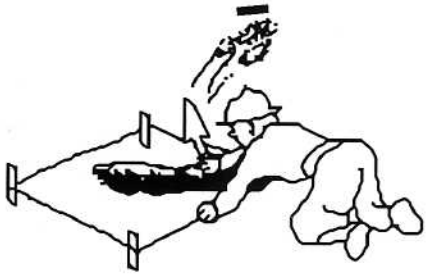
IS THERE LIFE AFTER REBURIAL?

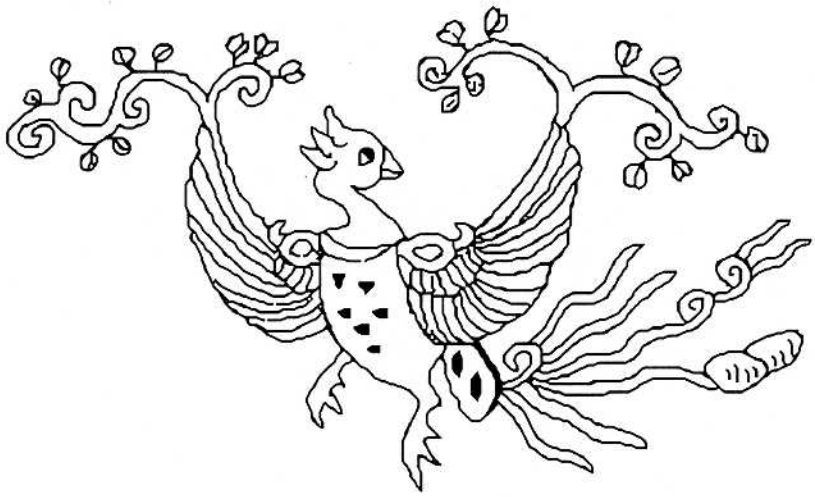
TALES OF THE BLUE PHOENIX



THE ORIGIN AND NATURE OF THE

BLUEBIRD DUMP SITE, CA-ALA-416H,

SAN LEANDRO, CALIFORNIA



A Report Prepared for Western Ecological Services Company, Inc.
and
Citation Homes Central

by

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INTRODUCTION

This report documents the study of surface and excavated archaeological materials recovered from the Bluebird Dump Site, CA-Ala-416H. The goals of this study were to: 1) catalogue and analyze the materials collected from the surface of Bluebird in 1978; 2) catalogue and analyze the materials excavated at the Bluebird site during the summer of 1979; and, 3) provide a written report of the excavation and the artifactual analysis. This report attempts to provide the following:

a) a full description of the contexts from which the artifacts were recovered;
b) a description and evaluation of the stratigraphic nature of the site, with an eye toward an explanation of the depositional processes that contributed to the formation of the site;
c) a detailed inventory of the artifacts recovered (see Appendix 3);
d) description and illustration of significant and/or chronologically diagnostic artifacts;
e) evaluation of the chronology of the site and its contents;
f) description and evaluation of possible demographic and/or ethnic affiliations of the site;
g) evaluation of the site's significance as a cultural/historical resource.

PROJECT LOCATION

The Bluebird Dump Site, formally designated as CA-Ala-416H, is located in San Leandro immediately to the east of San Francisco Bay (see Figure 1). The site is found within the area of the nineteenth century land grant of Rancho San Leandro and within Tier 3S, Range 3W of the 1973 USGS 7.5 minute San Leandro Quadrangle Map. The UTM coordinates of the site are 4,170,800 meters north, 573,740 meters east, Zone 10. The center of the site is found approximately 200 meters west of the Southern Pacific Railroad and 600 meters north of Lewelling Boulevard. San Lorenzo Creek is located approximately one half mile to the south; the mouth of San Leandro Creek some three miles to the north. The edge of San Francisco Bay is approximately 700 meters to the northeast of the site.

NATURAL SETTING

The Bluebird site is located on the San Lorenzo-San Leandro bayshore. The microclimat of the site is typical of the Mediterranean climate of the Bay Area and is characterized by mild temperatures throughout the year. Temperatures range from the summer mean daily maximum of 75.4 F. to the winter mean daily minimum of 38.4 F. Precipitation occurs primarily during the winter months from October to April.

Before the mid-19th century the area was primarily salt marsh. The dominant plant species were cord grass and pickle weed, forming a dense ground cover. Today, as a result of land fill-

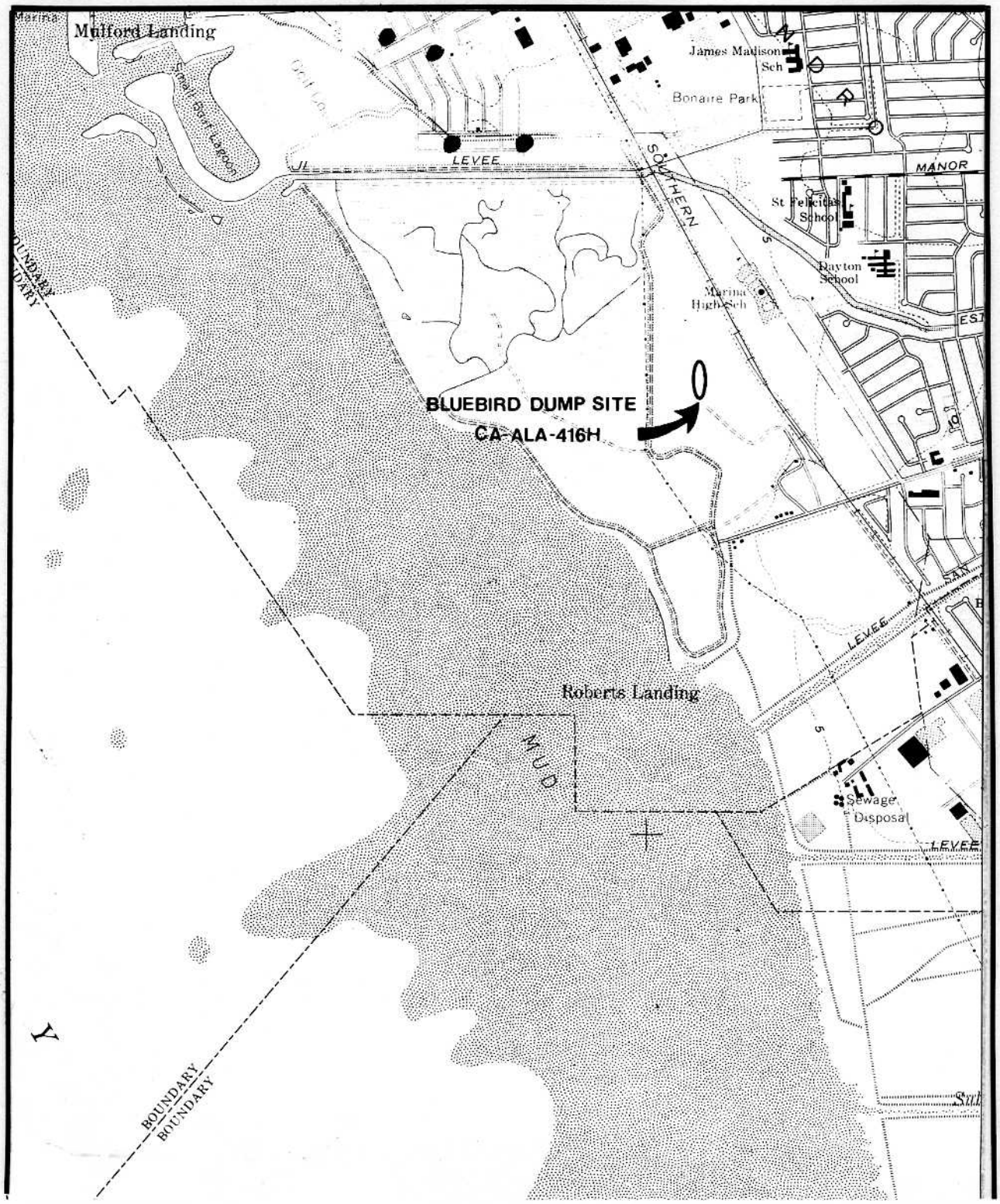


Figure 1 *The location of the Bluebird Site, CA-Ala-416H, on the U.S.G.S. 15' topographic map of 1973.*

ing, the area is raised above the original mudflat level and introduced coastal scrub such as coyote bush and mustard predominate. Areas of tidal marshland still exist close to the waters edge and penetrate inland in places, such as around Robert's slough, leading to the remains of Robert's Landing.

The Bay Area's tidal marshland once hosted an astonishing concentration and variety of wildlife. The Hayward-San Leandro bayshore now harbors fauna composed mostly of birds, and small mammals, such as the salt marsh harvest mouse, least terns, sea gulls, and raptorial birds. The bayshore remains a traditional stopping place for large numbers of migratory birds.

Geologically, the Hayward shoreline overlays the Franciscan Formation which is characterized by interbedded sandstone, siltstone, chert and greenstone. The Franciscan level is covered by Quartenary alluvial deposits ranging from 1000-1300 ft. Eight soil types exist along the shoreline, generally grouped into three main categories consisting of sand, silt and clay.

Even after the native inhabitants were largely displaced during the Spanish and Mexican periods (ca. 1770-1849), the tidal shoreline remained essentially intact. However, after the end of the Gold Rush, circa 1852, the area was settled rapidly by American and European immigrants who began substantial modifications of the natural environment.

Population pressure and commercial enterprises such as Robert's Landing led to dredging and land fill operations. Today, the surface of the project area is composed primarily of imported fill covered with non-native grasses, overlain by industrial and residential debris and dirt roads. The remnant marshland may be said to exist only on the periphery of the landfill area.

ETHNOHISTORICAL BACKGROUND

The Bluebird project area lies within the territory occupied by the Costanoan (or Ohlone) Indians of ethnohistoric times. The Costanoans occupied an area stretching from the Carquinez Straits to the Salinas Valley (see Figure 2). In more specific terms, the Bluebird site lies in an area originally inhabited by the Chochenyo Costanoans; Chochenyo was a local dialect of Costanoan, itself a branch of the Penutian language family (Kroeber 1910: 239-241; Beeler 1961:195; Levy, 1978:485). The Costanoans are believed to have entered the East Bay around 500 A.D. and to have been responsible for a new phase in Bay Area prehistory characterized as the Late Horizon. The Costanoans replaced or assimilated the previous occupants who are believed to have belonged to the Hokan language group. At the time of the first European contact in the late 1700's, about 2000 Chochenyo Costanoans lived in the East Bay from Richmond to Mission San Jose and east to the Livermore Valley (Levy 1978:485).

