A Report on Archaeological Testing Conducted within the Spenger's Parking Lot, bounded by University Avenue, Hearst Avenue, Fourth Street and the Tracks of the Union Pacific Railroad, City of Berkeley, Alameda County, California

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EXECUTIVE SUMMARY

This report describes the findings of a comprehensive archaeological testing program conducted by Archeo-Tec within the Spenger's Parking Lot site (located between University Avenue, Hearst Avenue, Fourth Street and the Tracks of the Union Pacific Railroad) in the City of Berkeley, Alameda County, California. The program comprised a thorough archival and historical records review in addition to scientifically rigorous field testing and laboratory analysis. This investigation was undertaken in consultation with Andrew Galvan, a Native American Resource consultant and member of the Ohlone Tribe.

The research reported herein is part of an ongoing process in accordance with California Environmental Quality Act (CEQA) Guidelines, to understand the potential use capacities of the present Spenger's Parking Lot site. No specific plans for a development project have yet been formulated.

The archaeological testing program (consisting of test trenches and large areal exposures) determined that shellmound materials identified within the parking lot during an earlier testing program (in 1999 and 2000, consisting of exploratory borings) are in secondary deposition (Figure 1). While these materials probably originated from the West Berkeley Shellmound (CA-ALA-307), they were moved from their original location onto the project site as a consequence of natural creek deposition or in the late 19th or early 20th century during one of many episodes of human-induced topographic modification. No evidence was found of primary shellmound deposits anywhere within the Spenger's Parking Lot site. It appears that the current boundaries of CA-ALA-307 do not extend onto the project site.

It is the conclusion of the Principal Investigator that development within the Spenger's Parking Lot site will not result in adverse impacts to CEQA-significant prehistoric or historic period cultural resources. However, it cannot be eliminated with absolute certainty that significant historic and/or prehistoric cultural materials exist within the Spenger's Parking Lot site. Any ground disturbance below the historic period debris layer (approximately the upper four feet) should be monitored by both a qualified archaeologist and a representative of the Ohlone people. In addition, a more thorough, whole-site program of ground-penetrating radar survey is recommended prior to future development of the site.

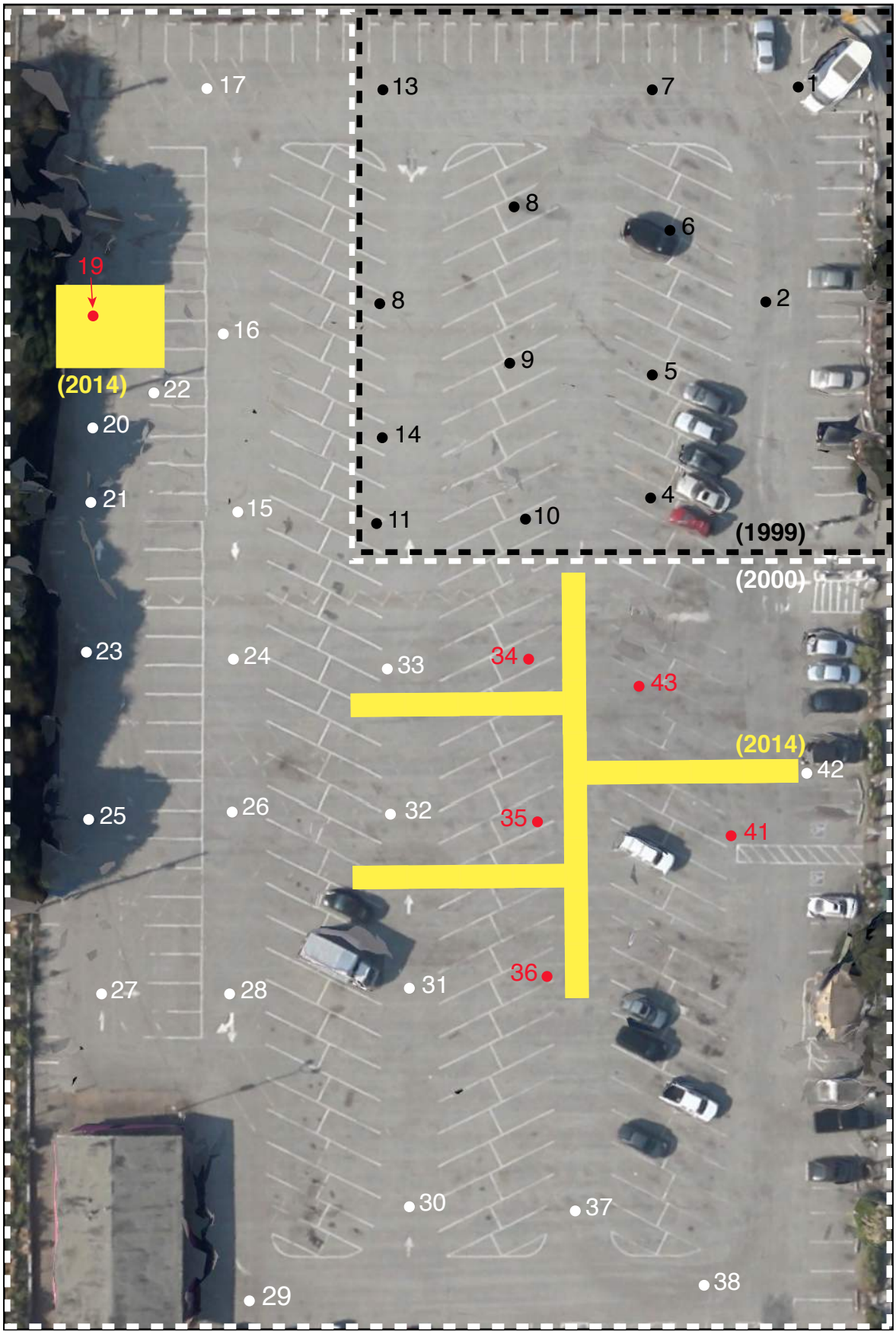

Figure 1. Archeo-Tec testing locations in Spenger's Parking Lot. 1999 (Borings 1-14, black dots bounded by black box); 2000 (Borings 15-43, white dots bounded by white box); 2014 (Yellow polygons). Positive borings from the 2000 study, used to guide the current study, are indicated in red.

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1 INTRODUCTION

Pursuant to a potential development project, Archeo-Tec has undertaken a program of archival research and field investigations of the Spenger's Parking Lot, located between 3rd and 4th streets and Hearst St. and University Avenue in Berkeley, Alameda County, California (Figure 2). Specifically, the program of archaeological research discussed in this report was conducted within the northwestern and eastern areas of the paved parking lot located directly to the west of and across 4th Street from Spenger's restaurant. The archaeological field and laboratory investigation were performed between January and May, 2014.

The program was designed to identify and evaluate archaeological resources in accordance with California Environmental Quality Act (CEQA) Guidelines. This report describes the findings of the archaeological investigations, offers interpretations of the findings, and presents the archaeological and supporting historical data resulting from that effort.

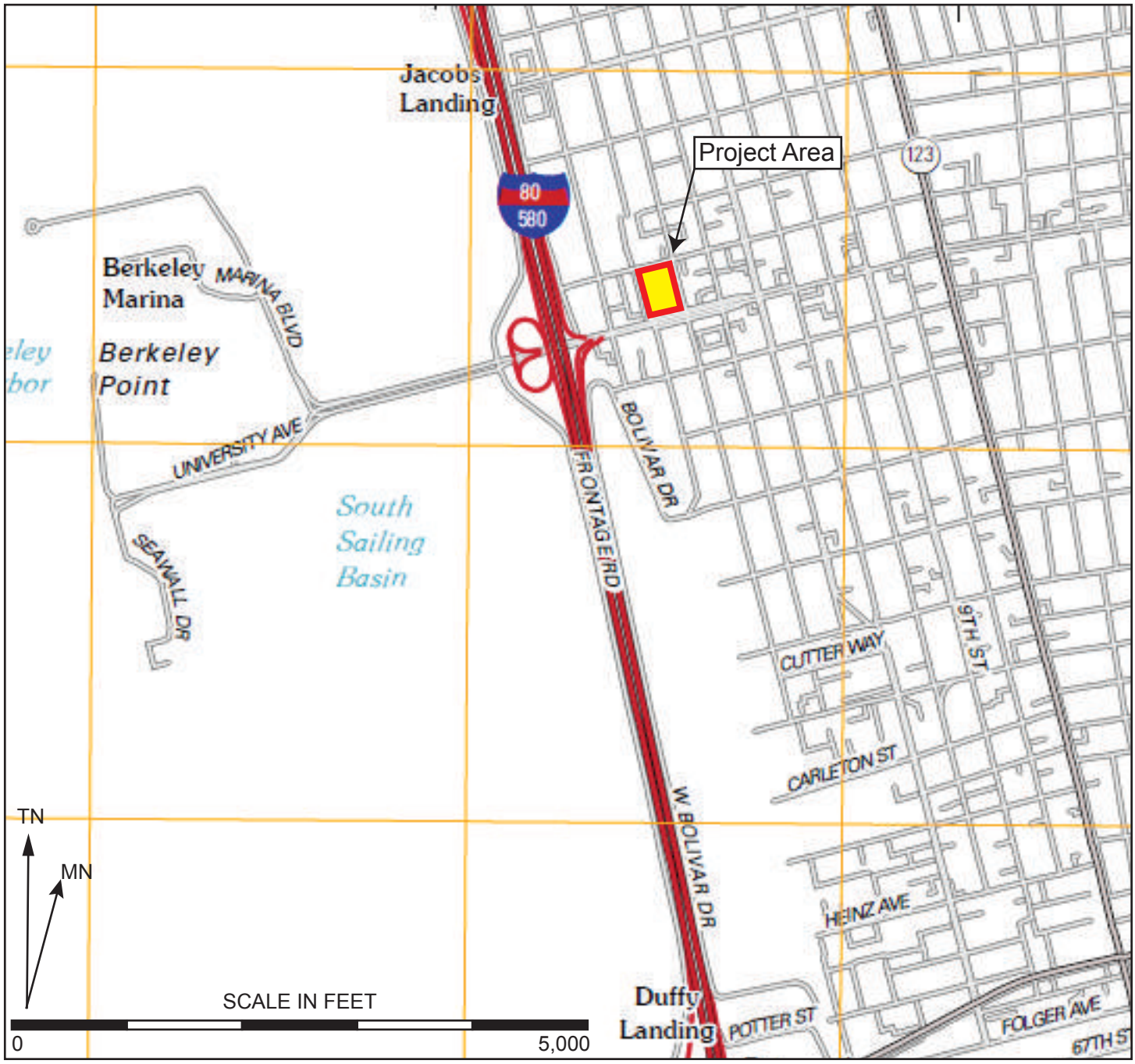
1.1 OBJECTIVE

Our intent was to discover and characterize any subsurface cultural materials that may exist on the property and to recommend a best course of action if future development were undertaken on the site.

1.2 PERSONNEL

Unless otherwise noted, all work described in this report was completed by Archeo-Tec staff. The program of archaeological work described herein was overseen by Dr. Allen G. Pastron, Principal Investigator. Archival review and consultation was undertaken by Kyle Brudvik, Guido Pezzarossi, Michelle Touton Staley, and Emily Wick of Archeo-Tec, with assistance from independent historian Richard Schwartz; field work and analysis were completed by Mr. Brudvik, Elise Christensen, Melissa Lewis, and Mr. Pezzarossi.

- Dr. Pastron received a doctorate in Anthropology from U.C. Berkeley and has over 35 years of experience in Bay Area archaeology.
- Mr. Brudvik received a master's degree in Integrative Biology from U.C. Berkeley and bachelor's degrees in Anthropology and Geophysical Sciences from the University of Chicago and has 1 year of experience in Bay Area archaeology.
- Ms. Christensen received a bachelor's degree in Physical Anthropology from U.C. Santa Barbara and has 4 years of experience in Bay Area archaeology.
- Ms. Lewis received a bachelor's degree in Anthropology from U.C. Berkeley and has 2 years of experience in Bay Area archaeology.
- Mr. Pezzarossi received a master's degree in Historical Archaeology from the University of Massachusetts at Boston and a master's degree in Anthropology from Stanford University and has 1 year of experience in Bay Area archaeology.
- Ms. Staley received a master's degree in Anthropological Sciences from Stanford University and has 10 years of experience in Bay Area archaeology.



2009 US Topo Oakland West, CA, 7.5 topographic map

Figure 2. Spenger's Parking Lot Location Map.

Spenger's Parking Lot Project

- Ms. Wick has an interdisciplinary bachelor's degree from the University of Redlands and 14 years of experience in Bay Area archaeology.

1.3 REGULATORY FRAMEWORK

The Spenger's Parking Lot site is the eastern third of a previously demarcated historic landmark, established by the Landmarks Preservation Commission of the City of Berkeley in the summer of 2000. This status was conferred in an effort to preserve the area as an important Native American living and burial site. As such, every effort has been made during the planning and execution of the current archaeological testing plan to recognize the potential cultural importance of the land beneath Spenger's Parking Lot and to follow requisite California Environmental Quality Act (CEQA) guidelines pertaining to such historic landmark properties.

CEQA requires that the lead agency consider the project's effect on archaeological resources as a part of the environmental review process. If an archaeological resource meets eligibility requirements of the California Register of Historical Resources (CRHR), it is deemed a "historical resource" under CEQA. The criteria for eligibility of a resource are that the resource:

1. Is associated with events that have made a significant contribution to broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons significant in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values;
4. Has yielded, or may be likely to yield, information important to prehistory or history.

Archaeological sites are typically eligible under Criterion 4 of the CRHR. To be considered a historical resource and thus be significant under CEQA, a resource must only show potential to yield important information to our understanding of history or prehistory. Resources can show this potential by demonstrating an ability to contribute significantly to topics of scientific or historical importance. The Landmark Preservation Commission of the City of Berkeley deemed the area in and around the Spenger's Parking Lot site worthy of inclusion by CRHR criteria (based on data available at the time) and so we have approached the present scientific research on the site with that in mind.

Our investigations did not find intact shellmound. Though we did locate secondarily re-deposited shellmound material that provided extremely useful insights into site formation and dynamic change over the past century, none of the shellmound material contained any cultural artifacts that are of definitively pre-contact origin.

Therefore, the results of this study show that data produced through this investigation do not show meet the criteria for a significant cultural resource under CEQA. However, measures should be taken during any future ground-moving below the historic debris layer should be monitored by both a qualified archaeologist and a representative of the Ohlone people.

1.4 CONSULTATION

In an effort to conduct as thorough a review as possible of post-contact, pre-contact, and ethnographic sources, we consulted with Richard Schwartz, a noted Bay Area historian, and Andrew Galvan, an Ohlone representative. Both were immensely helpful and forthcoming in sharing their extensive local and regional knowledge and we extend our thanks to them for helping us refine our understanding of past human lifeways in the Bay Area.

1.5 SUMMARY OF PREVIOUS EFFORTS

Multiple programs of archaeological research, of varying degrees of scientific rigor, have been previously conducted within and around the Spenger's Parking Lot since the late 19th century. The present study specifically expands upon the findings of two previous research-based endeavors by Archeo-Tec in 1999 and 2000 (see Pastron 1999 and 2000). Both of these studies were conducted by the staff of Archeo-Tec, under the direct supervision of Principal Investigator, Dr. Allen G. Pastron.

A review of relevant historical documents and past archaeological work reveals that the Spenger's Parking Lot area is situated in close proximity to the recorded location of the West Berkeley Shellmound (CA-ALA-307). This is a significant pre-contact archaeological site that only forty years ago was declared "one of the last great [San Francisco Bay area] shellmounds" by William J. Wallace and Donald W. Lathrap (1975:1). Additionally, the relatively early date of systematic archaeological research at CA-ALA-307—during the first decade of the 20th century—renders the site "one of the first bay shellmounds to receive scientific attention" (Wallace and Lathrap 1975:3). In the professional judgment of most local archaeologists – including the present writer – any remnant of this pre-contact deposit could possess the potential to yield significant archaeological data.

During the final quarter of the 18th century (i.e., near the beginning of the Mission Era throughout the San Francisco Bay region), the West Berkeley Shellmound was among hundreds of pre-contact archaeological sites that existed along the shoreline of San Francisco Bay (see Nelson 1909). Other significant pre-contact deposits that exist (or once existed) in close proximity to the West Berkeley Shellmound include the Emeryville Shellmound (CA-ALA-309) in the City of Emeryville (Uhle 1907; Schenk 1926), the Ellis Landing Shellmound (CA-CCO-295) in the City of Richmond (Nelson 1909, 1910), and the Stege Mounds (CA-CCO-297, 298, 299 and 300), also located in Richmond (Loud 1924). Unfortunately, even the most cursory glance at the body of literature pertaining to the archaeology of the San Francisco Bay region leaves no doubt that the vast majority of the pre-contact sites that once existed along the Bay shoreline have been subject to massive – in many cases catastrophic – disturbance as a result of 19th and 20th century urban development and topographic change. Nevertheless, during the past hundred years, archaeological investigations at a variety of San Francisco Bay area shellmounds, including CA-ALA-307, recovered valuable data that have contributed to a fundamental understanding of the region's complex pre-contact heritage. In addition, recent archaeological research at various places throughout the San Francisco Bay region have conclusively demonstrated that highly significant, deeply buried, essentially intact pre-contact deposits can survive below the surface of the ground, despite more than a century of intense urban development (e.g., Pastron and Walsh 1988a, 1988b; Archeo-Tec 1990).

The most intensive archaeological research at the West Berkeley Shellmound took place during the middle of the 20th century. Regrettably, these investigations were conducted under less than ideal conditions. Among other things, the site had already suffered severe impacts and so was far from pristine. Wallace and Lathrap (1975:1) noted that only a remnant of the archaeological deposit had survived until 1950 because it was "wedged tightly between two old factory buildings." Because 20th century urban development had wrought such a dramatic transformation on the landscape of West Berkeley, the "original dimensions and exact limits" of CA-ALA-307 were never properly delineated (Wallace and Lathrap 1975:1). However, based on the evidence at hand, Wallace and Lathrap suggested that the center of the site was [redacted]

The site was tested again in the late 1990s as part of the proposed Spenger's Plaza Development Project, which would have constructed a multi-story commercial building within a portion of the Spenger's parking lot. As Wallace and Lathrop had placed the presumed center of CA-ALA-307 just a block to the west of the parking lot, and previous documentation had failed to conclusively demarcate the boundaries of the site, it was unclear whether remnants of the West Berkeley Shellmound might still lie buried beneath the parking lot. Accordingly, in 1999 and 2000 two sets of borings (a total of 43 borings, laid out as shown in Figure 1) were placed within the parking lot to search for the archaeological deposit.

While the borings in the northeastern quadrant, which would have been the location for the proposed commercial building, found no conclusive evidence of an anthropic deposit, it did identify several pieces of unmodified shell (Pastron 1999). Due to its location at the interface between marine and terrestrial deposits, the unmodified shell was found to most likely be naturally occurring and not a result of human activity. However, several borings in the remaining three quadrants indicated seemingly intact or disturbed shellmound deposits that might significantly expand the knowledge base of the West Berkeley Shellmound (Pastron 2000).

The present program of archaeological testing and evaluation was guided largely by the results of past research on the West Berkeley Shellmound, but especially the testing programs from 1999 and 2000. The present program consisted of the placement, excavation, and assessment of twenty-two (22) mechanical exploratory test trenches, two (2) of which were large areal exposures (Figures 2 and 3), at locations within the Spenger's Parking Lot Project site that coincided with the positive test borings from 1999 and 2000 (Figure 1). The field investigations were performed during January, February, and March of 2014. Fieldwork was followed by laboratory analysis and data assessment, all of which we report here.

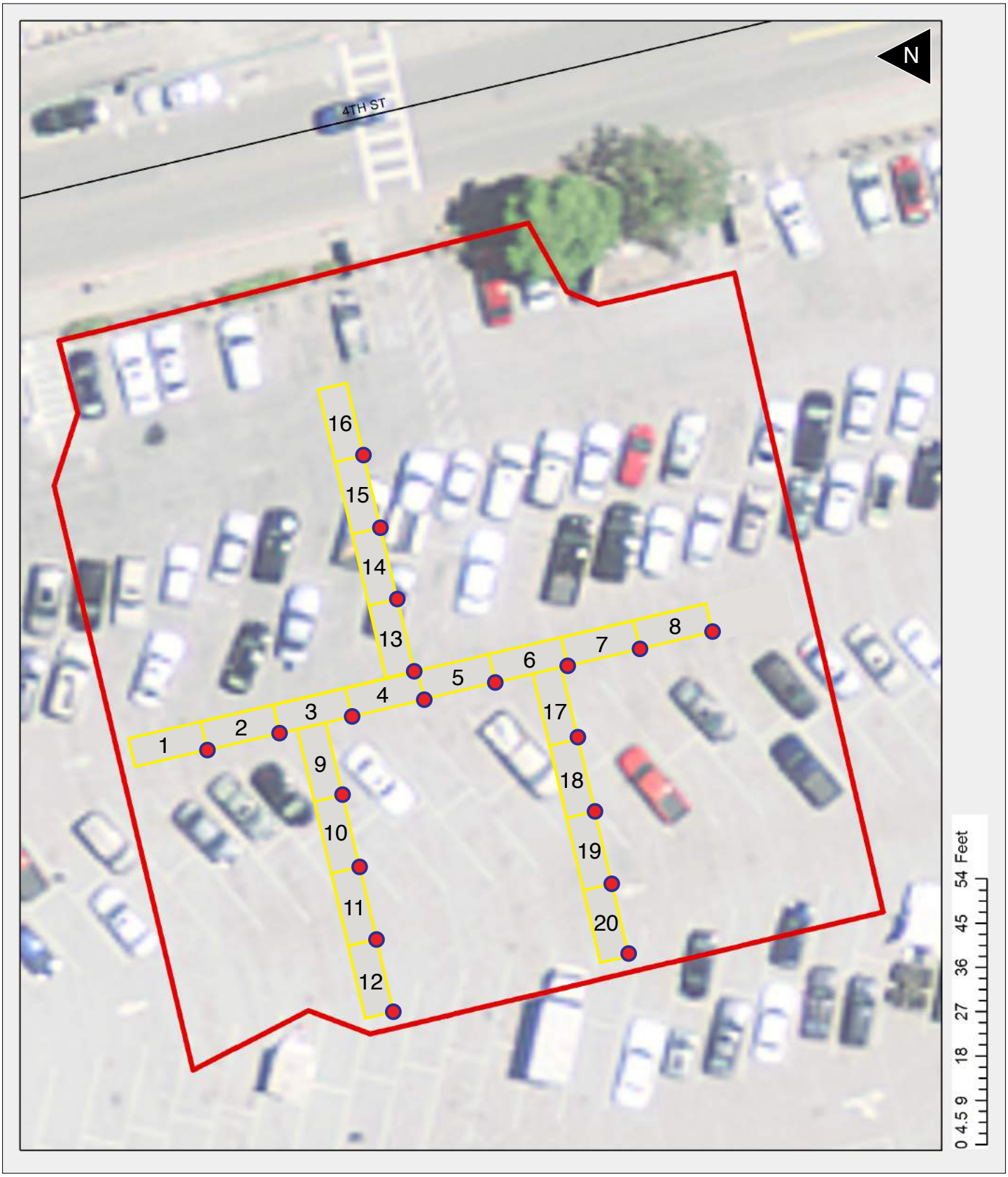


Figure 3. Test trench locations in the larger excavation area, Spenger's Parking Lot. Red dots indicate geospatial measurement locations. Red polygon is the fence line.

Figure 4. Test trench locations in the smaller excavation area, Spenger's Parking Lot. Red dots indicate geospatial measurement locations. Red poylgon is the fence line.

2 PROJECT SETTING

The Spenger's Parking Lot property is situated in the western part of the City of Berkeley. The project site is bounded on the north by Hearst Avenue, on the south by University Avenue, on the east by 4th Street, and on the west by the tracks of the Union Pacific Railroad (Figure 2). The project area is presently completely covered by a paved parking lot. However, a small single-story building, situated at the southwestern corner of the subject property, is currently being used as an exercise studio.

As recently as the close of the 19th century, before massive urbanization transformed the natural landscape of West Berkeley, the extensive marshlands bordering the eastern shoreline of San Francisco Bay were situated very near to the west of the present project area.

2.1 GEOLOGIC, ECOLOGIC, AND ENVIRONMENTAL SETTING

The Spenger's Parking Lot site sits at a temporal (pre-contact and pre-contact periods) and geographical (land and water) interface in one of the more culturally and geologically active urban population centers in the world (Figure 5). What we see on the modern landscape today is the direct result of extended human and natural processes that are both dynamic and unyielding. In this section, we describe the regional and local geologic context of the Spenger's Parking Lot area and present its attendant ecological and environmental changes, especially those of the Holocene. This context then sets the stage for the next section in which we detail a rich period of human occupation and florescence.

The tectonic evolution of California spans the entire Phanerozoic and extends as far back as the Precambrian (i.e., older than ca. 542 million years ago). California is a state of accreted terranes, in effect a patchwork of exogenous landmasses, making its evolution complex. Reduced to its essentials, however, this evolution is understood as occurring in four distinct stages (Dickinson 1981).

