CONCLUSIONS

Topography and Horizontal Zonation

The knowledge we have gained from exploring and mapping the surface topography -- and making extensive subsurface tests with soil probes, augers and excavation units -- gives us confidence in our interpretations of the Site Ridge landform. The large depressions are clearly structural remnants. Some may be truncated or filled in to a degree by cultural and other activity, but the general arrangement of the Cathlapotle houses can be discerned. And we may be certain of the identity of these remnants as the Cathlapotle village based on our thorough investigation of the historical data and the wisdom and experience of Mr. Jim Carty.

The 1994 testing provided valuable data on the formation of topographic features and cultural deposits. Testing showed that the rear berm has a low density of cultural material and features relative to other zones at the site. The testing of two additional oval depressions supports the hypothesis that the two rows of oval depressions are plankhouse pits. The two units (and the 1993 unit) in the frontal westward slope showed that the debris fields are widespread and contain, in addition to flat, gently sloping cultural deposits, a number of features, particularly ovens and structural features. Of particular interest is the discovery that the debris fields contain buried house deposits. One unit (N75-77/W76-78) placed on a large berm between houses shows that these berms are midden accumulations that may provide information regarding house building events. An auger probe adjacent to this unfinished unit indicates that these deposits are very deep.

The 1995 excavations expanded our stratigraphic sample significantly, and opened excavations within a second structure, House 4. Sampling within House 1 developed significant details about house construction and layout that contrasted with other excavated structures in the region. The sample of exterior excavations was expanded with two additional midden units, and the western extent of the N52 trench. It became very clear that there were deeply buried structures at the site for which there are no surface indications. Given the potential depth of House 7, discovery and sampling these structures is well beyond the scope of the current project.

While the 1996 excavations focused on sampling within established houses, one unit illustrated the potential extent of the debris field west of House 1. This debris field is an interesting, and potentially informative, large-scale feature. Figure 59 indicates the relative positions of the main large features across the site.

Radiocarbon dating, the presence and nature of historic items, and the general appearance of the assemblage all place Cathlapotle easily within Ames' "Late Pacific" and "Modern" phases (Table 6).