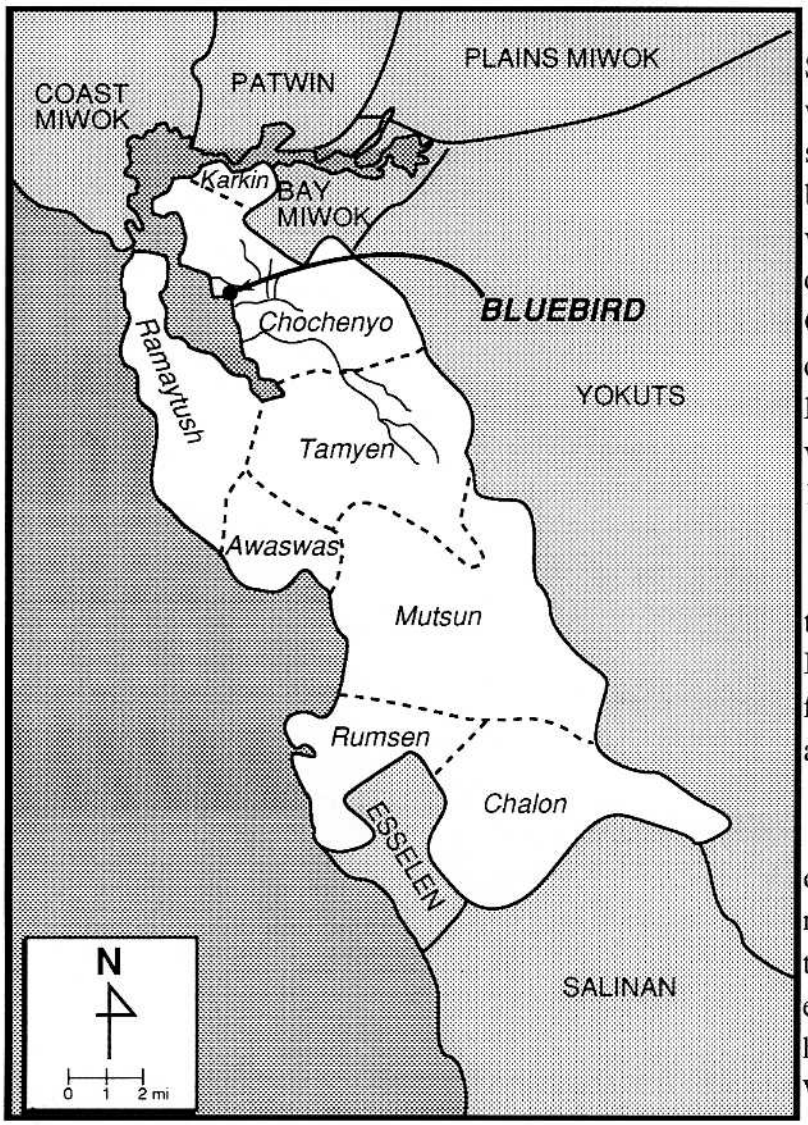


Figure 2 *The Bluebird study area in relation to known Indian boundaries at the time of Spanish contact (after Levy 1978)*

According to the accounts of Spanish explorers, the Costanoans were hunters and gatherers who spent the winter in camps along the bayshore, harvesting the abundant wildlife of the Bay and fresh water creeks flowing into the Bay. The Costanoan villages and their accompanying debris left hundreds of large shell mounds that were still visible around the Bay in the early 1900's (see Figure 3).

During the spring and summer, the tribes moved up into the East Bay hills concentrating on the foodstuffs in the hills such as acorns and deer.

If the early Spanish explorers observed native Indians among the marsh lands that were to become the Bluebird area two centuries later, they made no record of it that has survived to the present day. We are fortunate, however, to possess a number of early descriptions of the inhabitants of San Lorenzo Creek to the south and east of the project area. On one day in March, 1772, the expedition of Lt. Pedro Fages traveled between Coyote Creek at the south end of the Bay to the northern bank of San Lorenzo Creek. Fages' journal entry for that day is as follows:

> After hearing Mass [at camp just north of Milpitas], at about seven o'clock we took a north-northwesterly course over very flat land. On the course of the day's march we crossed five creeks with water, all of them well lined with live oaks and cottonwoods. Over the plain we spied several heathens, shouting out as though from joy at seeing us; we left five villages to our right, each of them having close to six houses of spherical shape, with considerable numbers of heathens living in them. Lying to our left hand were

some villages; we could not make out very well what they were like, or how many houses were in them, since they were some way off. We did have a good view of the estuary, lying to the same side of us, and of a very level country reaching to it, which must have been three or four leagues of very grassy dark soil. Despite having made some eight leagues today, we were unable to follow the estuary all the way down to its mouth; we camped at the far side of the last creek [San Lorenzo Creek], which carries a great deal of water. From the camp we espied a great many heathens of both sexes who seemed, by the signs, to be shifting their village in our direction. Halfway upon the day's march we saw three freshwater lakes of considerable size upon the right of way. The camp here was named San Salvador de Orta (Fages 1972 [1772]:10).

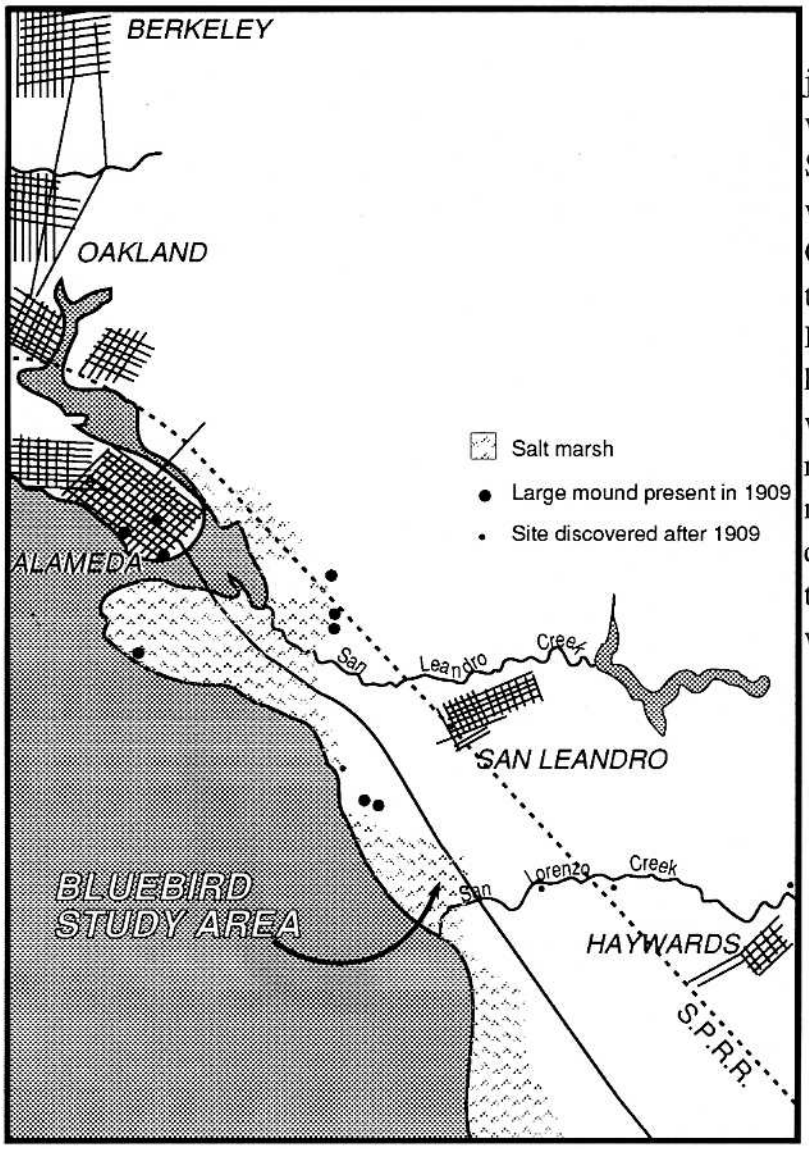


Figure 3 *The location of prehistoric sites that have been recorded in the vicinity of the study area superimposed over Nels Nelson's survey map of 1909.*

To the north of the Bluebird project area, the next watershed that would have attracted the early Spanish chroniclers' attention would have been San Leandro Creek. San Leandro Creek, although perhaps not as lush as San Lorenzo Creek to the south, would have provided the native Ohlones with an attractive environment for resource exploitation and settlement. On April 1, 1776, Padre Pedro Font may have been referring to San Leandro Creek when he wrote:

> We came to an arroyo with little water but with a deep bed grown with cottonwoods, live oaks, laurels, and other trees, crossing it at the foot of the hills by making a detour. Before crossing it, we saw on a slope four bears which, according to all accounts are very plentiful here also, for we saw several Indians badly scarred by bites and scratches of these animals... (Font [1772] quoted in Shaffer 1972: 9).

The first specific mention of San Leandro Creek does not appear in historical accounts until 1797 when Mission San José de Guadalupe was founded near Fremont. The Mission assumed administrative control of all lands extending north from the mission to El Arroyo de San Leandro. The establishment of Mission San Jose marked the beginning of the end for the Costanoan people. Mission baptismal records show that the last Costanoan tribelets ceased to exist by 1810 (Cook, 1957) as a result of disease and displacement. Christianized natives, known as neophytes, began to form settlements during this period. Around 1824, Fray Narcisco Duran drew a map of the Mission San José area which included the neophyte villages, or "rancherías", on the East Bay floodplain. Two of these, designated as "Ranchería de Cann." and "Ranchería de San Lorenzo", appear to have been located in the vicinity of the project area (see Figure 4). The map, however, is only a rough sketch and precise locations are impossible to determine.

In 1821, Mexico became an independent nation, taking control of California from Spain. In 1833, the Missions were secularized and some Indians returned to native lifeways and re-occupied their traditional lands. The area that was to become the Bluebird dump, however,