A passive, Atlantic-style continental margin dominated the late Precambrian and early Paleozoic, an active Japanese-style margin lasted from late Paleozoic to early Mesozoic times, an active Andean-style margin developed in the Mesozoic and early Cenozoic, and a California-style margin began approximately 29 million years ago (Ma), in the middle Cenozoic, and persists to the present (Blake et al. 1978; Dickinson 1981).

Atlantic-style margins are passive, by definition, because there is no subduction of adjoining plates. In fact, plate boundaries are divergent, creating a rift zone and a marked mid-oceanic spreading ridge. During the late Precambrian and early Paleozoic in California, the continental margin extended only as far west as the modern Mojave Desert, in the southeastern part of the state. The rest of the state as we know it today did not yet exist.

Following this early stage, an active Japanese-style margin developed during the late Paleozoic and early Mesozoic times. Off-shore island arcs formed above subducting oceanic slabs, which isolated the continental margin by an intervening seaway. Major mountain building episodes

MAP REDACTED: CONFIDENTIAL ARCHAEOLOGICAL INFORMATION

occurred (Antler and Sonoma Orogenies) and much of the Sierra Nevada block was accreted (Dickinson 1981).

An active margin persisted in to the early Cenozoic, but was this time dominated by an Andean-style regime. The overlying continental plate continually scraped material off the subducting plate, creating an accretionary wedge of sediments, lavas, and ophiolite sequences, which expanded the continental margin westward. In addition, an island magmatic arc was initiated, separated from the accretionary wedge by a narrow forearc basin.

Following these two active-margin stages, a passive California-style margin developed in middle Cenozoic (late Oligocene) times. This began with the initiation of a strike-slip fault contact between the Pacific and American plates approximately 29 Ma (million years) ago. Anastomosing faults and pull apart basins developed and disappeared within this transform system, leading to the present day San Andreas fault zone, which is continually lengthening and today stretches from the Rivera triple junction in the south to the Mendocino triple junction in the north. Part of this system is a network of major and minor faults, some running in a general northwest-southeast direction, but others trending 60 to 90 degrees away from this direction in what are known as splay orientations. The divergent and convergent natures of and differential movements along these faults has created a landscape of geologic formations and other lithologic bodies that is carved and divided.

It is the San Andreas fault system that has had the most dramatic influence on the area surrounding the Spenger's Parking Lot site in the past and continues to do so today. Thus, critically important to an understanding of the site formation processes of the Spenger's Parking Lot area is an understanding of the geology of Berkeley and neighboring hills and the history of Strawberry Creek.

Spenger's Parking Lot sits upon a low-lying plain that is underlain by Quaternary (primarily Holocene) alluvial fan and levee deposits (Figure 5). Dore et al. (2004) have argued that the West Berkeley area (based on extensive coring work done in 2001) is a zone of bajada development that began during the Pleistocene. This adds to the work of Graymer (2000), who maps large alluvial fan deposits from that time period west of the Hayward fault, but only Holocene age deposits west of approximately San Pablo Avenue. Thus it seems that at depth, west of San Pablo Avenue and extending to the bay shoreline (and thus underlying the Spenger's Parking Lot site), Strawberry Creek has deposited levee and overbank sediments since at least the Pleistocene. This is confirmed by the work of Meyer (2011), who analyzed cores taken west of the Eastshore Highway along University Avenue.

Strawberry Creek deposits were encountered during the current phase of archaeological testing at the Spenger's Parking Lot site. We base this assertion on the sedimentary evidence from several of the test trenches. We cover this more fully in the Site Stratigraphy section later in this report, but we bring it up here to introduce the source material from which we think the sediments we observed derive.

The source material for this bajada and levee development was the stratigraphic sequence of the Berkeley Hills, from which the headwaters of Strawberry Creek originate. The stratigraphic

sequence of the Berkeley Hills is largely confined to middle and upper Miocene age units (ca. 16-8.2 Ma) that are readily differentiable. From oldest to youngest, these include the Sobrante Formation, the Claremont Chert, the Orinda Formation, the Moraga Formation, the Siesta Valley Formation, and the Bald Peak Basalt. However, the Sobrante Formation crops out only in small areas to the north and south of Berkeley, so it could not have provided material for Strawberry Creek. In addition to this Miocene package, Strawberry Creek cuts through fragments of Jurassic to Late Cretaceous age rocks of the Franciscan and Great Valley Complexes.

The oldest rocks in the area are of the Jurassic- and Cretaceous-aged Franciscan Complex. The Franciscan is one of the more ubiquitous units in the Bay Area. It is very distinctive, especially in the Marin Headlands, where it outcrops as pillow basalt overlain by ruddy brown radiolarian chert, sandstone, and shale. In fact, the type locality of the Franciscan Formation of Lawson (1914) is in Marin and the complex was one of the first terranes recognized as comprising the North American Cordillera (Blake et al. 1974; Wahrhaftig 1984). In the Berkeley Hills, immediately west of the Hayward Fault, near Memorial Stadium, the Franciscan is represented by small packages of mélange, including serpentine matrix mélange, and undivided sandstone (Graymer 2000).

Immediately to the east of the Hayward Fault, The Great Valley Complex outcrops as an undivided sandstone body. Though the Great Valley Complex is elsewhere represented by a much larger suite of lithologic constituents, in the Berkeley Hills area it is more homogenous. This dual emplacement of the Franciscan and Great Valley Complex is not unique to the Berkeley Hills. It more broadly reflects the dynamic subduction histories of terranes along the west coast of California, which were in all cases, as here, facilitated by faulting.

The Claremont Chert (16-13 Ma) is lithologically heterogeneous, alternating between cherts and shales. The cherts are biogenic in origin, composed of diatom and foraminiferan tests (Jones and Curtis 1992), indicating productive surface waters at the time of formation. Interbedded dark brown to black shales indicate anoxic conditions and decreased surface productivity. These repeating couplets of clastic and biogenic units in the Claremont are generally regarded as a series of rhythmites (Pisciotto and Garrison 1981). The Claremont is routinely folded and in general dips to the east; however, at its upper contact with the Orinda Formation, it is overturned. North of Berkeley, the Claremont is more shale-rich.

The Orinda Formation (13-10.5 Ma) unconformably overlies the marine deposits of the Claremont. The Orinda sands, siltstones, and pebble conglomerates indicate a fluvial origin and represent a clear shift from a subaqueous to a subareal paleoenvironment. The whole formation coarsens upward suggesting that some amount of marine regression or uplift had begun. Lower Orinda fine sands, siltstones, and thin pebble conglomerate beds give way higher in the section to coarser sands, thicker siltstones, and massive cobble and boulder conglomerates. It is evident that Orinda sediments were transported from outside the Berkeley Hills region, as they contain clasts of greywacke, red chert, blueschist, and black chert, which are hallmarks of the Franciscan terrane and Great Valley Sequence (Jones and Curtis 1992). The Orinda also contains clasts of quartz, limestone, rhyolite, and glaucophane schist. Importantly, the Orinda lacks clasts of chert and shale from the Claremont. Red and green sandstones and

siltstones of the upper Orinda, near its contact with the overlying Moraga Formation, contain fossil mammals (e.g., gomphotheres, horses, and camels), plants, and gastropods.

Above the Orinda is the Moraga Formation (10.2-9.0 Ma). The Moraga is primarily basaltic and comprises Lower (10.2 Ma) and Upper (9 Ma) members, separated by a distinctive rhyolite tuff (9.5 Ma) that is used as a marker bed throughout the Berkeley Hills. The Lower Moraga is characterized by five basalt flows separated by reddish layers that have been interpreted as paleosols. Additionally, the Lower Moraga contains lahars; mudflows that form in the presence of water. These data suggest that between basalt flows, river or lake systems were established such that plant life could generate thin soil layers.

The Lower Moraga is overlain by a quartz-rich volcaniclastic rhyolite/dacite tuff. This rock is a very useful marker for mapping the virtually indistinguishable Lower and Upper Moraga and is resistant enough to erosion that it is easy to find. This tuff has routinely been described in the literature as a rhyolite, but is mostly of dacitic composition. This is supported by the fact that much of it has a generally lower concentration of quartz than true rhyolite. The Berkeley Hills monoliths, however, are true rhyolites, as their quartz concentrations are much higher.

Above the rhyolite/dacite tuff is the Upper Moraga, comprising five layers of basalt flows, again interspersed with lahars and paleosols. In addition, there are several limestone beds and conglomerates that are compositionally identical to those of the Orinda Formation. This suggests that during periods between flows; rivers, lakes, and ponds were able to form and persist long enough to deposit sediments and support productive ecosystems. Thus, even though individual basalt flows occurred rapidly, perhaps in a matter of days, quiescent periods between flows were substantially longer. The Moraga Formation is thickest near its source in Sibley Volcanic Regional Preserve.

Overlying the Moraga Formation is the Siesta Valley Formation (9.0-8.5 Ma), which consists mainly of bluish and grayish siltstones and claystones, fine-grained sands, and a thick basal freshwater limestone. There are also lenses of freshwater limestone throughout and reworked tuffs (Edwards 1983). Such fine-grained materials suggest deposition within lakes or swamps in a terrestrial setting.

North of Highway 24, the Siesta Valley Formation interfingers with the Bald Peak Basalt (8.2 Ma), which caps the stratigraphic sequence in the Berkeley Hills. The Bald Peak comprises the youngest basalts in the hills and has a much more limited extent than the Moraga Formation. However, the basalts of both formations are lithologically identical, though it is understood that the Bald Peak parent source directly underlies it and is not located in Sibley Volcanic Regional Preserve.

Also important to the formation of the area underlying the Spenger's Parking Lot are the dynamic ecological and environmental factors that we can discern since the end of the last glacial maximum.

Approximately 15,000 years ago, the oceanic coastline was nearly 25 kilometers to the west of where it is currently (Moratto 1984). During this time, the San Francisco Bay, or rather, the Franciscan Valley, was a low-lying plain cut by the now-vanished California River. The valley

supported riparian forests and oak savannahs and was home to Tule elk, deer, pronghorn antelope, and other megafauna that are now wholly or locally extinct (Rosenthal and Meyer 2004). When glaciers began to recede, near the end of the Pleistocene, sea levels rose worldwide and locally such that by 8,000 years ago, waters began to inundate the Franciscan Valley, creating San Francisco Bay. These events submerged old shorelines, created marshlands, and led to extensive bay mud accumulations.

The rate of sea level rise in San Francisco Bay increased dramatically between 8,000 and 6,000 years ago (Atwater 1979; Atwater et al. 1977; Stanley and Warne 1994; Wells 1995; Wells and Gorman 1994) and by 5,000 years ago was within approximately 8 meters of its current level (Naidu 1982). A relatively warm and dry Altithermal Period began about 6,000 years ago and lasted for several millennia. This caused increased glacial melting and sea level rise (Zachos et al. 2001). Cool and moist conditions then predominated until about 1,500 years ago when warm and dry conditions returned (Moratto et al. 1978). Roughly 600 to 100 years ago was a short period of relatively cool temperatures and increased moisture but the last century has seen a return to warm and dry conditions, which continues today (Atwater et al. 1977; Sloan 1989).

2.2 ARCHAEOLOGICAL BACKGROUND

Against this backdrop of global and regional ecological and environmental change, humans have been continuously occupying California and the San Francisco Bay region for at least 12,000 years (Bartelink 2009; Erlandson et al. 2007). The earliest sites are in Lake, Sonoma, and Santa Cruz counties (Barrow 2009; Pahl 2003).

Archaeological sites in the vicinity of the Spenger's Parking Lot project area consist mainly of pre-contact shellmound deposits. Until relatively recently (i.e., within the last 100 years) the Bay Area's landscape was marked by numerous large and small mounds of earth and shell containing a variety of pre-contact cultural materials and features, which captivated early 20th century archaeologists and lay people alike. In fact, pre-contact research in the San Francisco Bay Area is one of the oldest archaeological traditions in California. When U.C. Berkeley archaeologist N.C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no less than four hundred and twenty-five shellmounds on or near the shoreline of the Bay (Nelson 1909, 1910). He found that:

> [Shellmounds were] situated in a great variety of places; but, on the whole, the positions may be characterized as "convenient" rather than in any sense "strategic." Many of the largest mounds are located at the head of the sheltered coves, yet not a few deposits lie in thoroughly exposed places, out on the bluff and higher headlands. Occasionally a hillside, with or without any accommodating shelf or hollow, has been chosen, doubtless on account of some small spring issuing in the vicinity… Some mounds are found in apparently unnatural situations, such as on the plain where no streams pass, or out in the salt-marsh, where fresh water could not be had, [but] normally shell heaps lie close to sea level.
>
> The fact is that nearly all the mounds lie within fifty feet of the surface of the bay water… but exceptions occur, [some] mounds lie very far above the normal

> zone…[and] at least ten of the known deposits extend below sea level (Nelson 1909:328-329).

The alignment of known sites, along freshwater sources near the confluence areas with tidal marshes, suggests the Spenger's Parking Lot area was located within an ecotone conducive to Native American habitation. Along the western shores of Alameda and Contra Costa counties, dozens of large and small pre-contact sites have been recorded within similar landscapes. The most important of these include the Emeryville Shellmound (CA-ALA-309) and the Stege Mounds (CA-CCO-297, 298, 299, and 300). [redacted] When Nelson first saw these sites during his 1907 and 1908 survey, they were all visible above the surface of the ground and consisted of mounded earth, shell, and cultural material. Most extended more than one foot below the natural ground surface, and some deeper.

In fact, some of the archaeological sites Nelson saw, and those noted here, were once extensive and are demonstrably significant multi-use sites characterized by deep deposits. All of the most informative sites are discussed at length in a variety of previous archaeological reports and cultural resources assessments (e.g., Broughton 1999, Buss 1982, Loud 1924). Accordingly, detailed synopses of the specific characteristics of these pre-contact cultural resources will not be presented within the text of this report.

2.3 ETHNOGRAPHY

When the Spanish first explored Northern California in the final quarter of the 18th century, the San Francisco Bay region possessed what has been described as "the densest Indian population anywhere north of Mexico" (Margolin 1978:1). Anthropologists have estimated that anywhere between 7,000 and 10,000 people inhabited the naturally bountiful coastal area between Monterey County's Point Sur and the San Francisco Bay at the start of the historic era (Cook 1943, 1957; Kroeber 1925:464; Margolin 1978:1).

The present project area is situated within what was, prior to the arrival of the first Europeans, part of the territory occupied by the Ohlone people. In 1770, the Ohlone numbered at most around 10,000 individuals (Levy 1978:485), perhaps fewer (Kroeber 1925:464). Forty years later, however, around 1810, much of the aboriginal population and most of the traditional culture of these Native Californians had largely disappeared in the face of relentless European encroachment and its devastating impacts – diseases, warfare, displacement and, above all, the California mission system (Cook 1943, 1957; Milliken 1995).

Trained 20th century anthropological observers and historical researchers have been forced to rely on scant and often biased historical accounts in journals, diaries, and logs (e.g., Fages 1911; Font 1930, 1933), or on the long-term memory of Ohlone descendants. Recent ethno-historic work with mission records has proved fruitful in reconstructing Ohlone kinship patterns (Milliken 1981, 1983, 1988, 1995). As is the case throughout California, archaeological efforts have contributed greatly to our knowledge of the Ohlone people, especially with regard to material culture.

The term Ohlone implies a linguistic affiliation encompassing seven (Kroeber 1925:465) or eight (Levy 1978:485) distinct language branches. These derive from Penutian stock (Callaghan 1967; cf. Pitkin and Shipley 1958), a theoretical linguistic construct that may have its origin in the northwestern Great Basin (Hattori 1982:208).

Penutian-speaking peoples presumably slowly migrated into central California, perhaps as early as around 2,500 B.C. (Moratto 1984:552). By around A.D. 300-500, proto-Ohlone speakers of Penutian stock were firmly ensconced within the San Francisco Bay area. It is generally thought that over the millennia these languages evolved, split, recombined, borrowed, paraphrased and invented until the seven or eight distinctive Ohlone languages observed in the ethnographic present were formed, each mutually unintelligible but derived from a common ancestor.

The Ohlone people were primarily collectors and hunters of fish and game. Of significant importance to the aboriginal diet, as documented both ethnographically and archaeologically, were various molluscan resources: clams, ocean and bay mussels, and oysters were extensively exploited.

Many other littoral food sources, including varieties of gastropods and crustaceans, contributed protein to the Ohlone diet, as documented in the archaeological literature (for example, see Greengo 1951, 1952, 1975). As discussed in detail by Levy (1978:491), other sources of meat included all manner of land and waterfowl, as well as terrestrial and marine mammals, both large and small (also, see Broughton 1999).

Fish contributed a large measure of protein to the Costanoan diet, and were taken by net, trap, hook, spear, and poison (Harrington 1921; Crespi 1927:280; Font 1930; Bolton 1933). Ocean and estuarine environments yielded a wide variety of species including steelhead, sturgeon, salmon, ray, lamprey, perches, smelts, and varieties of small sharks (Follet 1975:73; Levy 1978:491-492).

In common with most Native American groups throughout what today is California, the Ohlone people probably acquired most of their calories from plant foods. The staple was the acorn, pounded by stone mortar and pestle to form a mush, gruel, or bread, following the complex technique of leaching tannic acids (Gifford 1965). Buckeye yielded edible nuts; and all manner of berries were harvested for direct consumption, for flavoring the bland acorn starch, and for cider (Harrington 1921; Merriam 1966-1967:3).

Roots, shoots, and seeds were savored, and derived from wild onion, cattail, wild carrot, dock, tarweed, chia, and other species (Levy 1978:491). Controlled burning of the land was practiced in order to renew the succession of plant communities (Kroeber 1925:467; Crespi 1927; Galvan 1968; Lewis 1973).

In addition to providing primary subsistence, the flora and fauna of a rich natural habitat provided the remainder of life's necessities for the Costanoan people and their neighbors in the San Francisco Bay region. Tule reeds (*Schoenoplectus acutus*) provided the building materials for structures (Kroeber 1925:468), and for crude balsas (Heizer and Massey 1953). The balsa canoe was instrumental to the Ohlone people for fishing (Bolton 1933) and for hunting waterfowl and possibly sea mammals (cf. Kroeber 1925:467). Balsas also facilitated navigation

of the salt marshes and permitted transportation of both people and goods across the Bay (Kroeber 1925:468).

Vegetal resources also provided the fabric for net and cord manufacture, especially basket making. These latter artifacts were used variously as cooking containers and utensils, storage containers, seed beaters, water jugs, cradles (Merriam 1966-1967:3,294-294; Broadbent 1972:63), fish traps (Crespi 1927:280), trays for leaching and drying acorn meal (Kroeber 1925:467), and for burden (Kroeber 1925:468; Levy 1978:493).

Animal remains – bone, tooth, beak and claw – provided awls, pins, daggers, scraping and cutting knives, and other tools. Pelts and feathers provided clothing and bedding (Kroeber 1925:467; Levy 1978:493). Feather, bone, and especially shell were used for items of ornamentation, such as beads, pendants, hair bangles, septum inserts, earrings, and other jewelry (Mason 1916:433-435).

Local rock and mineral sources provided cherts and other metamorphic and igneous stones for tool manufacture. Local sandstone, highly indurated, provided suitable material for grinding and pounding tools. Exotic materials, such as steatite and particularly obsidian, could be obtained in trade; bartered for with locally available commodities such as cinnabar and hematite (Heizer and Treganza 1972). Other valuable resources used to obtain exotic materials in trade with non-coastal peoples included salt, shellfish meat, and shell as raw material for ornament manufacture (Davis 1961:23).

The family household was the basic social unit, and was extended patrilineally (Harrington 1933:3). An average of about 15 individuals—although this varied considerably—made up the household (Broadbent 1972:62), and sororal polygyny was apparently commonplace (Palou 1924:64). The next larger social unit was the clan (Harrington 1933:3). Additionally, the Ohlone were divided into moieties, following the common central California practice (cf. Kroeber 1925:835). The largest social unit throughout most of California was the tribelet (Kroeber 1962), and the Ohlone prove no exception. The tribelet, or group of interrelated villages under the leadership of a single headman (Heizer 1978:5), consisted here of around 200-400 people per unit (Levy 1978:485). Each tribelet—of which there may have been several for each of the eight linguistic branches—served as an autonomous political and social unit, presumably for enforcing equal access to resources for its members and for protection from hostile neighbors.

2.4 POST-CONTACT DEVELOPMENT

Between the appearance of the first Spanish ship to sail through the Golden Gate in 1775 (the *San Carlos* under the command of Lieutenant Juan Bautista de Ayala), and the discovery of Gold at Sutter's Mill in 1848, population and maritime traffic in the San Francisco Bay area were extremely limited (Bancroft 1886, volume 1: passim; Scott 1959:13). The first Spanish explorer to reach the San Francisco Bay was Gaspar de Portola and his party in 1769. In 1776, Captain Juan Bautista de Anza established the San Francisco Presidio, and in the same year Mission Dolores (also known as Mission San Francisco de Asís) was established on Mission Creek several miles to the south of the newly-established presidio. Thus began the “Mission Period” in the San Francisco Bay area.

Beginning in the first decade of the 19th century and continuing until the mid 19th century, the lands surrounding the project area were part of the extensive East Bay ranch holdings of San Francisco's Mission Dolores. Mission records state that sheep, cattle, and grain were grown on these lands, which encompassed the entire eastern shore of the San Francisco Bay and extended into the Coast Ranges further to the east (Hendry and Bowman 1940:487). As with all of the Mission's activities, the majority of this ranch work depended upon the labor of Ohlone neophytes, both from local villages and from raided communities throughout Northern and Central California.

The Spenger's Parking Lot property falls within the lands granted to Sergeant Luis María Peralta on September 7, 1818, by Governor Pablo Vicente de Solá, Lieutenant Colonel of the royal armies of Spain and Governor of New California (Vigness 1939:20). Peralta, a 17-year old when he arrived in California, was on the Anza expedition of 1776. He subsequently enlisted at the Monterey Presidio, then transferred to the San Francisco Presidio, and finally helped to found Mission Santa Cruz in 1791. He was appointed *comisionado* at Pueblo San José in 1807, where he remained until government of San José was transferred to the newly independent Mexican government in 1822 (Hendry and Bowman 1940; Bagwell 1982:11-12).

Peralta's large grant (43,000 acres) was called Rancho San Antonio and included all of present day Albany, Berkeley, Emeryville, Oakland, Piedmont, Alameda, and part of San Leandro. The primary economic activities of this rancho until after the mid 19th century were cattle ranching and lumbering. Emeryville boasted an early slaughterhouse that was used by the ranches throughout Alameda and Contra Costa Counties, and planing mills were found along the eastern bayshore for converting the redwood from the East Bay hills to lumber (Hendry and Bowman 1940).

In 1823, the Mexican government began to reduce the power and influence of the missions. Among other things, the missions relinquished claims to grazing lands in the East Bay, including those encompassing the present project area. The Castro and Peralta families, who were ranking members of the Spanish military, had already requested title to some of these lands in compensation for their past services; by the end of 1823 these private landholders had taken control of the entire eastern bayshore north of San Leandro Creek (Milliken 1997:132; Hendry and Bowman 1940:487-506).

In 1842, Don Peralta subdivided his immense ranch between his four sons (Conmy 1961:3-4). All of the present subject property fell within the portion of Rancho San Antonio given to his fourth son, José Domingo Peralta.

In 1841, the first known structure in the area—José Domingo Peralta's residence—was constructed in the vicinity of what today is the intersection of Hopkins and Albina streets in Berkeley, to the north of Spenger's Parking Lot and Strawberry Creek, well outside of the current project's area of potential effect (Hendry and Bowman 1940:592). It is unlikely that the Peralta family utilized the present project area for any purpose except, possibly, cattle grazing. Additionally, it is known that the route of present-day San Pablo Avenue, which is 6 blocks east of the parking lot site, was at that time used as a trail connecting the various ranches scattered throughout the East Bay region. This is sufficiently far enough away that scattered, isolated

items, lost or casually discarded over the years, are unlikely to have had any lasting impression on the archaeological record of relevance here.

The discovery of gold in 1848 in the Sierra foothills brought settlers to the area in considerable numbers (Wood 1883). Permanent settlement and development of the East Bay region first occurred during the 1850s, the era of the California Gold Rush. During this era, the various members of the Peralta family retained formal ownership of virtually all the lands that constitute modern-day Oakland, Berkeley, and Albany. Nevertheless, by the close of the Gold Rush era, an increasing number of squatters had settled with impunity upon the lands of Rancho San Antonio; these Anglo-American pioneers soon claimed ownership of most of the land that had originally been granted to the Peralta family by the Spanish government during the first quarter of the 19th century.

The first intensive settlement of the East Bay region during the historical era occurred in what is today downtown Oakland. The City of Oakland was formally named and incorporated in 1852. Alameda County was created in 1853. Although the City of Berkeley was not formally incorporated until 1876, some scattered settlement in the area had existed since the 1850s, when Captain James Jacobs first anchored his ship off Jacob's Point, at the mouth of Strawberry Creek (Wollenberg 2008). In the beginning, the unincorporated town was called Ocean View.

