats (*Lynx rufus*), gray wolves (*Canis lupus*), and coyotes (*Canis latrans*). Other medium-sized land mammals that may have once occurred on the island include red fox (*Vulpes fulva*), raccoon (*Procyon lotor*), weasel (*Mustela frenata*), ermine (*Mustela erminea*), mink (*Mustela vison*), striped skunk (*Mephitis mephitis*), river otter (*Lutra canadensis*), beaver (*Castor canadensis*), and muskrat (*Ondatra zibethica*). Smaller land mammals include brush rabbits (*Sylvilagus bachmani*) and a variety of chipmunks, ground squirrels, moles, voles, and shrews (Bailey 1936: Ingles 1965; PGE 1985: Appendix D).

There is intensive use of the project site by birds,
including dozens of songbirds and several species of shorebirds. Upland ground birds observed in the area include California quail (Lophortyx californicus) and band-tailed pigeon (Columba fasciata). Waterfowl use in the past was probably limited to the winter months, with feeding and resting in ponds and marshes, and possibly resting in offshore shallows. Waterfowl species presently using the project site include Canada goose (Branta canadensis), mallard (Anas platyrhynchos), American wigeon (Anas americana), and wood duck (Aix sponsa) (PGE 1985: Appendix C). Populations of migratory waterfowl in the Portland Basin begin to increase in October and peak in November and December (U.S. Army Corps of Engineers 1976: 2A: Tables 103-109). The abundance of wintering waterfowl in the area was remarked (Gass 1807: 192; Parker 1838: 168; Thwaites 1904-05; 3: 199, 4: 216) by early travelers, including the oft-quoted comment of Lewis and Clark (Thwaites 1904-05: 3: 199) of being kept awake all night by the noise of ducks and geese near Sauvie Island. Townsend (1839: 210) noted the abundance of band-tailed pigeons along the Columbia, feeding on cottonwood buds in the spring.

From Hayden Island there was access to the rich resources of the Columbia River and Oregon Slough. Harbor seals (Phoca vitulina) were once common on the Columbia as far upriver as The Dalles (Parker 1838: 193; Thwaites 1904-05: 4: 225; Townsend 1839: 248). There are also accounts (Coues 1897: 2: 857; Ingles 1965: 402) of sea lions (Eumetopias jubata) traveling up the Columbia to the lower Willamette River. The most important resources were the great variety of both anadromous and resident
fish. The former include eulachon (smelt), which ran up the Columbia from mid-winter to early spring. Although individual fish are small, the size and timing of the eulachon runs and the relative ease with which they can be taken made them an important resource for native peoples. There are seven salmonid species which constituted the most valued resources of the river. Some of the species can be found in the river year-round, but populations peak during the spring (April-May), summer (June-July), and fall runs (September-October). Resident fish species utilized by the aboriginal populations included sturgeon, lamprey, chiselmouth, peamouth, chub, northern squawfish, and suckers. River mussels were also exploited in the past (PGE 1985: III-19 - III-27; Saleeby 1983).

This setting appears to have remained little changed through the nineteenth century. The relatively small size of the island (only about 800 acres in 1860), its inaccessibility, and frequent flooding probably discouraged interest in the island by early white settlers. In 1841, the island was mapped by the U.S. Exploring Expedition. It was depicted (U.S. Exploring Expedition 1841) as consisting of three separate islands separated by narrow channels or "creeks" (the largest of which was labeled "Division Creek"). The lowermost and largest of the islands (comprising most of present-day western Hayden island) was designated "McTavish Island." The eastern tip of modern Hayden Island was shown as "Barclay Island." "Joe Island" was a small island to the north between McTavish and Barclay islands. The source of
these names is unknown and they do not appear in any other references. This map shows the islands as covered in prairie and scattered woodlands. This representation appears to have been a mapping convention by the Exploring Expedition on the lower Columbia and its accuracy is doubtful. The first documented survey of the island (U.S. General Land Office 1860)—then known as "Vancouver Island"—provides minimal information on the island's character. It depicts a channel cutting across the island from the southeast shore to the north-central shore. The old slough at the northeastern edge of the project site and extending to the west (although now considerably obscured by dredge spoils) is the remnant of this channel.

The first well-documented settlement on the island was by the Hayden family in 1851. Prairie areas supported small herds of beef and dairy cattle and the grass was harvested for hay. The annual floods prevented more intensive farming (Hayden 1915: 39, 41, 45). By the 1880s, a small farmstead had been established on the site of the present farmstead at the project site (Figure 18). At the time, the location was along the island's north shore. The island was otherwise unoccupied and was shown as covered with open woodlands and scattered ponds and sloughs. (U.S. Coast and Geodetic Survey 1888). The 1880s also witnessed the construction of a railroad line across the island from Vancouver to Portland along the route of the present Burlington Northern line.

The project area experienced little change up to the World War I era. At that time, dredge spoils from Oregon Slough began
to be deposited along the south shore of Hayden Island. Modifications of both the north and south shores of the project area accelerated in the 1920s. To improve the Oregon Slough channel, the Port of Portland constructed large spur dikes extending from the island south shore across a shoal area. The result was the natural accumulation of sediments around these dikes and the emergence of new land. The shoal became an island—known as "Cigar Island" from its shape (Figure 2). Deposition of dredge spoils along the north shore also began in the 1920s and continued into the recent past. The construction of pile dikes along the north shore has also resulted in the natural accumulation of sediments. The project area is thus about 200 acres larger in size than it was a century ago (PGE n.d.).
The existing farmstead on the project site is in the center distance, looking northwest from the northeastern pasture.
III. Cultural setting

A. Prehistory

The Portland Basin has long been known as an area rich in prehistoric resources. Local resident were collecting artifacts from sites by the late nineteenth century and collecting activity has continued to be popular to the present. The amateur interest has been focused on sites in the Sauvie Island-Scappoose area, along the Columbia and lower Willamette rivers, and around Vancouver Lake. Since the 1950s, the Oregon Archeological Society, the membership of which consists of non-professional archeologists, has conducted a number of important excavations at sites in the Portland metropolitan area. Their work has demonstrated the antiquity of human occupation on river islands such as Government and Lady islands upstream of Hayden Island.

The work of professional archeologists in the area lagged considerably behind that of local collectors. With few exceptions, systematic research did not occur until the 1970s. In that decade, studies by Pettigrew (1977) and Dunnell et al. (1973) provided invaluable data on prehistoric cultural development and land-use patterns in the Portland Basin. The more recent research of Saleeby (1983) has complimented the earlier work through the analysis of prehistoric resource use.

Pettigrew's study was based on limited excavations at seven prehistoric sites on Sauvie Island and around Scappoose. He also
examined collections made from three additional sites in the area.

On the basis of this fieldwork and information gathered from other excavations in the Portland Basin, Pettigrew (1977: 321-329) proposed an outline of prehistoric cultural development in the Portland Basin. The cultural phases outlined by Pettigrew are defined by the presence or absence and relative frequencies of certain artifact types. These artifacts appear to have been sensitive to cultural and technological changes. In the Sauvie Island area, these types include projectile points, unifaces, and net weights.

The earliest phase has not been named and no radiocarbon dates have yet been obtained for this era. Characteristic artifacts are large side-notched and smaller leaf-shaped points ("Cascade points"). These types probably date no later than 2500-3000 years ago and may be as old as 10,000 years. Sites assigned to this period include the Coplin and Douglas sites. The Geertz Site southeast of Portland (Woodward 1972, 1974: 9-12) also dates to this period.