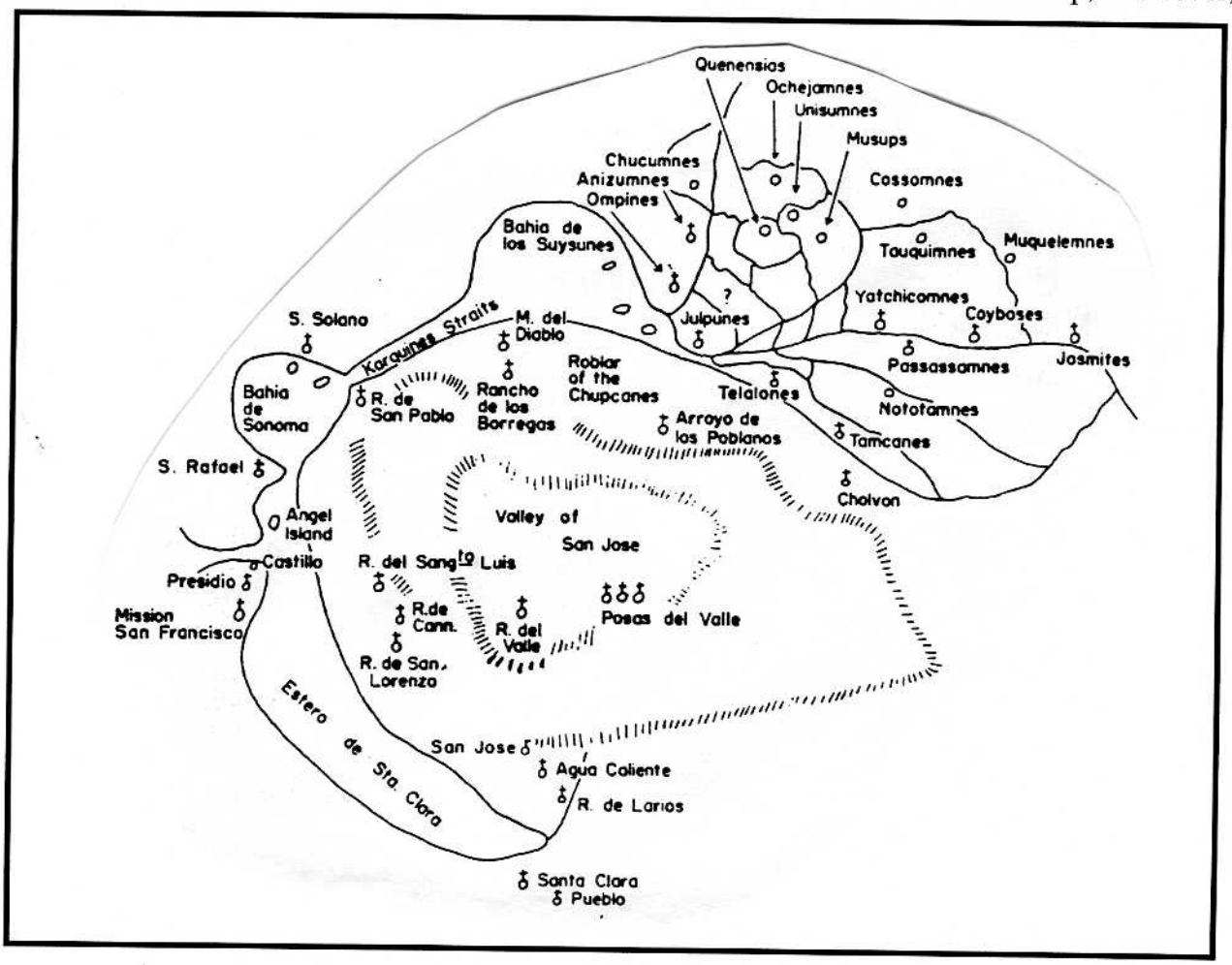


Figure 4 Topographic map of the Mission of San José drawn about 1824 by Fray Narcisco Duran who made an expedition on the Sacramento and San Joaquin Rivers in 1817.

probably was not among these lands. Instead, the post-secularization Indians occupied land to the north of San Lorenzo Creek in the eastern portion of modern San Leandro and northern Hayward. The area between San Leandro Creek and San Lorenzo Creek was surveyed by Nicholas Gray in 1841 and 1842. Gray's map, published in 1855, records several sites of Indian activity to the north of San Lorenzo Creek but nothing north of an "agreed line between Estudillo and the Indians" (see Figure 5). This Indian land constituted an informal reservation or buffer zone between Don Joaquin Estudillo's land grant, El Rancho de San Leandro, and that of Don Guillermo Castro, El Rancho de San Lorenzo. This "reservation" was sufficiently well recognized in 1842 that the Governor of Alto California, Don Juan Alvarado, made provisions that it not be included either in Estudillo's nor Castro's grant. The governor's *expediente* of October 16, 1842, granting Estudillo's rancho, makes clear reference to the the Indian land:

> ...land under the name of San Leandro, bounded on the north by the Arroyo de San Leandro, on the east by the drainage of the springs (Diramaderos), on the land now occupied by the Indians living there; from this point in a straight line to the Arroyo de San Lorenzo without including the lands cultivated by the above mentioned Indians; and on the west by the sea (quoted in Shaffer 1972: 16).

The principal concentration of these ex-mission Indians was in the vicinity of the present Fairmont Hospital in eastern San Leandro. Gray's map of 1855 notes the "Remains of the old Adobe House of Indians" just west of the foothills near a series of springs which rise up there. This site may correspond to the "Ranchería de Cann." illustrated on Duran's map of 1824 and, as such, represent a well established native village in the San Leandro watershed. The occupants of the Fairmont Hospital Ranchería are reported to have survived until an indeterminate date when they were tragically wiped out eating squirrels that had been poisoned by rancheros. The only survivor of the group, Old Umbry, died near San Leandro in March, 1873, at the age of about 60 (Shaffer 1972: 11).

In summary, although recorded sites demonstrate that the San Lorenzo and San Leandro watersheds were occupied by prehistoric groups, the ethnographic literature makes no specific reference to Indian activity in the immediate vicinity of the project area. During the Mission and Mexican periods records show that Indian occupation in the San Leandro area was restricted to land some four miles to the southeast of the project area.

HISTORICAL BACKGROUND

During the Mexican period (1821-1850), large land grants were issued to Hispanic and other European settlers with the goal of establishing a cattle ranching economy. The first Spanish settler in the area was Don Joaquin Estudillo who raised cattle on approximately 7000 acres from 1837 until the Gold Rush. The Hayward-San Leandro area was divided between Estudillo's

grant, El Rancho de San Leandro and Don Guillermo Castro's grant, El Rancho de San Lorenzo. The Indian settlements formed an informal buffer between the grants and occupy the area closest to the present location of the Bluebird site. However, the actual site location was still marshland during the Mexican period.

During the years just before and especially after the Gold Rush of 1849, former miners and other emigrants began to settle in the East Bay. Alameda County was established in 1853 after California attained statehood and San Leandro became the county seat in 1854. The "Indian" lands offered an easy target for squatters and American settlers on the Estudillo and Castro grants, whose numbers steadily increased during the 1850's. So many squatters settled along the banks of San Lorenzo Creek during this time that the area became known as "Squattersville" or "Squattertown"(Wood 1882). An indication of the size of the settlement comes from the Alameda County census of 1852 which lists only three towns: Oakland, Martinez and Squattertown. The squatters assumed that the Mexican grants would be overturned in American courts. As with most Mexican land grants, the Estudillo grant was eventually upheld in court as a extension of the Treaty of Guadalupe Hidalgo. The court decisions, however, were essentially mute as both American squatters and commercial enterprise dominated the area by 1860.

In 1848, Thomas Mulford and a group of American settlers began contract hunting north of the Bluebird project area and in 1852 formed a warehouse and freight company thus creating Mulford's Landing. In 1850, Captain William Roberts established Robert's Landing located just west and south of the Bluebird site. Roberts began the first commercial shipping service between the East Bay and San Francisco in 1852. Early American explorers had noted the presence of large salt pans which were used by the Indians just south of Robert's Landing. Salt, oyster harvesting and mercantile transport formed the basis of Robert's and Mulford's shipping business. Robert's business came to an end in 1860 after Southern Pacific chose Oakland as the western terminus of the transcontinental railroad. Horace Carpentier's Oakland Waterfront Company monopolized transbay shipping soon after the railroad's completion (Wood 1882). By 1879, the San Leandro/ San Lorenzo area had developed to assume the shape recorded on the map opposite (see Figure 6).

Captain Roberts moved into oyster farming, and was again driven out of business by another monopoly, the Shoalwater Oyster Company. Roberts died in 1905 and in August, 1906 H.C. Wybro bought 48 acres of his land for $1920.00. Four months later Wybro sold the parcel to the Pacific High Explosives company which would become the Trojan Powder Company. Production of explosives began in 1907 and continued in the same locale until 1964.

Figure 6 *The Bluebird study area in 1878 (from Thompson and West 1878).*

FIELD RESEARCH

The data presented in this report were recovered in three separate testing programs: 1) Surface Collection , 2) Auger Boring Collection, 3) Excavation Collection. The particulars of each of these testing programs are provided below:

Surface Collection

Upon the discovery of the Bluebird site in November, 1978, its surficial extent was mapped and a surface collection of diagnostic artifacts (e.g., ceramic sherds with makers' marks, glass bottle lips and embossed side wall, etc.) was made. Mapping and surface collection was conducted by a crew from the Institute of Cultural Resources, California State University, California under the direction of E. Breck Parkman. A site datum was chosen near the approximate center of the surface manifestation, on a bare washed out area, slightly above the surrounding plain; it was marked by a 12 inch steel spike. Three compass bearings were taken from the datum point: 1) 80° to the transformer box of the Southern Pacific Railroad, 2) 156° to the Johnson's Landing electrical transmission tower, and 3) 210° to the fourth transmission tower south of the Estudillo Canal.

The initial surfacecollection was made along four swaths each approximately four meters wide and directed along bearings of 0°, 90°, 180° and 270° from the site datum. This survey covered approximately 1500 m^2 (6.9% of the measured surface dispersal) and yielded 196 artifacts (Parkman 1978). Subsequent to the initial survey (i.e., during the 1979 auger boring program, during the 1979 subsurface excavation and during the current analysis project) an additional 393 artifacts were recovered from the surface of the site, bringing the total to 589. Unfortunately, the quadrant provenience of only the first 196 artifacts was recorded; therefore, few valid inferences can be made concerning the distribution patterns of the surface artifacts. In addition, it must be emphasized that no attempt was made to take these collections in a random fashion; field workers were instructed only to collect diagnostic artifacts that might provide chronological, functional, ethnic or demographic information. This procedure, undoubtably, led to a skewing of the collection toward larger and "more interesting" specimens.

Auger Boring Program

Following the recommendation for subsurface testing of the Bluebird dump site contained in the original field reconnaissance report (Sawyer and Watts 1978), a two stage testing program was initiated by the Institute of Cultural Resources in May 1979. The first stage consisted of auger borings to collect subsurface materials, the second stage consisted of laboratory analysis of the data. The primary objectives of the program were to establish the vertical and horizontal limits of the site and to gain information concerning the nature of the subsurface contents.

Auger bores were made at 15 meter intervals along lines of 0°, 45°, 90°, 135°, 180°, 225°,270° and 315° from true north, radiating from the datum point used during the original reconnaissance. Twenty-eight subsurface borings were made using 8 and 10 centimeter soil augers (Miller and Sawyer 1979).