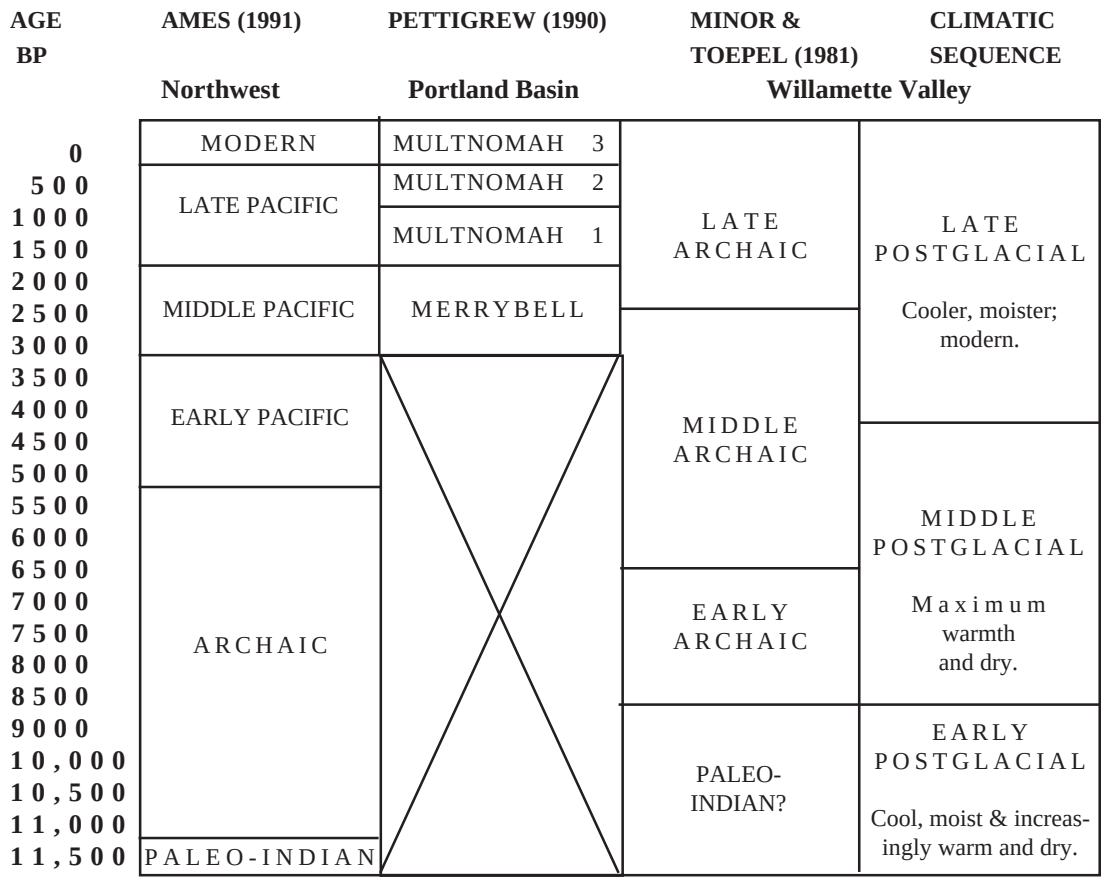
Feature Preservation

The feature preservation is excellent at Cathlapotle. The features observed include structural, subsistence and other household features. Among them are various fire features (ephemeral fires, central hearths, ovens, and ash dumps), plank and post molds, burnt planks, wall trenches, storage pits, shell lenses and artifact caches.

This excellent preservation is likely related to the higher rate of alluvial deposition at Cathlapotle than at Meier. Among the positive effects, higher depositional rates have led to a deeply-stratified site with separation of sequential events, less intrusive reuse of the subsurface deposits, and less intensive mixing of the sediments. The above mentioned stratigraphic evidence for a discrete component of trade items is just one example. In the house deposits at Cathlapotle we have found caches of lithic raw material and cores (and flakes) in the bench areas.

Architectural features are also well preserved. House wall features were found at the edge of every oval depression tested. Although expected, and probably once present, neither of these feature types were observed in situ at Meier. Additionally, a set of intact central hearths and central post molds were identified at Cathlapotle. Cathlapotle clearly has the potential to provide more precise temporal, spatial, and architectural information than was possible at Meier.

TABLE 6.
CULTURAL CHRONOLOGY OF WAPATO VALLEY AND VICINITY.



Artifact Assemblage

Analysis beyond general field categories has yet to be completed on the artifacts from Cathlapotle. At least 7000 artifacts have been recovered at this writing, not counting the far greater counts of debitage and faunal items that have yet to be quantified. Generally, the assemblage appears to have many of the same artifact types reported from sites elsewhere in the Wapato Valley (e.g., 35CO5). Additionally, field observations indicate that the lithic tool and bone tool technologies at Cathlapotle are similar to the Meier Site technologies. Specifically, the fine-grained lithic technology is based on the collection and storage of locally occurring alluvial cobbles that are expediently reduced for the manufacture of a variety of flake tools and small arrow points. In contrast, the bone tool technology is best described as curated, characterized by long lasting tools made with more effort. Unfortunately, perishable plant material (wood, matting, and cordage) is not as well preserved, leaving little in the form of tools or basketry.

The artifact types at Cathlapotle are common to the Multnomah Phase (AD 200-1835). Few artifact types common to the Merrybell Phase (600 BC- AD 200) (Pettigrew 1977:323) have been identified in the assemblage. This is consistent with radiocarbon dates that span the period AD 1200-1800. There is a prominent assemblage of historic trade items.