The Merrybell Phase represents the period from 600 B.C. to A.D. 200. The predominant projectile point style is a stemmed, broad-necked form. Other characteristic artifacts include stemmed drills, flaked crescents, and perforated ground stone pendants. A variety of net weights were used but all occur in low frequencies. Peripherally flaked pebbles and atlatl weights (used to provide more thrust for spear throwers ["atlatls"]) are
more common during the Merrybell than in the later phase (Pettigrew 1977: 322-324).

This subsequent phase is the Multnomah Phase, dating A.D. 200-1835. Smaller, narrow-necked points become the most common forms. Mule-ear knives and "mauls" (Pettigrew's [1977: 58] "self-handled heavy percussors") are also diagnostic of this phase. Working in clay spreads through the area as evidenced by clay figurines and incised clay tablets (Pettigrew 1977: 323-325).

The Multnomah Phase is divided into three sub-phases--Multnomah 1 (A.D. 200-1250), Multnomah 2 (A.D. 1250-1750), and Multnomah 3 (A.D. 1750-1835). During the Multnomah 1, the narrow-necked points become more prevalent and there are significant differences in the frequencies of certain point types. Notched net weights become very common although perforated and wrap-marked weights continue to occur. Atlatl weights are still present in this sub-phase but have disappeared by the Multnomah 2 sub-phase. This latter sub-phase is characterized by shifts in the relative percentages of some point types; broad-necked points are increasingly rare. Perforated net weights steadily increase in frequency at the expense of notched weights. The most diagnostic artifacts for the Multnomah 3 sub-phase are copper tubes and historic trade goods, the latter representing contact with Euroamerican cultures (Pettigrew 1977: 323; 325-327).
Pettigrew's research indicated that the Portland Basin experienced considerable cultural stability through the Merrybell and Multnomah phases (Pettigrew 1977: 369). The most significant technological change was a shift from use of spear and dart to bow and arrow. This transition occurred in the late Merrybell phase and Multnomah 1 sub-phase. Pettigrew (1977: 328-329, 372-373) has hypothesized that the end of the Multnomah 1 sub-phase and the onset of the Multnomah 2 was spurred by a natural disaster. About A.D. 1250, a major landslide occurred in the Columbia Gorge. Pettigrew suggests this landslide caused catastrophic flooding downriver, destroying prehistoric settlements and changing the landscape. The changes in artifact classes characteristic of the Multnomah 2 may have been a response to new environment.

Pettigrew's picture of cultural stability is echoed in Saleeby (1983), who also argues (pp. 7-9) that the environment of the Portland Basin has witnessed little change in the last 2000-5000 years. Her study addresses subsistence and settlement patterns in the area. She is concerned with broadening the artifact-based perspective of Pettigrew by outlining prehistoric resource and land use. The Saleeby research is based on integrating ethnohistoric data with the archeological evidence, particularly the faunal remains from the sites studied by Pettigrew.

Based on analysis of the faunal remains, Saleeby (1983: 149-150) proposes that most of the sites she studied were occupied.
year-round. Employing site catchment analysis, she (1983: 165-177) demonstrates that all seven major habitats of the Sauvie Island area could be exploited from anywhere in the Portland Basin in a day's travel (round-trip).

These and the ethnohistoric data indicate that the residents of the Portland Basin had a settlement pattern based on permanent villages. Unlike their relatives downriver from Deer Island to the coast and upstream in the Columbia Gorge, the Multnomah Chinook did not find it necessary to abandon their winter villages to move to the spring and summer sources of food. In the Portland Basin, these resources were accessible at a reasonable distance from the villages (Saleeby 1983: 64-65, 165, 167). Salmon were an important element in this difference but the critical variable was the availability of wapato throughout the year. These bulbs provided a staple for local diets and were most abundant in the Sauvie Island area. The abundance of waterfowl was also of importance for survival through the winter and early spring. Given the assumed importance of this wapato-salmon-waterfowl triad, it is probable that villages were located to maximize proximity to riverine, lacustrine, and palustrine habitats.

The archeological implications of Saleeby's model are that there should be only two types of sites in this area--permanent occupation sites (villages) and much smaller locations where resources were gathered (resource procurement sites). Saleeby...
(1983: 217, 219) accepts that winter lodges were probably abandoned in early spring but the move was prompted by considerations of sanitation and comfort. Furthermore, the move was not far, only to another location in the immediate vicinity. Thus, villages were composed of summer and winter occupation areas often within a few hundred meters or less. Activity areas associated with the village might also shift with the seasonal move.

Saleeby's conclusions on settlement patterns are in sharp contrast with the settlement model presented by Dunnell et al. (1973). On the basis of a comprehensive survey of lands west and north of Vancouver Lake, they defined five types of sites. These types were as follows (Dunnell et al. 1973: 51-55):

1) winter domestic sites, characterized by large clusters of artifacts and considerable functional diversity in tool types; housepits were often present at these sites; they are assumed to represent winter village sites;

2) secondary domestic sites, which are similar in character to winter domestic sites, but with some significant differences in the relative proportions of certain artifact types; as housepits are absent at these sites, they probably represent summer occupation sites at which permanent structures were not built;

3) activity areas—A, which are small clusters of unworked
cobbles and fire-cracked rock, often associated with hearths; they are assumed to indicate an area where a single activity or set of related activities occurred;

4) **activity areas**--B, which are similar to activity areas--A, but which are composed exclusively of fire-cracked rock, and occasionally fire hearths; and

5) **activity areas**--X, which are composed of only a small cluster of fire-cracked rock.

The location patterns of these sites indicated that winter domestic sites were found on minor channel levees of elevation 4.3 m (14') or higher. Secondary domestic sites occurred on lake and low marsh levees, also of elevation 4.3 m or above. The activity areas were recorded in the same setting as the domestic sites, as well as open-ended slough levees 3.7-5.5 m (12-18') in elevation (Dunnell et al. 1973: Table 1, 62-63, Figure 13).

The picture that emerges from this Vancouver Lake study is one of seasonal shifts in land use, primarily between winter and summer occupations. Activity areas demonstrate that some resource-processing activities were occurring outside the primary residential locations. There is little evidence for the sedentary pattern hypothesized by Saleeby. Subsequent research in the Vancouver Lake area (Duncan and Harvey 1979; Wessen 1983) has refined the site typology and settlement model of Dunnell et al., but has confirmed the basic winter domestic-secondary
domestic-activity area classification and the restriction of
sites primarily to levees.