The recovered material consisted of 1070 items weighing a total of 2360.75 grams. The material was classified according to type, and was weighed and counted. Glass and metal were the

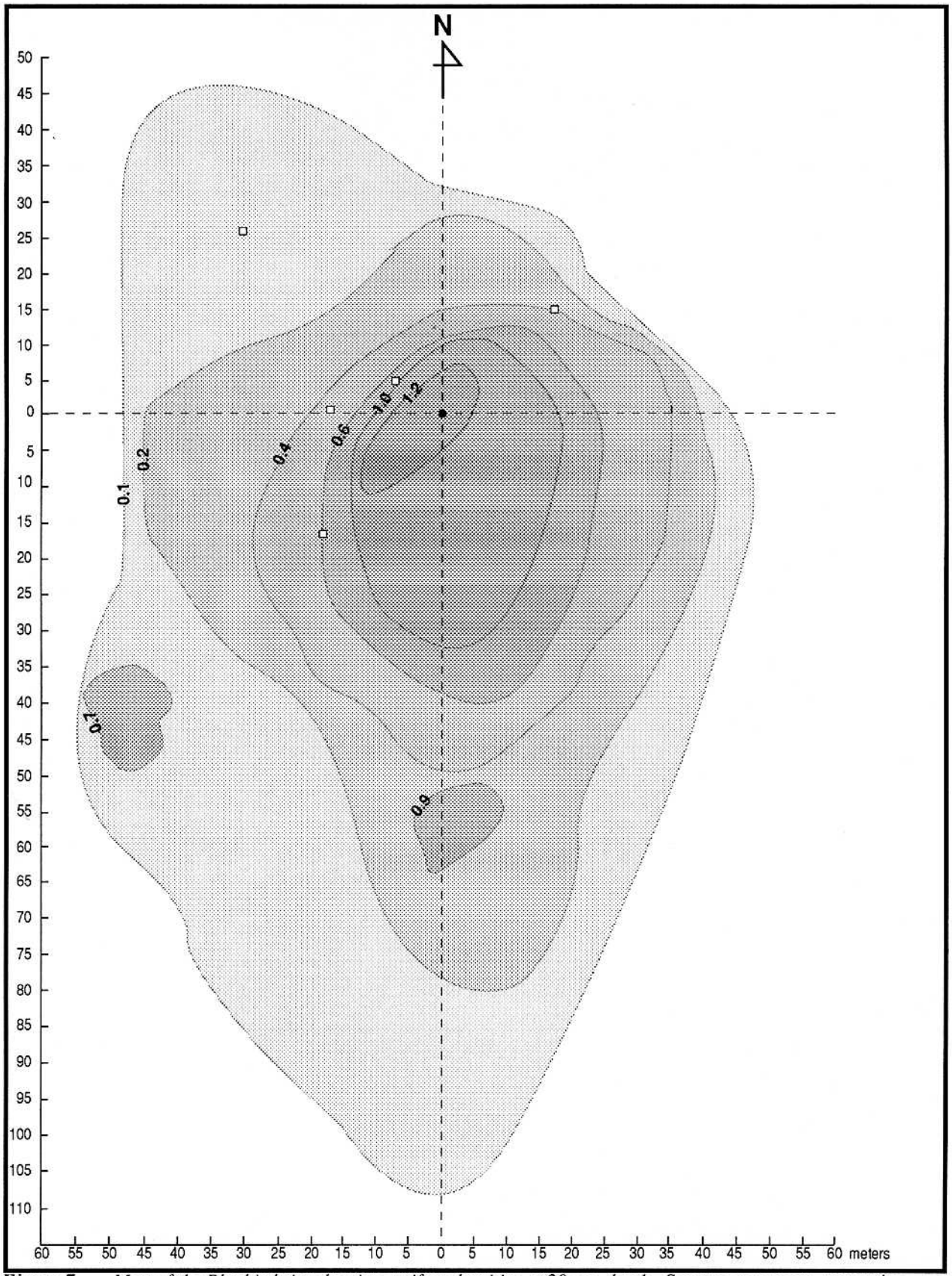


Figure 7 *Map of the Bluebird site showing artifact densities at 20 cm. depth. Squares represent excavation units. Density measured as number of artifacts per cubic decimeter. Data obtained in subsurface auger test (Miller and Sawyer 1979).*

predominant recovered materials. Glass was the most frequent material (37.2% of total by weight and 51.4% of total by number). Due to the shattered condition of the glass, the main functional determination was a division between bottle and window glass. Also noted was the presence of pipettes and glass tubing indicating a possible industrial component.

Metal pieces comprised 21.0% of total by weight and 9.4% by number. A high incidence of reddish oxidized soil was noted during the sifting process which probably resulted from metal decay. It was considered probable, therefore, that the original metal content of the subsurface deposit was greater than the recovered amount of metal.

A stratigraphic analysis of the auger program showed that the highest concentration of artifactual material occurred in the upper 20 cm. of the deposit, the second highest concentration being found at 40 to 50 cm. The artifactual concentration was determined solely on the basis of density. In general, artifactual concentrations did not occur in any one area of the site, except within a 40 meter radius from the datum in the SW quadrant. The maximum depth of the deposit was found to be 80 cm. (in auger hole SW3, Miller and Sawyer 1979: Figure __). On average, sterile soil was encountered at 40.6 cm. From the test results it appears that the deposit runs increasingly deep from East to West and the subsurface deposits lay shifted to the west of the surface debris.

In summary, the augering program verified the site boundaries determined by the original reconnaissance. The site was found to have significant depth. Conclusions about the nature, origin and historic significance were not feasible due to the limited extent of the auger testing. Controlled excavations conducted according to standard archaeological procedures were recommended.

Excavation Program

The primary site datum (Ø-Ø) that had been used in the previous site mapping and auger boring program was utilized for the excavation project. The 12 inch steel spike that had been utilized during the earlier projects was replaced by a 48 inch section of 1/2 inch re-bar. From the primary datum a magnetic North-South meridian line was established by use of transit and rod; it was extended 50 meters to the north and 100 meters to the south. An East-West baseline was then drawn at right angles to the meridian (50 meters to the west and 40 meters to the east) and a five meter by five meter grid superimposed over the site.

Five one meter by one meter units were laid out (see Figure 8) on the basis of information derived from the auger boring program[1]. The units and their rationales are as follows:

1) N25W27 -- this location was chosen because the auger program suggested that this area of the site might contain the deepest deposit and intact stratigraphy; 2) NØW15 -- this location was chosen because the auger testing indicated the possibility of the remains of a subsurface foundation; 3) N4W6 -- this location was chosen because the auger testing indicated a subsurface arti-

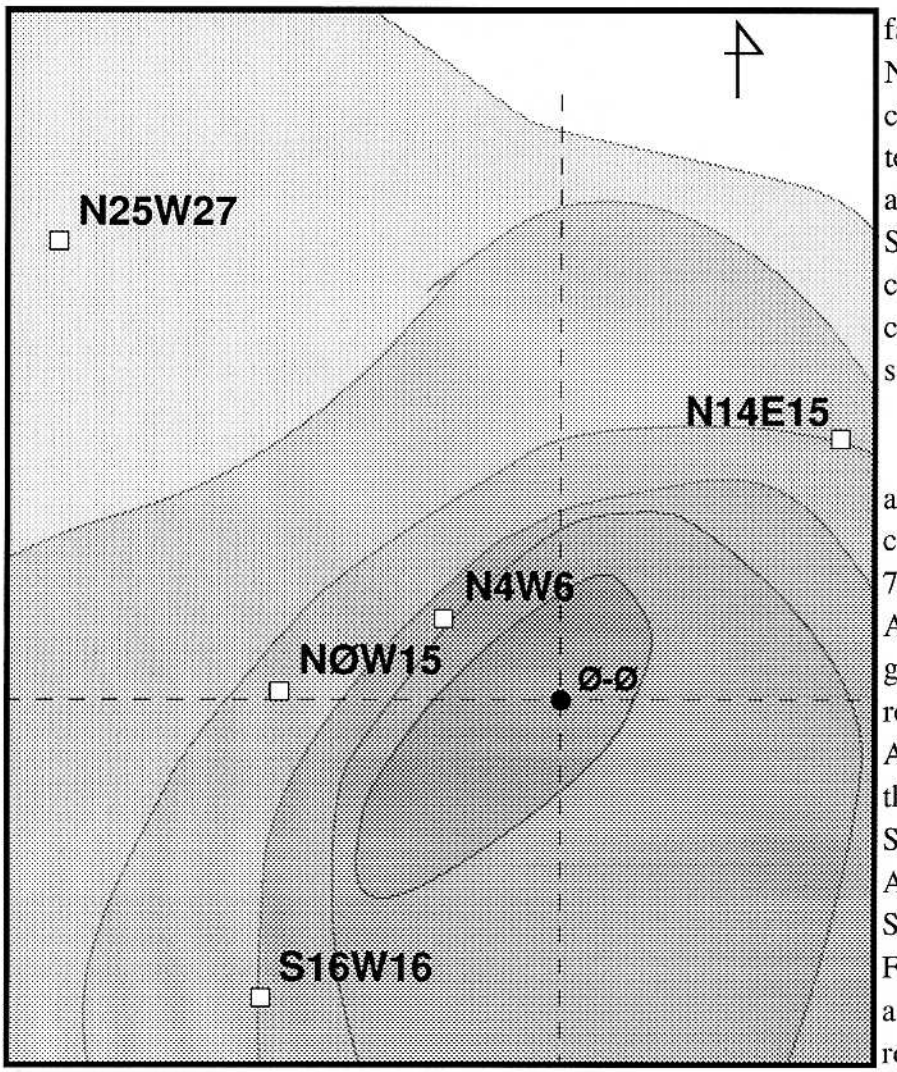


Figure 8 *The location of the excavation units in relation to the site datum and the auger boring densities.*

fact concentration; 4) N14E15 -- this location was chosen because the auger testing indicated a subsurface artifact concentration; 5) S16W16 -- this location was chosen because of a rich concentration of artifacts on the surface.

Excavation was conducted at the Bluebird Site on seven consecutive Saturdays (July 7, July 14, July 21, July 28, August 4, August 11 and August 18, 1979) under the direction of George R. Miller, Assistant Professor of Anthropology and Michael J. Sawyer, M.A. Candidate in Anthropology, California State University, Hayward. Fieldwork was performed by a crew of 14 students enrolled in Anthropology 4250, "Field Archaeology", (Monti Aguirre, Judy Biondich, Patrice Black, Valerie Fahey, Tom Hicks, Karole Kersey, Beverly Lewis, Tony Marks, Anthony Meima, Bob Murray, Bill Oneal, Keith Oshins, Jack Ross and Kerstin Sousa). Paul Gardner, Susan Koch, Breck Parkman and Diane Watts also provided volunteer assistance. A total of 101 person days were invested in fieldwork; 57 person days were invested in preliminary laboratory processing of the excavated artifacts.

Excavation was carried out in 10 cm. arbitrary levels measured from the surface at the highest corner stake. Depending on the hardness of the soil, the density of cultural materials and the presence or absence of features, excavation was conducted with a combination of shovels, handpicks, trowels and smaller hand tools. The soil from all units was dry-screened through 1/4 inch wire mesh and recovered artifactual and ecofactual materials bagged separately for each 10 cm. level. All materials were returned to the Archaeology Laboratory at California State University, Hayward where they were washed and sorted into general categories within each provenience unit.