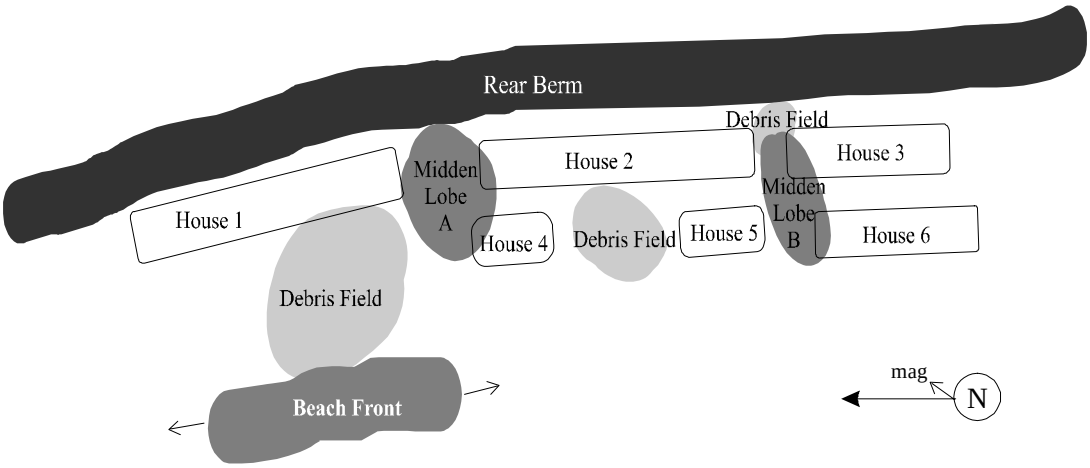


FIGURE 59.
SCHEMATIC ILLUSTRATION OF MAJOR SITE FEATURES.
SEE TOPOGRAPHIC MAPS FOR SCALE (FIGURES 7, 8, 9).

Artifacts are differentially distributed throughout the site. The heterogeneous nature of artifact densities is a result of a myriad of possible cultural site formation processes related to town activities such as food processing and storage, refuse disposal, and house construction. Spatial analysis will be a component of many studies of the Cathlapotle data.

Faunal Assemblage

Analysis of fish, bird, mammal, and other animal remains from Cathlapotle is ongoing (Table 7). Our investigations focus not only on the standard measures of diversity and taxonomy, but also on such problems as taphonomy and seasonality. The generally-excellent preservation at Cathlapotle makes such a wide-ranging research program possible.

In their preliminary report on the 1994 mammalian, reptilian, and avian remains, Church and Lyman concluded that a larger sample of faunal material than was collected in the 1994 field season was necessary to accurately describe the taxonomic diversity and richness of the archaeofaunal assemblage (Church and Lyman, n.d.). Furthermore, an analysis of Meier Site materials revealed that significant spatial variation in faunal taxa could be expected at Cathlapotle. These considerations guided some of our decision-making regarding sampling in 1995 and 1996 excavations (see above). Lyman and Church are currently studying the 1995 and 1996 excavations to evaluate our sampling strategy.

Church and Lyman's report on the 1994 fauna provides some interesting (but preliminary) information. The assemblage contains a total of 18 genera. These include large, medium, and small mammals. No reptilian remains have been observed, but a larger sample is expected to produce at least turtle. In the 1994 sample (see Table 7), the highest number of identified species (NISP) is elk (*Cervus elaphus*: n=441) followed closely by deer (*Odocoileus* spp: n=399). All other taxa identified to the genus level have less than 70 NISP. These are primarily medium sized mammals, although black bear (*Ursus americanus*) is a significant exception with an NISP of 24. Eight of the taxa exhibit evidence of butchering. This number is expected to increase as analysis proceeds. As discussed, the richness and diversity of faunal remains is anticipated to increase with sample size.

The 18 genera identified in the faunal sample are typical of other Portland Basin sites (compare with Table 3), but the Cathlapotle assemblage is unique in that wapiti (elk) remains outnumber deer remains. The assemblage difference may be explained in many ways including ecological, subsistence, taphonomic and sample bias or any combination of these. Additional analysis and a larger sample are necessary to adequately determine the causes of the disparity.