Professional investigations in the immediate Hayden Island
area have been uncommon. In 1977, Newman and Starkey reported
several sites around Smith and Bybee lakes on the floodplain
south of Hayden Island. A 1979 survey of the southeastern shore
of Smith Lake recorded an additional seven sites in that area
(Portland State University 1979). Most of the latter sites
consisted of small surface scatters of cultural materials. This
same survey also examined the lower course of Columbia Slough and
located eight sites, most of which were indicated by strata of
charcoal and burned earth in the slough banks. In 1983, limited
excavations were undertaken at two of the Columbia Slough sites
(3SMU47 and 3SMU48-50). The excavations revealed a hearth and
two pits filled with fire-cracked rock. The latter features
probably had once been earth ovens, used for roasting bulbs and
roots. The quantity and variety of artifacts recovered suggests
both sites were limited activity areas. Site 3SMU47 appears to
have been used more intensively than 3SMU48-50; projectile points
from this site suggest it was occupied in the Multnomah 1 sub-

No archeological sites have been reported previously on
Hayden Island. Seaman, a knowledgeable and experienced collector
in the Pacific Northwest through the early twentieth century,
makes no reference to the island in his standard work (1946).
The best non-professional study of Columbia River archeology

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(Strong 1959) also ignores Hayden Island; his map (1959: 26-27) of sites in the Portland Basin depicts no sites on the island. A 1980 cultural resources investigation of Tomahawk Island, adjacent to the upper end of Hayden Island, found no field or archival evidence of native use (Follansbee and Frances 1980). On the basis of ethnohistoric and landforms data, that study concluded (p. 7) "that it is unlikely that substantial Native American villages dating from late prehistoric times will be found on Hayden and Tomahawk Islands." The possibility of older sites on buried land surfaces was not ruled out, however. Follansbee and Frances (1980: 5) stated that fire-cracked rock had been reportedly found on the west end of Hayden Island. The original source of this report was queried and the report was found to be in error (Jan Peterson, personal communication, 1986). Several proposed dredge disposal sites within the project boundaries were examined for cultural resources also in 1980 (Freed 1980). These sites were along the north shore of the project site and in the pasture to the southwest of the farmstead. No significant archeological evidence was observed.

B. Ethnohistory

In the early nineteenth century, the Portland Basin was the center of a thriving region. Between Deer Island and the Sandy River was Lewis and Clark's "Columbian Valley," "the only
desirable situation for a settlement which I have seen on the West side of the Rocky mountains" (Thwaites 1904-05: 4: 220). There was a flourishing and wealthy native population, one of the most densely settled regions in aboriginal North America. Within a few decades, however, this culture was in ruins. It is a bitter irony that the white explorers and traders who were, indirectly, the cause of the destruction have also provided the best accounts of the native peoples of the lower Columbia at their height.

It was not until the 1780s that European and American ships began to regularly visit the Northwest coast. In 1792, only a few months after Captain Robert Gray of the Columbia named the river for his ship, Lt. William Broughton of a British expeditionary force, sailed up the Columbia. He reached the mouth of the Willamette—which he named "River Munnings"—on 29 October. Impressed by the beauty of the surrounding countryside, he named the upper point of the river's mouth "Belle Vue Point" (this name has become attached, in error, to the Sauvie Island point at the Willamette mouth). Accompanied by Indians met on the lower river, Broughton encountered few problems with the native peoples of the "Columbian Valley." On the evening of the twenty-ninth, he was invited by an elderly chief to stay at a village somewhere near the present site of Portland International Airport. Although Broughton declined the offer, the chief's kindness led Broughton to name the stretch of the Columbia along Hayden Island the "Friendly Reach," a name it still bears
The next white travelers on the river were the members of the Lewis and Clark expedition. They reached the "Columbian Valley" from upriver on 3 November 1805, but in their eagerness to reach the sea they had passed out of the valley in a few days. In that brief time, they noted the rich resources of the valley and observed differences between the natives of the valley and those upriver in the Columbia Gorge. They also reported that the Indians already possessed a number of European goods--guns, flasks, beads, hats, shirts, etc. (Gass 1807: 191-193; Thwaites 1904-05: 3: 194-201).

The return journey upriver in March 1806 was more leisurely. After their winter sojourn among the Chinooks and Clatsops at the river's mouth, the party was also more observant of the native peoples. The expedition visited several villages around Sauvie Island, often trading for critical food supplies--dried smelt, salmon, sturgeon, dogs (a favored dish among early white explorers, although the native peoples did not eat dog), and wapato. Wapato (*Sagittaria latifolia*) grew abundantly in the many ponds and marshes of the valley. The tubers of this plant were easily collected and provided both a dietary staple and a valued trade item. Its importance led Lewis and Clark to name Sauvie Island "Wappato Island" (Gass 1807: 232-233; Thwaites 1904-05: 4: 213-221).

On the evening of 30 March, the expedition camped on a
prairie near a large pond on the north shore of the Columbia opposite "Image Canoe Island." The following day, they proceeded upriver to the mouth of the "Seal River" (Washougal River). They remained at this camp until 6 April, sending out hunting parties to accumulate food supplies before continuing eastward.

During this time, Clark made a brief excursion up the Willamette River as far as the present Swan Island. His route down to the Willamette mouth probably took Clark along the Oregon Slough. Although native villages were common on Sauvie Island and the adjacent north and south mainland shores, only two villages were reported by Clark on the south shore of the Columbia between the Sandy and Willamette rivers. Ne-cha-co-lee was opposite "Diamond Island" (Government Island). The residents of this village lived in a series of interconnected houses. The ruins of other houses were visible and Clark believed a smallpox epidemic had killed many villagers 25-30 years earlier. Some distance downriver was the Ne-er-cho-ki-oo village. There were only eight families at this village when Clark visited. Most of the village's population lived in the Cascades much of the year, moving to Ne-er-cho-ki-oo during the winter (Thwaites 1904-05: 223, 236-238, 240-241). In November 1805, Lewis and Clark had been informed there was a village on a channel between "Image Canoe Island" and the mainland (Thwaites 1904-05: 3: 198). There is no reference to this village in Clark's report of his excursion to the Willamette.

Among its other goals, the Lewis and Clark expedition sought
to assess the potential for commerce, especially the fur trade, in the lands through which they traveled. News of their observations and the decline in the coastal sea otter trade led to increased interest in fur trade in the interior. In May 1810, the Winship brothers established a trading post on the south shore of the Columbia, two miles above Oak Point, near Crums Island. The land was cleared, gardens planted, and a log house built. A sudden flood in June destroyed the post and the project was abandoned (Coues 1897: 2: 795, 828; Perry 1977: 29-30).

The Winships' post, though unsuccessful, was a harbinger of other efforts to exploit the region's resources. In the same year, David Thompson of the North West company (a major Canadian fur trading company) had penetrated the Oregon Country to establish Spokane House in the Columbia Basin east of the Cascades. The following year, Thompson represented the North West Company in a race with John Jacob Astor's Pacific Fur Company to establish a post at the mouth of the Columbia. Traveling by sea, the Astorians reached the mouth in March 1811, beating Thompson—traveling overland—by almost four months. Astoria was to serve as the focus of fur trading activity on the lower Columbia for fifteen years. Initially thwarted in their attempt to acquire access to the mouth of the river, the North West Company bought Astoria in 1813 in the midst of the War of 1812. Renamed Fort George, it was the regional headquarters of the North West Company until the company was merged with the
Hudson's Bay Company (HBC) in 1821 (Meinig 1968: 36-38, 41, 52). Through this early period, fur traders and officials moved frequently along the lower Columbia to and from Fort George and posts in the interior. Temporary camps were occasionally established on the river above Fort George such as that described by Franchere (1820: 314-316) at Oak Point in the winter of 1814. In the same winter, Alexander Henry investigated the possibility of relocating Fort George to Scappoose Bay but found the area too rocky and lacking in wood (Coues 1897: 2: 829). The lower Columbia was not a major source of beaver pelts or other furs in demand. The native peoples were wily traders and could acquire desired Euroamerican goods by providing vital food supplies, guides, and other services to the fur companies. Local chiefs such as Concomly at the mouth of the Columbia and Keasno of the Sauvie Island area built up considerable wealth and influence by serving as primary brokers between the fur companies and the native population (Keasno was to die a virtual pensioner of the HBC). Although there was hostility and occasional skirmishes between the traders and native groups, relationships were generally amicable. There were marriages between some of the traders and the daughters of chiefs (usually described as "Indian princesses" in later accounts).