In 1855, John Everding and A. A. Rammelsburg opened the Pioneer Starch and Grist Mill on and around the land now occupied by the Truitt and White Lumber Yard. Despite the settlement of nearby areas, the present subject area and its immediate surroundings remained in a relatively undeveloped state throughout the 1850s. The first documented topographic modification in direct proximity to the present project site occurred during the 1860s, when tracks for the Central Pacific Railroad were laid down along the alignment of present day 3rd Street, at the western edge of the subject property. The completion of the transcontinental railroad in 1869 and the establishment of the University of California in 1868 (with classes beginning at the Berkeley campus in 1873) were essential factors that attracted increasing numbers of people and businesses to Berkeley and the East Bay region during the final decades of the 19th century (Merritt 1928:150, 177).

During the 1870s and 1880s, residences were constructed throughout the area surrounding the University of California campus; by contrast, manufacturing and industrial concerns tended to cluster in West Berkeley. For example, by the late 1870s, the Giant Powder Works had been established on Fleming Point, in present day Albany. This factory, one of the largest and most important commercial facilities in the area, endured at Fleming Point for a dozen years despite several devastating explosions, the worst of which finally resulted in the permanent closure of the plant in 1892 (Baker 1914[1]:347).

Interest in the then-obvious shellmounds that dotted the landscape was rife in the years following the establishment of Ocean View. [redacted] As is evident from newspaper reports of the time, the shellmound was attractive as a resource for road-building and agricultural soil enhancement. Shellmound material was used extensively for road building because it became nearly impenetrable after soaking. Horse teams were routinely used to cart away large portions of the shellmound, which were then laid down along the major

streets in West Berkeley, including San Pablo and University Avenues. The Emeryville Shellmound, to the south in present-day Emeryville, saw a similar pattern of wholesale destruction. In addition, because of the rich calcium, phosphorus, and humus content of the shellmound material, which included large quantities of sea shells, animal bones, human remains, and charred plant matter, it was routinely spread over agricultural fields to fertilize crops and enrich the soil. Indeed, this practice continued until well into the 1940s.

Adding to this destruction, the West Berkeley Shellmound, like nearly every other shellmound along the East Bay shoreline, was the target of amateur relic hunting and trophy taking. Many human bones and attendant grave goods were removed from the West Berkeley Shellmound without any thought to the cultural importance to the public, particularly to living descendants, or to the cultural and scientific knowledge lost with the removal of provenience and context. Thus, when the West Berkeley Shellmound was first encountered by scientists in the early 20th century during the initiation of scientific survey and archaeology, it was already so highly disturbed that it was but a remnant, a last vestige of what it was in its prime, not 50 years earlier.

3 THE WEST BERKELEY SHELLMOUND

Based on the results of past archaeological investigations in and around the Spenger's Parking Lot site, [redacted]

Before presenting the methods and findings of the present archaeological testing program undertaken at the Spenger's Parking Lot site, a brief synopsis of the body of information that has been gathered over the years with respect to the West Berkeley Shellmound and surrounding sites will provide a useful perspective for a focused assessment of the data presented below.

The bulk of the scientific data presented in the following pages is drawn from the seminal monograph prepared for the site, entitled *West Berkeley (CA-ALA-307): A Culturally Stratified Shellmound on the East Shore of San Francisco Bay*, by William J. Wallace and Donald W. Lathrap, and published by the University of California, Archaeological Research Facility in November 1975. Research on the West Berkeley Shellmound after the publication of that monograph is presented in Table 1 and also discussed where it is helpful.

Table 1. Archaeological Investigations Within ¼-Mile of the Project Area (post-1975).

Citation	Type	Results
[redacted]		

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

3.1 INTRODUCTION

The West Berkeley Shellmound was a prominent feature of the landscape until well into the 20th century. [redacted]

In the century since formal excavation of the shellmound began (and before, as previously mentioned), it had been repeatedly disturbed by development-related earthmoving. By the 1950s it had been cut to ground level (Furlong et al. 2006). Recent coring programs and historical research suggest that much of the material was carted away during development and a substantial amount was scattered throughout the surrounding area. This dispersal makes it difficult to determine whether encountered cultural material is *in situ* or redeposited.

[redacted]

3.2 HISTORY OF INVESTIGATION

In its original condition, the West Berkeley Shellmound was a large, ovate mound structure, [redacted]

[redacted]

[redacted]

A cursory inspection of modern West Berkeley reveals that relentless landfilling and development, especially in the 20th century, have severely diminished these tidal lands and transformed the landscape of West Berkeley. [redacted]

The first documented archaeological study of the West Berkeley Shellmound was conducted in 1902 by E.L. Furlong (the same year Max Uhle first excavated at Emeryville), working under the direction of John C. Merriam of the University of California, Berkeley. Though this excavation was of limited extent, it resulted in the collection of a pre-contact cultural assemblage consisting of 265 artifacts. The recovered artifacts were added to the collections at the Phoebe Hearst Museum of Anthropology (then known as the Lowie Museum of Anthropology). Unfortunately, Furlong's notes did not accompany the artifacts and artifact catalog and, as a consequence, there are substantial gaps in the existing state of knowledge about this initial phase of archaeological study of the West Berkeley Shellmound.

Two years later, in 1904, Joseph Peterson continued the archaeological study of the West Berkeley Shellmound. His excavations were confined to the northeastern corner of the site, but uncovered significant stone and bone artifacts and nine human remains, seven of which were children. When his field research and follow-up analysis were finished, Peterson prepared a written report of his findings and placed the document in the archives of the Lowie Museum of Anthropology at the University of California, Berkeley.

Near the end of the first decade of the 20th century, Nels C. Nelson completed a comprehensive mapping of the pre-contact shellmounds of the San Francisco Bay region. He recorded no less than 425 shellmounds of varying sizes. The West Berkeley Shellmound was one of the sites addressed by this pioneering archaeological survey (Nelson 1909). Unfortunately, by that time "not a single mound of any size [was] left in its absolutely pristine condition" (Nelson 1909:12). Following the publication of Nelson's work, other representatives of the University of California continued to investigate the steadily diminishing remnants of the West Berkeley Shellmound on a regular basis throughout the first half of the 20th century. Unfortunately, a variety of amateur collectors also took artifacts from the shellmound. On occasion, local collectors and construction workers would present themselves at the Lowie Museum and donate the artifacts they had recovered from the West Berkeley Shellmound, the Emeryville Shellmound, and other pre-contact archaeological deposits in the area (Wallace and Lathrap 1975:3), but their finds were usually de-contextualized to such a degree that spatial and temporal information often did not accompany the artifacts.

CA-ALA-307 was not officially recorded with the state clearinghouse until 1949 when Pilling, using data from Nelson's early 20th century survey, compiled the formal site documents. [redacted]

[redacted]

The most extensive, systematic excavations at CA-ALA-307 were conducted in the early 1950s by representatives of the University of California, Berkeley. By this time the site had been severely disturbed, and impending industrial expansion threatened the remaining portions of the West Berkeley Shellmound with total destruction. The archaeological research was carried out under the aegis of the Archaeological Research Facility at U.C. Berkeley. In December 1950, another program of archaeological research managed to salvage a number of artifacts and human burials as the pre-contact cultural deposit was being leveled by development. Finally, in 1954, a final program of salvage archaeology was undertaken at the site by representatives of the University of California, Berkeley (Wallace and Lathrap 1975:1).

3.3 LOCATION AND SIZE

As already noted, the exact limits and dimensions of CA-ALA-307 were never precisely determined, only estimated. [redacted]

During the early 1950s, when archaeologists from the University of California excavated the site, the appearance and dimensions of CA-ALA-307 had already been drastically altered. The following passage conveys the severity of the damage done to the pre-contact deposit during the early 20th century:

> The portion remaining measured 45 x 100 feet. Approximately one half of the northern part of this had been scraped off and crushed limestone dumped on its surface. Over the years, the limestone had become consolidated into a hard stratum, three to four feet thick. At its highest point, the shellheap rose 15 feet above ground level and extended three feet below. Once it had been higher for the peak had been cut down and leveled to serve as the base for a water tank (Wallace and Lathrap 1975:1).

3.4 U.C. BERKELEY INVESTIGATIONS (1950s)

The most detailed information regarding the West Berkeley Shellmound and the people who formed it derives from the University of California, Berkeley, investigations in the 1950s. These investigations were extensively documented in Wallace and Lathrap (1975).

3.4.1 Excavation Methods

Wallace and Lathrap provide a detailed description of the archaeological investigations carried out at the West Berkeley Shellmound during the 1950 field season:

> Although the mound had already been greatly reduced in size when digging began, enough remained to give a fair sample. When the growth of weeds and litter of factory debris covering the surface had been removed, an area at the south end was staked out in five-foot squares. A cut 20-25 feet wide was then carried in along the site's major north-south axis. The material was removed

with shovels in arbitrary 12-inch layers until the underlying sterile stratum was reached. The excavation was then carried an additional foot down to make certain that nothing was overlooked. When a trench was completed, the next five-foot section was cut down, the open trench being used as a place to deposit back dirt. The over-all plan had to be altered occasionally to avoid undermining factory walls or railroad tracks, to follow out special features, or for other reasons. In order to obtain as full information as possible, four trenches were excavated entirely with trowels instead of by the shovel method.

The area excavated comprised approximately 1,175 square feet, worked down to depths of 9 to 18 feet according to the thickness of the deposit. Roughly, about 14,000 cubic feet of midden received examination. In addition to the main trench, a 10-foot square pit was cut through the overburden of limestone at the north end and carried down through the midden deposit to sterile soil (1975:7-8).

3.4.2 Archaeological Findings

The various archaeological investigations carried out at the West Berkeley Shellmound between 1902 and the mid-1950s resulted in the recovery of a total of 3,412 pre-contact "man-made objects" (Wallace and Lathrap 1975:8). Given the relatively extensive volume of soil excavated, the recovered pre-contact cultural sample is rather small; nevertheless, such a limited quantity of artifacts is typical of the diminutive artifact yields that characterize San Francisco Bay Area shellmounds (Wallace and Lathrap 1975:8).

The recovered artifacts can be characterized as a limited, but diverse, assemblage of flaked stone tools, items of ground or polished stone, as well as a variety of modified objects fashioned from shell, bone, and antler (Wallace and Lathrap 1975:9). The chipped-stone assemblage included a variety of projectile points, "knife blades," flake and core scrapers and choppers. Recovered objects of ground or polished stone include mortars, pestles, a large number of net sinkers, charmstones, and pendants. Objects of modified bone included awls, flakers, pins, beads and a single fishhook. The most ubiquitous items of modified shell consisted of *Olivella* shell beads (principally spire-lopped or rectangular) as well as a variety of abalone beads and pendants (Wallace and Lathrap 1975:10). Finally, the West Berkeley Shellmound contained large numbers of unmodified mammal, bird and fish bones, as well as an immense quantity of shellfish refuse.

In addition to the collection of recovered artifacts, "95 more or less complete skeletons and a number of disassociated human bones were exhumed" (Wallace and Lathrap 1975:45) . (Of course, considering its known and unknown early disturbance, the West Berkeley Shellmound must have originally contained a much larger number of human interments that were never seen by any of the archaeological researchers who investigated the site.) Most of the human interments encountered at CA-ALA-307 were found in a loosely flexed position, a common practice in pre-contact California. Wallace and Lathrap offered the following observations about the mortuary practices of the pre-contact inhabitants of the West Berkeley Shellmound:

> Depositing articles with the dead was either not a well-developed custom, or it was reserved for special individuals. Only 32 of the 95 burials had accompanying mortuary goods and of these at least five represent doubtful associations. In 11 graves, offerings remained limited to beads or ornaments. Objects of daily use were not regularly placed with the dead and the apparent intentional inclusion of animal remains was noted only three times. The "killing," or purposeful damaging of burial objects was reported only once – a mortar accompanying Burial 2 had a hole knocked through its base. Forty-three bodies showed signs of powdered pigment. For 42 burials, this consisted of red ocher or hematite; one (Burial 10) had traces of yellow-brown limonite. In only 13 graves was the red ocher profuse… [Of all the interments at CA-ALA-307], Burial 32, a young adult male, probably merits special attention. It was the only one which accompanied a fair number of burial gifts. Two large obsidian blades and a pair made from a white chertlike material, as well as an antler wedge and a grooved net sinker, were found in the grave. Red ocher colored most of the bones and the bases of the two obsidian blades (1975:46).

In addition to the 95 human interments, several examples of deliberately buried mammalian and avian species were encountered during the archaeological investigations at CA-ALA-307. These included a large portion of a coyote skeleton and the remains of a California condor (Wallace and Lathrap 1975:51). Ethnographic as well as archaeological evidence suggest that the ritual killing and burial of various animals was a relatively common occurrence in pre-contact California (Heizer and Hewes 1940:391; Howard 1929:314).

Analysis of the pre-contact archaeological specimens recovered from the West Berkeley Shellmound revealed a definite pattern of change in material culture over time. Wallace and Lathrap discuss this phenomenon:

> Although the same manner of living carried over in essence, new practices and items came into vogue from time to time. Most of the additions and substitutions seem trivial, such as the introduction of a new form of perforating charmstones. The only fundamental change was the abandonment of the use of net-sinkers, presupposing the giving up of an important fishing technique. This clustering of new traits allows for the recognition of two cultural components, one characteristic of the upper six feet of the shellmound and the other of the lower 12 feet…(1975:52–53).

Wallace and Lathrap proceed with a discussion of the temporal and cultural relationships between the archaeological remains encountered at CA-ALA-307 and the pre-contact materials recovered from other pre-contact shellmounds in the East Bay region:

> The West Berkeley cultural remains rather closely resemble those left behind by other prehistoric bayshore dwellers. A comparison of the more significant classes of West Berkeley artifacts with those from Emeryville [CA-ALA-309] and Ellis Landing [CA-CCO-295] reveals that certain basic traits are common to all three shellmounds. Mortars and pestles represent the characteristic grinding implements; a developed bone industry is found; shell beads and pendants

comprise the typical articles of personal adornment. Food habits and methods of disposing of the dead are alike.

Although essential cultural identity is evident, differences can be discerned. Some Emeryville and/or Ellis Landing items, including stone pipes, small projectile points, mica ornaments, charmstones with basal projections, fork-like bone or antler objects ("head scratchers"), eyed needles and entire abalone shells are absent at West Berkeley. Others, for example, bone tubes, beads and whistles, are shared, but are present at West Berkeley in reduced numbers. A few groups of objects found in the three shellmounds differ in their stratigraphic distribution. Perforated charmstones came from the lowest Emeryville stratum; at West Berkeley they showed a wider occurrence, being absent only in the top-most six feet; their depth provenience for Ellis Landing is not stated. Non-perforated charmstones, confined to West Berkeley's higher cultural layer, were found scattered more or less throughout the other two middens. Notched and girdled net-sinkers, unearthed in profusion below eight feet in the West Berkeley deposit, were virtually unknown at Emeryville. For Ellis Landing, stone weights were collected from the top and bottom of the refuse, being non-existent in the middle part. Large, stemmed projectile points, the characteristic West Berkeley lower-stratum form, are not reported for Emeryville. One of four weapon tips from the shaft dug below water level at Ellis Landing is of this type; a second, smaller specimen, might be added. Finally, the West Berkeley assemblage includes a series of articles, all from deep down, which were absent in the other two shellheaps. Among them are chipped stone blades with squared bases, rectangular *Olivella* and *Haliotis* beads, circular abalone and other ornament forms (1975:54–55).

A detailed comparative evaluation of the cultural contents of the three principal East Bay shellmounds – i.e., Emeryville, West Berkeley and Ellis Landing – led Wallace and Lathrap to reach the following conclusions:

These differences in content and stratigraphy permit an ordering of the cultural layers of the three shellmounds. On the basis of shared traits, the upper six feet of West Berkeley can be equated with the lower 10 – 14 feet of Emeryville and the bulk of Ellis Landing. The bottom 12 feet of West Berkeley, which produced items absent at the other two sites, has no direct counterpart though there is a possibility, based on the scanty evidence of a plentiful supply of net-sinkers and two stemmed projectiles, that the Ellis Landing's deepest stratum overlaps somewhat. Conversely, the higher portions of Emeryville and Ellis Landing contained materials not represented at West Berkeley. Thus…West Berkeley appears to have been the first of these three localities to have seen human occupation with Ellis Landing inhabited next and Emeryville last. There may have been a brief period when all three were inhabited simultaneously. West Berkeley became deserted first while people continued to live at both Emeryville and Ellis Landing for a lengthy span of time (1975:55).

The seemingly early temporal associations of CA-ALA-307 prompted Wallace and Lathrap to note that the cultural "items from the deeper portion of West Berkeley show many correspondences to those obtained from Early Horizon settlements in the lower Sacramento Valley" (1975:56). Indeed, the lower stratigraphic and cultural component of the West Berkeley Shellmound soon became known as the "Berkeley facies" of the "Early Horizon" in the San Francisco Bay region (Elsasser 1978:38). This temporal interpretation is supported by radiocarbon dates obtained from the West Berkeley Shellmound which suggest that occupation of the site began "prior to 2000 B.C." (Wallace and Lathrap 1975:56). In all, the data suggested that the total span of occupancy for the West Berkeley Shellmound was, "perhaps 1300 – 1500 years" (Wallace and Lathrap 1975:56).

3.5 ARCHEO-TEC INVESTIGATIONS (1999-2000)

Since the removal of the above-ground portions of the mound, several coring programs have been undertaken in and around the Spenger's Parking Lot property to test for the presence and boundaries of remaining subsurface portions of the mound (see Figure 6).

An archaeological testing program was undertaken by Archeo-Tec within the Spenger's Parking Lot in July of 1999 and January and February of 2000 as part of the Spenger's Plaza Development Project (Pastron 1999, 2000). A total of 43 24-inch borings were excavated down to approximately 18 feet below the surface level. An upper layer of historic period fill and rubble was encountered throughout the site; the layer ended at approximately 5 to 8 feet below surface. The first 14 borings were dug in 1999 in the northeast corner of the parking lot; no evidence of CA-ALA-307 was found in these borings. The remaining 29 borings were excavated on the remainder of the lot in 2000 (see Figure 1).

Based on the stratigraphic data from the initial 14 mechanical exploratory borings made in the northeast corner, the lot was previously subdivided into three distinct stratigraphic levels or zones (Pastron 2000). The uppermost zone consisted of historic period fill and modern (i.e., 19th and 20th century) cultural debris. This zone lay directly under the modern asphalt surface and extended down to approximately 4 or 5 feet. The middle zone occurred at depths ranging between 5 and 10 feet below the surface and consisted of dark gray and black silts and silty clays, with clay content increasing with depth. This zone was mostly devoid of cultural material, though shell fragments were occasionally encountered. The water table was usually reached at around 12 to 13 feet. The lowermost zone began at a depth of approximately 11 feet and consisted of homogeneous densely compacted clay. Its upper boundary graded conformably into that of the overlaying middle zone, suggesting a natural contact. The clay in the upper reaches of the lowermost zone tended to medium brown or tan in color, especially in the test borings in the northern areas of the property. In the test borings of the southern portion, the clay tended to dark gray or black in color. In all cases, the lowermost zone was devoid of cultural materials.

The 29 additional borings, which were spread out over the remainder of the parking lot in 2000, largely confirmed the zone demarcations of the original 14 borings, with some modifications.

MAP REDACTED: CONFIDENTIAL ARCHAEOLOGICAL INFORMATION

3.5.1 Pre-contact Cultural Deposits

Two discrete areas of subsurface pre-contact cultural deposition that possibly represented CA-ALA-307 were identified in the borings (indicated in red on Figure 4). The first of these culturally sensitive areas was encountered in Boring #19, within the northwestern quadrant of the parking lot. The pre-contact cultural deposits—which consisted of gray/black, silty clay mixed with an abundance of mussel and clam shell fragments, some oyster shell, a small quantity of mammal bones and several other possible cultural items—were noted between the approximate depths of 5 and 9 feet below the surface of the ground. This zone of pre-contact cultural deposition appeared to be rather restricted in its overall horizontal extent; no trace of anthropogenic soils were detected within any of the exploratory probes placed in direct proximity to Boring #19. However, in this respect, it must be noted that the closest test probe to Boring #19—Boring #20—encountered an impenetrable subsurface obstruction directly below the surface and was abandoned at a depth of 4 feet. Hence, it was not possible to determine whether or not subsurface pre-contact cultural deposits existed at this particular location.

A second zone of pre-contact cultural deposition was encountered in five adjacent test borings—#34, #35, #36, #41, and #43—within the east-central portion of the project site. In general, the pre-contact cultural deposits within the east-central portion of the project site were noted at depths ranging between 6 and 9 feet below ground surface. This second area of pre-contact cultural deposition was more horizontally extensive than the zone of anthropogenic soil encountered by Boring #19.

The pre-contact cultural deposits appeared to be typical of the larger San Francisco Bay area shellmounds (Nelson 1909). In appearance, the deposits consisted of dark gray/black silt, or silty clay, interspersed with flecks of charcoal, a relatively small quantity of fish and mammal bone, a few pieces of fire-affected rock, several possible stone artifacts, and ubiquitous amounts of shell. No temporally and/or functionally diagnostic artifacts of chipped stone or groundstone were recovered from any of the test borings. However, two chipped-stone flakes of red Franciscan chert were recovered from the 4-6 foot level of Boring #19 and the 6-8 foot level of Boring #36, respectively. In addition, a small fragment of groundstone was collected from the 6-8 foot level of Boring #35. No objects of modified bone or shell were identified during the course of the archaeological testing program. However, fragments of fire-affected rock were recovered from various levels of all of the six test borings where the pre-contact cultural deposit had been identified.

A small sample of mammal, bird and fish bone was recovered from the various test borings that penetrated the pre-contact cultural deposits. With respect to the mammalian faunal sample, identified species included the mule deer (*Odocoileus hemionus*), jackrabbit (*Sylvilagus* sp.) and an unidentified form of canine, possibly coyote (*Canis latrans*). Due to the fragmentary nature of the small sample, no detailed identification of the bird and fish bones was possible in connection with the archaeological testing program.

Without a doubt, the remains of shellfish represented the most ubiquitous component of the archaeological deposit. Mussel (*Mytilus* sp.), and to a lesser degree, clam (*Macoma* sp., probably mostly *Macoma natuta*, the bent-nosed clam), represented the most common types of shellfish recovered during the archaeological testing program. In addition, a much smaller

quantity of oyster (*Ostrea lurida*) was recovered from Borings #19, #34, #35, #36, #41 and #43. It should be stressed here that an in-depth analysis of the recovered shellfish remains was not conducted as part of the archaeological testing program. Accordingly, the frequency of recovered shellfish, as listed above, was not taken as necessarily representative for the West Berkeley Shellmound (CA-ALA-307) as a whole.

3.5.2 Interpretations

As shall be discussed in greater detail below, the data recovered during the current phase of research within the Spenger's Parking Lot are sufficient to determine that the previously identified areas of pre-contact cultural material represent zones of secondary deposition. [redacted] As has been previously argued (Wallace and Lathrap 1975:1–5), the original horizontal boundaries of the West Berkeley Shellmound were *thought* to be quite extensive, but were never precisely determined. Even so, we think it is not possible that the culturally derived deposits we encountered were undisturbed remnants of [redacted] the West Berkeley Shellmound. Indeed, based on available evidence, which we discuss more thoroughly below, it is most parsimonious to interpret the shellmound deposits encountered as highly disturbed, secondarily emplaced and probably intentionally distributed, for purposes of road building and agricultural soil enhancement.

It is well known that the West Berkeley Shellmound was subject to extensive – indeed, catastrophic – impacts during late 19th and early 20th century industrial development and urbanization (Wallace and Lathrap 1975:1–5). As a result of these impacts, substantial portions of the shellmound were spread over a relatively wide area. With this in mind, it appears likely that the recently discovered areas of pre-contact cultural deposition within the Spenger's Parking Lot represent episodes of this disturbance.

3.6 OTHER STUDIES (2000s)

[redacted]

[redacted]

3.7 OTHER NEARBY SITES: CA-ALA-390 AND CA-ALA-611

The other pre-contact sites within a quarter mile of the project site are CA-ALA-390 and CA-ALA-

[redacted]

In summary, previous investigations clearly provide evidence of indigenous habitation in the area now known as West Berkeley and, specifically, within the Spenger's Parking Lot Project boundaries. Due to the now extensive amount of archaeological testing and evaluation that has taken place within the Spenger's Parking Lot, the existence and approximate horizontal and vertical extent of culturally derived material within its confines are much better understood. We are now in a strong position to address the specific cultural characteristics, precise areal parameters, site formation, stratigraphic integrity and significance of the pre-contact archaeological remains that exist or may exist within the confines of the Spenger's Parking Lot.

4 FIELD AND LABORATORY METHODS

Field and laboratory methods followed those that are standard to archaeological research and practice. We detail these below and include how the site was spatially contextualized as well as how artifacts were collected and prepared for laboratory study. A section on geophysical surveying is included as well, as this method proved especially helpful for fine-tuning placement of our largest excavation trenches.

4.1 SPATIAL CONTROLS

Prior to the mechanical excavation of this project's 22 test trenches and areal exposures, Archeo-Tec staff established a formal mapping datum (different from, but complementary to, the ones used in 1999 and 2000) and sub-datums using a Trimble M3 Total Station. Mapping datums are necessary for any spatially dispersed archaeological site (as is the case here) because they establish internal site spatial relations and tie the site to a broader regional or global grid. To do this effectively, we selected a well-surveyed city tidal benchmark located at the base of a support column for the University Avenue overpass, just beyond the south end of Spenger's Parking Lot (Designation: C 558; PID: HT0985). This served as our tie to a broader regional grid. This benchmark also allowed us to expand out and establish sub-datums across the parking lot site, all while maintaining rigorous spatial controls internally.