TABLE 7.
SUMMARY OF AVIAN AND MAMMALIAN FAUNAL REMAINS FROM CATHLAPOTLE (45CL1) IDENTIFIED TO AT LEAST TAXONOMIC GENUS.

TAXONOMIC NAME	Common Name	NISP	Butchery	Gnawed Marks
Aves	bird	(176)	-	-
Sylvilagus bachmani	brush rabbit	1	-	yes
Aplodontia rufa	mountain beaver	16	-	-
Castor canadensis	beaver	43	yes	-
Peromyscus spp.	deer mouse	1	-	-
Ondatra zibethicus	muskrat	50	yes	yes
Erethzion dorsatum	porcupine	1	-	-
Canis spp.	coyote / wolf / dog	10	-	yes
Canis latrans	coyote	24	-	-
Vulpes vulpes	red fox	2	-	-
Ursus americanus	black bear	24	yes	yes
Procyon lotor	raccoon	69	yes	-
Bustela vison	mink	3	-	-
Lutra canadensis	river otter	10	yes	-
Felis concolor	cougar	5	yes	yes
Lynx spp.	bobcat / lynx	3	-	-
Phoca bitulina	harbor seal	2	-	yes
Odocoileus spp.	deer	399	yes	yes
Cervus elaphus	wapiti (elk)	441	yes	yes

Butler and Corcoran have produced a brief report on the 1994 Cathlapotle fish remains (Butler and Corcoran n.d.). According to a preliminary analysis, the fish remains are differentially distributed across the site, with sampling methods controlled. The highest density of fish remains is in unit N75-77/W76-78, the midden accumulation berm between Depression 2 and Depression 3, where excavators encountered veritable "beds" of fish bone.

The assemblage is comprised of a variety of taxa common to archaeological sites in the Wapato Valley (Saleeby 1983). The prominent taxa are salmon, sturgeon, and smelt. Also represented are stickleback (*Gasterosteidae*) and minnows (*Cyprinidae*). Butler and Corcoran suggest that, based on vertebral measurements, the Cathlapotle salmonids were very large.

In sum, it is clear that the Cathlapotle fauna are varied, abundant, well-preserved, and deserving of specialist attention. At this writing, one MA thesis is addressing the Cathlapotle fish, while one PhD. dissertation is underway with analysis of the mammalian fauna.

Botanical Assemblage

Although wood and fiber tools are not well preserved, 45CL1 has excellent preservation of smaller plant remains (Table 8). In a preliminary report, Nancy Stenholm states that Cathlapotle has the largest carbon percentage of any site analyzed in her 20 years of research (Stenholm n.d.). The flotation samples have a high of 25% carbon with an average of 6.5% (Table 8), the largest average of any site in the Pacific Northwest.

Table 8 (from Stenholm n.d.) indicates the percent composition of some botanical assemblages of the Wapato Valley, including preliminary figures for a sample from Cathlapotle, which has a rather low score for conifers and a rather high score for hardwoods; this has yet to be investigated in detail.

The abundance of botanical remains should provide significant data in determining such aspects of subsistence as the plant resources used, functions of processing features, and seasonality. The flotation samples produced at least 30 plant taxa, including tissue and

TABLE 8.
THE BOTANICAL ARRAYS (% BY WEIGHT) OF WESTERN WASHINGTON SITES BY FLORAL CATEGORY.

Site Name	Site Number	FLORAL CATEGORY I	II	III	IV
Cathlapotle	45Cl1	32	58	9	1
White Lake	45K1421 & 45K1438A	14	49	14	24
Allentown	45K1421	63	17	17	3
Duwamish No. 1	45K123	67	11	12	10
West Point Plant	45K1428	69	20	3	8
West Point Plant	45K1429	71	19	2	8
Daishowa Mill	45CA415	68	24	2	6
North Nemah Bridge	45PC101	82	9	6	6
Chester Morse Lake	45K1125	77	14	1	7
Burton Creek Rockshelter	45LE266	86	14	1	5
Layser Cave	45LE223	37	25	2	36
Naches Lithic Scatter	CR05-07-31	94	2	1	4

I = Conifer, II = Hardwood, III = Edible Tissue, IV=Other Material

charred specimens. The seeds and roots thus far analyzed suggests four seasons of collection, storage, and use. As expected, the botanical materials also indicate use of a broad range of habitats within the Wapato Valley and uplands.