The merger of the North West Company into the HBC had little local impact initially. In 1824, George Simpson, the HBC governor, toured the Columbia region and decided to move the regional headquarters from Fort George. The new location was on
the north shore of the Columbia just upriver from the mouth of the Willamette. The new fort—christened Fort Vancouver—was constructed and Fort George was abandoned in the spring of 1825. Appointed as chief factor of the Columbia Department was Dr. John McLoughlin, to be for 20 years the de facto ruler of the region (Douglas 1914: 106; Meinig 1968: 73–74).

The move upriver allowed the HBC to continue its influence on the strategic lower Columbia area and to exercise greater control over the increasingly important Willamette Valley. The focus of native influence vis-a-vis the HBC also shifted from the Chinook and Clatsop at the mouth of the Columbia to the peoples and political leaders of the Sauvie Island–Scappoose Bay area. This growing power was fated to end abruptly within a few years.

In 1829 and 1830, a disease known at the time as "intermittent fever" or "ague" began appearing among both the whites at Fort Vancouver and among the native peoples. The disease soon reached epidemic proportions among the peoples of the lower Columbia region. Within a few years, 75–90% of the native population in the Portland Basin were dead. A visitor to Sauvie Island in 1834 (Young 1899: 149) found its inhabitants slain by a "mortality," their existence indicated only by "their decaying houses, their graves and their unburied bones."

Severely weakened and demoralized, the survivors ceased to be of importance to the HBC. Chief Concomly had died in the epidemic and Chief Keasno fled with a few of his people to the
protection of Fort Vancouver. In 1851, Indian Commissioner Anson Dart found only 273 natives along the lower Columbia; from the Cascades to the Cowlitz River there were "no real owners of the land living" (Dart 1851: 92, 93).

When extensive contacts with the lower Columbia valley began in the 1780s and 1790s, the region was inhabited primarily by speakers of Chinookan languages. Similarities in language and culture have led some observers (Barry 1927: 53-55; Berreman 1937: 13; Boas 1911; Lewis 1906) to lump all Chinookan-speakers into a single cultural group. Even more recent studies (e.g., Silverstein 1974) based primarily on linguistic analysis tend to treat all Chinookan groups as alike with minor cultural distinctions between individual groups or bands. Those Euroamericans who resided in the lower Columbia valley before the 1829-1830 epidemic usually recognized greater cultural diversity. Members of the Lewis and Clark expedition, after their winter residence at Fort Clatsop and familiarity with the peoples at the mouth of the Columbia, recorded significant differences in language, dwellings, dress, and burial practices as they returned upriver in the spring of 1806 (Gass 1807: 193; Thwaites 1904-05: 4: 214, 223, 240).

In their summary of the native peoples encountered in their travels, Lewis and Clark (Thwaites 1904-05: 6: 116-117) recognized seven "nations" of peoples along the Columbia River from the mouth to the Cascades. The "Wap-pa-to" nation, which occupied most of the "Columbian Valley," was in turn divided into
13 "tribes" numbering about 5500 people. Alexander Ross (1849: 102-103), although noting the similarities among the groups on the lower Columbia, designated ten peoples residing in the area. As with Lewis and Clark (Thwaites 1904-05: 6: 117), Ross (1849: 102) used the term "Chinook" only for the people who lived around the mouth of the Columbia on the north shore. In 1824-25, Simpson (Merk 1931: 170), listed 12 "tribes" from the Columbia's mouth to the Cascades although he (Merk 1931: 96) stated that they could be treated as "one and the same Nation altho [sic] speaking different Languages." Only those who traveled through the area after the post-epidemic native collapse lumped together the scattered survivors as "Chinooks" (e.g., Kane 1855; Parker 1838: 242).

Linguists now classify the Chinookan languages into two groups: Lower Chinook, spoken by the Chinook proper and the Clatsop at the mouth of the Columbia; and Upper Chinook, spoken by the peoples along the Columbia upriver to the Dalles and on the lower Willamette. There were also enclaves of non-Chinookan speakers: the Athapaskan Kwalhiokwa on the upper Willapa River and the Clatskanie on the south shore of the Columbia around the present town of the same name. On the Cowlitz River were the Lower Cowlitz people, speaking a Salishan language. Upper Chinook languages can be divided into three dialect groups: from the Lower Chinook peoples to around the mouth of the Kalama River was the Cathlamet group; upriver of the Cathlamet to Government
Island were the Multnomah or Middle River Chinook; and around Willamette Falls were the Clawiwalla and Clackamas, with close ties with the Cascades Chinook, known collectively as kikst (Silverstein 1974: 2-5).

Given the observations of significant cultural differences made by early explorers and travelers and more recent studies (e.g., Hajda 1984; Saleeby 1983: 47-48), this outline of the life of the native peoples will be limited to the Multnomah Chinook. The rapid destruction of this culture in the 1830s, however, necessitates some cautious extrapolations from surrounding areas.

As noted above, the Multnomah Chinook inhabited the Columbia River valley from Deer Island to Government Island. In this area the Chinookan peoples occupied a fairly narrow band along the river, generally limited to the Columbia floodplain and the immediately adjacent hills. To the south in the Tualatin and Willamette valley were the Kalapuya, to the north were the Cowlitz only a few miles back from the river. In the region of the Multnomah Chinook, a number of named villages with more or less accurate locations have been reported in the literature. Those villages that can be located with some accuracy are shown in Figure 19.

Although closely tied to other villages through trade and intermarriage, each village was usually an autonomous social and political unit. The Chinookan cultures generally had a three-class social structure (this system was less pronounced among the Upper Chinookan speakers than among those living near the coast).
At the top was a hereditary elite of chiefly families. The power of a chief was usually limited to a single village and was largely advisory. The accumulation and display of wealth, the development of alliances with other villages, and diplomatic skills helped in the rise of a chief and allowed particularly successful chiefs to exercise influence over several villages (Franchere 1820: 115; Silverstein 1974: 22-24).

With the intrusion of Euroamerican trading interests in the late eighteenth and early nineteenth centuries, local chiefs who successfully established themselves as brokers between their own peoples and the foreigners rose to great power. Concomly of the Chinook was influential throughout the lower Columbia region from the establishment of Astoria until his death in 1830. Concomly's daughter married the son of Keasno, a chief of villages in the Sauvie Island area. In May 1811, Keasno was reported (Franchere 1820: 49) to be the chief of a large village up the Kalama River. By January 1814, he appears to have shifted his base to Scappoose Bay and was described as "chief of the Willamette tribe" (Coues 1897: 2: 796-797). His sister-in-law was married to Coalpo, an important Clatsop chief, and Keasno was also related to chiefly families at the Cascades. Simpson (Merk 1931: 86) noted in 1824-25 that almost all the furs traded at Fort George passed through the hands of Concomly, Keasno, and Schannaway (the chief of the Lower Cowlitz). It was by controlling the native-European trade that Keasno's power grew, especially after the HBC transfer from
Fort George to Fort Vancouver.

Below the upper or noble class were the commoners. This class made up the bulk of the native population. Although free, they lacked the wealth and influence to rank with the chiefly families. Commoners could rise into the upper class through the acquisition of goods and influence and through alliances with noble families (Hajda 1984: 190-191; Silverstein 1974: 21-22).