Each test trench was mapped in on-site using a total station. We specifically mapped the southwest corner of each trench before excavation. We then used field tapes to mark precise 5-foot by 15-foot rectangles. These are standard trench dimensions for the kind of mechanical excavation we intended, using a backhoe. Additionally, we mapped excavation levels within trenches 21 and 22 at appropriate intervals and finely mapped 2 excavation units (EU-1 and EU-2) in Trench 22.

4.2 TEST TRENCHES

A systematic program of sub-surface archaeological testing was performed on the Spenger's Parking Lot site between January and March, 2014. Twenty (20) test trenches, each measuring five feet wide by fifteen feet long, were mechanically excavated using a backhoe (see Figure 3). Trenches were strategically placed so as to extensively sample the areas indicated by the 2000 Archeo-Tec borings as potentially containing shellmound material (Pastron 2000). Trenches were placed in north-south and east-west oriented strings, such that they directly abutted each other, leaving no gaps between trenches. This provided the unique opportunity to assess long, continuous profiles (by summing adjacent trenches), which allowed us to map and characterize the vertical stratigraphic relationships and to test for lateral facies changes (soil and rock) along the cardinal directions (see Figure 3).

We also exposed two (2) large test units (each 10 feet by 20 feet square) in the northwest portion of the project site (see Figure 4). These units were specifically designed to open a large area in a portion of the property thought to have the highest potential to yield intact

shellmound. This idea was based on the findings of the Archeo-Tec boring program of 2000, in which potential shellmound, containing animal bones and shell, was encountered. We also relied on ground penetrating radar (GPR) data, supplied by Dr. Scott Byram, to pinpoint the most likely areas of intact midden. This helped us avoid areas where extensive fill and rubble debris overburden would hinder efficient mound discovery.

4.3 GEOPHYSICAL SURVEY

Ground-penetrating radar (GPR) is a geophysical survey method that is increasingly being used in archaeology (e.g., Conyers 2013). Its primary objective is to find and map near-surface (i.e., shallowly buried) archaeological features either previous to or in place of ground disturbance work. GPR has the distinct advantage that near-surface archaeological features can be found and mapped without the need for ground disturbance, reducing project costs, and protecting potentially valuable resources. GPR is also very adept at allowing the researcher to distinguish jumbled and massive subsurface sediment and debris units from those that are more regularly stratified or patterned. This is important in the search for shellmound deposits because they are frequently stratified and appear readily distinguishable from artificial fill overburden. One caveat is that GPR does not work especially well in very wet conditions, as water tends to absorb and scatter incident electromagnetic signals. Dry conditions, like those experienced during our field survey, are ideal for this technique.

For this project, GPR was used as a preliminary data-gathering measure to determine ultimate placement of the areal exposures (trenches 21 and 22). Dr. Scott Byram, a noted expert in applying GPR to Pacific coast shellmound deposits, was contacted by Archeo-Tec in late February 2014. Dr. Byram surveyed the entirety of the northwest sub-area of the Spenger's Parking Lot Project site and conducted preliminary surveys of the whole parking lot on February 27, 2014. He also surveyed the bottom of Trench 22 on March 4, 2014. This was done at approximately 4 feet below surface level and was specifically intended to assess any potential shellmound *before* it was encountered by the backhoe.

On both occasions (February and March), Dr. Byram used a GSSI SIR-3000 GPR unit with a 400 MHz antenna and survey wheel. This set-up allowed for rapid, smooth data collection to depths of about 1.5 meters. As previous information from Archeo-Tec Boring #19 had indicated that the top of the shellmound layer was likely four feet below surface level, Dr. Byram decided a 400 MHz antenna was appropriate. The GPR survey was extremely useful for fine-tuning the placement of test trenches 21 and 22. Based solely on map reading and the location of Boring #19, we had initially placed the test trenches over areas of extensive subsurface debris. With the GPR data we were able to move the test trench locations to maximize our potential for finding significant archaeological resources.

We recommend that any future development of the Spenger's Parking Lot site make use of an initial GPR survey. This will go a long way to characterizing sub-surface deposits ahead of ground disturbance, ultimately saving time and money during construction.

4.4 SCREENING

We hand-screened some of the decidedly shellmound material and other potential layers in approximately 8 of the 22 trenches. This was a concerted attempt to recover any culturally identifiable artifacts, including potentially very small specimens like debitage and shell beads. Though we recovered shell fragments, faunal remains, charcoal, and historic period trash, we did not find anything that we determined needed more exhaustive study. We found only one specimen that we think might represent an episode of pre-contact human behavior (a defleshed bird bone; see section 5.2.8, below).

4.5 WASHING

Collected artifacts (including fauna) that were deemed fit for analysis (i.e., those not embedded in bulk soil samples), were lightly washed in a controlled laboratory setting to remove adhering matrix. No chemical cleansers were used and no preservatives of any kind were applied. No artifacts were stabilized using cyanoacrylate or other adhesive. In all instances, when artifacts were recovered in pieces, they were left as pieces and not re-constructed.

4.6 CATALOGING AND IDENTIFICATION

Collected artifacts (including fauna) that were deemed fit for analysis (see above), were catalogued into a computerized database using the software program Microsoft Access. Each individual artifact was numbered and briefly described. Provenience data, like trench number and stratigraphy, was also attached to each unique catalogue number. Treating artifacts in this way (i.e., individually rather than as part of a bulk sample or broader site collection) will allow future researchers to utilize the spatial and temporal integrity of the site.

5 FINDINGS

5.1 GEOMORPHOLOGY AND SITE STRATIGRAPHY

In order to fully contextualize the artifacts and other data collected during the course of the project, we here summarize our work on the structural and stratigraphic context of the Spenger's Parking Lot site. These interpretations are supported in large part by the stratigraphic descriptions of our test trenches (Appendix I) and previous borings (Appendix II).

The subsurface stratigraphy of the Spenger's Parking Lot property documents a sequence of bay filling, erosion and deposition along Strawberry Creek, agricultural use, and building and demolition. All of this has occurred since the Pleistocene and in earnest since the late Holocene. In fact, the deepest deposits we were able to identify on the site are largely an accumulation of Holocene age alluvium, deposited over bay muds. It was during the late Holocene that native peoples are known to have been in the area and established mound building in the region. Though people may have lived in the vicinity earlier, we found no evidence of it on the Spenger's Parking Lot site. This probably has to do with the fact that the area is situated in an ecotonal transition zone such that it was at times wholly underwater or strongly influenced by tidal fluctuations.

Wallace and Lathrap, in their presentation of archaeological excavations carried out at the West Berkeley shellmound in 1950, described a "heavy but well-drained yellow clay" that extended down approximately three feet below the base of the mound (Wallace and Lathrap 1975:8). At that level, the yellow clay "merged with a damp layer consisting of clay mixed with rounded pebbles and angular fragments of sandstone" (Wallace and Lathrap 1975:8). It is possible that this layer of rounded pebbles represents an old Strawberry Creek channel. The angular fragments of sandstone might have originated from the Orinda Formation (described in detail above). As Graymer notes, the Orinda Formation consists of "distinctly to indistinctly bedded, nonmarine, pebble to boulder conglomerate, conglomeratic sandstone, coarse- to medium-grained lithic sandstone, and green and red siltstone and mudstone. Conglomerate clasts are subangular to well rounded, and contain a high percentage of detritus derived from the Franciscan complex" (Graymer 2000:9). We did encounter a number of subangular and rounded clasts, in multiple test trenches, that appeared to be of Franciscan (i.e., Orinda) origin. This is not surprising and merely documents bed load and flood induced overbank materials that would surely have made up the constituents of an active, meandering Strawberry Creek. We also collected a small sample of very yellow clay from Trench 22, *below* the encountered shellmound material layer. This may be part of the same deposits that Wallace and Lathrap describe as sub-mound basement.

Likewise, Uhle describes the base of the Emeryville shellmound, only 2 miles south of the West Berkeley site, as resting "upon a sharply defined yellowish alluvial clay stratum" (Uhle 1907:9). He further notes that "[t]here is no indication of a rocky elevation which might have served as an inducement for the original settlement, and would have helped raise the mound to its present height" (Uhle 1907:9).

Schenck, present at the final leveling of the Emeryville shellmound in 1924, concluded a similar mound-base to Uhle, and added more subsurface observations. He noted that the yellow clay layer became sandier down section until "at about 3 feet (under the central portion [of the mound]) it passes into a stratum of gravel" (Schenck 1926:163). In addition, a "well 150 feet or so to the north of the center indicates that these strata of clay and sand alternate to a depth of 300 feet, the first gravel stratum being 17 feet thick" (Schenck 1926:163).

Though we did not excavate as deep as Schenck saw in the well, we did excavate significantly below shellmound material lenses and layers, when they were encountered. We believe these to be culturally derived deposits, though they appear to be redeposited and thus not in primary context. Though we cannot rule out the possibility that undisturbed, primary cultural deposits still exist within the study area, our archaeological testing program did not reveal any.

We believe the culturally derived deposits we encountered are from disturbed, secondary contexts for several reasons. First, we found mainly lenticular pockets of material. Half (4 of 8) of our positive trenches in the eastern section contained only small lenses of midden material. This does not appear to be an artifact of trench orientation as our north-south and east-west (long axis) trenches did not show continuous midden bodies in most cases. The only exception was in Trench 19, in which it seems the midden level was a thicker (several inches), continuous deposit. Second, most of the midden deposits we saw were very thin and mixed with sand and rounded gravel lag. We interpret this as Strawberry Creek bed load, which may suggest that the midden material was eroded from elsewhere, entrained in the creek flow, and redeposited. Third, very few examples of known midden constituents (e.g., shells, charcoal) were large or intact pieces. The fact that we encountered extremely fragmentary shell suggests that it might have been transported from elsewhere. Last, we found faunal elements that appeared to have been butchered by metal implements. The fact that these processed bones were intermingled with midden material suggests that these deposits were temporally mixed at some time in the recent past, probably during the late 19th and early 20th centuries.

Another possibility is that the source of the culturally derived material we encountered was to the west (i.e., from the West Berkeley Shellmound itself) or from a satellite mound known to have existed to the east of the West Berkeley mound, in the vicinity of 6th Street, possibly CA-ALA-390 (see Banks 1977 and Nelson's map from 1909). The Spenger's Parking Lot site could have acted as a catch basin for deposition of eroded mound material from either or both sources. However, it seems most likely to us that material would have derived from the West Berkeley Shellmound, as it contained the largest concentration of material. In addition, the extent and content of the eastern, satellite mound is not known and so cannot be definitely characterized.

During the life of both mounds, seasonal rain events could have eroded material from their flanks and washed it into Strawberry Creek where it was later entrained and redeposited on the Spenger's Parking Lot site. That this happened in addition to wholesale mound destruction by road builders and farmers is likely, though the evidence necessary to draw this conclusion is equivocal (e.g., shellmound material mixed with purportedly Strawberry Creek gravels). We therefore conclude that the most likely source of the shellmound material we encountered on

the Spenger's Parking Lot site came from the West Berkeley Shellmound and was placed there as agricultural soil enhancement.

5.2 ARTIFACTS

Numerous artifacts from multiple test trenches were collected and catalogued. Most of the artifacts consist of glass bottles and ceramic cups, plates, and bowls. Some of these artifacts are intact, but most are fragmentary. In addition, we collected several examples of animal bone and shell from domestic and naturally occurring species. For each test trench in which a collection was made (see below), we elaborate the most interesting and informative findings and present these. We also present our interpretations of the pre- and post-contact significance of these artifacts and address their find contexts in relation to the East Bay Hills geology previously described in detail. The location of each trench is shown in Figures 3 and 4.

5.2.1 Test Trench 7

Trench 7 contained a lot of demolition debris and historic period trash. We encountered a small piece of charred wood and a possible lithic fragment at a depth of 8.4 feet below surface level. The charred wood could be subject to radiocarbon dating, though none was attempted here. The possible lithic fragment could be of anthropogenic origin, though since it is of a cryptocrystalline rock (black chert), it could easily be naturally formed. The fragment is subangular and waterworn, but also shows signs of more recent fracture. As described above in the Geology section, black chert is a common constituent of the Orinda Formation and so could have been transported to the Spenger's site by Strawberry Creek. Once there, the black chert could have been processed by human hands and made into a small cutting tool. However, the freshest edges show no clear signs of use and also lack retouch. This black chert fragment might thus be a true artifact or might simply be an ecofact. Its provenience within a lens of midden material suggests that it is a true artifact or at least a fragment of one.

5.2.2 Test Trench 12

As with Trench 7, small pieces of charred wood and potential lithic fragments were encountered in Trench 12. Both were retained for later study, though no radiocarbon dating was attempted here and, again, the fragments of red chert and quartz could easily be naturally derived from the Orinda Formation in the East Bay Hills.

5.2.3 Test Trench 13

Trench 13 contained a fine example of a Hiram Walker whiskey bottle with only small breakage around the opening (Figure 7). Walker began distilling whiskey in the United States in the 1850s, in Detroit, before setting up operations in Canada in what was then called Walkerville (now Windsor, Ontario). The bottle collected on the Spenger's Parking Lot site is fine amber brown; on the reverse is embossed lettering that reads, "Federal Law Forbids Sale or Re-Use of This Bottle". This statement is a definitive time marker for this bottle as it was only included on liquor bottles sold in the United States in and after 1932. This was an attempt by the United States to prevent the re-use of liquor bottles by moonshiners during Prohibition (which ended in 1933). The presence of this bottle, with this inscription, demonstrates that level it came from was formed no earlier than 1932.

Figure 7. A post-1932 Hiram Walker whiskey bottle, from Test Trench 13.

Figure 8. A stoneware bottle, possibly of German origin, from Test Trench 16.

5.2.4 Test Trench 16

Test Trench 16 contained several interesting artifacts, including a stoneware bottle that is possibly of German or Dutch origin and was originally used to store mineral water or alcohol (Figure 8). The lack of inscriptions or a maker's mark preclude a more detailed assessment of the bottle though it appears to be handmade on a wheel and has a brown salt glaze. These types of bottles were made starting in the mid-19th century and seem to be in regular use through at least the 1920s, possibly later.

Test Trench 16 also contained a small collection of faunal remains, originating from a level between 4.8 and 5.5 feet below the surface. Comingled with the faunal bones (all mammals) were some shell fragments (oyster, mussel, and clam) and chert and quartz pebbles. The shell and pebbles may have originated from the West Berkeley Shellmound, but are here in secondary deposition and clearly mixed with more modern animal food waste. The faunal remains consist of goat (*Capra hircus*) and pig (*Sus scrofa*) and represent axial and appendicular elements. Several of the bones show clear signs of butchering by metal tools (saws and knives) and having been gnawed by rodents, though none are burned. At least one of the specimens is from a juvenile animal.

5.2.5 Test Trench 17

Test Trench 17 provided a modest collection of native and invasive sea life (snails and clams) and domesticated mammals (pig, sheep, and cow). All of these animals appear to have been consumed as food, as many of the bones display evidence of burning, mechanical sawing, and defleshing. This test trench also contained numerous glass and ceramic artifacts that are related to food consumption. Several of the faunal components are presented in Figures 9 and 10.

The evidence for mechanical sawing of bone indicates that the animals were not processed by native peoples in an indigenous context. The West Berkeley Shellmound builders made use of stone tools for cutting, chopping, and defleshing. These implements do not leave the characteristic circular and arc-shaped marks that toothed saw blades leave. We can be reasonably certain then that the sawed bones from Test Trench 17 were cut by rotating saw blades. Though we cannot at this time assign a calendar date or period to the processing, it almost certainly post-dates the onset of the Gold Rush in the San Francisco Bay area.

Another line of evidence suggests that the materials collected in this test trench are of relatively recent origin. We collected 2 shells of the common periwinkle, *Littorina littorea*, at approximately 5.4 feet below surface level (see Figure 10). This species of snail is endemic to Europe and did not make its first recorded appearance in North America (on the East Coast) until the 1840s. The snail is thought to have been first introduced to the eastern seaboard in ship's ballast and is likely to have made its initial appearance in San Francisco Bay in similar fashion. Today, the common periwinkle's West Coast distribution is not ubiquitous, but it is persistent, especially in the Bay Area. It is commonly sold in California as food in predominantly Asian markets and has been for some time. That we found *Littorina littorea* commingled with the mammal bones and glass and ceramic bottles (already discussed), speaks again to the relatively recent origin of the majority of the deposits in this trench.

Figure 9. Assorted faunal remains from Test Trench 17. Evidence of mechanical sawing (e.g., the rib fragment at top right) indicates a post-contact age. *Note: these elements do not represent the same animal.*

Figure 10. Shelly fauna from Test Trench 17. The invasive snail, *Littorina littorea*, at top, dates the the sediments from which it was retrieved to the late 19th century .

5.2.6 Test Trench 18

Test Trench 18 contained a small sample of animal bones and demolition-related debris from a 20th century structure. The building debris was confined to the upper 4 feet of the trench and the faunal remains came from the level between 8 and 9 feet below the surface. The demolition debris is unremarkable, consisting of brick and concrete rubble and metal pieces.

The one faunal bone collected is a 9.8cm section of the distal half of a right humerus of an adult goat, *Capra hircus*. The bone is fractured about mid-shaft where it appears to have been lightly chopped then manually broken. There are no signs of burning, but there are light striations medio-distally, just superior to the medial epicondyle, indicative of defleshing, most likely tendon separation. That this is a domestic goat, of European decent, means that the layer from which it derived (just above a shellmidden-like deposit) is not pre-contact. This bone represents relatively modern food waste.

5.2.7 Test Trench 21 (Areal Exposure)

Test Trench 21 was much larger than the trenches already described. It was initially opened as a 10 foot by 20 foot rectangle and adjoined Test Trench 22, which was of equal dimensions. Trenches 21 and 22 were opened on such broad scales that they are best described as areal exposures. These were done to overlap the area previously penetrated by Boring #19 (see Pastron 2000), which indicated a high potential of finding intact shellmound deposits. Trench 21 was essentially centered on Boring #19 and was dug to a final depth of 5.3 feet below surface level, at which point groundwater filled the exposure.

We did not recover any artifacts from Trench 21. Upon closer examination, we determined that Boring #19 probably did not originally contain intact shellmound between 5 and 9 feet below surface level, as we only encountered a thin layer of crushed shell, much like that seen elsewhere in the parking lot site. We believe this thin crushed shell layer is most likely a redistributed remnant of the West Berkeley Shellmound (for the purposes of road building and agricultural soil improvement, described elsewhere) and not the intact shellmound itself.

5.2.8 Test Trench 22 (Areal Exposure)

Test Trench 22 was a large, rectangular areal exposure measuring 10 feet by 20 feet and extending down to approximately 5 feet below surface level. This large trench was excavated, as was trench 21, in an effort to thoroughly and carefully characterize the area in and around Boring #19. Boring #19, originally examined in 2000 by Archeo-Tec (see Pastron 2000), had given some indication that intact portions of the West Berkeley Shellmound may be present in the area. Upon closer examination, we found this not to be true, though we did locate shellmound material. However, we believe this material is redeposited from the shellmound for the purposes of road building and agricultural soil improvements.

Trench 22 was thoroughly and carefully excavated and included two (2) separate excavation units that began just above the thin shellmound material layer and cut through it. We found evidence of linear features that could represent plow scars and a small cluster of large stones that could have been used to form a row demarcation. Additionally, we found a historic period bottle embedded in the shellmound material, which suggests that the material was redeposited relatively recently and is thus not in original context.

One faunal element was collected from the shellmound layer. It is a 4.9cm long proximal portion of a bird humerus, from the right side. The bone has a broken head, but a distinct delto-pectoral crest, a deep bicipital furrow, and is flattened antero-posteriorly (Adams and Crabtree 2012; Gilbert et al. 1996). It lacks a distinct ligamental furrow. On the whole, it resembles a juvenile pelican. Two pelican species are found in California, the American White Pelican (*Pelecanos eurythrorhyncus*), and the Brown Pelican (*Pelecanos occidentalis*). As the specimen is heavily broken around the head and the delto-pectoral crest and is incomplete, we assign it conservatively to cf. Pelecaniformes. However, judging from the occurrence of birds assigned to that order in North America, and especially California, we may be inclined to refine our taxonomic position to cf. Pelecanidae. A more thorough study would be required to decide on the alpha taxonomy for this bone. No doubt a comparison with the collection from the Emeryville Shellmound (Howard 1929) would settle any uncertainty.

Importantly, the bone shows clear signs of defleshing and forced breakage midshaft. There are cutmarks just inferior to the head that are shallow, wide, and clustered, suggesting that the tendons or muscle fibers of the pectoralis muscle were the objects of repeated attempts at severing. These cutmarks look different from those typically left by metal tools, such as a steel-edged knife, and may in fact have been made with stone implements. This bird humerus, with its cutmarks, is the best piece of pre-contact behavioral residue we found in the redistributed shellmound material on the Spenger's Parking Lot site.

5.3 INTERPRETATIONS

We believe the bulk of the collected artifacts represent historic period (or, more precisely, post-1900) food debris and dining related material goods. As we have shown, most of the artifacts can be dated, either directly or indirectly, to the post-1850s and probably much later (e.g., post-1932 as in the case of the Hiram Walker whiskey bottle from Trench 13). Though we did recover a small collection of faunal remains (bone and shell) from multiple trenches, most of this can be attributed to historic period food waste.

We found one bird bone that we believe, based on its context in a redistributed shellmound layer and the nature of its cut marks, probably derives from a pre-contact source. In addition, we found a single lithic fragment that may have been intentionally shaped, though it may simply be of natural origin. We did not find any other definitive evidence of pre-contact land use and certainly did not find intact extensions of the West Berkeley Shellmound.

Therefore, on the whole, we believe that all of the shellmound layers and lenses we encountered during the course of our trenching program were the result of post-depositional redistribution and disturbance. The most likely, and indeed well-documented, reasons for this disturbance are the extensive use of shellmound materials for road building and agricultural soil improvement in the late 19th and early 20th centuries. Large shellmounds around San Francisco Bay were targeted for these purposes to such a degree that by the time professional archaeologists first laid eyes on the structures and began to investigate their compositions, the mounds were virtually destroyed.

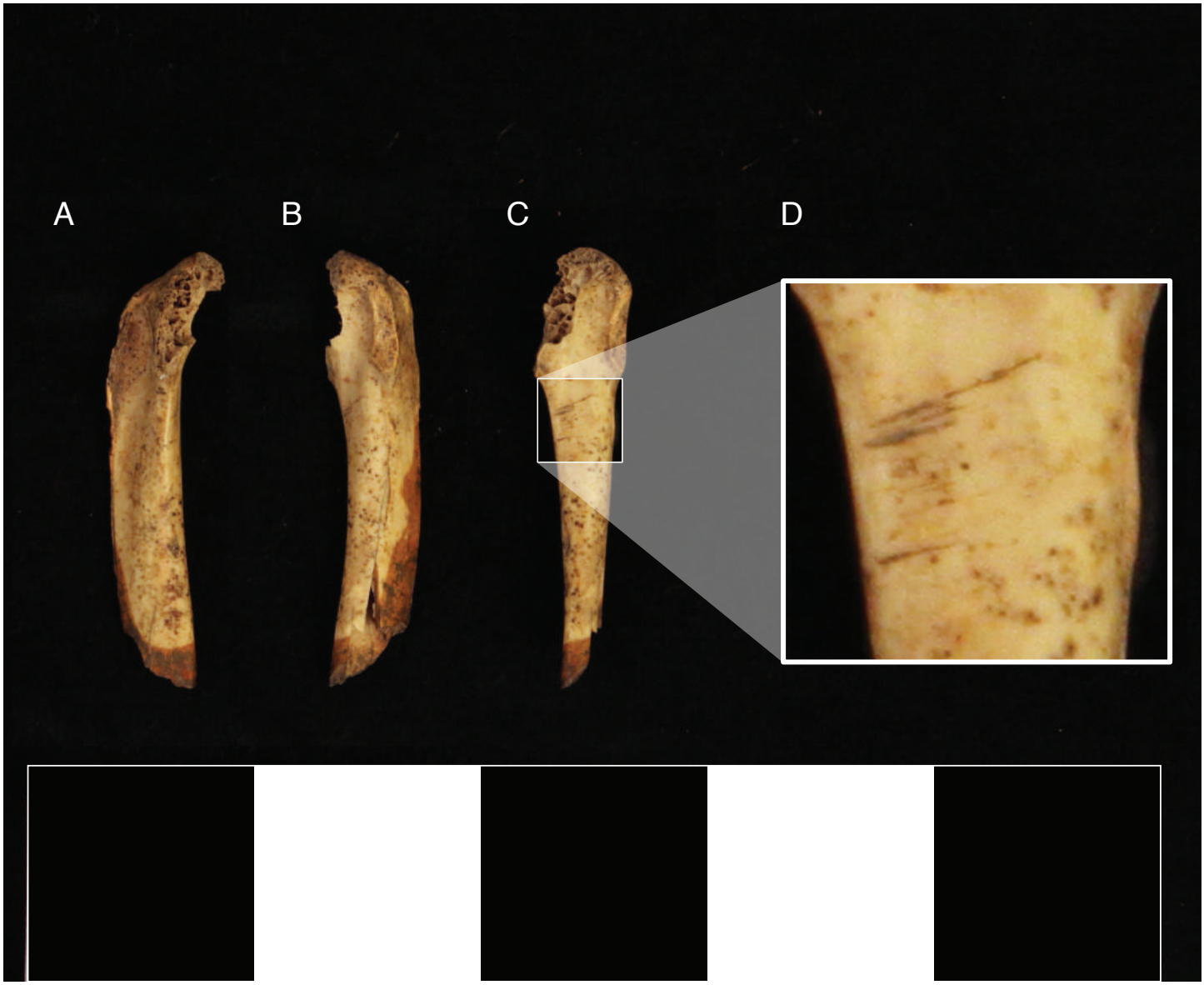


Figure 11. Possible pre-contact pelican right humerus from Test Trench 22. A. Posterior view; B. Anterior view; C. Medial view; D. Cutmark detail. The presence of this isolated element with post-contact refuse confirms that the deposit from which it derives is not in original context, but has been secondarily emplaced, possibly by human disturbance in the late 19th or early 20th centuries.