The most apparent taxa absent in the sample is wapato, a plant that is assumed to have been heavily used by people in the Wapato Valley. It is unclear why wapato has not been found at 45CL1. Probably for similar reasons, Wapato is also noticeably missing from most, if not all, archaeological assemblages of the Wapato Valley.

Research Plan

The Cathlapotle project is seen has having at least two phases. Phase I was the preliminary testing phase of the Cathlapotle Site. This included locating the site, testing it, and then carrying out extensive and statistically- representative excavations. Phase I was concluded with the end of the 1996 excavation season. Phase II will incorporate and organize the many specialist analyses currently addressing the Cathlapotle data. Most analyses are either MA or PhD projects; they are thorough, but laborious. We feel the need to stress that this report contains preliminary Phase I results only. Nevertheless, these results are sufficient to meet management needs and to develop a long term research plan. We believe we have shown that 45CL1 is an extraordinary archaeological site, deserving of special attention and programs.

Management and Scientific Goals

Site-Specific Goals. The Phase I archaeological investigations at 45CL1 were initiated by the United States Fish and Wildlife Service to :

1. Locate Cathlapotle. Given the evidence presented, 45CL1 is the only viable candidate.

2. Determine the horizontal and vertical extent of the site. The site is approximate 15,000 square meters in area and varies between 1.5 and 2 meters deep.

3. Establish the stratigraphic integrity of the deposits. The site is deeply and intricately stratified. The stratigraphy is a complex combination of cultural stratigraphy produced by the construction and occupation of the houses and related activities and a dynamic alluvial regime. Stratigraphic reversals appear to be common.

4. Evaluate the condition of the site and its contents. Aside from some minor surface disturbance due to collecting and road building across its extreme northern end, the site is in extraordinarily good condition. Microstratigraphy representing dividing walls within the once standing houses is present, for example.

5. Establish the site's age. The site spans a period from ca. AD 1000 to perhaps the 1860s.We have firmly demonstrated that the site spans a period from well before the contact period well into the nineteenth century. Cathlapotle provides an unparalleled vantage point from which to study archaeologically the effects of contact on one Native community.

6. Map the site in detail. This has been done, though the present 20 cm contour map needs to be revised to a 10 cm contour.

Related Topics

1. We have clearly shown that the depressions are the remains of houses, not the results of alluvial dynamics.

2. It is clear that the topographic features at 45CL1 relate to functional differences in site usage. We have also demonstrate that there are buried features that have no surface indications. The excavation data and the faunal analyses, particularly of the fish, show that the deposits are extremely heterogeneous.

3. We have established the basis for construction of a depositional and site formation model for 45CL1 that can be tested and evaluated in further excavations, and that can be used to explicate our results.

4. We have initiated a major program in radiocarbon dating. It is clear that geological correlations across the site without benefit of radiocarbon dates or time-stratigraphic markers is extremely risky.

5. The extraordinary faunal and floral records will permit a detail reconstruction of the community's subsistence economy. The presence of trade goods, such as iron and possibly fossils, will allow exploration of regional trade.

Outreach Goals

The project has already begun its outreach activities. These involve presentations at Tribal Council and general tribal meetings, letters, and site visits by members of the Chinook Tribal Council. We have given several lectures in the Ridgefield Community and the Portland-Vancouver metropolitan areas, as well as to the Lewis and Clark Trail Heritage Foundation, and we have actively encouraged site visitations.