At the bottom of the social order were slaves. These were individuals obtained in trade from outside of the lower Columbia region. Chinookan groups occasionally undertook slave-raiding expeditions, usually to the southern Willamette Valley or the southern Oregon coast (Franchere 1820: 109-110; Silverstein 1974: 25). Slaves were regarded as property and were treated accordingly. Even under the kindest of owners their existence was hard. Slaves were generally owned only by the upper class. Although an important chief might own as many as twelve slaves, the average noble owned only two or three. Slaves were distinguished from the free by not having flattened heads. At birth, free children were placed in a cradleboard and a cedar bark pad was pressed against the forehead by cords. As a result, the back of the head was flattened and the individual possessed a flat, sloping forehead. This practice did not impair mental functions (Franchere 1820: 109-110; Silverstein 1974: 24-26).

In 1814, Henry (Coues 1897: 2: 794-795, 832) described a typical village as consisting of eight houses extending for about
110 m ("120 paces") and another eight "detached houses," each measuring 15 paces (it's not indicated if this represents length or width). All of the houses extended in a line parallel to the river. The Wa-pa-to villages recorded by Lewis and Clark (Thwaites 1904-05: 6: 116-117) ranged in size from one lodge to 28 lodges, averaging about eight lodges in a village. These houses varied from about 3.7 m (12') by 6.1 m (20') to 12.2 m (40') by 30.5 m (100') in size. The smaller dwellings housed a single family; the larger structures were usually the residences of chiefly extended families. The houses were constructed either on the surface or the floor would be excavated to a depth of 60-90 cm (2-3'). Along the sides, posts were sunk into the ground at intervals of about 2.2 m (7-8'). At each end a notched post 4.6-6.1 m (15-20') in height would be set to support the ridge-pole. Split cedar planks about 1 m (3') in width and set vertically into the ground formed the side walls, rising about 1.2-1.5 m (4-5') above the ground. The component planks were tied together at the top with cedar-bark cord. Rafters extended from the ridge-pole to the walls and formed the framework for a roof of more split cedar planks laid horizontally across the rafters. Among the Multnomah Chinook, the roof would be further covered with cedar bark. The gabled end walls were also built of cedar planks. The center plank of one or both end walls would have oval door openings cut into them. The end wall might be painted with a large figure. At the Quathlapootle village, figures were carved around the door and on the posts supporting
the ridge-pole (Franchere 1820: 114; Kane 1859: 128-129; Ross 1849: 111-112; Strong 1930: 8-9; Thwaites 1904-05: 4: 215).

In the interior, berths were constructed around the walls, used for both sleeping and storage. If more than a single family occupied the house, interior partitions provided some privacy. Each family had its own fireplace or hearth excavated in the center of the room. Smoke from the fires escaped through holes in the roof but also conveniently smoked fish and other foods hung from the rafters. The earthen floor would be covered with rush mats (Franchere 1820: 114; Kane 1859: 129; Silverstein 1974: 17; Strong 1930: 9). The lodges served primarily for storage and sleeping quarters and many domestic activities took place outside the dwelling, especially in the summer.

An unusual communal dwelling was described by William Clark (Thwaites 1904-05: 4: 240) at the Ne-cha-co-lee village on the southern Columbia shore near Government Island. This structure consisted of seven "rooms," each about 9 m (30') square. Four rooms were connected to form two pairs but otherwise the units were separated by passageways about 1.2 m (4') wide. All of the apartments shared a single roof.

Kane (1859: 128) reported that Chinookan groups occupied smaller dwellings of mats over a simple pole framework at camas and fishing camps. These structures could be easily constructed and dismantled as the people moved, the poles stored at preferred sites for future use and the mats rolled up and taken to the next
campsite. These temporary dwellings were probably similar to the bark and "straw" houses used by the Cascades (Sha-ha-la) winter residents of the Ne-er-cho-ki-oo village on the south side of the Columbia a few miles above the Willamette River (Thwaites 1904-05: 3: 196, 4: 223, 236-237).

There were other structures necessary in daily life. Ross (1849: 112) mentions large, temporary sheds built for drying fish, roots, and berries. The local people considered steam baths important for good health. A small, rounded structure of branches, mud, and sod composed the usual sweat lodge. Inside, a shallow hole would be dug, into which hot stones would be placed. Water poured on the rocks produced steam for the occupants (Douglas 1914: 114-115; Thwaites 1904-05: 4: 220). It is possible that separate dwellings were built for young girls undergoing ritual seclusion from the village during the onset of menses (Silverstein 1974: 28).

Each household was equipped with a variety of tools and utensils of wood, bone, shell, and a variety of plant materials. These included carved wooden trays, bowls, trenchers, and boxes. Mats, baskets, bags, and hats were woven of cat-tail, bear-grass, sedge, and cedar root. Water-proofed boxes and baskets were used as cooking vessels. Meat, fish, or vegetables would be placed with liquid in a container. Cobble-sized stones would be heated in a fire then dropped into the pot to boil or steam the food (Coues 1897: 2: 765; Douglas 1914: 114, 138; Franchere 1820: 114; Kane 1859: 127; Silverstein 1974: 17-18).
Clothing tended to be minimal. Women wore a short skirt of cedar-bark strips year-round or, more commonly in the Sauvie Island area, a breech-cloth of deerskin. In the winter season, a mantle of skins or furs would provide warmth and a woven conical hat shed the rain. The men generally wore no clothing at all except a robe and hat during the rainy season (Franchere 1820: 110-111; Cass 1807: 232; Silverstein 1974: 18-19; Thwaites 1904--05: 4: 214).

The primary means of travel and transportation was by water. Henry (Coues 1897: 2: 829) mentions the presence of a few horses among Indians around Scappoose Bay in 1814 but the horse never became common among the lower Columbia peoples (Silverstein 1974: 20). Instead, the local peoples relied upon the canoe. There were several functional types, all carved from a single cedar log. The larger varieties were up to 10.7 m (35') long, 1.5 m (5') wide, decorated with shells and carved figures, and painted and polished. They were used primarily to transport people and cargo. Smaller canoes were used in hunting and the smallest were shallow and only 3-4 m (10-14') long. The latter type was used by a woman out collecting roots in the ponds and marshes (Franchere 1820: 113-114; Silverstein 1974: 19-20; Thwaites 1904--05: 4: 236-237).

The collection and use of resources for food, shelter, clothing, and tools followed a regular pattern through the year, oriented toward the seasonal availability of many resources. The
pattern that had evolved along the lower Columbia was one of primary subsistence activity from late winter through late fall with relative retirement into the winter villages during the season when resources were least available. This system required collection of sufficient resources to support the population for each season and to provide a surplus to be stored for winter consumption.

By late fall as the fall chinook run ended, the residents of a village were prepared for the rainy season with a store of nuts and dried foods—roots, berries, and fish. Few plant resources were available in the winter months, but some hunting and fishing was possible. Winter herds of deer and elk could be found along the floodplain and winter was the season of greatest waterfowl availability. Sturgeon fishing occurred all along the lower Columbia through the winter although it is likely that the catch was not great. Sturgeon were taken with nets, or hooked lines, or through the use of long spears from canoes. Winter was also the time for trading, social visits, and the manufacture of tools, baskets and mats, and clothing (Coues 1897: 2: 765, 786-787, 820, 825, 831-832; Kane 1855: 30; Merk 1931: 102; Saleeby 1983: 37; Silverstein 1974: 9-10).

In mid-winter, the great runs of smelt would occur, although they occasionally began as early as the beginning of January. Smelt were taken with scoop nets or with a "herring rake"—a long, wooden curved blade set with bone teeth and dragged through the shoals of fish to be impaled on the teeth. These fish were
smoke dried and tied into strings for trading (Coues 1897: 2: 786-787, 789, 820, 831; Kane 1855: 30-31; Merk 1931: 103; Parker 1842: 212; Saleeby 1983: 37; Silverstein 1974: 10; Thwaites 1904-05: 4: 215).