6 CONCLUSIONS AND RECOMMENDATIONS

The current archaeological testing program, conducted in the Spenger's Parking Lot site between January and March, 2014, was primarily undertaken to assess the presence or absence of historically significant cultural materials associated with the West Berkeley Shellmound (CA-ALA-307). The research methodology was designed to build upon the findings of an earlier program of subsurface archaeological testing performed by Archeo-Tec in the Spenger's Parking Lot area in 1999 and 2000. This previous research suggested the presence of one or more pre-contact cultural material layers, primarily composed of shell and possibly related to the West Berkeley Shellmound, in two discrete portions of the lot.

These portions previously suggested the presence of either intact or secondarily emplaced shellmound deposits that had limited vertical but unknown horizontal extent. To further investigate the archaeological potential of the Spenger's Parking Lot, a systematic program of subsurface archaeological testing was conducted in early 2014. This work included a rather extensive subsurface trenching regime in a large, eastern portion of the parking lot, and a smaller, but areally more expansive, trenching regime in a smaller, northwestern portion of the parking lot. Personnel of Archeo-Tec also conducted a limited ground-penetrating radar (GPR) survey in the smaller, northwestern portion. The results of this survey greatly assisted the placement of properly strategic test trenches that avoided excessive overburden and focused specifically on the zones of highest probability of finding intact shellmound.

Though we did not find intact shellmound, we did locate secondarily redeposited shellmound material that provided extremely useful insights into site formation and dynamic change over the past century. However, none of the shellmound material contained any cultural artifacts that are of definitively pre-contact origin.

In both areas subject to archaeological testing in 2014, we feel confident that our program of study was fully adequate to ascertain the presence or absence of cultural materials related to the West Berkeley Shellmound. In the judgment of the Principal Investigator, additional subsurface testing in the two areas under study would not have yielded additional relevant data.

6.1 PRE-CONTACT PERIOD MATERIALS

Therefore, based on an analysis of the data recovered during the current archaeological testing program, the following conclusions have been reached concerning the existence of significant subsurface cultural deposits within the borders of the site. Overall, the Spenger's Parking Lot site appears to be underlain by roughly four (4) feet of historic-period demolition debris and fill. It is only below 4 feet that any semblance of possible pre-contact shellmound material is encountered.

Material culture clearly dating to the late 19th or early 20th centuries was found in some abundance in many of the test trenches during the testing program. We collected representative samples from eight (8) of the twenty-two (22) test trenches and retained them

for analysis. We recorded field notes on other material we encountered throughout the site, though trash was relatively ubiquitous and so most was not recorded in full.

Overall, the assemblage of historic-period cultural materials recovered from the Spenger's Parking Lot site represents a fairly typical assortment of later 19th and early 20th century historic trash-related material culture. These include food-related glassware and ceramics, brick and assorted demolition debris, and various metallic waste. Such cultural collections are commonly encountered at many archaeological sites throughout the San Francisco Bay region.

6.2 PRE-CONTACT PERIOD MATERIALS

Although we did find evidence of human-created sedimentary layers dating to earlier periods and specifically related to pre-contact shellmound building, we found no definitive indications that these layers were in an original depositional context. We did, however, find limited cultural artifact remnants, including one bird humerus (cf. Pelicanidae) showing signs of stone tool processing (Test Trench 22) and a black chert fragment that might have been modified into a tool (Test Trench 7).

We found a thin lens of shell that we feel may have been originally part of a shellmound deposit, possibly the West Berkeley Shellmound. This thin lens of shell was either re-deposited by Strawberry Creek or by early 20th century excavation and re-distribution as agricultural soil enhancement and road-base filling. We believe the latter is the most likely case.

We found no evidence whatever that the West Berkeley Shellmound was ever located on the Spenger's Parking Lot site. [redacted] That the West Berkeley Shellmound, and other shellmounds in the area, were the chosen sources of road-grade and agricultural soil enhancement material is beyond dispute.

Therefore, based on the historical record and our own extensive testing and geoarchaeological hypothesis testing, we feel confident that the thin lenses and layers of shell-rich material we found in numerous test trenches were secondarily re-deposited as a result of late 19th and early 20th century agricultural soil enhancement and road-building activities in and around West Berkeley.

6.3 SIGNIFICANCE

After a thorough assessment of the cultural assemblage, it is apparent that the recovered collection of artifacts does not meet the criteria for historical significance set forth in the guidelines issued by the State of California for evaluating cultural resources. The present cultural assemblage does not provide any unique information or insights into patterns of daily life in either San Francisco or the larger region of the American West. Further, the cultural assemblage does not appear to be associated with any noteworthy individuals or any significant historic events.

Thus, we conclude that this material is not historically significant. In addition, due to the demonstrated lack of significance with respect to the assemblage of cultural materials recovered at the project site (i.e., the historic-period trash), we recommend that no systematic efforts need to be made for the permanent curation or preservation of these materials.

6.4 RECOMMENDATIONS

Based on the data adduced to date, it is the conclusion of the Principal Investigator that development within the Spenger's Parking Lot site would not result in adverse impacts to CEQA-significant pre-contact or historic period cultural resources. Though we did find historic period trash, even mixed in with the above described thin shell-rich layers and lenses, such as glass bottles and ceramics, this trash all appears to have been discarded at some time around or after the turn of the 20th century. In fact, one well-preserved whiskey bottle from Trench 13 is not older than 1932 as it bears a Prohibition-era disclaimer that was not embossed on liquor before that date. And, though we did find limited material evidence of land use by pre-contact peoples, that evidence was scant and recovered from disturbed layers, not intact shellmound.

However, even in light of the preceding conclusions, we cannot eliminate with absolute certainty the possibility that significant historic and pre-contact cultural materials exist within the footprint of the Spenger's Parking Lot site. We are confident, though, that this possibility is quite low. Based on our three separate, but related, studies in 1999, 2000, and now 2014, we feel confident that the Spenger's Parking Lot site has been sampled systematically according to standard archaeological research methodologies.

In consideration of the known long occupation of the area by the Ohlone people and others before them, and in accordance with the known proximity of one of the most important pre-contact shellmounds in the state of California (i.e., the West Berkeley Shellmound), all project-related ground disturbance below the historic fill layer (which we find in the Spenger's Parking Lot in excess of approximately 4 feet below the present ground surface) should be monitored at all times by a qualified archaeologist and a representative of the Ohlone people.

We further recommend that a site-wide ground-penetrating radar (GPR) survey be conducted in advance of full-scale ground-disturbance and demolition. A limited GPR survey was especially useful in our pre-excavation planning for the just-concluded archaeological testing program, and we feel it could be equally useful again. The results from just a few GPR transects in our northwest testing area helped us strategically place our test trenches for maximum shell layer

exposure. Results of the GPR survey helped us avoid areas of excessive debris and trash overburden and more finely target meaningful layers. We think GPR could prove abundantly useful for pre-excavation planning and development because it will indicate ahead of time where more or less resources will have to be put toward subsurface obstacle avoidance and mitigation. GPR will also indicate where it most likely that any shellmound material that may exist on the Spenger's Parking Lot site is concentrated or dispersed. As we mentioned above, GPR is very good at distinguishing deposits that are jumbled and massive from those that are more regularly stratified or patterned. This is important in the search for shellmounds because they are frequently stratified and appear readily distinguishable from artificial fill overburden.

One caveat is that GPR does not work especially well in very wet conditions, as water has the capacity of absorbing and scattering incident electromagnetic signals. Dry conditions, however, like those experienced during our field survey, and which are abundant in the Bay Area climate, are ideal for this technique. Such knowledge will help guide and inform the recommended archaeological and Native American monitors and property owners, allowing them to better perform their duties and predict which areas of the site will require more or less attention.

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Appendix I

Stratigraphic Soil Profiles of 20 Test Trenches and 2 Areal Exposures

(Refer to Figures 1, 3, and 4 for Individual Placement within Spenger's Parking Lot)

Test Trench #1

Excavated: February 27, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.9 feet	A	Asphalt with rubble underneath.
0.9-5.6 feet	B	10 YR 2/1, black sand mottled with orange and olive sand. Pockets of gray sand and gray-green sand. Inclusions of metal coils, gravel, small to medium subangular rocks and concrete slabs, burnt wood, brick, crushed black asphalt, glass from melted sand, blocks of black glass, metal car parts scraps, glass and metal meshing.
5.6-8.6 feet	C	Gley 1 4/5 GY, dark greenish gray silty clay.
8.6-9.1 feet	D	Gley 1 2.5/10 Y, silty sand mottled with Gley 1 2.5/10 Y gravel.
9.1-9.7 feet	E	Mussel shell layer with some clam frags and waterlogged wood fragments (small), black clay with angular and rounded gravel and pebbles.

Trench Abandoned at 9.7 feet below Surface

Test Trench #2

Excavated: February 27, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.7 feet	A	Asphalt with rubble underneath.
0.7-4.3 feet	B	10 YR 2/1, black sand mottled with orange and olive sand. Pockets of green-gray ashy sand on east wall in north half of trench. Inclusions of brick, medium to large subangular rocks, rubble, wood fragments, miscellaneous metal fragments including wire and nails, and bottle glass.
4.3-8.0 feet	C	Gley 1 4/5 GY, dark greenish gray silty clay with small gravel inclusions. In south half of trench this layer began higher (ca. 4.3' bsl) and dipped to the north such that it appears at 4.8' bsl in the north half of the trench.
8.0-9.1 feet	D	Gley 1 2.5/10 Y, loamy sand mixed with abundant gravel, river rock, and chert..
9.1-9.8 feet	E	10 YR 2/1, black silty clay mottled with 10 YR 4/1, dark gray clay. Wood *in situ* at 9.1' bsl.
9.8+ feet	F	Dark brown clay becomes obscured by water table.

Trench Abandoned at 9.8 feet below Surface

Test Trench #3

Excavated: February 27, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.7 feet	A	Asphalt with rubble and wire scraps underneath.
0.7-3.5 feet	B	10 YR 2/1, black sand mottled with orange and olive sand and gravel, various sized angular rocks, miscellaneous metal objects, wood fragments, large concrete boulders, large lumber fragments (disarticulated with square top nail openings; probably railroad lumber).
3.5-8.2 feet	C	Gley 1 4/5 GY, dark greenish gray silty clay with small gravel inclusions. Mottled with Gley 1 2.5/N, black silty clay that has more clay and is less friable than the surrounding soil matrix. There are some brick, glass, and wood debris inclusions as well. As depth increases, there are small shell fragments and the overall color and texture is Gley 1 4/5Y, dark greenish gray silty clay.
8.2-9.3 feet	D	Gley 1 2.5/10 Y, loamy gravel and sand mixed with abundant gravel, river rock, and chert..
9.3+ feet	F	Gley 3 1/5 GY, dark greenish gray clay with abundant gravel and water logged wood. Trench obscured by water table.

Trench Abandoned at 9.3 feet below Surface

Test Trench #4

Excavated: February 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-0.8 feet	A	Sand and gravel bedding under asphalt.
0.8-4.1 feet	B	7.5 YR 2/1, black medium sand mottled with 7.5 YR 2/2, very dark brown loamy sand with abundant demolition debris.
4.1-7.7 feet	C	7.5 YR 2/1, very dark brown sandy clay loam. Gradual transition into a 7.5 YR 3/2 dark brown coarse sand, and yet another transition as digging continued, to a Gley 1 3/10 Y, dark greenish gray sandy loam.
7.7-9.2 feet	D	Coarse sandy gravel mottled with dark brown sand and dark greenish gray sandy loam. Reached water table at bottom of level.
9.2-12.5 feet	E	Bay mud Gley 2.5/5 GY, greenish black silty clay with some wood fragments beneath water table.

Trench Abandoned at 12.5 feet below Surface

Test Trench #5

Excavated: February 3, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.3 feet	-	Asphalt
0.3-1.2 feet	A	Asphalt and gravel.
1.2-3.2 feet	B	7.5 YR 2/1, black loamy sand mottled with 7.5 YR 2/1, black sandy clay. Heavy concentration of building demolition debris (e.g., concrete, metal, wood).
3.2-5.0 feet	C	7.5 YR 2/1, black sandy clay with only minimal building debris.
5.0-7.1 feet	D	7.5 YR 2.5/2, very dark brown silty clay loam. Erosional lower boundary.
7.1-12.4 feet	E	Gley 1 4/5 G, dark greenish gray clay loam with some wood/carbon that may be intrusive. Stratum F also contained.
8.3-8.6 feet	F	Shell mound deposit encountered at 8.3' below surface. It is a somewhat circular lenticular pocket and may be a pit feature, though this is uncertain. The lens is very thin and only in the center of level F. It is Gley 1 2.5/5 GY, silty clay with 30% shell inclusions.

Trench Abandoned at 12.4 feet below Surface

Test Trench #6

Excavated: January 31, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-1.4 feet	A	Rubble and modern debris.
1.4-2.0 feet	B	7.5 YR 3/1, very dark gray sandy clay loam with some gravel inclusions. Includes CONTEXT 7; gray strat over rubble layer with lots of wood and what appears to be ash within level.
2.0-3.4 feet	C	Modern demolition debris and rubble. Includes CONTEXT 8; building debris with much ash mixed in as well. Seems to be 20th century based on associated material.
3.4-4.6 feet	D	Gley 1 3/10 Y, dark greenish gray silty clay. Includes CONTEXT 9; a pocket of what appears to be shell mound deposit. Soil is darker, quite black with many shell inclusions (though highly fragmented). In addition, some burned bone and small bird bone was observed coming out just above the deposit. A thin cut through the deposit revealed a dense concentration of shell, bone, and carbon. Carbon was taken as SAMPLE #3 for possible C14 dating. Midden lens was only 4-5" thick.
4.6-8.6 feet	E	Very gradual transition from level D above. Gley 1 2.5/5 GY, greenish black silty clay with shell midden lens located between 8.1' and 8.5' in the southern portion of the trench.
8.1-8.5 feet	F	Condensed, shelly lens (within Stratum E) with faunal bones (one bird) and some gravel and pebbles.

Trench Abandoned at 8.6 feet below Surface

Test Trench #7

Excavated: January 31, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-1.4 feet	A	Rubble and modern debris.
1.4-2.0 feet	B	7.5 YR 3/1, very dark gray, sandy clay loam with some gravel inclusions. Includes CONTEXT 3; a dense layer of building debris that contains mainly ceramic roof tiles, glass, wire, grass, and wood 2x4's.
2.0-3.4 feet	C	Modern building demolition debris including roof tile, glass, ceramic, metal fragments, and wire. Includes CONTEXT 4; heavy concentration of demolition debris, which looks 20th century in origin.
3.4-4.6 feet	D	Gley 1 3/10 Y, dark greenish gray silty clay. Includes CONTEXT 5; grayish layer beneath rubble at ca. 4.6 feet (bottom of level) that contains a 2' lens of what appears to be midden (Gley 1 2.5/5 GY). Just above this deposit is a large metal object sticking out of trench wall. This superposition indicates that some of the midden lenses encountered may in fact be disturbed or that the 20th century artifacts are intrusive.
4.6-9.0 feet	E	Gley 1 2.5/5 GY, greenish black silty clay with much fragmented shell (ca. 30% by density) and one possible lithic located at 8.4' bsl. Some charcoal/carbon was found in the midden lens at this level, which is likely cultural. One fragment of splintered faunal bone also found. Lots of rolled, smooth pebbles mixed in, so this midden layer may have been redeposited by the old Strawberry Creek. Water table was also encountered at 8.4' bsl.

Trench Abandoned at 9.0 feet below Surface

Test Trench #8

Excavated: January 31, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-1.5 feet	A	Rubble and modern debris.
1.5-4.5 feet	B	7.5 YR 3/1, very dark gray, sandy clay loam with some gravel and brick (possibly roofing tile) inclusions. Includes CONTEXT 1; demolition debris, 20th century.
4.5-9.7 feet	C	2.5 Y 2.5/1, black clay loam. Includes CONTEXT 2; possible midden deposit at 8.8' bsl. A pocket lens of gravel was encountered at ca. 7.0' bsl, which quickly changed back to clay. Water table was reached at ca. 7.8'.
8.8 feet	D	Black soil with flecks of white shell. This thin lens disappeared after one scoop of the backhoe. This thin lens was likely disturbed or redeposited or might be naturally occurring in the bay mud.

Trench Abandoned at 9.7 feet below Surface

Test Trench #9

Excavated: February 27, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-1.4 feet	A	Asphalt and gravel and rubble debris beneath.
1.4-4.0 feet	B	10 YR 2/1, black sand mottled with olive and orange sand. Gravel with various angular rocks and modern debris (metal and wood fragments).
4.0-5.6 feet	C	7.5 YR 3/1, very dark gray silty loam with very few sub-centimeter sized shell inclusions. Amount of shell decreases with depth and soil becomes wetter.
5.6-6.5 feet	D	10 YR 3/1 to 10 YR 4/1, dark/very dark gray silty sandy loam with small gravel and very small shell fragments. Thin gravel lenses intermittent.
6.5-7.8 feet	E	7.5 YR 3/2, dark brown sand with some broken shell fragments (similar to beach deposits). This gravel lenses intermittent.
7.8-9.5 feet	F	10 YR 2/1, black silty clay with some gravel fragments. Possible water table encountered.
9.5-9.9 feet	G	Gley 1 2.5/10 Y, loamy gravel/coarse sand with abundant rolled gravel.
ca. 9.9+ feet	H	7.5 YR 2.5/1, black, very dark brown soil with a mussel shell fragment lens and water logged wood fragments.

Trench Abandoned at 9.9 feet below Surface

Test Trench #10

Excavated: February 26, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-1.4 feet	A	Asphalt and gravel and debris beneath.
1.4-2.8 feet	B	7.5 YR 3/1, very dark gray sandy silt with rubble.
2.8-4.4 feet	C	10 YR 2/1, black sand mottled with olive and orange sand. Huge blocks of slag. Soil appears contaminated.
4.4-5.0 feet	D	7.5 YR 3/1, very dark gray silty loam with a few medium sized shell inclusions and sawed bone. In east half of trench a gray (gley) splotch appeared, blurring into Stratum D matrix.
5.0-7.2 feet	E	7.5 YR 3/2, dark brown loamy sand. At ca. 6.5-7.0' bsl, in the east half of the trench, a small, 3" thick gravel lens was encountered.
7.2-8.1 feet	F	Gley 1 2.5/10 Y, greenish black silty clay loam.
8.1-10.1 feet	G	Gley 1 2.5/10 Y, loamy gravel/coarse sand with abundant rolled gravel.
10.1-11.0 feet	H	7.5 YR 2.5/1, black/very dark brown moderate quartz gravel (rounded) with inclusions of small mussel shell fragments and waterlogged wood. Trench flooded at 11' bsl.

Trench Abandoned at 11.0 feet below Surface

Test Trench #11

Excavated: February 26, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-1.2 feet	A	Asphalt and rubble/gravel.
1.2-2.0 feet	B	7.5 YR 3/1, very dark gray sandy silt with rubble.
2.0-3.6 feet	C	7.5 YR 3/1, very dark gray sandy clay loam mottled with 7.5 YR 5/6, strong brown clay loam with rock fragments, rubble/debris, and metal.
3.6-6.5 feet	D	10 YR 2/1, black sand (petroleum odor) mottled with olive brown and orange sand with metal inclusions, rubble/concrete, and some 7.5 YR 3/1, clay loam. Burned timbers present.
6.5-8.8 feet	E	Sharp boundary with Stratum D above, possibly graded. 10 YR 4/1, dark gray silty clay loam grades to pure clay. Stratum D intrudes into center of clay stratum. Possible gooseneck cutoff deposit? Bottom of Stratum E undulates and dips to the east.
8.8-9.0 feet	F	Gley 1 2.5/10 Y, greenish black silty clay loam.
9.0-10.0 feet	G	Gley 1 2.5/10 Y, loamy gravel/coarse sand with abundant rolled gravel.
10.0-10.6 feet	H	Gley 1 2.5/10 Y, greenish black silty clay loam.
10.6-10.8 feet	I	Gley 1 2.5/N, silty clay loam with abundant shell. A possible natural mussel bed.

Trench Abandoned at 10.8 feet below Surface

Test Trench #12

Excavated: February 26, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-1.7 feet	A	Asphalt and rubble/gravel.
1.7-2.4 feet	B	7.5 YR 3/1, very dark gray sandy silt.
2.4-3.7 feet	C	7.5 YR 2/1, very dark gray sandy clay loam mottled with orange/yellow and 7.5 YR 5/6, strong brown clay with abundant rock fragments, river cobbles, and rubble/debris.
3.7-6.1 feet	D	10 YR 2/1, black sand (noxious petroleum odor) mottled with olive brown and orange sand with abundant metal and rubble/debris. A mass of metal strings and rods.
6.1-6.3 feet	E	10 YR 4/1, dark gray silty clay loam grades to pure clay.
6.3-6.8 feet	F	5 Y 5/1, black silty loam with sub-centimeter fragments of shell (mostly oyster).
6.8-9.4 feet	G	Gley 1 2.5/10 Y, greenish black silty clay laom with small pebble inclusions and oyster fragments. Some grass and organic material and charcoal.
9.4-11.0 feet	H	Gley 1 2.5/10 Y, loamy gravel/coarse sand (matrix supported gravel) with some small shell fragments and quartz, red chert, angular, subangular, and rounded gravels.
11.0-11.5 feet	I	Gley 1 2.5/N, silty clay loam with abundant shell. A possible natural mussel bed.
ca. 11.5+ feet	J	Gley 1 2.5/10 Y, silty clay loam that looks characteristically like Bay Mud. Water table reached.

Trench Abandoned at 11.5 feet below Surface

Test Trench #13

Excavated: February 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-1.1 feet	A	Rubble and modern debris.
1.1-4.8 feet	B	7.5 YR 2/1, black medium sand mottled with 7.5 YR 2.5/2, very dark brown loamy sand with lots of demolition debris, especially metal. Whiskey bottle collected at ca. 2.2' bsl form east wall of trench. Transition to Gley 1 3/10 Y, sandy loam at 3.7' bsl.
4.8-7.9 feet	C	Transition to Gley 1 3/10 Y, dark greenish gray loamy sand. South wall has a small band of 7.5 YR 3/2, dark brown coarse sand. Full transition to 7.5 YR 3/2, dark brown coarse sand at 6.3' bsl.
7.9-8.4 feet	D	Water-logged Gley 1 3/10 Y, dark greenish gray coarse sand with gravel.
8.4-12.2 feet	E	Bay mud clay reached; Gley 1 2.5/5 GY, greenish black, silty clay. A big wooden branch was found at 8.4' bsl. Pockets of coarse sand and gravel found at ca. 10.0' bsl.

Trench Abandoned at 12.2 feet below Surface

Test Trench #14

Excavated: February 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.2 feet	-	Asphalt
0.2-1.1 feet	A	Gray sand and gravel bedding beneath asphalt.
1.1-4.8 feet	B	7.5 YR 2/1, black medium sand mottled with 7.5 YR 2.5/2, very dark brown, loamy sand with a lot of demolition debris.
4.8-7.9 feet	C	Gley 1 3/10 Y, dark greenish gray loamy sand mottled with 7.5 YR 3/2, dark brown coarse sand.
7.9-8.4 feet	D	Gley 1 3/10 Y, dark greenish gray coarse sand with gravel.
8.4-12.8 feet	E	Bay mud clay reached; Gley 1 2.5/5 GY, greenish black, silty clay.
12.8-13.8 feet	F	Bay mud clay; Gley 1 2.5/5 GY, greenish black silty clay with multi-colored specks from decomposing rocks.