It is in the areas of Culture History and Environmental Reconstruction that the project can make the most immediate public contributions, both to the public at large, but more specifically to the area's Indian people.

Implications for Future Work

Culture History: Chronology and Sequence

The available chronological and stratigraphic data indicate that it may be possible to isolate three temporal components in some parts of the site: one dating well before contact, one dating to the contact period, and one postdating contact. It may be possible to further subdivide these three periods, depending on the clarity of stratigraphy in portions of the site we have yet to test.

However, the complex stratigraphy may preclude finer subdivisions except in very well controlled circumstances. Be that as it may, this will provide an exceptionally fine-grained chronological sample of the last 1000 years. The site assemblages contain a wealth of time-stratigraphic markers (trade goods) that can be used to date particular portions of the site.

Culture History: European Contact

The effects of European contact, including disease history, the timing of the diffusion of trade goods and the impact of the fur trade, is one of the major issues in the archaeology and history of North America. Cathlapotle

spans that period. We can see the abrupt appearance of glass beads in the deposits. The site is located a short distance downstream from Fort Vancouver, a major Hudson's Bay Company post in the first decades of the nineteenth century. The Hudson's Bay fort has been the subject of continual archaeological research by National Park Service personnel and contractors. It is richly documented in the ethnohistorical record.

The Hudson's Bay archives in Winnipeg, Saskatchewan, have not yet been consulted, but it is possible they may contain extensive information on the site. In our preliminary tests, trade goods are clearly concentrated within a 70 cm thick zone, suggesting it may prove possible to construct a chronology of the entry of trade goods into the Lower Columbia region.

Environmental Reconstruction

Alluvial Chronology

At present, there is no alluvial chronology for the Lower Columbia River. Such a chronology is crucial not only to archaeologists and others working with alluvial deposits in the region, but also for any form of long-term environmental planning. The Cathlapotle deposits should permit construction of such a chronology for at least the last millennium.

Environmental Reconstruction

Pollen cores have been collected from lakes some distance north of Cathlapotle. The area surrounding the site has a number of small permanent lakes which can provide usable pollen cores for reconstructing the evolution of the local vegetation. Faunal and floral preservation at the site is excellent.

The wealth of floral and faunal remains will permit a very detail reconstruction of the biota in the site's catchment area. It is already clear that unusual combinations of flora are entering the site.

Economy

Subsistence

To belabor a point, the extraordinary preservation of ecofacts will permit us to reconstruct the town's subsistence base with considerable clarity. We already have enough data at hand to ask some critical questions. For example: where is the wapato, which is supposed to have been the starch staple. Our deposits appear rich in camas, but no wapato has been recovered here or elsewhere in the basin. Answering that question will require answers about the nature of wapato, site formation processes and so on. Since the site's people appear to have been sedentary hunter-gatherers, their subsistence practices are of considerable theoretical interest.

Additionally, changing subsistence practices, including the relative roles of salmon and other resources in the diet, are major issues in Northwest Archaeology. This sample, coupled with that from the Meier Site, will provide large samples of dietary remains from two permanent settlements in the Wapato Valley which have significantly different site catchments. The potential for a relatively fine-grained chronology suggests it may be possible to monitor relatively short-term subsistence changes, and perhaps even the subsistence effects of contact.

Regional

The Wapato Valley is known to have been on a major trade route running along the Columbia which links the coast with the interior, particularly with the major trade fair at The Dalles, east of the Columbia Gorge. Early European travelers commented on the importance of trade to the people of the Lower Columbia River and their trading skills. Such trade is probably quite ancient. Regional trade in obsidian throughout the Northwest extends back at least 9000 years (Carlson, 1994). Burials predating 7000 BP at Marmes Rockshelter in eastern Oregon contain relatively large numbers of *Olivella* shells, which had to be traded in from the coast.

We already have several lines of evidence for regional interaction at Cathlapotle. An obsidian-sourcing assay conducted by Northwest Research Obsidian Studies Laboratory, in Corvallis, Oregon, has placed the geological origin of some Cathlapotle obsidian to south-central Oregon; some is likely to have come from Northern California (Skinner pers. comm. to E.A. Sobel).