Although plentiful, the smelt runs were brief. As a result, the period between the end of the smelt and the beginning of the spring chinook run—from late March to late April—was often a time of scarcity and hunger. The supply of dried foods was at its lowest. Deer and elk could be hunted but had also been weakened by winter and their flesh was dry and stringy. Sturgeon fishing continued and was important but could not feed the large population of the area. The people turned to a wide variety of plant foods in which spring growth produced shoots, roots, and young leaves which were edible and nutritious. It is likely that gathering of wapato intensified at this time (Coues 1897: 2: 859; Franchere 1820: 108; Young 1905: 168; Parker 1842: 212; Thwaites 1904-05: 4: 229, 243).

It was about this time that the winter villages were abandoned. Ross (1849: 112-113) attributed the move to the terrible flea infestations in the cedar-plank lodges. The houses were dismantled and families moved into lighter, more temporary mat or brush shelters. There was also a move to richer lands. At the mouth of the Columbia in March 1814, Henry (Coues 1897: 2: 859) reported that those who could were traveling upriver to trade for food. Eight years earlier, in early April 1806, Lewis
and Clark (Thwaites 1904-05: 4: 228, 234) found the residents of the Cascades villages moving to the Columbian Valley. Their winter store of dried foods was gone and the spring chinook run had not yet begun.

Saleeby (1983), in outlining an aboriginal settlement pattern for the Portland Basin, has proposed (pp. 47-48) that the resources of this area, especially wapato, provided a stable environment year round. In the early spring of 1806 as those upriver flocked to the Columbian Valley, Lewis and Clark (Thwaites 1904-05: 4: 214-246) had few difficulties obtaining food supplies from Multnomah villages. In this setting, the abandonment of the winter villages may have been only an escape from intolerable sanitary conditions. The residents of the village merely shifted a short distance from the winter lodges to erect the summer mat dwellings.

The shortages were relieved with the spring chinook run which could begin any time between late March and early May. The population now gathered at the many fishing camps along the river. Salmon were usually taken in seines or scoop nets, the latter favored on smaller channels and sloughs of the Columbia. In July 1811, Thompson (Elliott 1914: 109) watched a group of men seining for salmon near the upper end of Sauvie Island. The net they were using was 55 m (180') long. At Willamette Falls the fish were speared and netted from platforms built out over the river (the Clackamas, however, monopolized fishing at the falls) (Coues 1897: 2: 853, 863; Young 1905: 175; Kane 1855: 28, 30).
Salmon was roasted; stewed; split, filleted, and smoked dried; or baked in underground ovens. Dried salmon was often pounded into a powder and packed in large containers for trade or to be stored for winter. The earth oven was used for baking or steaming fish, game, and roots. A hole was dug and lined with hot rocks and grass. On the grass was laid the raw food which was then covered with more grass and earth. A hole was left in the upper layers through which water was poured to steam cook the food (Kane 1859: 127 128; Silverstein 1974: 9 10).

The spring freshet in late May or June flooded the lowlands and ended the spring fish runs. The people of the valley retreated to high ground and waited for the waters to fall. In the upland prairies it was the beginning of the camas season and women collected the bulbs. Wapato could also be harvested. These important roots were oven steamed; boiled; or baked on an open fire, kneaded into a paste, formed into loaves or cakes, and baked again in the hearth (Franchere 1820: 105 106; Young 1905: 174).

Once the floodwaters receded, some returned to the riverside for the summer fish runs which began in late June and early July. Others continued the harvest of camas that continued to midsummer. At the same time, the berry season would be beginning as strawberries were ready to be picked. The berry season continued into late summer as the different varieties ripened (Franchere 1820: 106 108; Kane 1855: 28. 1859: 127). It is likely that by
late summer, as the summer fish runs declined and the berries were at their best, that berries became, as Simpson (Merk 1931: 111) noted, a "principal article of subsistence."

Berries continued to be gathered into early fall. Crabapple and Indian plum were also ripening and hazelnuts and acorns were harvested. The latter were stored in pits and cured in urine to produce the unique "Chinook olives" (Kane 1859: 128). Although Lewis and Clark (Thwaites 1904-05: 4: 223) observed that wapato could be collected throughout the year, fall was probably the major harvest time (Zenk 1976: 39, 40). It has been suggested (Saleeby 1983: 145) that fall was also the season of collecting shellfish. Fall salmon were considered "insipid" (Franchere 1820: 108) in flavor but the leanness of their flesh may have made them invaluable for drying for winter. In the interior plateau east of the Cascades, there is evidence (Swindell 1942: 181; Thoms et al. 1983: 8) that the winter fish store came from the fall run. With little fat, they were less subject to spoilage and the cooler fall temperatures also aided preservation. Late fall probably witnessed a flurry of activity to completely fill the winter larder.

Waterfowl would begin to congregate on the lakes and ponds. Summer fattened deer and elk would begin to move down from the hills onto the bottoms. The winter plank houses would be rebuilt, drying fish hanging from the rafters, baskets and boxes of dried roots and berries stored along the walls or on shelves, fresh mats on the floor, new furs for the beds, and hides to be
Winter visitors like the Cascades Sha ha las at Ne er cho ki oo near the mouth of the Willamette would gather at the host village to prepare for a season of hunting deer and elk and collecting wapato (Thwaites 1904 095: 4: 223 225 236 237. 240) The year had come round full circle.

This was the life of the native peoples of the Columbian Valley as observed in the early nineteenth century. These observations however were of societies already in change from the European settlement in North America. By the time of the Lewis and Clark expedition British and American merchants had been trading on the Pacific coast for 20 years. The groups on the lower Columbia had cloth, hats, guns, and metal trinkets, and beads were already in demand (Thwaites 1904 05: 3: 195).

Although they provided poor transportation on the marshy floodplain there were horses on the lower Columbia by 1814 (Coues 1897: 2: 829). Henry (Coues 1897: 2: 863) also noted that the villagers at Oak Point had hens, hogs, goats, and cats given them when the Pacific Fur Company operation was dissolved at Astoria.

Europeans on the coast had left more than beads and cats. At the Ne cha co lee village, Clark (Thwaites 1904 05: 4: 240 241) noted the remains of other large lodges and was informed that many of the people had died in an epidemic 25-30 years before Clark believed smallpox had swept through the area. In 1812 Stuart (Spaulding 1953: 47) reported that the village of
Cathlamet had been reduced in size and power by a smallpox epidemic years before.

The 1829–30 malaria epidemic was thus the deathblow for cultures already weakened by disease. By late 1830, McLoughlin (Merk 1931: 331) was reporting that three quarters of the native population around Fort Vancouver was dead. By 1835, Parker (1838: 178) estimated that almost 90% of the population of the lower Columbia had perished since 1829; there were only 1500–2000 Chinooks alive. Ten years later, the once powerful Clackamas were reduced to six to eight lodges. Of four populous villages on Sauvie Island only a few lodges remained (Kane 1855: 21, 1859: 135). In 1851, Dart (1851: 93) reported along the lower Columbia 71 Clatsops, 142 Chinooks, and 60 "Vancouvers" (the term used for the melting pot of Indians gathered around Fort Vancouver). Passing down the Columbia from Fort Vancouver in 1841, Farnham (1843: 68) observed the shores and islands covered with thousands of canoe burials.