The Unit Contents

N25W27-- This unit was located in an area where subsurface auger testing had indicated a deep and rich deposit. Slightly below the surface of this unit was found a large (five-six lbs., six-inch by six inch) corroded metal lump covered with a yellowish powder. Much smaller chunks of this material were found throughout the unit (196 items, 14.5 % of the N25W27 assemblage). At a depth of 12 cm., excavation revealed a hard-packed clay surface that extended throughout the unit. It appeared to be the result of heavy equipment compacting the surface. Large frag-

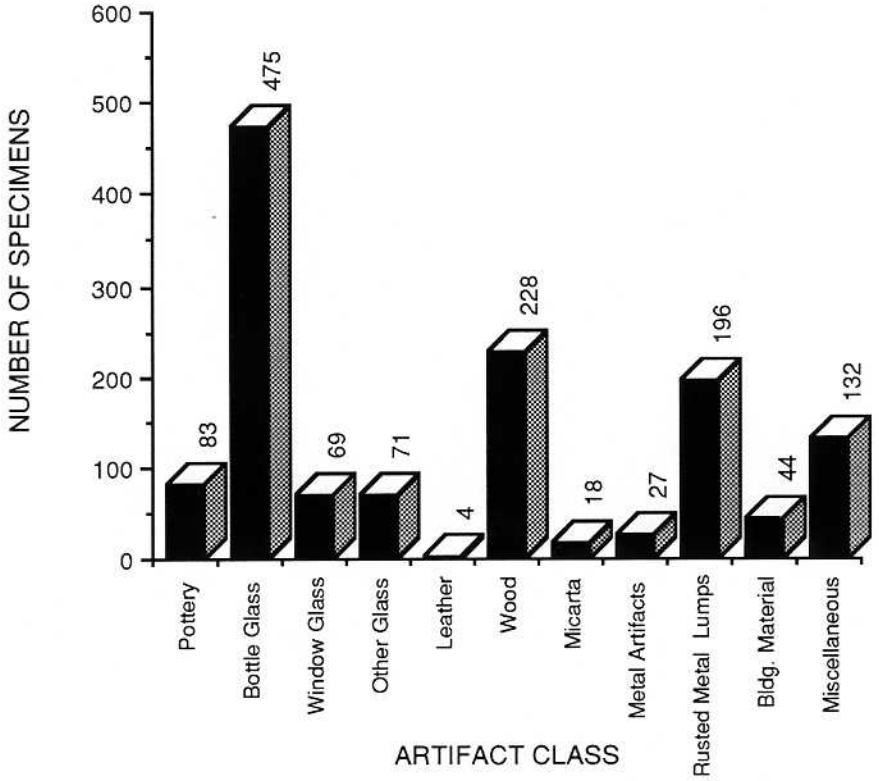


Figure 9 *The artifactual contents of Unit N25W27.*

ments of construction materials, in the form of concrete and wood, were found between 20 and 30 cm. of depth. Sterile soil was not reached in N25W27, but at its lowest level (42 cm.) the artifactual yield of this unit had become quite light.

The artifactual profile of Unit N25W27 (see Figure 9) is characterized by a greater than average density of wood, rusted metal lumps and building materials, and a lower than average density of micarta.

NØW15 -- This unit was located directly to the west of the primary datum in an area where the auger boring program had encountered evidence of a possible subsurface foundation. A 15 cm. in diameter chunk of concrete was encountered in the SE quadrant at a depth of approximately 10 cm. and a 20 cm. x five cm. piece of wood was found in the SW quadrant at the same depth,

but no other signs of a foundation were discovered in this unit. At approximately this same depth, a linear mechanical surface scar was encountered running approximately parallel to the south wall of the pit (see Figure 10). This scar appeared to be the result of large earth moving equipment scraping the site at some time in the past and corresponds to similar evidence found in Units N25W27, described above, and N4W6, described below. No other significant features were noted in this unit. Due to the time limit of the field class, excavation was abandoned in this unit at 40 cm. of depth; sterile soil was not reached.

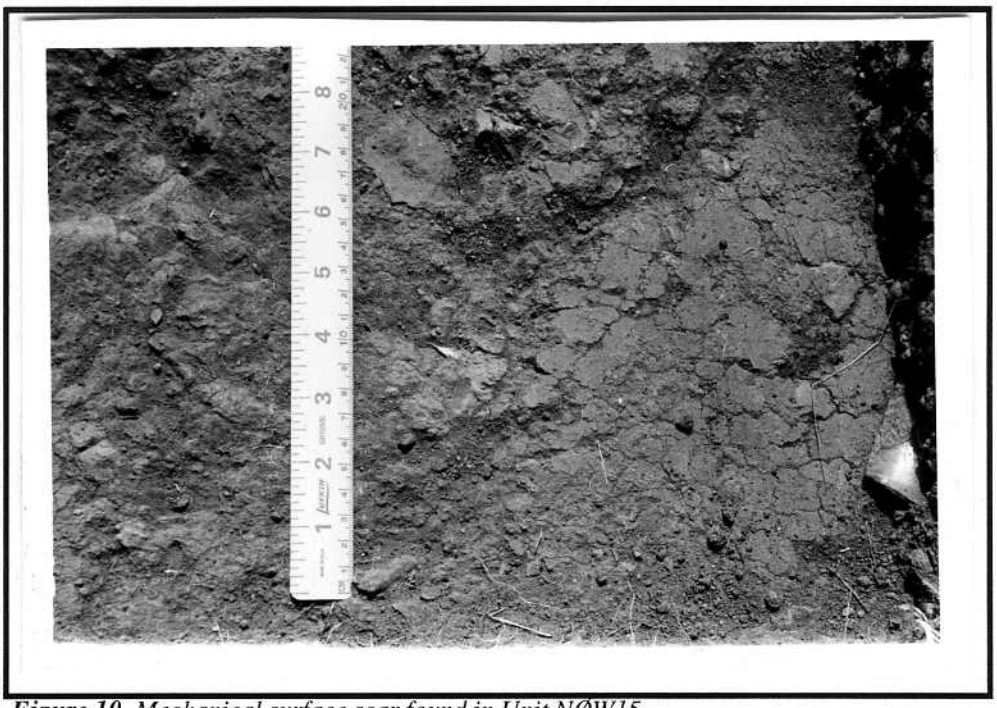


Figure 10 *Mechanical surface scar found in Unit NØW15*

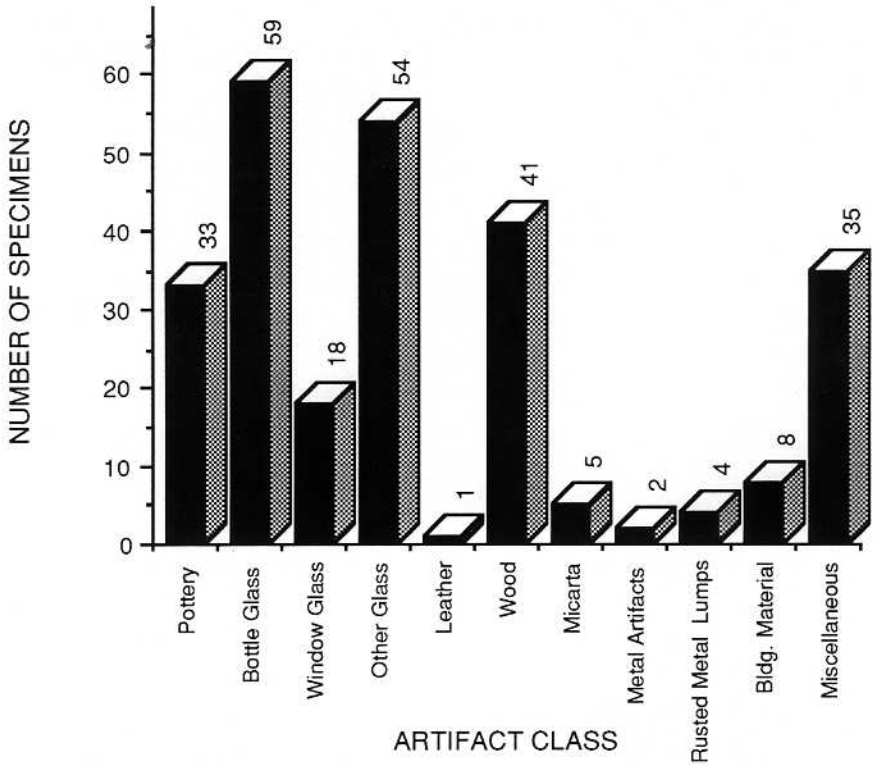


Figure 11 *The artifactual contents of Unit NØW15*

The artifactual contents of NØW15 is summarized in Figure 11. The character of the artifacts from this unit is similar to that encountered in other areas of the site with the exception of a greater than average yield of wood products and non-bottle glass items, such as window glass, glass slag, and laboratory glass.

N4W6 -- This unit, located near the center of the site, yielded a typical inventory of artifacts and one exceptional feature. The feature appeared at a depth of approximately 20 cm. throughout the unit and consisted of an even compaction surface. Artifacts and clods above the compaction surface peeled away from it cleanly, with the exception of several artifacts that were found horizontally crushed into the surface (i.e., no artifacts were found protruding vertically from this surface). The uniform horizontal orientation of artifacts on this feature surface and the random orientation of artifacts and clods above it suggest that the upper 20 cm. of deposit in this area of the site represents loose fill dumped over a surface previously compacted by heavy earth moving equipment. Mechanical striations found at the bottom of a 5 cm. wide depression in the compaction surface further indicate that the machine moved in an east-west direction. The mechanical surface scar encountered at a depth of 10 cm. in NØW15 and the compaction surface found at a depth of 12 cm. in N25W27 corroborates this inference.

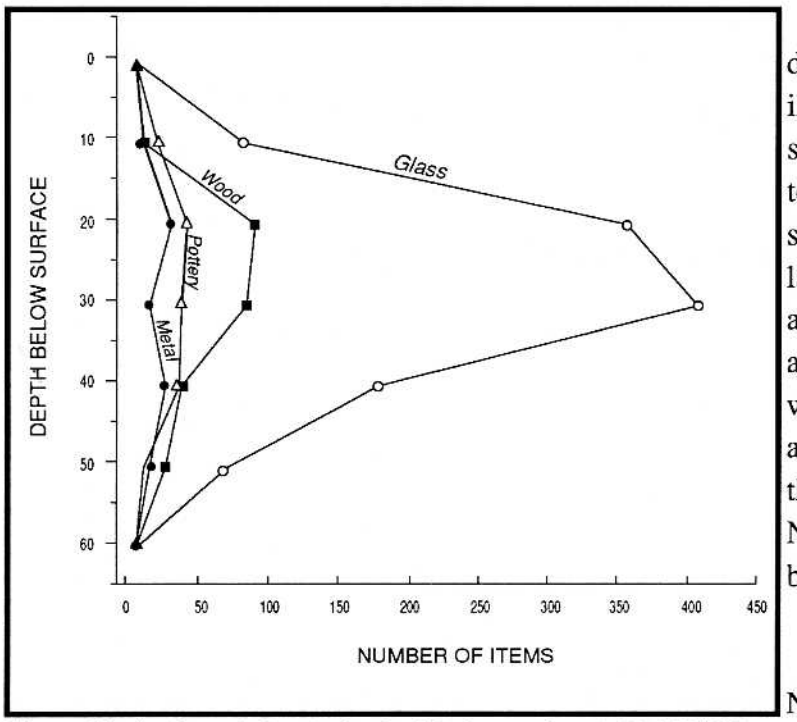


Figure 12 *Artifactual density by depth below surface in Unit N4W6.*

Unit N4W6 was excavated to a depth of 60 cm. at which point sterile shale mixed with fragments of sandstone and calconite was encountered. Immediately above the sterile surface was found a dense blue clay layer mixed with a small number of artifacts. An auger hole was bored another 20 cm. into the sterile soil without yielding any artifacts. Examination of Figure 12 reveals that the bulk of the deposit in Unit N4W6, as in other units, occurred between 20 and 40 cm. of depth.