Additionally, the presence of what may be precontact

iron at Cathlapotle is clear evidence of its participation in a far-flung trade system. Cathlapotle also certainly played a role in the fur trade as it developed in the late eighteenth century and early nineteenth century. The presence of trade beads and Chinese porcelain support this theory.

In sum, we expect to examine a wider array of exotic materials with which to document the extent and nature of regional trade during the period of the site's occupation. We also want to explore how the households at the town were integrated into this larger economy during the past millennium, and to what extent they were dependent on it.

Settlement and Land Use Patterns

Village / Towns

Cathlapotle was a multihouse town. Lewis and Clark observed 14 houses and some 900 individuals in March, 1806. We have mapped six large surface depressions that are the remnants of houses. Aside from the Meier Site and 35MU57, there have been no extensive excavations of a Chinookan town below the Columbia Gorge. Salvage excavations at 45SK11 exposed a series of small plankhouses dating to the seventeenth and eighteenth centuries. However, Cathlapotle was a major town. 45CL1 may be one of the best preserved native townsites in the northwest United States.

Household Archaeology

Understanding the organization and evolution of households is a key methodological step in understanding the economy, social organization, etc., of the Northwest's inhabitants. The presence of six large structures on the site's surface will permit us to sample several houses to explore the social and economic status of each house's inhabitants, as well as that of the town as a whole.

Non-Site Areas

We intend to explore — using augering, limited excavations and a variety of geophysical techniques in an effort to locate features away from the main site. Such features could include subsurface ovens, processing localities, limited occupation sites, etc. Our intention here is to determine how the landscape around the main town was used and to what purposes. This activity, taken in conjunction with those listed immediately above, will provide a basis for interpreting the results of much more limited data collection projects.

As part of this effort we anticipate an ongoing survey effort of the entire refuge.

Site Formation Processes

Virtually all major Northwest Coast residential sites are shell middens, which are notoriously complex and difficult to excavate and interpret. Cathlapotle and the other sites in the Wapato Valley are alluvial sites but are otherwise similar to other Northwest Coast residential sites. The study of the site formation processes at Cathlapotle will permit us to continue the development of models of the site formation processes at work in these residential sites (see Ames et. al 1992).

Theoretical Issues

The project was initiated on the theoretical grounds that a well-documented study of sedentary complex hunter-gatherers would be theoretically very significant. Complex hunter-gatherers (or affluent foragers) are important because they exhibited a variety of sociocultural and economic traits once thought the exclusive province of agriculturalists. These traits including social stratification, complex and bulky technologies, specialization, environmental manipulation, intensive practices of food production, and some degree of sedentism. This is in marked contrast to the usual picture of hunter-gatherers as being very mobile with light, flexible technologies and small fluid social groups. Despite their theoretical importance, complex hunter-gatherers cannot be studied directly, since none presently exist, though they may have been widespread in the past. Indeed, some have argued that they were instrumental in the evolution of agriculture (Hayden, 1991). Hunter-gatherer mobility, including sedentism, is a central problem in hunter-gatherer theory. The Meier Site, Cathlapotle, and other sites in the area provide a situation where there is an archaeological record of exceptional quality from a period which ends with an extensive ethnohistoric record, so the two lines of evidence can be used to compliement each other.

Hunter-Gatherer Sedentism

The inhabitants of the Wapato Valley appear to have been sedentary hunter-gatherers, which makes their archaeology of considerable theoretical interest. They also had quite high population densities for hunter-gatherers. The basic theoretical goals of the project involve determining how hunter-gatherers sustain long-term sedentism.

Social Archaeology

The Chinookan people of the Valley, like other Northwest Coast people, were socially stratified. Excavations at the Meier Site demonstrated that it is possible to document aspects of the inhabitants' social and economic organization. We intend to test and expand these insights at Cathlapotle.