The vacuum created by the rapid demise of the Chinookans was soon filled by interior groups such as the Cowlitz and the Klikitat. During the 1830s and 1840s, the Cowlitz shifted their major settlements to the now-empty north shore of the Columbia around the mouths of the Cowlitz and Lewis rivers. The Klikitat had originally lived east of the Cascades north of the Columbia. Important middlemen in the trade between the lower Columbia and the interior plateau, they began settling around Fort Vancouver in the 1830s and intermarrying with the Cowlitz (Ray 1966: 249-
The Klilitats largely escaped the 1830s epidemic and spread quickly where Chinookan and Kalapuyan groups had disappeared in the Columbian and lower Willamette valleys.

Mary Jane Hayden (1915: 43) recalled a large band of Klilitats on the north shore of the Columbia opposite Hayden Island in the early 1850s. The band's leader--"Tamitus"--regularly hunted on Hayden Island and would occasionally exchange game for vegetables from the Hayden family garden. There was also a large camp on the south side of the island (Hayden 1915: 43). It is unclear whether this was a permanent or temporary camp, occupied by Klilitats or some other group. Hayden (1915: 43) reported that "Chief Tamitus" was killed during the 1855-56 Yakima War. Sources (Gibbs 1855; Glassley 1972; Guie 1977; Kappler 1904: 2: 698-702) on the Yakima War and the Klilitats of that period make no reference to any chief named "Tamitus" or with a similar name. It is likely that Hayden's "Chief" Tamitus was a minor band leader or headman.

C. Euroamerican settlement

Hayden Island has long been removed from the historical developments in the surrounding region. Although situated opposite the Hudson's Bay Company regional headquarters at Fort Vancouver, the island appears to have held little interest for the fur company. The brief visit of Douglas and Scouler to collect plant specimens in May 1825 is the only recorded white
use of the island in the early nineteenth century.

There are several enigmatic references to a dairy on the island. A settler arriving at Fort Vancouver in June 1848 referred (Rockwood 1939: 180) to a dairy on "Menzie's Island." In addition, a Hudson's Bay Company map of circa 1840-1845 depicts a dairy on the eastern end of "Menzie's Island," almost directly opposite Fort Vancouver. In testimony on the Hudson's Bay Company's claims, one HBC employee mentioned a dairy on "Hayden's Island" (British and American Joint Commission for the Settlement of the Claims of the Hudson's Bay and Puget Sound Agricultural Companies [hereafter cited as British and American Joint Commission] 1865: 107), and the HBC claim included "Menzies' Island," "occupied, and used for pasturage" (British and American Joint Commission 1868: iv). Testimony by another HBC employee (British and American Joint Commission 1868: 83) refers to Menzies Island as "where hay was made for the cattle, and which was used for the pasturage of the Company's stock in winter." This last reference may actually be to Government Island, on which grass was cut for winter cattle feed (British and American Joint Commission 1865: 105-106).

Other than these few references, the dairy on Menzies Island is absent from the historical record. There is considerable discussion of the Company's dairy operations in a letter from John McLoughlin to George Simpson dated 20 March 1840 (Rich 1943: 229-236), but no mention of any use of Menzies Island. The HBC
does not appear to have pursued this particular claim in its official claims against the United States government. The Company's inventory (Elliott 1931) of its properties in the United States also makes no reference to any facilities on the island. It is hypothesized, therefore, that the HBC briefly used the eastern portion of the island for grazing dairy cattle in the 1840s. However, no permanent structures were built; hence the limited references in official documents. More extensive archival research might shed light on this question in the future.

Settlers from the United States began flooding into the Oregon Country in the early 1840s, and new residents continued to be drawn to the region in large numbers for almost 20 years. In 1846, the boundary question was settled and Oregon was established as a territory of the United States. The Hayden family arrived in Oregon in the fall of 1850, having left Wisconsin the previous spring. In the spring of 1851, Gay and Mary Jane Hayden purchased the claims of a Mr. Barker and a Mr. Copeland on Vancouver Island (Hayden 1915: 7, 9, 39). The exact location of the Barker and Copeland claims is unknown nor is there any evidence these men ever occupied or made any improvements to their claims. It is likely that Barker and Copeland never held a legal claim to the land. Mary Jane Hayden (1915: 39-40) recalled that their claim consisted of 760 acres and extended along the island's north shore. It was on this shore that the Haydens built a log house, the only inhabitants of
the island. The young couple (photographs of the Haydens later in life are reproduced on the cover) raised beef and hay on the island and sold wood, butter, eggs, and vegetables to the Vancouver Barracks. Three children were born to the Haydens on the island (Hayden 1915: 40-41; Plains across in 1850: pioneer woman's story n.d.).

Life on the island was not easy. The homestead was fairly isolated, although steamers passed by regularly. The spring floods created considerable disruption although the Hayden home was on higher ground. Several times the family was forced to take refuge in Vancouver. In October 1856, therefore, the Haydens abandoned their island claim and moved to Vancouver (Hayden 1915: 40, 47). The Haydens had lived long enough on the island to acquire homestead rights; the land patents were issued in the mid-1860s (Mumma 1981).

In 1869, the Haydens sold most of their holdings on the island to John and William Switzler. The Switzlers were pioneer stockmen in the Pacific Northwest. They held contracts to beef cattle to Vancouver Barracks from 1849 to 1853 and later operated large horse and cattle ranches in eastern Oregon and Washington. The Switzlers probably pastured stock on the island and may have been the builders of the farmstead that appears on maps in the 1880s (British and American Joint Commission 1867: 150; Mumma 1981; Travis 1951: 88-89; U.S. Coast and Geodetic Survey 1888).

The Switzlers sold their land to Benjamin Shaw in 1877.
Shaw was a local real estate investor and gradually sold off his holdings over the next 25 years. In 1905, the project area lands were sold to Osrian Paxton, who in turn sold the land to the Portland Railway Company in early 1906. In the same year, the Portland Railway Company was absorbed by the new Portland Railway Light & Power Company, a corporate predecessor to Portland General Electric (MacColl 1976: 366-371; Mumma 1981).

These changes in legal ownership appear to have had little impact on the use of that portion of the island. Since the late nineteenth century, the land has been leased for grazing cattle for much of its history. The project area was used for many years as a holding area for stock from the Portland Livestock Market. Beginning in the 1880s, portions of the project area came to be used as a utility corridor. The Portland & Puget Sound Railroad (part of the Northern Pacific conglomerate) was built across the island in 1884. In the early 1930s, power transmission lines were placed along the western edge of the present project area. A City of Portland sewer line was constructed along the eastern boundary in 1950. The east-west PGE transmission line dates to the 1960s (PGE n.d.; Scott 1924: 4: 67 fn 4).

In the 1890s, human efforts to modify the Columbia and Oregon Slough channels led to substantial changes in the island. The construction of pile and spur dikes along the island's north and south shores began in the 1890s and accelerated in the years before World War I. The Corps of Engineers began extensive use
of the project area for dredge disposal in the 1920s; this use has continued to the present. The result has been a substantial addition to the island's mass. These new areas, especially those along the Oregon Slough, have been incorporated into the stock operations in the project area.