The overall artifactual content of N4W6 is summarize in Figure 13. The artifact yield from this unit was similar to that observed in other units with the exception of an usually large number of laboratory glass fragments, light bulb fragments and glass slag.

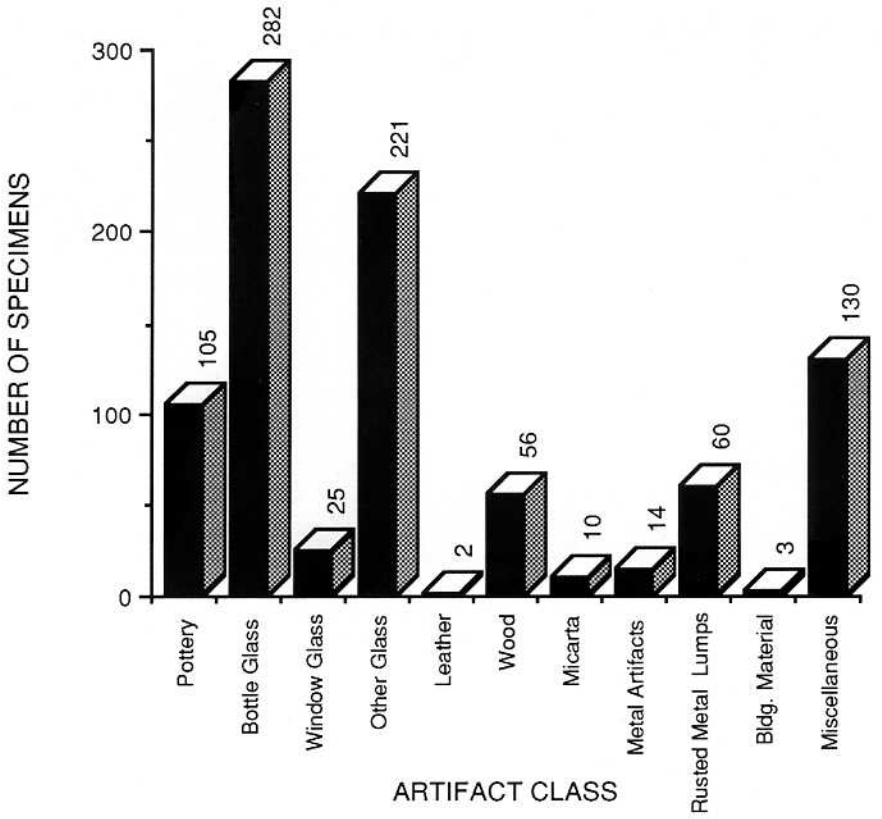


Figure 13 *The artifactual contents of Unit N4W6.*

N14E15 -- Excavation of this unit revealed a number of interesting features and evidence of discrete dumping events (see Figure 14). As opposed to the three units to the west of the datum, Unit N14E15 showed no evidence of an earthmoving equipment compaction surface. Instead, the upper 15 to 20 cm. of the deposit consists of dark lumpy clay mixed with large quantities of

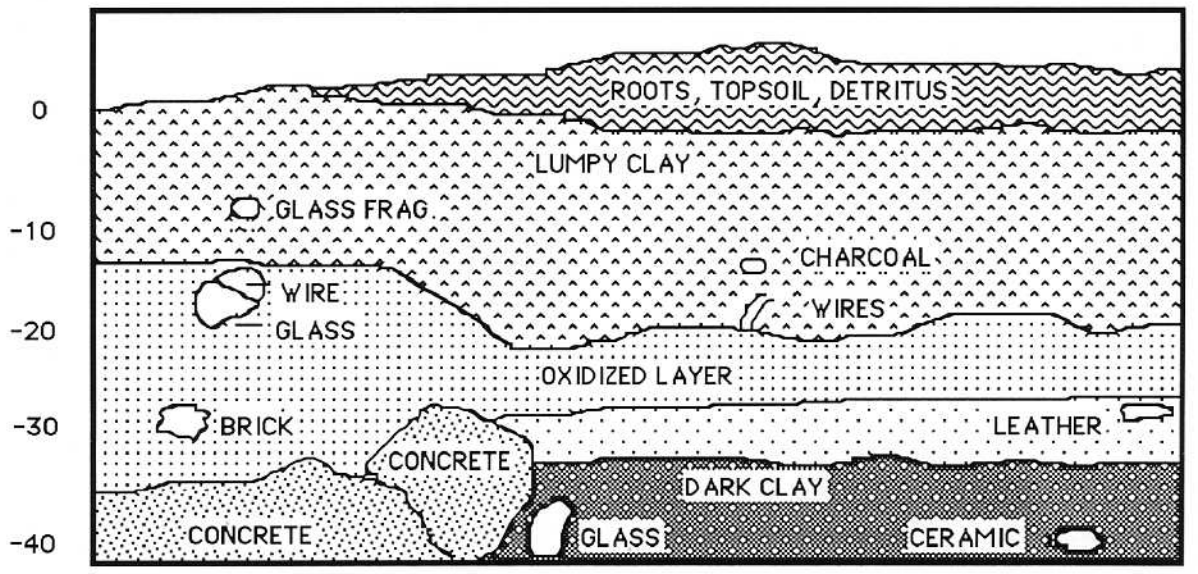


Figure 14 *Stratigraphic profile of the east wall of Unit N14E15.*

glass bottle and jar fragments. Beneath the clay layer is a five to 15 cm. thick layer of reddish oxidized clay. This layer was characterized by a large number of leather fragments, some of which are recognizable shoe parts and others which are unidentifiable. These leather items occurred within a definite lens and appear to represent a distinct dumping event. Also mixed in this oxidized layer was an unusually heavy concentration of thin micarta (phenolic fiberboard) fragments. These fragments were found in various sizes but most appear to be parts of pressed stencils or early radio circuit boards.

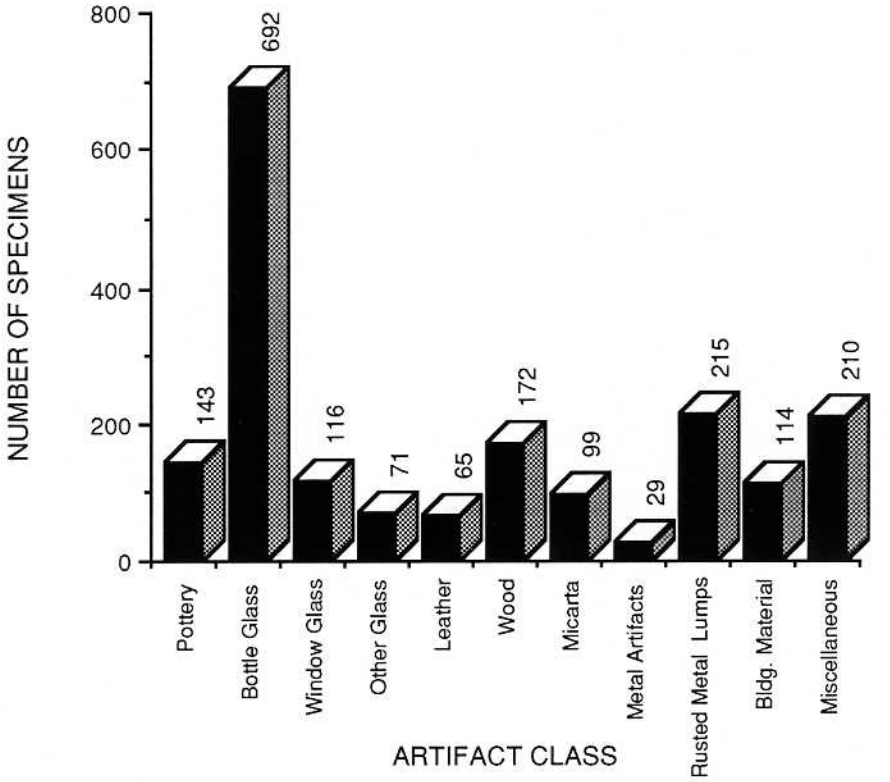


Figure 15 *The artifactual contents of Unit N14E15*

S16W16 -- This unit was chosen because the auger boring testing indicated a rich concentration of artifacts in this area. No significant features were recorded in this unit, but the excavation yielded an extremely large number of ceramics (mostly undecorated white ironstone) and quantities of bottle and other glass (see Figure 16). Sterile soil was encountered in Unit S16W16 at 53 to 56 cm. of depth and an auger hole bored in the center of the pit confirmed that no further artifacts lay below.

The Character of the Deposit

In general, the subsurface deposit at Bluebird is characterized by dense, hard-packed clay soil mixed with small rocks and a large quantity of badly fragmented artifacts. Many areas of the soil exhibit pockets or lenses of diffuse rust and occasional concentrations of oxidized ferric metal,

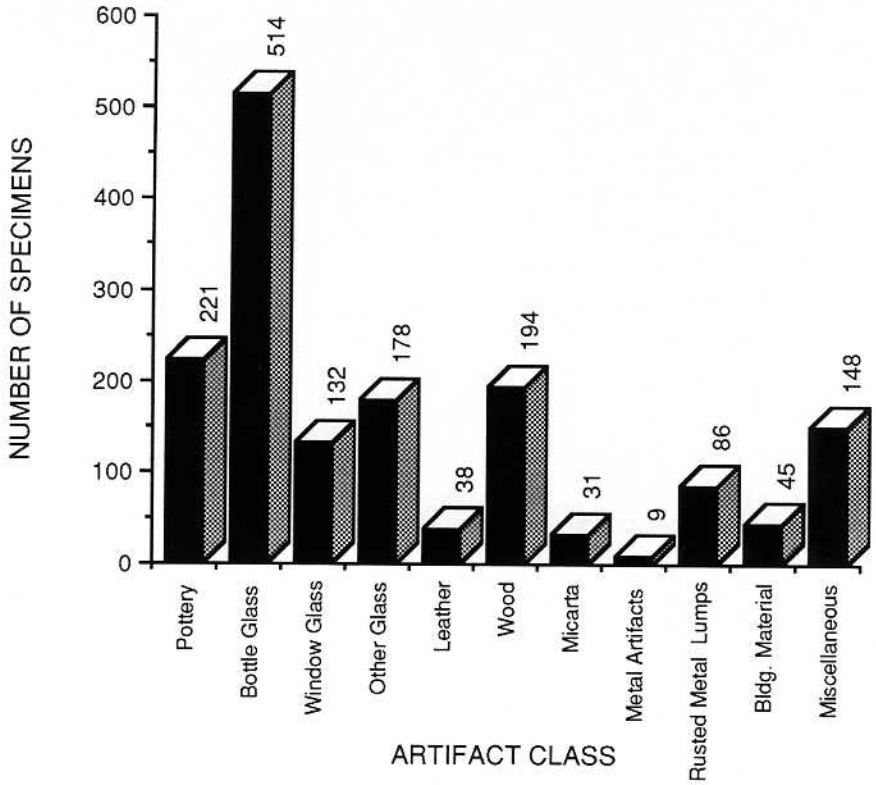


Figure 16 *The artifactual contents of Unit S16W16.*

sometimes coated with a yellowish powder. The large quantity and ubiquity of decomposing iron in the soil was demonstrated on August 11, 1979 by running a magnet through the back dirt of each of the excavation units. Each of the five texts resulted in an immediate accumulation of iron filings on the magnet. The nature of the iron lumps was of especial interest to one student who as an engineer at the Lawrence Livermore Laboratory was able to subject the materials to specialized analysis at that facility. The findings suggest that sulphate fertilizers and/or steel mill waste residues may have been involved in the formation of the Bluebird site (O'Neal 1979). These findings are presented in their entirety as Appendix 5 of this report.