Trench Abandoned at 13.8 feet below Surface

Test Trench #15

Excavated: February 5, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.4 feet	-	Asphalt
0.4-1.4 feet	A	7.5 YR 2/1, sand with gravel. Demolition debris and large mottles of white and yellow.
1.4-2.6 feet	B	7.5 YR 2/1, black medium sand mottled with 7.5 YR 2.5/2, very dark brown loamy sand with abundant demolition debris.
2.6-4.3 feet	C	Gley 1 3/10 Y, dark greenish gray clay loam with demolition debris.
4.3-5.8 feet	D	Gley 1 3/10 Y, dark greenish gray sandy loam.
5.8-7.1 feet	E	Gley 1 3/10 Y, dark greenish gray silty clay, wetter.
7.1-8.3 feet	F	Gley 1 3/10 Y, dark greenish gray coarse sand with gravel.
8.3-10.0 feet	G	Gley 1 2.5/5 GY, greenish black clay with sand (Bay mud).
10.0-10.5 feet	H	Some increase in gravel inclusions in bay mud, including chert from the Berkeley Hills. These gravels are likely bed-load from Strawberry Creek when it traveled this course.
10.5-11.7 feet	I	Gley 1 2.5/5 GY, greenish black clay with sand (Bay mud).

Trench Abandoned at 11.7 feet below Surface

Test Trench #16

Excavated: February 5, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.3 feet	-	Asphalt
0.3-3.1 feet	A	7.5 YR 2/1, black sandy clay and loamy sand with white and yellow mottles and extensive demolition debris.
ca. 1.6 feet	B	A thin lens of 7.5 YR 2/1, black medium sand mottled with 7.5 YR 2.5/2, very dark brown sand.
3.1-4.8 feet	C	Gley 1 3/10 Y, dark greenish gray silty clay loam.
4.8-5.5 feet	D	Gley 1 3/10 Y, dark greenish gray loamy sand with fragments of shell. Soil was screened through 1/8 mesh. This is possibly a redeposited or otherwise disturbed lens of the shell mound. It is mixed with more recent historical material, including faunal bones (mammal, butchered by metal tools). Abundant oyster, mussel, and clam shell.
5.5-6.3 feet	E	Gley 1 3/10 Y, dark greenish gray silty clay loam.
6.3-6.6 feet	F	Pockets of Gley 1 2.5/5 GY, greenish black silty clay midden redeposit.
6.6-7.6 feet	G	Gley 1 3/10 Y, dark greenish black silty clay loam.
7.6-8.8 feet	H	Gley 1 2.5/5 GY, greenish black silty clay (Bay mud-sterile for shell).
8.8-9.3 feet	I	Gley 1 2.5/5 GY, greenish black coarse sand with gravel, that may be creek deposits.
9.3-12.0 feet	J	Gley 1 2.5/5 GY, dark greenish black clay with a little coarse sand (Bay mud).

Trench Abandoned at 12.0 feet below Surface

Test Trench #17

Excavated: February 3, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.6 feet	-	Asphalt
0.6-1.4 feet	A	Gravel under asphalt.
1.4-4.0 feet	B	7.5 YR 2/1, black loamy sand with black sandy clay. High concentration of demolition debris including wooden beams.
4.0-7.0 feet	C	Minimal demolition debris encountered at 4.0 feet bsl. Turns into 7.5 YR 2/1, black sandy clay. Charred wooden beams are coming out of this stratum, some vertically oriented. A few ceramic fragments visible in the fill. A possible privy encountered at 5.4 feet bsl. It is heavily disturbed, has possible post beams, but is irregularly located. Some wood is charred. No discrete concentration of material identified.
7.0-8.0 feet	D	7.5 YR 2/1, gray/black sandy clay, waterlogged. Some material still present at 7 feet bsl, including silvery welding clag (possible). No discrete concentration. Water table was reached. Charred wooden beam found emplaced in bay mud-like deposit, running north-south. Appears to bound the "privy" artifacts only on the eastern-most edge of the trench.
8.0-10.1 feet	E	Gley 1 4/5G, clay loam. At bottom of level is the top of a potential midden scatter. Gley 1 3/N, very dark gray bay mud below F.
ca, 8.6 feet	F	Midden level contains large shell fragments and abundant burned wood. Midden located directly beneath privy/trash dump above sand "lumps" (pebble sized) found associated. Sample of burned wood (large) taken for possible C14 analysis.

Trench Abandoned at 10.1 feet below Surface

Test Trench #18

Excavated: February 3, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.6 feet	-	Asphalt
0.6-1.4 feet	A	Gravel under asphalt.
1.4-3.9 feet	B	Rubble layer demolition debris in 7.5 YR 2/1, sandy clay matrix; 20th century.
3.9-5.4 feet	C	7.5 YR 2/1, sandy clay, practically devoid of demolition debris by 3.9 feet bsl.
5.4-6.4 feet	D	Transition to a lighter Gley 1 3/5 GY, dark greenish gray loamy sand.
6.4-8.1 feet	E	Transition to a more clay-rich version of level D; Gley 1 3/5 GY, dark greenish gray clay loam.
8.1-9.0 feet	F	Gley 1 2.5/5 GY, greenish black coarse sand with gravel inclusions that are of diverse lithology and are smooth and rounded. Animal bone found and collected. Water table reached.
9.0-10.2 feet	G	Possible midden deposit encountered. It is present along the entire length of the trench, running east-west. Gley 1 2.5/5 GY, silty clay with 30% shell inclusions. Bay mud reached at 10.2 feet bsl (Gley 1 4/5 G, clay loam).

Trench Abandoned at 10.2 feet below Surface

Test Trench #19

Excavated: February 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.3 feet	-	Asphalt
0.3-0.7 feet	A	Sand bedding.
0.7-2.0 feet	B	7.5 YR 2.5/2, very dark brown, very coarse, sandy loam with gravel.
2.0-5.3 feet	C	7.5 YR 2/1, black loamy sand and sandy clay with demolition debris. In the eastern half of the trench at approximately 3.7 feet bsl, the soil becomes a 10 YR 3/2, very dry grayish brown silty clay. An assortment of demolition debris, glass, ceramic, and mammal bone was collected.
5.3-9.0 feet	D	Gley 1 3/10 Y, dark greenish gray sandy loam.
9.0-9.5 feet	E	Gley 1 3/10 Y, dark greenish gray coarse sand with gravel.
9.5-10.6 feet	F	Gley 1 3/10 Y, dark greenish gray sandy loam. Midden material encountered in eastern half of the trench at approximately 10.1 feet bsl. There is a definite edge to the midden deposit, as it feathers out towards the western wall. There is much wood associated.
10.6-11.6 feet	G	7.5 YR 2.5/1, black sandy clay loam with abundant unburned wood present.
11.6-12.6 feet	H	Gley 1 3/10 Y, dark greenish gray sandy loam.

Trench Abandoned at 12.6 feet below Surface

Test Trench #20

Excavated: February 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.3 feet	-	Asphalt
0.3-0.7 feet	A	Sand and gravel bedding under asphalt.
0.7-2.1 feet	B	7.5 YR 2/1, black sandy clay and loamy sand.
2.1-5.6 feet	C	7.5 YR 2/1, black loamy sand with mottles of 7.5 YR 2.5/2, very dark brown loamy sand. A lot of demolition debris including brick, ceramic, wood, concrete, shoe fragments, and mortar fragments. Between approximately 3.5 and 5.3 feet bsl, a mottled yellowish clay with green gray clay and sand was encountered. This pocket smelled very bad and is likely contaminated. In the western half of the trench the disturbed pocket is a square shape, suggesting that a tank of some kind was removed.
5.6-9.0 feet	D	Gley 1 3/10 Y, dark greenish gray sandy loam.
9.0-9.5 feet	E	Gley 1 3/10 Y, dark greenish gray coarse sand with gravel.
9.5-10.6 feet	F	Gley 1 3/10 Y, dark greenish gray sandy loam.
10.6-11.6 feet	G	7.5 YR 2.5/1, black sandy clay loam with abundant unburned wood present.
11.6-12.6 feet	H	Gley 1 3/10 Y, dark greenish gray sandy loam.

Trench Abandoned at 12.6 feet below Surface

Test Trench #21 (Areal Exposure)

Excavated: March 6, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.5 feet	-	Asphalt
0.5-1.0 feet	A	Coarse gravel bedding in 10 YR 3/3, sandy loam matrix, very pronounced in west wall and west half of north wall.
1.0-2.5 feet	B	7.5 YR 4/1, dark gray sandy loam with abundant mottles of 7.5 YR 4/2 and 7.5 YR 2.5/1, sandy loam and many brick, mortar, metal, and concrete debris inclusions.
2.5-3.9 feet	C	7.5 YR 2/1, black sand mottled with 7.5 YR 4/4, brown sand with many large rocks, demo debris, brick and gravel.
3.9-4.4 feet	D	7.5 YR 2/1, black loamy sand and some shell fragments.
4.4-5.3 feet	E	Some flakes of clam and oyster shell in 10 YR 3/1, very dark gray silty loam (similar to what was seen in TT-1, 2, and 3).
ca. 5.3+ feet	F	End of excavation as trench was filling with water.

Trench Abandoned at 5.3 feet below Surface

Test Trench #22 (Areal Exposure)

Excavated: March 4, 2014

Depth Below Surface	Stratum	Soil Characteristics
0-0.5 feet	-	Asphalt
0.5-1.0 feet	A	Coarse gravel bedding in 10 YR 3/3, sandy loam matrix.
1.0-2.5 feet	B	7.5 YR 4/1, dark gray sandy loam with abundant mottles of 7.5 YR 4/2 and 7.5 YR 2.5/1, sandy loam and many brick, mortar, metal, and concrete debris inclusions.
2.5-3.9 feet	C	7.5 YR 2/1, black sand mottled with 7.5 YR 4/4, brown sand. The black color is from oil contamination. Intermingled with large rocks, concrete blocks, debris, and gravel from previous demolitions.
3.9-4.8 feet	D	7.5 YR 2/1, black loamy sand with some shell fragments that seem churned up from previous historic disturbance.
4.8-5.1 feet	E	10 YR 3/1, very dark gray (or black with oxidation) silty loam with abundant calm and mussel inclusions.
5.1-5.5 feet	F	10 YR 4/2, dark grayish brown silty clay loam with root ghosts and some mottling and oxidation.

Trench Abandoned at 5.5 feet below Surface

Appendix II

Previous Stratigraphic Soil Profiles from Boring Data: Archeo-Tec 1999-2000

(Refer to Figure 1 for Individual Placement within Spenger's Parking Lot)

Boring #1

Location: 28.5 feet west, 23 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement, followed by a layer of fine-grained, loosely compacted, dark brown silt mixed with a moderate quantity of small, angular rocks and a scattering of cultural refuse – i.e., brick, ceramic, glass and several pieces of butchered animal bone. In summary, this layer is part of a zone of historic fill.
2 – 4 feet	A gradual change to a light-to-medium brown, moderately compacted, silty clay, mixed with some gravel, a number of small, angular rocks, and a scattering of cultural refuse – i.e., brick, glass and ceramic fragments. This layer is a continuation of the above described zone of historic fill.
4 – 6 feet	A continuing gradation to an increasingly light brown, or tan, loosely compacted silty clay, mixed with an increasing quantity of small, angular rocks and pieces of gravel. Only a few historic period cultural specimens noted in this level. No trace of ground water noted.
6 – 8 feet	The soil matrix in this level is essentially the same as noted for the preceding level. No cultural materials noted below a depth of 7 feet. Still no trace of ground water observed. This level appears to represent the interface between the overlying zone of historic period fill and the underlying stratum of native soils.
8 – 10 feet	Soil within the upper half of this level are essentially identical to those described for the preceding level. At approximately 9 feet below the surface, there is an abrupt change to a light brown, or tan, homogeneous clay. No cultural material encountered. Ground water first noted at the bottom of this level.
10 – 12 feet	Identical to the soils noted in the preceding level – i.e., a stratum of light brown, or tan, densely compacted, homogeneous clay, now mixed with decomposing organic material. No cultural material encountered.
12 – 14 feet	Same as preceding level. No cultural material encountered.
14 – 16 feet	Same as preceding level. No cultural material encountered.
16 – 18 feet	Same as preceding level. No cultural material encountered.

Boring Abandoned at 17 feet below Surface

Boring #2

Location: 30.5 feet west, 84 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a relatively thin lens of tan, fine-grained, homogeneous sand. This sand in turn is followed by a layer of dark brown/black, densely compacted silty clay, mixed with a modest quantity of small angular rocks, gravel and a scattering of cultural refuse (i.e., brick and glass fragments and several corroded pieces of metal). In summary, this layer represents a zone of historic fill.
2 – 4 feet	A continuation of the historic fill zone described for the preceding level. The soils noted in this level have changed to a dry, mottled, brown/black, loosely compacted silty clay, mixed with an abundance of brick, a scattering of other cultural debris (i.e., glass and ceramic fragments as well as a few pieces of butchered bone) and a modest quantity of small angular rocks and gravel.
4 – 6 feet	A continuation of the historic fill zone described for the preceding two levels. The soils noted in this level are essentially the same as noted in the preceding level, except the mottled, brown/black silty clay (which is still mixed with a modest quantity of small angular rocks and gravel) has become more densely compacted. A scattering of historic period cultural materials (i.e., brick fragments, pieces of redwood, metal strips and glass fragments) was noted in this level. Still completely dry; no trace of ground water noted.
6 – 8 feet	A gradual change to a layer of densely compacted, increasingly homogeneous, dark grey/black silty clay. This layer appears to represent the transition between an overlying zone of historic period fill and an underlying stratum of native soils. Still completely dry; no ground water noted. No cultural material below 7 feet.
8 – 10 feet	The upper half of this level is identical to the preceding level (i.e., a densely compacted, largely homogeneous, dark gray/black clay). At 9 feet below the surface, there is an abrupt change to a stratum of densely compacted, light brown/tan, homogeneous clay. Still completely dry. No cultural material encountered.

10 – 12 feet	Same as the lower half of the preceding level. Ground water encountered at an approximate depth of 12.5 feet below the surface. No cultural material encountered.
14 – 16 feet	Same as the preceding level. No cultural material encountered.
16 – 18 feet	Same as the preceding level. No cultural material encountered.

Boring Abandoned at 17 feet below Surface

Boring #3

Location: 33 feet west, 138 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of densely compacted, dark gray/black silty clay, mixed with a modest quantity of small angular rocks, gravel and a scattering of cultural refuse (i.e., brick, glass and ceramic fragments and a few pieces of corroded metal). In summary, this layer represents a zone of historic fill.
2 – 4 feet	A continuation of the historic fill zone described for the preceding level. The soils noted in this level have changed to a dry, mottled, brown/black, densely compacted silty clay, mixed with some brick, chunks of concrete, small-to-fist-sized angular rocks and a scattering of other cultural debris (i.e., glass and ceramic fragments as well as a few small pieces of corroded metal).
4 – 6 feet	At 4 feet below the ground surface, there is an abrupt change to a stratum of gray/black, homogeneous silty clay, mixed with a small quantity of shell fragments, but no cultural materials. At 5 feet below the surface, there is an abrupt change to a layer of fine-grained, medium brown, largely homogeneous sandy silt, mixed with some shell. No evidence of cultural deposition noted in this layer, which appears to represent the beginning of the transition between the overlying zone of historic fill and the underlying native sediments. Soils in this level are moist, but ground water has not yet been encountered.
6 – 8 feet	At 6 feet below the surface, there is another abrupt change to a stratum of gray/black, fine-grained silty sand, mixed with scattering pockets of densely compacted gray/black clay. A few pieces of shell were noted in this layer. Soils in this level are moist, but ground water has not yet been encountered. No cultural material found in this level.
8 – 10 feet	A gradual change to a layer of moist, dark, gray/black, largely homogeneous silty clay, mixed with a few small pebbles and scattered organic materials. Ground water encountered at an approximate depth of 12 feet below the ground surface. No cultural material was recovered.

10 – 12 feet	Same as preceding level – i.e., a layer of moist, dark, gray/black largely homogeneous silty clay, mixed with a few small pebbles and scattered organic materials. Ground water encountered at an approximate depth of 12 feet below the ground surface. No cultural material encountered.
12 – 14 feet	An abrupt change to a layer of densely compacted, gray/black, homogeneous clay known locally as bay mud. No cultural material encountered.
14 – 16 feet	Same as the preceding level: a layer of densely compacted, gray/black, homogeneous clay known locally as bay mud. No cultural material encountered in this level.
16 – 18 feet	Same as the preceding level: a layer of densely compacted, gray/black, homogeneous clay known locally as bay mud. No cultural material encountered.

Boring Abandoned at 17 feet below Surface

Boring #4

Location: 65 feet west, 145 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium-to-dark brown, differentially compacted sandy silt, mixed with pockets of dense gray/black clay and a scattering of cultural refuse (i.e., brick and brick fragments, a piece of corroded metal and several scraps of butchered bone). This layer represents a zone of historic fill.
2 – 4 feet	A continuation of the zone of historic fill described for the preceding level. The soils within this level have gradually changed to a dry, light brown, moderately compacted sandy clay, mixed with a few small angular rocks and a modest quantity of the same sort of relatively recent cultural materials described above.
4 – 6 feet	The upper half of this level is identical to that described above for the preceding level (i.e., a dry, light brown, moderately compacted sandy clay, mixed with a few small angular rocks and a modest quantity of historic period cultural refuse). At 5 feet below the surface, there is an abrupt change to a fine-grained, medium brown, homogeneous silt, mixed with a few small pebbles and bits of shell. No cultural deposition was noted anywhere within the lower half of this level. This stratum of fine-grained silt appears to represent the beginning of the transition between the overlying zone of historic period fill and underlying native sediments. No ground water yet.
6 – 8 feet	A gradual change to an increasingly moist, densely compacted, medium brown, fine-grained, homogeneous silty clay. No ground water yet noted. No cultural material found.
8 – 10 feet	A continuing gradation to an increasingly moist, dark gray, fine-grained densely compacted, homogeneous silty clay. No ground water yet noted. No cultural material encountered.
10 – 12 feet	Soils are essentially the same as noted for the previous level (i.e., a dark gray, fine-grained, densely compacted, homogeneous silty clay, now mixed with a modest quantity of organic material. Ground water encountered at a depth of approximately 11.5 feet below the surface. No cultural material encountered.

12 – 14 feet	A gradual change to a layer of densely compacted, gray/black, homogeneous clay known locally as bay mud. No cultural material.
14 – 16 feet	Same as the preceding level – a layer of densely compacted, gray/black, homogeneous clay known locally as bay mud. No cultural material encountered.
16 – 18 feet	Same as preceding level – bay mud. No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #5

Location: 66 feet west, 107.5 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of light brown/tan fine-grained silt, mixed with a scattering of cultural refuse (i.e., brick and glass fragments, a piece of corroded metal and several scraps of butchered bone). This layer represents a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill described for the preceding level. The soils which characterize this level are identical to those described above – i.e., a light brown/tan fine-grained silt, mixed with a scattering of historic period cultural refuse.
4 – 6 feet	Soils within this level have changed to a dry, fine-grained dark brown/black, loosely compacted silt, mixed with an abundance of fist-sized, angular rocks, a large amount of brick and rubble and a modest quantity of associated period cultural debris – i.e., glass and ceramic fragments as well as a few small pieces of corroded metal. No trace of ground water yet noted in the boring.
6 – 8 feet	An abrupt change to a layer of dark brown, densely compacted, largely homogeneous silty clay. No further evidence of cultural deposition noted below 6 feet. Still no trace of ground water. This stratum appears to represent the transition between the overlying zone of historic period fill and underlying native sediments.
8 – 10 feet	A gradual change to an increasingly dense, largely homogeneous, dark gray/green silty clay. Still no trace of ground water. No cultural material encountered in this level.
10 – 12 feet	The soils have slowly graded to a dark gray/black, largely homogeneous, densely compacted clay, containing a modest quantity of small-to-fist-sized angular rocks. Ground water encountered at an approximate depth of 11.5 below the ground surface. No cultural material noted.
12 – 14 feet	Same as the preceding level – i.e., a dark gray/black largely homogeneous, densely compacted clay, containing a modest quantity of small-to-fist-sized angular rocks and some organic materials. No cultural material.

14 – 16 feet	Identical to the preceding level – dark gray/black, largely homogeneous densely compacted clay, mixed with a modest quantity of small-to-fist-sized angular rocks and some organic materials. No cultural material in this level.

Boring Abandoned at 16 feet below Surface

Boring #6

Location: 63 feet west, 67.5 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of tan, coarse-grained sand, followed by a layer of dark brown, fine-grained silt, mixed with a few small rocks and a scattering of historic period cultural refuse – i.e., brick and glass fragments, and a few scraps of corroded metal. This layer represents a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill described for the preceding level, and the soils characterizing this level are similar as well – i.e., dry, dark brown, fine-grained silt, mixed with a few small, angular rocks and historic period cultural refuse.
4 – 6 feet	An abrupt change to a gray/black, crumbling moderately compacted silty clay, mixed with a few small, angular rocks and a small quantity of shell and a few scattered shards of glass. No other cultural material found. No trace of the rubble noted at this depth in Boring #5. No trace of ground water noted.
6 – 8 feet	Essentially the same as the preceding level – a stratum of gray/black, crumbling, moderately compacted silty clay, mixed with a few small, angular rocks and a small quantity of shell. No trace of ground water noted. No cultural material. This stratum appears to represent the transition between the overlying zone of historic fill and underlying native sediments.
8 – 10 feet	An abrupt change to a layer of mottled, medium brown, densely compacted sandy clay. Becoming moist, but no water yet noted in the boring. No cultural material found in this level.
10 – 12 feet	A gradual change to a layer of medium brown, densely compacted clay. Increasingly moist, but ground water not yet noted in the boring. No cultural material found in this level.
12 – 14 feet	Same as preceding level – medium brown, densely compacted clay. Water encountered at approximately 12.5 feet below the surface of the ground. No cultural material noted.
14 – 16 feet	Same as the preceding level – medium brown, densely compacted clay. No cultural material noted.

16 – 18 feet	Same as the preceding level – medium brown, densely compacted clay. No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #7

Location: 64.5 feet west, 25 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of tan, coarse-grained sand, followed by a layer of dark gray/brown, fine-grained silt, mixed with a few small rocks and a scattering of historic period cultural refuse – i.e., chunks of concrete, brick and glass fragments, and several pieces of butchered bone. This layer represents a zone of historic period fill
2 – 4 feet	A continuation of the zone of historic fill described for the preceding level. The soils which characterize this level are similar to those described for the preceding level – i.e., dry, dark brown, fine-grained silt, mixed with numerous chunks of concrete, a few small, angular rocks and a scattering of historic period cultural refuse – i.e., ceramic and glass fragments as well as a few pieces of corroded metal.
4 – 6 feet	An abrupt change to a stratum of light brown/tan, mottled crumbling silty clay, mixed with an abundance of small-to-fist-sized angular rocks and a markedly diminishing quantity of historic period cultural refuse. Indeed, no cultural refuse was observed below a depth of 5 feet. No trace of ground water noted. This stratum appears to represent the transition between the overlying zone of historic period fill and the underlying native sediments.
6 – 8 feet	A gradual change to a stratum of increasingly dense, light brown/tan silty clay, mixed with an abundance of small-to-fist-sized angular rocks. No trace of ground water noted. No cultural material encountered.
8 – 10 feet	Essentially the same as the preceding level – i.e., a dense, light brown/tan silty clay, mixed with an abundance of small-to-fist-sized angular rocks. No trace of ground water noted. No cultural material encountered in this level.
10 – 12 feet	A gradual change to a medium brown, densely compacted, homogeneous clay. Still no ground water noted. No cultural material found.

12 – 14 feet	Same as the preceding level – medium brown, densely compacted homogeneous clay. Ground water encountered at an approximate depth of 12.5 feet below the ground surface. No cultural material.
14 – 16 feet	Identical to the soils noted in the preceding level – medium brown, densely compacted homogeneous clay. No cultural material.
16 – 18 feet	Identical to the soils noted in the preceding level – medium brown, densely compacted homogeneous clay. No cultural material.

Boring Abandoned at 17 feet below Surface

Boring #8

Location: 105.5 feet west, 57.5 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a thin lens of tan, coarse-grained sand, followed by a dark gray/brown, fine-grained silt, mixed with a substantial quantity of brick and associated historic period cultural refuse – i.e., glass and ceramic fragments, pieces of corroded metal and a few scraps of butchered bone. This layer is part of a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill. Soils are similar to those described for the preceding level – i.e., dry, dark brown, fine-grained silt, mixed with numerous chunks of brick and concrete and a modest quantity of associated historic period cultural debris (ceramic and glass fragments and several pieces of corroded metal).
4 – 6 feet	A continuation of the zone of historic fill. Soils are largely the same as the preceding level – a layer of dry, dark brown fine-grained silt, mixed with pockets of densely compacted gray clay, a few small angular rocks and the same types of historic period cultural refuse described above. No trace of ground water noted.
6 – 8 feet	An abrupt change to a layer of light brown/tan, mottled silty clay mixed with an abundance of small-to-fist-sized angular rocks. No ground water noted. No cultural material found. This stratum represents the transition between the overlying zone of historic fill and underlying native sediments.
8 – 10 feet	Essentially the same as preceding level – light brown/tan mottled silty clay mixed with an abundance of small-to-fist-sized angular rocks. No ground water noted. No cultural material.
10 – 12 feet	Essentially the same as preceding level – light brown/tan mottled silty clay, mixed with an abundance of small-to-fist-sized angular rocks. No ground water noted. No cultural material.
12 – 14 feet	A gradual change to a medium brown/tan, densely compacted homogeneous clay. Water encountered at an approximate depth of 12.5 feet below the ground surface. No cultural material found.

14 – 16 feet	Same as preceding level – medium brown/tan, densely compacted homogeneous clay. No cultural material found.
16 –18 feet	Same as preceding level – medium brown/tan, densely compacted homogeneous clay. No cultural material found.