Since the construction of the railroad line in 1884 (now Burlington Northern), the east and west halves of the island have evolved into different landscapes. The west half, including the project area, has retained a pastoral character. The eastern half remained rural into the early post-World War I era. Although a community was platted in this area in the early 1900s, poor accessibility from the mainland limited development. This problem was overcome by a highway connection between Oregon and Washington across the east tip of the island, completed in 1917. In 1928, the Jantzen Beach amusement park was opened and soon became a major recreational center for the Portland area. The amusement park remained the focus of development until the late 1960s. Over the past twenty years, there has been rapid commercial and residential development of the eastern portion of the island. The amusement park is gone, replaced by a large shopping center surrounded by stores, motels, large housing complexes, and offices (Bacon 1972; Hunt 1967). The proposed marine industrial park would extend this type of development over much of the remainder of the island.
IV. Results and recommendations

This study has reviewed the available data on past human use and occupation of the Hayden Island area. Our purpose has been to determine if there are cultural resources already known on the island and to evaluate the potential for unrecorded resources in the project area. By reconstructing the aboriginal environment and considering how native and Euroamerican peoples could have used that environment, we can estimate the likelihood of encountering archeological evidence and pinpoint areas of particular interest. In the field, no area was excluded from examination, but the background information indicated some areas could be less intensively surveyed and others should be more thoroughly examined.

The archeological research around Vancouver Lake to the north has indicated that sloughs and minor channel levees were frequently occupied by the native Chinookans. These features were attractive because of their position (generally more than 4.0 m [13'] in elevation) above the surrounding wet floodplain. There are slough and minor channel levees extant on the aboriginal island segment within the project area. The absence of any oak in the project area and the relatively low height of the levees (none higher than 6.1 m [20']), it is likely that even the higher ground was regularly flooded. The aboriginal shorelines also had good potential for cultural resources. The ground was generally higher along the beach and there would have
been direct access to the Columbia, the most important native highway of the region. The only direct evidence of native occupation of the project area is Hayden's (1915: 43) recollection of an Indian camp along the south shore.

The higher ground in the project area was a focus of the field study. All exposed surfaces and banks in the areas were thoroughly examined. No evidence of any aboriginal use was observed in these areas. In alluvial environments such as Hayden Island, it is not uncommon for all surface lithic material to have been introduced by humans. Such unaltered cobbles and other rock ("manuports") are often a clue to past human use. In the project area, the only lithic material observed was in association with dredge spoils or road fill.

The negative results of the field investigation are unexpected given the potential for aboriginal use in the Vancouver Lake model. This investigation has indicated, however, that the potential was not exercised. No archeological sites have ever been reported on Hayden Island by either amateur or professional archeologists. Hayden's reminiscences constitute the only reference to any native use of or settlement on Hayden Island.

It is concluded that native use of the project area was so limited as to leave no archeological or written record. Although the island was subject to regular inundation, this was probably of little concern to native peoples; they used and occupied other
areas of the floodplain that were regularly flooded. It is hypothesized, therefore, that use of the island was limited to harvesting of resources (hunting of deer or waterfowl, collection of plant foods) and no resource processing occurred. It is the latter activity that is more archeologically visible.

In addition, shoreline areas may have been used for temporary camps, as travelers along the river paused overnight or for a noon rest. In the late prehistoric or early contact periods, at least, these camps are more likely to have been occupied by visitors from outside the Columbian Valley. The valley residents probably rested at established villages and camps where they had kin ties (Boyd and Hajda [1985], Hajda [1984], and Saleeby [1983] have recently examined the relative roles of residents and visitors along the lower Columbia). It is noteworthy that the only record of native use of Hayden Island is of an interior group whose occupation of the river valley was short-lived (ca. 1835-1860). It is also possible that processing of resources took place in shoreline areas, producing some archeological evidence (the "activity areas" of Dunnell et al. [1973]). Unfortunately, the aboriginal shores of the project areas are now largely buried under dredge spoils and human-induced natural deposition.

Although the possibility of ancient buried sites has been proposed (Follansbee and Frances 1980: 7), there is evidence that Hayden Island is of recent origin. The soils of the island have indicated that its present surface was formed within the past 550
years (Green 1983: 133-134, Geomorphic map). Boring logs (Dames & Moore 1985) recorded no significant changes in subsurface soils up to 12-18 m (40-60') deep. These soils are poorly sorted sands typical of recent alluvial deposits.

The reported HBC dairy and the Hayden homestead represented important trends in the early regional history of Euroamerican settlement. Archeological remains at the former site could provide invaluable data on the operation of the extensive agricultural complex associated with Fort Vancouver. The Hayden homestead could provide an insight into the daily lives of the first American settlers.

Unfortunately, it is not possible to pinpoint the locations of the dairy or the Hayden home. It is likely that Fort Vancouver used the island's meadows for grazing cattle and regularly cut the grasslands for hay. There is little evidence, however, that any structures were ever built at the "dairy." The probability of encountering archeological evidence of this use is therefore very slight. The only indication of the dairy's location is a map dating to the 1840s (Hudson's Bay Company ca. 1840-1845). The dairy is shown along the north shore near the eastern tip of the island, opposite Fort Vancouver. If this information is accurate, the dairy operation was outside the present project area.

From Hayden's reminiscences (Hayden 1915: 40) and legal documentation (Mumma 1981) we have determined that the Hayden
homestead was along the island's original north shore within the present project area. It is tempting to locate the Hayden home at the site of the present farmstead. The earliest record of buildings at this site is an 1888 map (U.S. Coast and Geodetic Survey 1888). It can be argued that later residents would have continued to occupy the site homesteaded by the Haydens as it was on the higher ground near the river. There was similar high ground to the west, however, and the Hayden homestead could have been situated on one of these rises. Only four years after the Haydens abandoned their first home, no evidence of the farm was noted in the government survey of the island (U.S. General Land Office 1860). Their cabin and any outbuildings could have been easily lost in a flood in the intervening years. Continuity in location of the Hayden homestead and later farmsteads cannot be assumed.

No evidence of either the HBC dairy or the Hayden homestead was recorded in the field investigation. The negative field data lend support to the hypothesis that HBC operations did not extend into the project area. An alternative explanation is that the HBC activities on the island (grazing cattle, cutting hay) did not involve construction of any buildings or alteration of the land in any recognized way. The Hayden family occupation, although brief, is more likely to have left some material remains. The failure to locate any archeological evidence suggests that the record has been lost to later development or obliterated by erosion or deposition (particularly of dredge
The only resource noted of potential historic value is the existing farmstead. This farmstead, however, dates from the twentieth century and the older structures are in poor condition. The farmstead is neither unique in its architectural or historical qualities nor a good representative of similar floodplain farms. Better examples of this type of settlement can be found in better condition elsewhere in the Portland Basin.

No cultural resources of either prehistoric or historic significance were located in this study. No properties listed in the National Register of Historic Places or eligible for inclusion are situated within the project boundaries or would be impacted by project development. As in all studies based on surface reconnaissance, there exists the possibility of encountering buried deposits during project implementation. If such resources are discovered during land clearance, excavation, or construction, the staff archeologists of the Portland District, U.S. Army Corps of Engineers, should be notified immediately. This action would permit accurate identification of the resources, evaluation of significance, and consideration of appropriate mitigation measures.

All Indian burials and associated artifacts are protected under ORS 97.740-.750. No Indian burial may be excavated or removed except by a professional archeologist in consultation with the SHPO and the appropriate Indian tribe. Burials exposed
either in professional excavations or by accident must be returned to the appropriate Indian tribe for reinterment. If a suspected Native American burial is discovered during project construction, the Oregon State Historic Preservation Office and the Multnomah County Medical Examiner's Office should be contacted immediately. The burial should be left as found and protected from further disturbance until proper recovery can be undertaken.
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