A surprisingly small quantity of animal bone was found in the Bluebird excavation. The relative paucity of faunal remains in the deposit may be related to the chemical nature of the soil rather than to the functional nature of the dump.

In addition to domestic items such as ceramic dinnerware, glass bottles, light bulb fragments, metal forks and spoons, etc., the Bluebird assemblage exhibits a remarkably large number of construction materials and industrial items. The construction materials consist of such things as chunks of concrete, asphalt, tar, bricks, window glass and the decayed fragments of wooden timbers. The industrial artifacts are represented by lumps of glass slag, the aforementioned lumps of

oxidized metal, large quantities of leather, micarta, fragments of laboratory glass such as pipettes, battery cores, etc.

Test excavations at Bluebird yielded evidence demonstrating that the formation of the deposit had not been accretionary and gradualistic. Instead, several signs such as the surface scar in NØW15 and the compaction layer in N4W6 and N27W25 suggest that heavy earth moving equipment repeatedly moved across the surface of the site. The combined stratigraphy of the five excavated units indicates that such large machinery was used to dump materials, level it out over a wide area and compact it. The high degree of fragmentation among the Bluebird artifacts is a further indication of this interpretation. The average size of ceramic and glass sherds at all levels was very small. It is unlikely that such fragmentation could have been achieved by any other than mechanical means. Finally, evidence derived from the analysis of the Bluebird glass bottles suggests that the Bluebird deposit is the product of stratigraphic reversal. For example, 18.3% (n = 17) of the identifiable bottle lips encountered on the surface of the site were of the hand-turned applied lip variety indicating that they were produced before 1940, and probably before 1927 (see bottle chronology section, pp. 22-25). In contrast, only 2.2% (n = 2) of the bottle lips found in the lower levels of the site were of the applied lip type. This finding, in combination with similar purple glass evidence (see p. 23), suggests that the Bluebird site represents a secondary deposit formed by first dumping upper levels of a primary deposit on the sterile Bluebird surface and later dumping the deepest and oldest portion of the same primary deposit on the accumulated Bluebird mound. These inferences, based on the test excavations, were later corroborated by a series of other evidence, including aerial photographs and oral interviews. This evidence is discussed on pages 42 to 46.

THE ARTIFACTS

The Bluebird surface collection and excavation yielded a total of 1686 catalogued specimens representing 6266 individual items. As illustrated in Figure 17 nearly fifty percent of the materials recovered from the site were glass. The bulk of the glass consisted of badly fragmented portions of bottles, as well as fragments of window pane, light bulbs, laboratory glass and glass slag. Building materials such as wood, concrete, asphalt, etc., were also common, followed by large quantitites of ceramics. In general, the excavated artifacts appeared in fragments so small as to be undiagnostic. Both diagnostic and undiagnost-

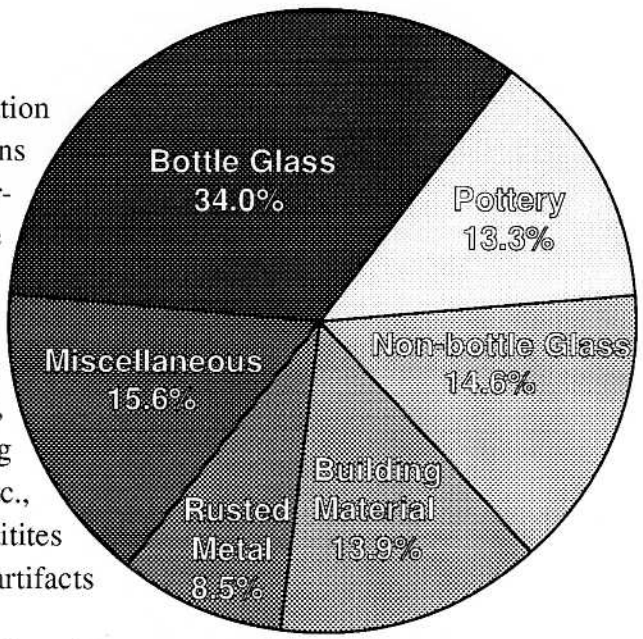


Figure 17 *The relative abuundance of major artifact classes encountered at the Bluebird site.*

ic artifacts were catalogued according to the system detailed in Appendix 4 at the end of this report. In addition, an inventory of all 1686 catalogued artifacts is provided in Appendix 3.

Chronological Indicators

In an attempt to date the period of deposition of the Bluebird site, special attention was paid to all artifacts that possessed information as to year(s) of manufacture and/or use. The two most valuable artifact categories in this regard were ceramic manufacturers' marks and the technology and embossed lettering found on glass bottles.

Ceramic Makers' Marks -- The most accurate and abundant chronological indicators encountered in the Bluebird assemblage were manufactures' marks or back stamps commonly found on the underside of plates, bowls and saucers. Sixty-five ceramic fragments were found at Bluebird which have discernable makers' marks. The manufacture/use period indicated by the Bluebird makers' marks ranges from 1896 to 1960 (see Appendix 1). The broad time frame suggested by these dates, however, is deceptive. Some manufactures changed their mark every few years, while others maintained the same mark for several generations; for example, Homer Laughlin China Co., a manufacturer that is frequently represented at Bluebird, used the same basic mark from 1900 to 1960. As shown below in Figure 18, the inclusion of such "broad" makers' marks dilutes the chronological precision of "narrow" makers' marks such as the Charles Allerton mark used only between 1903 and 1912.

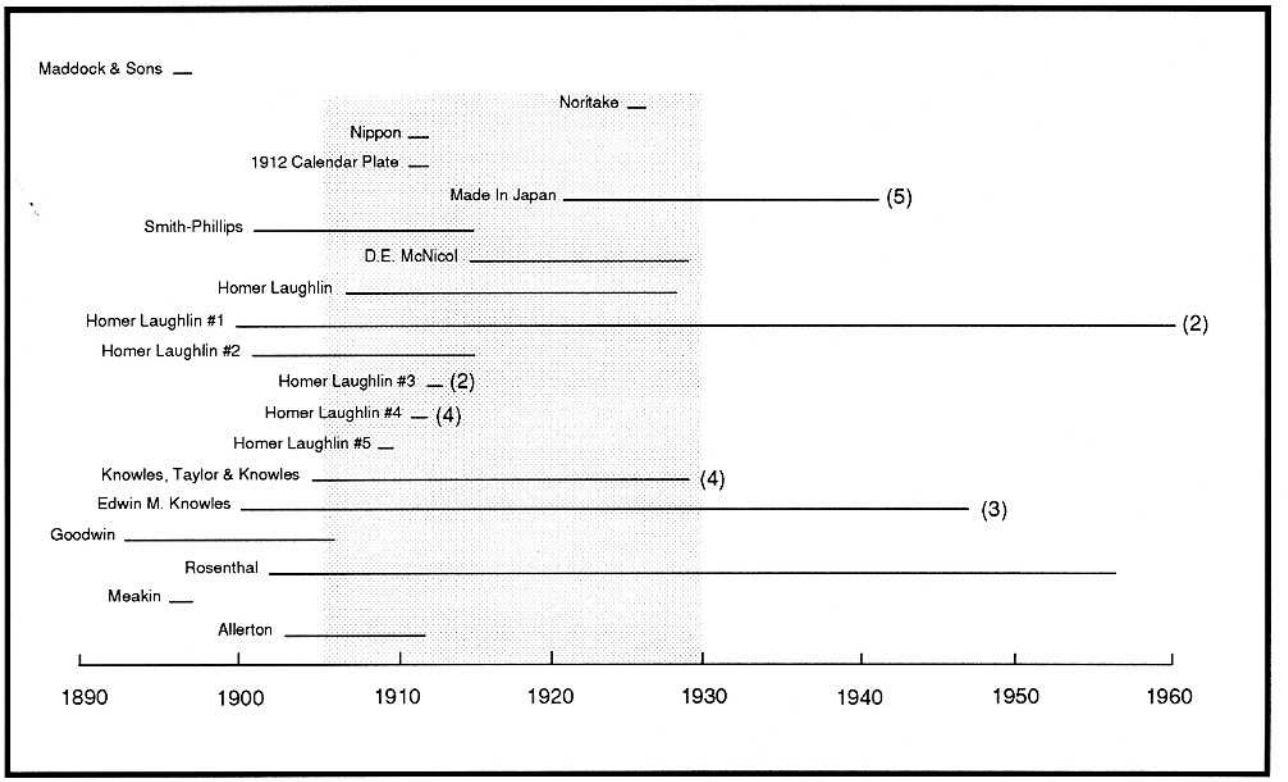


Figure 18 *Chronological distribution and frequency of ceramic manufacture dates at the Bluebird site (gray area indicates probable use period of the site, based on ceramic manufactures' marks).*

In order to avoid some of the ambiguity caused by this problem, we have utilized a modified form of the Mean Ceramic Dating Formula developed by Stanley South (1971). According to South, who worked with colonial sites in the southeastern United States, the mean ceramic date provides a remarkable degree of similarity to the historic median occupation date of the sites on which it has been tested. In nineteenth century sites in California this formula has been utilized with similar success. The mean ceramic date, which is the result of calculating the frequency of median manufacture dates is defined as follows:

$$\text{M.C.D.} = \frac{\sum_{n=1} xf}{\sum_{n=1} f}$$

where x = the median dates for the manufacture of each maker's mark,

f = the frequency of each maker's mark, and

n = the number of makers' marks.

The mean ceramic date for the Bluebird site was calculated to be 1916, a date which falls at the approximate mid-point of the estimated use period illustrated above in Figure 18 and correlates nicely with other available chronological indicators.

An inventory of the individual makers' marks, their dates of use and their Bluebird provenience is provided in Appendix 1, however, a brief summary revealing patterns of provenience and frequency of manufacturers' marks will be useful here. There are sixty-five ceramic fragments which have discernable makers' marks. Out of these sixty-five, all but ten were found at the surface level. From the ten found at other levels we were able to establish dates for two of them: the D.E. McNicol fragment (1915-29), unit 4 at level 2 and a Homer Laughlin fragment (1912), unit 5 at level 3. No ceramic pieces with maker's marks were found at level six in any of the units. The total number of ceramic sherds found in these lower levels, however, is quite small (n = 93).