Boring Abandoned at 18 feet below Surface

Boring #9

Location: 104 feet west, 105 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a thin lens of light brown/tan coarse-grained sand, followed by a stratum of dark gray/brown fine-grained silt, mixed with a scattering of historic period cultural refuse – i.e., brick, glass and ceramic fragments, and a few scraps of butchered bone. This layer is part of a zone of historic period fill.
2 – 4 feet	Continuation of zone of historic fill. Soils are similar to those described for the preceding level – i.e., dry, dark brown fine-grained silt, mixed with a moderate quantity of small, angular rocks and a small number of historic period cultural specimens – i.e., ceramic and glass fragments and a few pieces of corroded metal.
4 – 6 feet	Essentially the same as the preceding level – i.e., a dry, dark brown fine-grained silt, mixed with a moderate quantity of small, angular rocks, pockets of medium brown fine-grained sand and a diminishing quantity of historic period cultural specimens of the type described for the preceding two levels.
6 – 8 feet	An abrupt change to a stratum of mottled, dark brown densely compacted silty clay, mixed with a lens of highly fragmented shell. No trace of cultural deposition or ground water. This layer represents the transition between the overlying zone of historic period fill and the underlying native sediments.
8 – 10 feet	Increasingly dense, medium-to-dark brown silty clay. No shell. Still no trace of ground water. No cultural material encountered.
10 – 12 feet	An abrupt change to a layer of wet, densely compacted clay, mixed with an abundance of small pebbles and angular rocks. Ground water at ca. 11 feet below the surface. No cultural material found.
12 – 14 feet	A continuing gradation to a wet, increasingly dense, medium-to-dark brown sandy clay, mixed with an abundance of pebbles and small angular rocks. No cultural material encountered.
14 – 16 feet	A continuing transition between the sandy clay layer and the dense, dark gray/black homogeneous clay known locally as bay mud. No cultural material encountered.

16 – 18 feet	Same as the preceding level – dense, dark gray/black, homogeneous clay (bay mud). No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #10

Location: 102.5 feet west, 150.5 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a thin lens of medium brown, coarse-grained sand, and then a stratum of dark gray/brown, fine-grained silt, mixed with a substantial quantity of brick and concrete rubble, and a scattering of historic period cultural refuse – i.e., glass and ceramic fragments, and a few scraps of butchered bone. This layer is part of a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill. Soil of this level are similar to those described for the preceding level – i.e., a dry, dark brown, fine-grained silt, mixed with a moderate quantity of small, angular rocks, a large amount of brick and concrete rubble and a scattering of historic period cultural specimens (i.e., ceramic and glass fragments as well as a few scraps of corroded metal). No trace of ground water noted.
4 – 6 feet	Essentially the same as the preceding level – i.e., a stratum of dark brown, dry, fine-grained silt, mixed with occasional pockets of lighter brown, more densely compacted sandy clay, a moderate diminishing quantity of brick and concrete rubble and associated historic period cultural specimens (particularly irregularly shaped chunks of fire affected glass.
6 – 8 feet	An abrupt change to a stratum of medium brown, dry, densely compacted, mottled sandy clay, mixed with a moderate quantity of tiny shell fragments. This stratum quickly grades to a dry, dark gray, densely compacted silty clay (which contains no shell fragments). A few historic period cultural specimens were observed in the upper half of this level; by contrast, the lower half of this level – which appears to represent the interface between the overlying zone of historic fill and the underlying native sediments – was devoid of cultural deposition.
8 – 10 feet	A gradual change to a gray/green, moderately compacted silty clay, mixed with pockets of more densely compacted, homogeneous gray/black clay. Ground water encountered at approximately 11 feet beneath the surface. No cultural material encountered.

10 –12 feet	Basically the same as the preceding level – a dark gray/green, wet, moderately compacted silty clay, mixed with pockets of more densely compacted, homogeneous gray/black clay. Ground water encountered at approximately 11 feet beneath the surface. No cultural material encountered.
12 – 14 feet	A continuing change to a stratum of densely compacted, dark gray/black homogeneous clay known locally as bay mud. No cultural material encountered.
14 – 16 feet	Same as preceding level; a wet, densely compacted, dark gray/black homogeneous clay (bay mud). No cultural material encountered.
16 – 18 feet	Same as preceding level; bay mud. No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #11

Location: 144.5 feet west, 151 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 1 feet	Asphalt pavement followed by a stratum of dark gray/brown, fine-grained silt. At a depth of approximately 1 foot below the surface, the auger encountered an impenetrable concrete slab. Accordingly, this boring was abandoned at a depth slightly in excess of 1 foot below the parking lot surface

Boring Abandoned at 1 foot below Surface

Boring #12

Location: 143.5 feet west, 86 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a stratum of fine-grained dark brown silt, mixed with brick and concrete rubble, charcoal, scraps of burned redwood and a scattering of associated historic period artifacts (i.e., a metal spike, glass and ceramic fragments). This layer is part of a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill. Soils of this level consist primarily of a stratum of dry, dark brown densely compacted silty clay, mixed with a modest quantity of pebbles, small angular rocks and a scattering of historic period artifacts (i.e., glass and ceramic fragments along with a few pieces of corroded metal).
4 – 6 feet	At 4 feet beneath the surface there is an abrupt change to a layer of light brown, fine-grained homogeneous, fire-affected sand, mixed with a markedly diminishing quantity of brick and concrete rubble and other historic period cultural refuse (i.e., glass and ceramic fragments). At about 5 feet beneath the surface, there is another abrupt change to a dry, mottled, medium brown, densely compacted silty clay. No cultural deposition was noted within the layer of densely compacted clay. The lower half of this level seems to represent the transition between the overlying zone of historic fill and the underlying native sediments.
6 – 8 feet	Another abrupt change at 6 feet beneath the ground surface to a layer of dry, medium brown, moderately compacted silty clay, mixed with a small quantity of tiny shell fragments. No ground water noted. No cultural material encountered.
8 – 10 feet	A gradual change to a densely compacted, dark brown/black silty clay, mixed with a small quantity of tiny shell fragments and other organic matter. Moist, but no ground water encountered. No cultural material encountered.
10 – 12 feet	A continuing change to a stratum of wet, dark gray/black densely compacted, homogeneous clay, known locally as bay mud. Ground water encountered at approximately 12 feet beneath the surface. No cultural material encountered.

12 – 14 feet	Same as preceding level – a layer of dark gray/black, densely compacted, homogeneous clay (bay mud). No cultural material.
14 – 16 feet	Same as preceding level – bay mud. No cultural material.

Boring Abandoned at 16 feet below Surface

Boring #13

Location: 143 feet west, 23 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a stratum of fine-grained, dark brown silt, mixed with brick and concrete rubble, charcoal, scraps of burned redwood and a scattering of associated historic period artifacts (i.e., two metal nails, slag, window and bottle glass fragments, ceramic shards and several scraps of butchered bone). This layer is part of a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill. Soils of this level consist primarily of a dry, dark brown, densely compacted silty clay, mixed with a substantial quantity of historic period cultural material – i.e., brick and concrete fragments, pieced of burned wood, chunks of fire-affected glass, ceramic shards, etc.).
4 – 6 feet	The upper half of this level is the same as noted for the previous level – i.e., a dry, dark brown, densely compacted silty clay, mixed with a substantial quantity of historic period rubble (brick and concrete fragments, pieces of burned wood, chunks of fire-affected glass, ceramic shards, etc.). At 5 feet beneath the surface, there is an abrupt change to a layer of dry, medium brown, densely compacted silty clay, mixed with pockets of even denser, homogeneous dark gray clay. The lower half of this level – which appears to represent the transition between the overlying zone of historic period fill and the underlying native sediments – was devoid of cultural deposition. No ground water was noted anywhere in this level.
6 – 8 feet	Essentially the same as the lower half of the preceding level – a dry, medium brown, densely compacted silty clay, mixed with pockets of even denser, homogeneous dark gray clay. No trace of ground water. No cultural material encountered.
8 – 10 feet	A gradual change to a stratum of dry, dark gray/green clay, mixed with small angular rocks and scattered pockets of dark gray/black, densely compacted homogeneous clay. At approximately 10 feet beneath the ground surface, the auger encountered a thin, but distinctive lens of red/brown silty sand, mixed with an abundance of pebbles and small, angular rocks. Still no trace of ground water. No cultural material encountered

10 – 12 feet	A change to a layer of red/brown densely compacted silty clay, mixed with an abundance of pebbles and small, angular rocks. Ground water encountered at approximately 12 feet beneath the surface. No cultural material encountered.
12 – 14 feet	A gradual change from the above described stratum of red/brown densely compacted silty clay mixed with an abundance of small, angular rocks, to a layer of medium brown, densely compacted, homogeneous clay. No cultural material encountered.
14 – 16 feet	Same as the lower half of the preceding level – a layer of medium brown, densely compacted, homogeneous clay. No cultural material encountered.
16 – 18 feet	Same as preceding two levels. No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #14

Location: 143 feet west, 125.5 feet south of datum

Excavated in July, 1999—see Pastron 1999

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a dark brown, fine-grained, silt, mixed with an abundance of small-to-fist-sized angular rocks, a substantial amount of brick and concrete rubble as well as a scattering of historic period artifacts – i.e., window and bottle glass fragments, ceramic shards, one metal nail and several scraps of butchered bone. This layer is part of a zone of historic period fill.
2 – 4 feet	A continuation of the zone of historic fill. Soils of this level are identical to those described for the preceding level – a fine-grained, dark brown silt, mixed with numerous small-to-fist-sized angular rocks, a substantial amount of brick and concrete rubble as well as a scattering of historic period artifacts.
4 – 6 feet	A continuation of the zone of historic fill. Soils of this level are the same as the preceding level – dry, fine-grained, dark brown silt, mixed with numerous small-to-fist-sized angular rocks, and a markedly diminishing quantity of historic period cultural debris.
6 – 8 feet	An abrupt change to a layer of dry, mottled, medium brown, moderately compacted silty clay, mixed with an abundance of small-to-fist-sized angular rocks. This level appears to represent the transition between the overlying zone of historic fill and the underlying native sediments. No cultural material encountered.
8 –10 feet	A gradual change to a moist, gray silty clay, mixed with a substantial quantity of small-to-fist-sized angular rocks. No cultural material encountered.
10 – 12 feet	The gray silty clay encountered in the preceding level has graded to a densely compacted, largely homogeneous gray clay. Ground water encountered at approximately 11 feet beneath the surface. No cultural material encountered.
12 – 14 feet	Wet, densely compacted, homogeneous gray black clay, mixed with some organic matter. No cultural material encountered.
14 – 16 feet	Same as the preceding level – a layer of wet, densely compacted, homogeneous gray/black clay, mixed with some organic matter. No cultural material encountered.

16 – 18 feet	Same as the preceding level – wet, densely compacted, homogeneous black clay, mixed with some organic matter. No cultural material encountered.

Boring Abandoned at 18 feet below Surface

Boring #15

Location: 185.5 feet west, 147.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of loosely compacted, medium brown silty clay, mixed with a moderate quantity of small-to-fist-sized rocks and gravel. A crumbling concrete slab was encountered at 2 feet beneath the surface. This layer is part of a zone of historic period fill. No cultural material encountered.
2 – 4 feet	The top half of this level is the same as the preceding one – loosely compacted medium brown silty clay, mixed with a moderate quantity of small-to-fist-sized rocks and gravel. At about 3 feet below the modern concrete, an abrupt soil change to a moderately compacted, dark brown, fine-grained homogeneous sand, mixed with only a few small-to-fist-sized rocks and gravel, as well as a few pieces of corroded metal and a big chunk of redwood. No other cultural material was noted in this level.
4 – 6 feet	This level marks an abrupt soil change, to a dry, moderately compacted, gray silty clay with no rocks. No cultural material was noted in this level.
6 – 8 feet	A gradual change to a moderately compacted, moist gray sand, mixed with a scattered pockets of clay and tiny flecks of shell. No cultural material encountered other than one undecorated white ironstone pottery sherd. Although shell was encountered in this level, there is no sign of prehistoric cultural deposition.
8 –10 feet	An abrupt change in soil composition is seen at 8 feet, to a dense gray clay known locally as bay mud, mixed with tiny flecks of shell and other organic material. There was no cultural material encountered in this level.
10 – 12 feet	Same as the preceding level – bay mud. No cultural material encountered.
12 – 14 feet	Same as the preceding level – bay mud. No cultural material seen.
14 – 16 feet	Same as the preceding level – bay mud. No cultural material.

Boring Abandoned at 16 feet below Surface

Boring #16

Location: 190.5 feet west, 95 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of loosely compacted, medium brown silty sand, mixed with rocks and gravel as well as a scattering of historic period cultural refuse – i.e., glass fragments and metal chunks. This layer is part of a zone of historic fill.
2 – 4 feet	A continuation of the zone of historic fill described for the previous level. The soil composition and color is basically the same as above – a layer of dry, loosely compacted silty sand, mixed with rocks and gravel and a scattering of historic period cultural refuse consisting of metal and glass fragments and a few chunks of concrete.
4 – 6 feet	A gradual change to a somewhat densely compacted, dry, medium brown clay/silt. No cultural material was encountered in this layer.
6 – 8 feet	An increasingly compacted, moist, gray/brown sandy clay, mixed with small pebbles and a few tiny flecks of shell. This layer represents the transition between the overlying zone of historic period fill and the underlying native sediments.
8 – 10 feet	Very compact, moist, gray/black clay mixed with many small pebbles, numerous flecks of shell and some organic material. No cultural material found in this layer. The shell content appears to be natural and not an indicator of shellmound deposits. This layer represents the beginning of the bay mud stratum.
10 – 12 feet	Identical to the soils in the preceding level (bay mud). No cultural material encountered.
12 – 14 feet	Same as the soils in the preceding two levels (bay mud). No cultural material encountered.
14 – 16 feet	Same as the preceding three levels (bay mud). No cultural material noted.

Boring Abandoned at 16 feet below Surface

Boring #17

Location: 195 feet west, 22.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed immediately by an underlying, decomposing concrete slab, and then by a layer of loosely compacted, medium brown sandy/silty clay, mixed with rocks and gravel and some historic period cultural refuse including glass and metal fragments. This layer is part of a zone of historic period fill.
2 – 4 feet	An abrupt change to a dry, loosely compacted, fine-grained, silty clay, mixed with a small quantity of angular and rounded pebbles. Brick rubble seen between 2 and 3 feet below the ground surface. Very little historic period cultural refuse seen, which is similar than the material seen in the preceding layer, although in smaller quantities.
4 – 6 feet	Same soil as the preceding level – dry, loosely compacted fine-grained silty clay mixed with an abundance of angular and rounded pebbles. Only a few scattered pieces of historic period cultural refuse including glass and metal fragments.
6 – 8 feet	Generally the same soil as the preceding level – loosely compacted silty clay mixed with an abundance of angular and rounded pebbles, although it is now becoming moist. No cultural material found in this level.
8 – 10 feet	Same soil as above. Water encountered at approximately 10 feet. No cultural material encountered in this level.
10 – 12 feet	At 10 feet, an abrupt change to a layer of wet, increasingly dense, gray silty clay with many small angular pebbles and no cultural material. This layer represents the interface between the overlying zone of historic fill and the underlying native clay.
12 – 14 feet	A gradual change to a densely compacted, wet gray clay, mixed with many tiny flecks of shell, wood and other organic material (bay mud). No cultural material encountered.
14 – 16 feet	Same soil as the preceding level – bay mud. No cultural material encountered.

Boring Abandoned at 16 feet below Surface

Boring #18

Location: 226 feet west, 22 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of fairly loosely compacted medium-to-dark brown silty/sandy clay mixed with small angular pebbles and containing some glass and metal fragments. This level represents a layer of recent historic fill.
2 – 4 feet	A dry, densely compacted, light brown silty clay with relatively few small angular pebbles. No cultural material found or collected. This layer represents the interface between the zone of historic period fill and the underlying native sediments below.
4 –6 feet	Basically the same soil as the preceding level – a dry, densely compacted light brown silty clay – although now containing significantly more small rocks and pebbles. No cultural material found or collected.
6 – 8 feet	Similar to the soils for the previous two levels – a light brown silty clay – although now the soil is slightly more moist, more compacted and contains more small angular pebbles. No cultural material encountered.
8 – 10 feet	Basically the same soil as previous layers with increasing clay content at approximately 9 feet and an increasing quantity of small angular rocks – soil classified as a compacted, light brown clay with some silt and an increasing amount of small angular pebbles. No cultural material found or collected.
10 – 12 feet	Same soil as previous layer – very compact light brown clay with a decreasing amount of silt and some small angular pebbles. The water table was encountered at approximately 11 feet. No cultural material encountered.
12 – 14 feet	Same as previous level. No cultural material encountered.
14 – 16 feet	Same as previous level. No cultural material encountered.
16 – 18 feet	Same as previous level. No cultural material encountered.
18 – 19 feet	Same as previous level. No cultural material encountered.

Boring Abandoned at 19 feet below Surface

Boring #19

Location: 228.5 feet west, 67.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement and underlying deteriorating concrete slab followed by a layer of loosely compacted, light brown silty clay, mixed with lots of mussel shell fragments as well as a good deal historic period cultural refuse – i.e., brick fragments, glass sherds and some pieces of corroded metal. Some charcoal found within this soil, although it is not clear what this charcoal is associated with and thus none saved for testing. Other than the shell and possibly the charcoal, there is no evidence that this material represents a remnant of the midden deposit associated with CA-ALA-307; yet this layer is the most similar to these types of deposits than any other soil previously encountered, and may possibly represent a midden deposit mixed with significant historical period disturbance.
2 – 4 feet	An abrupt change to a densely compacted, dry, light brown silty clay. No shell seen in this layer. No historical or other cultural material encountered in this layer. The soil no longer resembles a prehistoric midden deposit, as with the preceding stratum.
4 –6 feet	The upper half of this layer contains the same soil as the previous layer – a densely compacted, dry, light brown silty clay. At 5 feet below the surface, there is an abrupt change to gray/black, dry silty-clay clayey silt mixed with an abundance of mussel and clam shell fragments, some oyster shell and some mammal bones. This layer probably represents a remnant of the West Berkeley Shellmound deposit known by the CA-ALA-307.
6 – 8 feet	Same soil as the preceding level – part of the stratum of gray/black, dry, densely compacted clayey silt, containing a significant amount of mussel and clam shell fragments and little oyster shell fragments, as well as some mammal bone – which probably represents a remnant of CA-ALA-307. No tools or other prehistoric artifacts encountered, nor were any other signs found that this is assuredly part of CA-ALA-307. A sample of this layer was taken and later screened through a 1/16th-inch strainer. The cultural material recovered from this process consisted of 2 small bottle glass fragments, 3 fish vertebrae, 1 stingray spine, and

	numerous small shell fragments. Approximately 20 times more shell was recovered from this sample than that taken for the same level in Boring #34, and unlike the sample for Boring #34 in which no burned shell was recovered, approximately 20% of the sample in this boring were fire-affected. The fragments from this sample range from 3.61 to 0.21 centimeters in size, measured along the longest remaining dimension. Two genus and three family of shell could be positively identified; *Mytilus*, *Macoma*, Ostreidae, Cirripedia, and Cardiidae. All of the *Mytilus* recovered is extremely fragmentary, making accurate species identification tenuous. Of the *Macoma* fragments, eight are of sufficient size to identify as *Macoma nasuta*. The *Mytilus* and *Macoma* shell fragments were found in roughly the same amount. The other three shell types are represented in very limited quantities. The three fish vertebrae range from 0.64 to 0.40 centimeters in diameter. The stingray spine measures 2.76 centimeters in length.
8 – 10 feet	Same soil as above in the upper half of this level – gray/black, dry, densely compacted clayey silt, containing a significant amount of mussel and shell fragments, few oyster shell fragments, as well as some mammal bone. The water table was encountered at approximately 9 feet. At this point, the soil changed to a gray/brown, densely compacted silty clay, with significantly less shell than the previous stratum. This lower portion of this level probably represents the interface between the overlying disturbed midden and the underlying native soils. No cultural material noted or collected.
10 – 12 feet	A continuation of the stratum seen in the lower half of the previous level: gray/brown, wet, densely compacted silty clay containing no traces of cultural deposition.
12 – 14 feet	Same soil as the previous level – densely compacted, wet, densely compacted silty clay, containing no cultural material.
14 – 16 feet	Same soils as the previous two levels

**** Possible pre-historic cultural remnants encountered 0 – 2 feet, and again from 4 – 9 feet, with no possible pre-historic cultural material from 2 – 4 feet.***

Boring Abandoned at 16 feet below Surface

Boring #20

Location: 231 feet west, 123.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed immediately by chunks of concrete and brick, and then a layer of dark brown, dry, loosely compacted sandy silt, mixed with small angular and rounded rocks and a scattering of historic period cultural debris.
2 – 4 feet	The auger encountered a footing or other obstruction. Hence, the boring was abandoned at 4 feet below the surface.

Boring Abandoned at 4 feet below Surface due to Obstruction

Boring #21

Location: 230.5 feet west, 144.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement, underlying chunks of concrete, followed by a layer of dry, dark brown, fine-grained silt, mixed with small angular and rounded rocks and a scattering of historic period cultural debris including some brick, although none saved as it is the same material as is regularly encountered at this level.
2 – 4 feet	A gradual change to a dry, dark brown, moderately compacted silty clay, mixed with some mussel shell – although significantly less than was encountered in Boring #19. A few historic period artifacts seen but not collected.
4 – 6 feet	A gradual change to gray, dry, densely compacted silty clay, mixed with a few small angular and rounded pebbles. A trace of historical period cultural refuse was noted.
6 – 8 feet	Same soil as the previous level – gray, dry, densely compacted silty clay, mixed with few angular and rounded pebbles. No cultural material encountered.
8 – 10 feet	Densely compacted gray/black clay mixed with traces of shell and some organic debris. No cultural material encountered. The water table was reached between 9 and 10 feet below the asphalt pavement.
10 – 12 feet	Same soil as the preceding level – bay mud. No cultural material encountered.
12 – 14 feet	Bay mud. No cultural material encountered.
14 – 16 feet	Bay mud. No cultural material encountered.

** No trace of the pre-historical cultural material possibly associated with CA-ALA-307.*

Boring Abandoned at 16 feet below Surface

Boring #22

Location: 211.5 feet west, 111.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, fine-grained sand, mixed with scattered pockets of sandy clay and a scattering of historic period cultural refuse including a large amount of slag. This layer represents a layer of historic period fill.
2 – 4 feet	A gradual change to a light brown/gray, densely compacted, dry, silty clay, mixed with a scattering of historical period cultural refuse including some brick rubble, as well as a few small flecks of mussel shell. This layer represents part of the interface between the zone of historic period fill and the underlying native sediments below.
4 – 6 feet	The upper half of this level contains the same light brown/gray soil described above. At 5 feet, there is an abrupt soil change to a light brown, dry, moderately compacted silty clay containing no shell and devoid of cultural deposition.
6 – 8 feet	Same light brown soil as described for the lower half of the preceding level. This soil is still dry and devoid of cultural deposition.
8 – 10 feet	An abrupt soil change to a layer of gray, moist, loosely compacted sandy clay, mixed with an abundance of small angular and rounded pebbles. This level represents the upper portion of the interface between the zone of historic period fill and the underlying native clays.
10 – 12 feet	The water table was encountered at 10 feet. This layer contains the same soils as the preceding levels, although now becoming denser and containing more clay content – soil now described as a gray, wet, compacted clay with some sand. This level represents a continuation of the interface between the zone of historic period fill and the underlying native clays. No signs of cultural deposition of any sort.
12 – 14 feet	A gradual change to a compact, wet, gray clay with some organic material. This level represents the upper portion of the bay mud stratum. No cultural material encountered.

14 – 16 feet	Essentially the same soil as above – bay mud. No cultural material noted.

** No trace of the shellmound deposit (CA-ALA-307)*

Boring Abandoned at 16 feet below Surface

Boring #23

Location: 230 feet west, 188 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement with chunks of concrete directly below the pavement, followed by a layer of dark brown, dry, fine-grained silty sand, mixed small angular and rounded pebbles as well as a scattering of historic period cultural debris including chunks of redwood. No trace of prehistoric cultural deposition. This level represents part of the zone of historic period fill.
2 – 4 feet	A fairly abrupt change to a layer of light brown, loosely compacted, homogenous fine-grained sand. No cultural material encountered. A continuation of the zone of historic period fill.
4 – 6 feet	A light brown, dry, moderately compacted silty clay, mixed with some small angular pebbles. No cultural material noted. This level represents the interface between the zone of historical period fill and the underlying native sediments.
6 – 8 feet	Same light brown silty clay as seen in the preceding level, although now becoming increasingly dense. No historical or other cultural deposition in this level, and this level is part of the undisturbed native sediments.
8 – 10 feet	An abrupt soil change to a gray, moist, moderately compacted silty clay, mixed with a few small angular pebbles. No evidence of cultural deposition.
10 – 12 feet	Same soil composition and color as the preceding level, containing no cultural materials. The water table was encountered at 12 feet.
12 – 14 feet	Gray, wet, densely compacted gray clay mixed with a scattering of organic matter and traces of mussel shell – bay mud. No cultural material encountered.
14 –16 feet	Same soil as seen in the preceding two levels – bay mud. No cultural material noted or collected.

Boring Abandoned at 16 feet below Surface

Boring #24

Location: 188 feet west, 190 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement with concrete chunks directly beneath the pavement, followed by a layer of dark brown, dry, fine-grained silt, mixed with some small angular pebbles and a scattering of historical period cultural debris – part of the zone of historic period fill.
2 – 4 feet	Basically the same fill as above, mixed with a large amount of brick rubble and many large chunks of concrete, and a scattering of historic period cultural refuse. This level is a continuation of the zone of historic period fill.
4 – 6 feet	A fairly abrupt change to a light brown, dry, moderately compacted silty clay, mixed with a moderate quantity of small angular small-to-fist sized angular rocks and a scattering of historic period cultural debris. Historical period fill.
6 – 8 feet	Basically the same soil composition and color as preceding level. This level still contains traces of historic period cultural refuse, and seems to be a continuation of the historical period fill zone
8 – 10 feet	A fairly abrupt change to a gray, moist, moderately dense silty clay, mixed with small-to-fist-sized angular rocks. No cultural material encountered. This level represents the interface between the overlying zone of historic period fill and the underlying native clay sediments.
10 – 12 feet	A gradual change to a gray, wet, compacted gray clay mixed with traces of organic materials (bay mud).
12 – 14 feet	Same soil as the preceding level – bay mud. No cultural material encountered.
14 – 16 feet	Same soil as the preceding two levels – bay mud. No cultural material encountered.

** No trace of pre-historic cultural deposit in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #25

Location: 230.5 feet west, 236.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement, followed by a layer of medium brown, dry, loosely compacted, fine-grained homogeneous sand, mixed with a few angular small-to-fist-sized angular rocks as well as a minute scattering of historic period cultural refuse. Part of the zone of historic period fill.
2 – 4 feet	An abrupt change to a medium brown, dry, moderately compacted sandy clay, with few small-to-fist-sized angular rocks. Traces of historic period cultural refuse. This layer is a continuation of the historic period fill zone.
4 – 6 feet	This level consists of a continuation of the medium brown sandy clay stratum seen in the preceding level. No cultural material noted. This layer represents the interface between the zone of historic period fill and the underlying native sediments below.
6- 8 feet	An abrupt to a moist, gray, moderately compacted silty clay with no rocks or cultural materials.
8 – 10 feet	Same soil as the gray silty clay seen above, although the amount of silt within the clay decreases with depth. No cultural material found within this level.
10 – 12 feet	This level represents a transitional layer between the gray silty clay seen in the upper portions of this level with the bay mud seen in the lower portions. No signs of cultural deposition within this level. The water table was encountered at 11 feet below the modern asphalt.
12 – 14 feet	Bay mud. No cultural material encountered.
14 – 16 feet	Bay mud. No cultural material encountered.

** No trace of pre-historic cultural deposition.*

Boring Abandoned at 16 feet below Surface

Boring #26

Location: 187 feet west, 235 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed immediately by chunks of concrete above and within a medium brown, dry, fine-grained silty sand containing small angular small-to-fist-sized rocks and a scattering of historic period debris. This level represents part of a zone of historical period fill.
2 – 4 feet	Same soil as the medium brown silty sand described above. A continuation of the zone of historic period fill.
4 – 6 feet	An abrupt change to a light brown, dry, moderately compacted silty clay mixed with a few small angular rocks. No cultural material encountered. This level seems to represent the upper portions of the native sediments.
6 – 8 feet	An abrupt change to a dark gray/black, dry, densely compacted silty clay mixed with some shell and other organic debris. This level represents the transition from the first horizon of native sediments and the bay mud below. No cultural material found, and there are no signs that these traces of shell are cultural.
8 – 10 feet	A gradual change to a gray/black, moist, very compact, clay, mixed with small flecks of shell and some organic material – bay mud. No cultural material encountered. The water table is encountered at 10 feet, at which point the soil is saturated.
10 – 12 feet	Black gray, wet, very compact clay with some organic material – bay mud. No cultural material noted or collected.
12 – 14 feet	Same as previous level – bay mud. No cultural material encountered.
14 – 16 feet	Same black clay as previous two levels – bay mud. No cultural material noted or collected.

** No pre-historic cultural deposition in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #27

Location: 226.5 feet west, 288.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement, followed by a layer of medium brown, dry, loosely compacted, fine-grained sand mixed with a few small angular rocks, mixed with a few pockets of mottled gray clay. This layer contains some brick fragments and a small scattering of historic period cultural debris of the same type encountered in the other borings at this depth. Part of the zone of historical fill.
2 – 4 feet	Same soil as the preceding level – medium brown sand with pockets of mottled gray clay. A scattering of historic period cultural debris was noted for this level as well, although not collected as it is representative of the same material previously encountered at this depth. A continuation of the zone of historic fill.
4 – 6 feet	An abrupt change to a light brown, dry, moderately compacted sandy clay, mixed with a few small angular rocks, and a scattering of historic period cultural debris. This level represents the interface between the zone of historic fill above and the underlying native sediments below.
6 – 8 feet	Basically the same as the light brown sandy clay described in the preceding level, although becoming somewhat more compact, moist, and somewhat more gray in color. A continuation of the transitional stratum if historic fill and underlying native sediments. No cultural material noted.
8 – 10 feet	A gradual change to a gray/black, increasingly wet, compact silty clay, mixed with shell and a scattering of organic debris. No cultural material found within this level. This level represents a transition to the natural sediments. The water table was encountered at approximately 10 feet below the surface.
10 – 12 feet	Gray/black, compacted clay containing organic matter – bay mud. No cultural material seen or collected.
12 – 14 feet	A continuation of the stratum of bay mud encountered in the previous level. No cultural deposition within this level.

14 – 16 feet	Same soil composition and color as the previous two levels – bay mud. No cultural material encountered.

**No trace of pre-historic cultural deposition within this boring.*

Boring Abandoned at 16 feet below Surface

Boring #28

Location: 188.5 feet west, 289 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement, followed by a layer of medium brown, dry, loosely compacted, fine-grained sand, mixed with a moderate quantity of small-to-fist-sized angular rocks. This level contains brick rubble, slag, and a scattering of historic period cultural debris o the same types as previously encountered within the zone of historic fill.
2 – 4 feet	A continuation of the soil type encountered in the preceding level, although no slag was noted or collected below 2 feet. A continuation of the zone of historic fill.
4 – 6 feet	Light brown, dry, moderately compact silty clay, mixed with a small amount of small-to-fist-sized angular rocks, a few small flecks of shell and a scattering of historic period cultural refuse.
6 – 8 feet	Basically the same soil composition as the preceding level, except the silty clay is becoming more compact and grayer in color. The soil is also becoming slightly moist. No cultural material noted for this level.
8 – 10 feet	A gradual change to a gray/black silty clay, mixed with a few flecks of shell and some other organic debris. No cultural material encountered, and there are no signs that the shell mixed clay is part of the prehistoric shellmound deposit known as CA-ALA-307. This level appears to be just above the bay mud.
10 – 12 feet	A gradual change to a gray/black, wet, very compact clay, mixed with flecks of shell and other organic debris (bay mud). The water table was encountered just below 10 feet below the surface. No cultural material encountered in this level.
12 – 14 feet	Bay mud is seen in this level. No cultural material noted.
14 – 16 feet	A continuation of the stratum of bay mud encountered in the previous level. No cultural material encountered.

**No trace of pre-historic cultural deposition within this boring.*

Boring Abandoned at 16 feet below Surface

Boring #29

Location: 187.5 feet west, 379 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by medium brown, dry, coarse-grained silt (fill,) mixed with a moderate quantity of angular pebbles and a scattering of historic period cultural debris.
2 – 4 feet	An abrupt change to a light brown, dry, moderately compacted silty clay, mixed with a small quantity of small angular pebbles and a scattering of historic period cultural debris. A continuation of the zone of historic fill.
4 – 6 feet	An abrupt change to a gray, more compact silty clay, mixed with a few flecks of shell and other organic debris. The soil becomes moist at 6 feet below the surface. A transition between the zone of historic fill and the underlying native sediments. No cultural material found within this level.
6 – 8 feet	A gradual change to gray, compact clay – bay mud. Still moist, but the water table has not been encountered. No cultural material noted and collected.
8 – 10 feet	A continuation of the stratum of bay mud encountered in the previous level. No cultural material seen within this level.
10 – 12 feet	Same as the previous two levels – bay mud. No cultural material encountered.
12 – 14 feet	Same as above – bay mud. No cultural material found.
14 – 16 feet	Same as above – bay mud. No cultural material found.

**No trace of cultural deposition encountered in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #30

Location: 135.5 feet west, 352.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a medium brown, dry, coarse-grained silty sand (fill,) mixed with numerous small angular pebbles and a scattering of historic period cultural debris. Part of the zone of historic fill.
2 – 4 feet	Same soil composition and color as above, also containing a scattering of historic period cultural debris. A continuation of the zone of historic fill.
4 – 6 feet	An abrupt change to a dry, moderately compacted light brown sandy clay, mixed with a few angular small-to-fist-sized rocks and a scattering of cultural debris.
6 – 8 feet	Basically the same soil as above, although now becoming come compact and more gray in color. This level is slightly moist at the bottom. No cultural materials found.
8 – 10 feet	A gray/black, moist, densely compacted silty clay, mixed with a few flecks of shell and a scattering of other organic debris. No cultural material encountered. The water table is encountered at 9 feet, and below this point the soil is saturated.
10 – 12 feet	Same as above, yet a continuing decrease in the amount of silt with depth, and the soil is gradually transitioning into bay mud. No cultural material encountered.
12 – 14 feet	Same as the previous level although now containing almost no silt – almost completely bay mud. No cultural material in this level.
14 – 16 feet	Silt is completely gone by this depth, and this soil can now be described as bay mud.

**No pre-historic cultural deposition in this boring*

Boring Abandoned at 15 feet below Surface

Boring #31

Location: 134.5 feet west, 288.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a dry, loosely compacted, medium brown coarse-grained silt (fill), mixed with some brick rubble and a scattering of historic period cultural debris.
2 – 4 feet	Same as the preceding level; a continuation of the zone of historic fill.
4 – 6 feet	An abrupt change to a light brown, moderately compacted sandy clay, a few small-to-fist-sized rocks, some small mussel shell fragments and a diminishing scatter of cultural refuse. The soil is generally dry in this level, although it is becoming moist at the bottom.
6 – 8 feet	Another abrupt change to a gray, moist, densely compacted silty clay mixed with an abundance of large pieces of wood, a few scattered fragments historic period cultural items, and a few small-to-fist-sized angular rocks. The soil becomes more moist and significantly more compacted with depth. This is the deepest level in which historic period cultural materials have been recovered.
8 – 10 feet	A gradual transition occurs in this level, from the gray silty clay seen in the preceding level to bay mud below. The water table was encountered at 10 feet below the surface. No cultural material found.
10 – 12 feet	Bay mud. No cultural material encountered.
12 – 14 feet	Bay mud. No cultural material encountered.
14 – 16 feet	Bay mud. No cultural material encountered.

**No trace of pre-historic cultural deposition in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #32

Location: 143 feet west, 237 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a medium brown, coarse-grained, dry, loosely compacted sandy clay (fill), mixed with wood, metal and brick fragments, some small-to-fist-sized angular rocks and some large cobbles.
2 – 4 feet	Basically the same soil as above, and some of the same types of historic period cultural materials were recovered in this level. A continuation of the zone of historic period fill.
4 – 6 feet	An abrupt change to a light brown, dry, moderately compacted sandy clay, mixed with a few small-to-fist-sized angular rocks and a scattering of historic period cultural debris. A transitional stratum between the overlying zone of historic period fill above and the underlying native sediments.
6 – 8 feet	An abrupt change to a gray, moist, moderately compacted silty clay. No cultural material seen within this level. This layer marks the uppermost of the undisturbed native sediments.
8 – 10 feet	A gradual change from the silty clay seen in the preceding level to a dense gray clay containing some organic material (bay mud). No cultural material found.
10 – 12 feet	Bay mud. No cultural material found.
12 – 14 feet	Bay mud. No cultural material found.
14 – 16 feet	Bay mud. No cultural material found.

**No prehistoric cultural material found in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #33

Location: 142 feet west, 195 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a medium brown, dry, coarse-grained silty sand (fill), mixed with small-to-fist-sized rocks and a scattering of historic period cultural refuse.
2 – 4 feet	Same soil as the preceding level, also containing the same types of historic period cultural refuse, although in slightly decreasing quantities. This level represents a continuation of the zone of historic period fill.
4 – 6 feet	An abrupt change to a light brown, dry, moderately compacted sandy clay, mixed with a few historic period cultural specimens and few small-to-fist-sized rocks. This layer represents the transition between the overlying zone of historic period fill and the underlying native sediments.
6 – 8 feet	Another abrupt change to a gray, moist, moderately compacted silty clay, as seen in previous borings at this depth. No cultural material of any sort found in this level.
8 – 10 feet	A gradual change to a gray/black, moist, very compact clay – bay mud. The water table was encountered at 10 feet below the surface. No cultural material encountered in this level.
10 – 12 feet	Bay mud. No cultural material found.
12 – 14 feet	Bay mud. No cultural material found.
14 – 16 feet	Bay mud. No cultural material found.

**No trace of prehistoric cultural deposition in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #34

Location: 97 feet west, 191.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a medium brown, dry, fine-grained sand, mixed with angular pebbles and some historic period cultural debris, including brick. Historic period fill.
2 – 4 feet	Same as the preceding level. A continuation of historic period fill.
4 – 6 feet	An abrupt change to a light brown, dry, moderately compacted sandy clay, mixed with a diminishing quantity of historic period debris, as well as a few angular pebbles. The soil is becoming slightly moist. This layer represents a transition between the overlying historic period fill, and the underlying native sediments.
6 – 8 feet	This level consists of a gray, moderately compacted silt layer found directly atop bay mud. This layer is filled with small pieces of shell, bone, charcoal, and other possible indicators of a remnant of the West Berkeley Shellmound deposit. It is possible that this level represents a secondary deposit of CA-ALA-307. The bay mud seen in the bottom of this level contains no evidence of cultural deposition, so it seems a thin layer of possible prehistoric cultural deposit is represented in this level. A sample of the soil from this level was saved and later screened through 1/16th-inch mesh. Small fragments of shell were recovered ranging from 1.30 to 0.20 centimeters. These represent *Mytilus* and *Macoma*. More precise taxonomy was not possible due to the fragmentary nature of the shell. 75% of this sample was *Mytilus* and 25% *Macoma*. Two fish vertebrae were recovered, 0.80 and 0.47 centimeters in diameter, but are indeterminate.
8 – 10 feet	A transitional stratum, which consists mostly of bay mud, but still contains some silt, is lighter in color than the bay mud below, and is slightly less compact than the underlying bay mud. No organic material can be seen in this level.
10 – 12 feet	Gray/black, moist, densely compacted clay, containing some organic material but no rocks or evidence of cultural deposition – this soil color and composition is known locally as bay mud.
12 – 14 feet	Bay mud. No cultural material seen.

14 – 16 feet Bay mud. No cultural material seen.

** Evidence of possible prehistoric cultural deposition seen in a thin lens within the 6 to 8 foot level of this boring.*

Boring Abandoned at 16 feet below Surface

Boring #35

Location: 100 feet west, 239.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a dark brown, dry, coarse-grained silty soil (fill), mixed with angular pebbles and a scattering of historic period cultural debris, including brick rubble and a small amount of redwood. Some flecks of shell were also noted in this level.
2 – 4 feet	Essentially the same soil color, consistency, and cultural constituents as the preceding level. This level represents a continuation of the zone of historic period fill.
4 – 6 feet	An abrupt change to a light brown, moist, moderately compacted sandy clay. One bird bone seen, which is probably a chicken bone, but no other evidence of cultural deposition. This layer represents the usual transitional layer between the overlying zone of historic fill and the underlying native sediments.
6 – 8 feet	A brown/gray, increasingly wet, moderately compacted silty clay, mixed with abundant flecks of decomposing shell and some wood. The shell remains were mostly mussel, with occasional clam and oyster shell fragments also found. Mammal bones, one possibly polished, and a quartz crystal were also found in with the shell. The lens containing shell and other abundant organic material is at the same depth as in Boring #34, and has the same color and composition. Again, this may be a remnant, possibly redeposited, of the West Berkeley Shellmound: CA-ALA-307.
8 – 10 feet	A gradual change to a dense gray clay (bay mud), which is distinctly different in color and composition than the above silty clay. No cultural material encountered in this stratum. The water table was reached at 10 feet.
10 – 12 feet	Bay mud. No cultural material found.
12 – 14 feet	Bay mud. No cultural material found.
14 – 16 feet	Bay mud. No cultural material found.

**Possible prehistoric cultural remains encountered at 6 – 8 feet in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #36

Location: 95 feet west, 285.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a medium brown, dry, coarse-grained sandy silt (fill), mixed with a moderate quantity of small angular and rounded pebbles and a scattering of historic period cultural debris – i.e., brick, glass and ceramic fragments, corroded metal fragments, etc.
2 – 4 feet	Same as the preceding level. Some shell fragments also noted.
4 – 6 feet	An abrupt change to a gray, moderately compacted silty clay, mixed with a few angular and rounded pebbles, mixed with a few angular and rounded pebbles and a very small quantity of historic period cultural debris. The light brown sandy clay usually seen at this level is absent in this boring.
6 – 8 feet	Same gray silty clay seen in the preceding level, although the soil is becoming more dense and containing more clay with depth, and becoming very wet at the bottom of this level. Some shell and charcoal noted between 7 to 8 feet, which seems to be a remnant of CA-ALA-307, but less of this material than was found in Borings #34 and #35. The shell fragments are larger in this boring, and there is more charcoal than these other two borings with possible prehistoric cultural material, which are located directly north of this boring.
8 – 10 feet	A gradual change to a dense gray clay mixed with a trace of shell and other organic debris – bay mud. Unlike the previous level, however, this level contains no cultural material. The water table was encountered at approximately 9.5 feet below the surface.
10 –12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**Possible prehistoric cultural material found at 6 – 8 feet below surface*

Boring Abandoned at 16 feet below Surface

Boring #37

Location: 84.5 feet west, 353.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a light to medium brown, coarse-grained, dry sand with pockets of sandy clay, mixed with angular pebbles and a scattering of historic period debris.
2 – 4 feet	Same as the preceding level. Still dry.
4 – 6 feet	An abrupt change to a layer of brown/tan, dry, coarse-grained sands mixed with a large quantity of small-to-fist-sized angular and rounded pebbles. This stratum is probably a remnant of Strawberry Creek, which originally ran through the project area. No cultural material found within this deposit.
6 – 8 feet	A gradual change to a gray, moist, increasingly dense silty clay. This is clearly below the above described stratum of apparent riverine gravels deposited by Strawberry Creek.
8 – 10 feet	A gradual change to a gray/black, moist, very compact clay containing some organic material – bay mud. No cultural material noted.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No trace of prehistoric cultural deposits.*

Boring Abandoned at 16 feet below Surface

Boring #38

Location: 43.5 feet west, 375 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown/tan, dry, coarse-grained silt (fill), mixed with a moderate quantity of small quantity of angular pebbles and a scattering of historic period cultural refuse, including a piece of butchered bone.
2 – 4 feet	Essentially the same as the preceding level. Still dry.
4 – 6 feet	An abrupt change to a layer of gray/green, dry silty clay containing a few angular pebbles. No trace of shell or cultural deposition.
6 – 8 feet	A gray, moist, very compact silty clay, becoming increasingly dense and saturated with depth. No cultural material found within this stratum.
8 – 10 feet	A gradual change to a gray, moist, very compact clay mixed with flecks of shell and some other organic material – the bay mud deposit. No cultural material found. The water table was encountered at 10 feet below the surface.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No signs of prehistoric cultural deposition.*

Boring Abandoned at 16 feet below Surface

Boring #39

Location: 17.5 feet west, 339 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, coarse-grained sandy silt, mixed with some small-to-fist-sized angular and rounded rocks and some historic period cultural material, including wood and glass fragments, and one corroded metal belt buckle. Part of the zone of historic period fill.
2 – 4 feet	Essentially the same as the previous level. Still dry. Historic cultural debris found, including one penny pipe bowl and stem. A continuation of the zone of historic period fill.
4 – 6 feet	The upper half of this level consists of a thin layer of gray/green, dry, loosely compacted, coarse-grained sand with numerous angular and rounded small-to-fist-sized rocks. This stratum appears to be a deposit of Strawberry Creek, which at one time ran through the subject parcel. At five feet, there is a distinct soil change, and the lower half of this level consists of a moist, gray, moderately compacted silty clay. Neither of these strata contain any cultural material of any sort.
6 – 8 feet	A continuation of the gray silty clay seen in the lower half of the preceding level, which is becoming increasingly dense and wet with depth. No cultural material encountered.
8 – 10 feet	A gradual change is seen in this level to a gray/green, wet, very compact clay – bay mud. No cultural material found.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No trace of prehistoric cultural deposition.*

Boring Abandoned at 16 feet below Surface

Boring #40

Location: 49.5 feet west, 291 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, coarse-grained sand and silty clay (historic fill), mixed with small-to-fist-sized angular rocks as well as a scattering of historic period cultural debris.
2 – 4 feet	Essentially the same as the preceding level – a continuation of the zone of historic period fill.
4 – 6 feet	An abrupt change to a gray, moist, moderately compact silty clay, as described for previous borings at this depth. No cultural material encountered.
6 – 8 feet	The same gray silty clay seen in the previous level, although now becoming wetter and more densely compacted.
8 – 10 feet	Bay mud – no cultural material.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No sign of prehistoric cultural deposits in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #41

Location: 54.5 feet west, 242.5 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, coarse-grained sand and silty clay, mixed with a modest quantity of small-to-fist-sized rocks and a scattering of historic period cultural material – i.e., glass, metal and wood fragments, etc.
2 – 4 feet	Essentially the same historic period fill as the previous level, continuing to contain historic period artifacts including a piece of European ceramic ware.
4 – 6 feet	An abrupt change to a medium brown, dry, moderately compacted sandy clay, mixed with an abundance of small riverine gravels at about 6 feet below the surface. No evidence of cultural deposition.
6 – 8 feet	A gradual change to a gray, wet, moderately compacted silty clay, mixed with a diminishing quantity of riverine gravels. This level becomes wetter and denser with depth. No cultural material encountered in this level. Same gray silty clay seen in the preceding level, although the soil is becoming more dense and containing more clay with depth, and becoming very wet at the bottom of this level. Some shell and charcoal noted between 7 to 8 feet, which seems to be a remnant of CA-ALA-307, but less of this material than was found in Borings #34 and #35, and somewhat less than Boring 36. The shell fragments are larger in this boring, and there is more charcoal than these other two borings with possible prehistoric cultural material, which are located directly north of this boring.
8 – 10 feet	A gradual change to a gray, wet, very compact clay – the upper portions of the bay mud. No cultural material noted. The water table was reached at approximately 10 feet.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No evidence of cultural deposits in this boring.*

Boring Abandoned at 16 feet below Surface

Boring #42

Location: 16 feet west, 225 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, coarse-grained sand and sandy clay mixed with small-to-fist-sized angular rock and a scattering of historic period cultural material – part of the zone of historic period fill.
2 – 4 feet	A continuation of the same historic period fill as the preceding level.
4 – 6 feet	An abrupt change to a gray, moist, moderately compacted silty clay, which becomes more compact and moist with depth. No cultural material found.
6 – 8 feet	Same soil as the preceding level, becoming more densely compacted and moist with depth. No cultural material found within this material.
8 – 10 feet	A gradual change to bay mud. The water table was encountered at 10 feet below the surface. No cultural material encountered.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No evidence of prehistoric cultural deposition found within this boring.*

Boring Abandoned at 16 feet below Surface

Boring #43

Location: 66.5 feet west, 199 feet south of datum

Excavated in January, 2000—see Pastron 2000

Depth Below Surface	**Soil Characteristics**
0 – 2 feet	Asphalt pavement followed by a layer of medium brown, dry, coarse-grained sand and sandy clay mixed with small-to-fist-sized angular rock and a scattering of historic period cultural material – part of the zone of historic period fill.
2 – 4 feet	A continuation of the same historic period fill as the preceding level.
4 – 6 feet	An abrupt change to a gray, moist, moderately compacted silty clay, which becomes more compact and moist with depth. No cultural material found.
6 – 8 feet	Same soil as the preceding level, becoming more densely compacted and moist with depth. No cultural material found within this material. A trace of the shell and the organic material seen in borings #34, #35, #36, and #41, marking a possible remnant of CA-ALA-307 – the West Berkeley Shellmound. No artifacts were found within this thin lens of shell, although this lens appears to be identical to deposits within these other borings which contained bone and chipped stone, which clearly indicated prehistoric cultural activity.
8 – 10 feet	A gradual change to bay mud. The water table was encountered at 10 feet below the surface. No cultural material encountered.
10 – 12 feet	Bay mud – no cultural material.
12 – 14 feet	Bay mud – no cultural material.
14 – 16 feet	Bay mud – no cultural material.

**No evidence of prehistoric cultural deposition found within this boring.*

Boring Abandoned at 16 feet below Surface