In addition to the makers' marks evidence presented above, a unique fragment of pottery collected from the surface provides an unequivocal date as to its year of primary use. Specimen No. 0-0-431 is a fragment of a commemorative calendar plate showing the October and November pages of the 1912 calendar (see Figure 19).

Such calendar plates were popular during the first third of the twentieth century. The D.E. McNicol Pottery Company of East Liverpool, Ohio specialized in the production of calendar and souvenir plates (Gates and Omerod 1982:185) and the specimen may have come from that company.

Glass Bottles -- Bottles also provide an indication of a site's chronology. Two factors are involved in dating bottles: 1) Bottle and glass production techniques, and 2) embossed makers' marks. The bottles found at the Bluebird site, as indicated by their method of manufacture, come

Figure 19 *Fragment of 1912 commemorative calendar plate.*

from an era when glass-making technology was undergoing a vast transformation. The date 1904 represents a watershed in bottle manufacture. In 1899, Michael Owens invented the first automatic bottle machine. By 1904, the machine had been perfected and full-scale production of machine bottles began. Prior to this invention bottles were produced by hand-blowing or by the use of semi-automatic mold machines. Machine-made bottles can be identified by the presence of a mold seam which runs up the side of the bottle and clear through the lip. Hand blown bottles have no mold seams. Use of semi-automatic molds produced a seam that ran up the body but ended below the lip. In hand blown and semi-automatic bottles, the lip of the bottle has to be applied in a separate step and is characterized by a smooth non-seamed appearance. Nineteen applied lip bottles can be identified in the Bluebird artifact assemblage. Only one item (0-0-564) lacks any mold seams and can be classified as hand-blown. The other 18 have mold seams on the necks or bodies and were produced by the semi-automatic moldand machine-made process.

Until 1917 only large bottles were produced by machine. After this date all sizes and shapes were machine produced, and other types of machines began competition with Owens. By 1924-25, 90% of glass containers were being produced by automatic machines (Busch 1987: 73). According to Miller and Sulivan (1984: 94), however, some limited production bottle types, such as pharmaceuticals and cosmetics, continued to be made with applied lips "into the 1930's".

The earliest date range evident in the bottle and glass inventory is derived from the presence of "purple" glass (n=21). The silca-based sand used to produce glass invariably contains impurities of iron. The iron impurities introduce an aqua tint to the otherwise clear glass. From antiquity glass makers have tried to eliminate the aqua tint by a variety of means. From 1880 to 1914 manganese was used by American glass manufacturers to produce clear glass (Kendrick 1971: 54-55). When exposed to sunlight the manganese in the glass reacts chemically and acquires a purple hue. In 1914, the government commandeered manganese supplies for the war effort. At

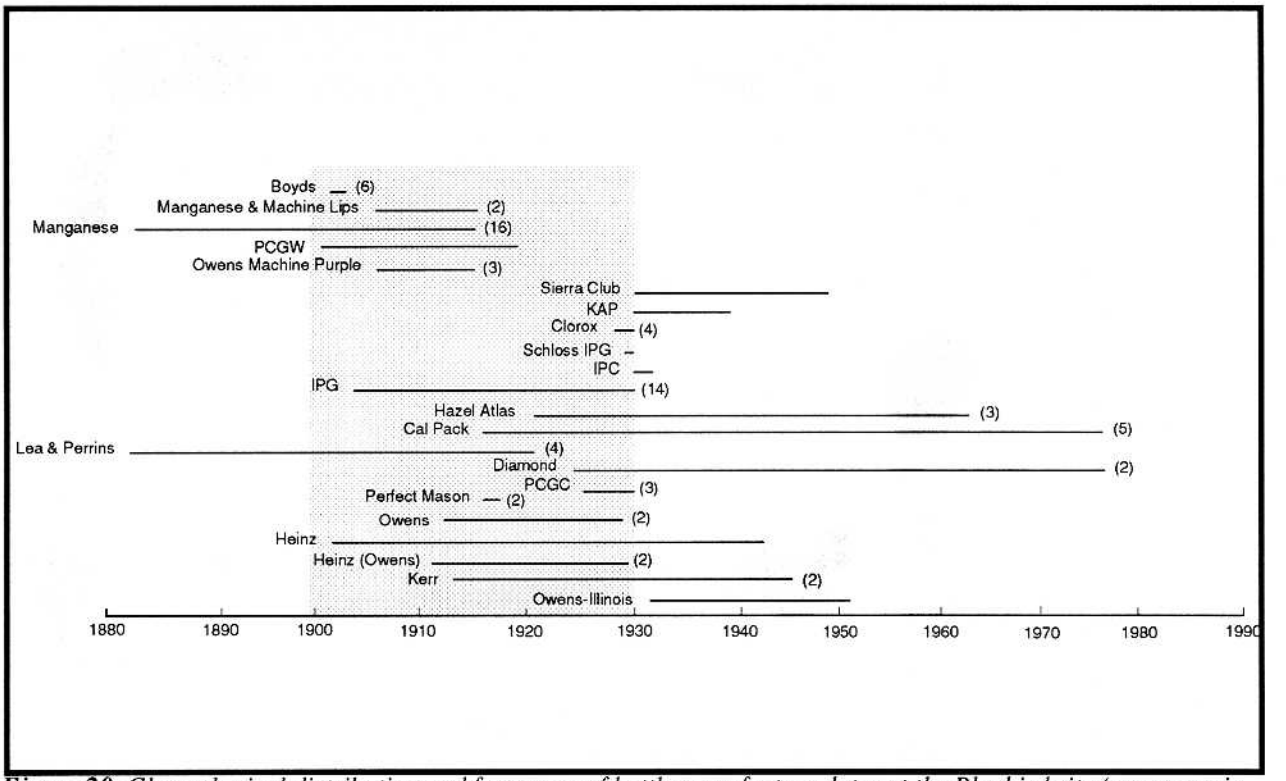


Figure 20 *Chronological distribution and frequency of bottle manufacture dates at the Bluebird site (gray area in dicates probable use period of the site, based on bottle manufactures' marks).*

Bluebird purple glass was found on the surface as well as in the lower levels of the excavation. The presence of these photochemically reactive glass fragments in the buried Bluebird deposit suggests that they lay on the surface at some period in the past. Surface exposure may have occurred at Bluebird itself or at some other site before being dumped at Bluebird.

Another indicator of bottle chronology is the maker's mark or the presence of embossed labels. The majority of makers' marks come from companies producing bottles between 1900-1950. Embossed labels were primarily used prior to the full implementation of machine bottles; thus, bottles exhibiting an embossed label can be assumed to have been manufactured prior to 1940.

Makers' marks found on Bluebird bottle bases cover a time period of nearly 100 years. The earliest mark is the "JDS" label on Lea and Perrins bottle fragments. Lea and Perrins Worchestershire Sauce was first imported into the U.S. by John Duncan and Sons in 1880. At the other end of the time spectrum are bottles embossed with the diamond logo of the Diamond Glass Company. Diamond Glass has used the same mark from 1924 until the present. 44 of 69 identifiable makers' marks from Bluebird come from the era between 1900-52; 58% of the marks (n=40) date between 1880 and 1932.

The vast majority of bottles with embossed lettering come from the period between 1869 and

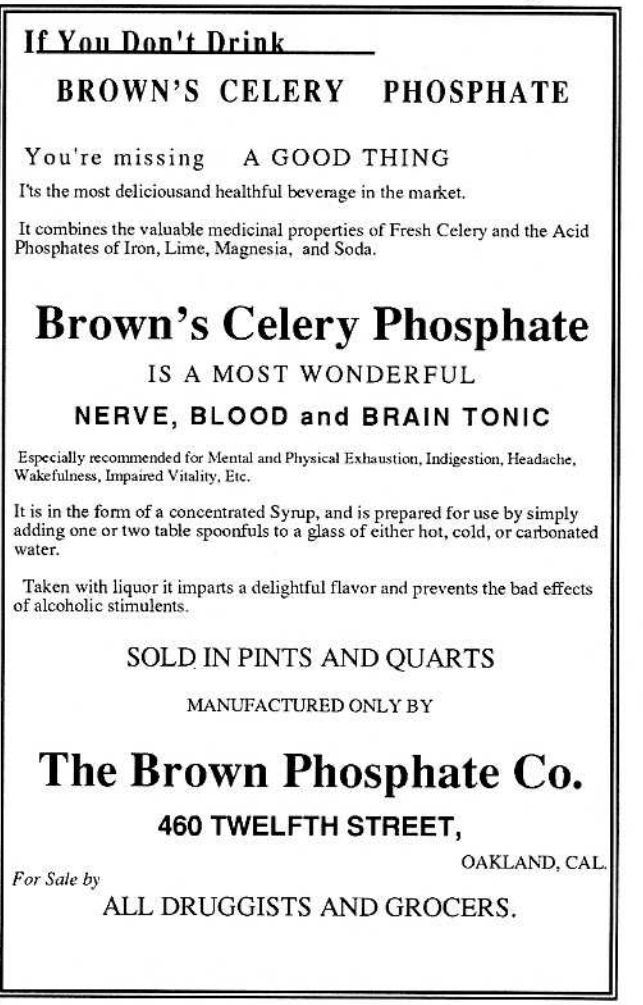
1933 (Kendrick 1971: 65). Embossed lettering can occur as makers' marks, or labels and slogans on bottle sides. The advent of machine-made bottles also led to the use of paper labels. Paper labels were more colorful, more informative, and above all, were cheaper to produce than embossing. Unfortunately, paper labels do not preserve well in archaeological sites and their rise in popularity represents a significant reduction in the number of cultural and chronological bottle criteria available to the historical archaeologist. Appendix 2, Embossed Glass Bottle Inventory, provides a complete list of the glass bottle manufacturers represented at Bluebird. Figure 20, shown opposite, provides a graphic representation of the chronological information furnished by the Bluebird bottles.

Several caveats must be added about dating bottles and glass. The reuse of glass containers, as evidenced by the second hand glass industry, was common in the early part of the 20th century and continued until 1930-40. Storage and transportation delays, also may affect the actual use and disposal of glass containers. Hence, the documented manufacture date of a particular logo or embossed label must be viewed only as a *terminus post quem*; the actual date of use and disposal of the bottle may post-date the manufacture date by several years.

Stanley South's Mean Ceramic Date formula was applied to the bottle and glass inventories and resulted in a median date of 1915. Correspondingly, Figure 20 shows the primary overlap in the dates of makers' marks occurs between 1900-32. Thus, despite the qualifications mentioned above, we may safely conclude that the majority of indentifiable glass and bottle items at the Bluebird site were manufactured, and presumably deposited in the first 30 years of the 20th century. This date range of glass artifacts is consistent with the ceramic and miscellaneous artifact categories.

***Brown Phosphate Bottle Cap* (pre-1914)**

A metal bottle cap measuring three cm. in diameter was recovered from unit N14E15, level 3. Embossed in circular form around the top of the cap are the words "Brown Phosphate Oakland". In the center is an embossed celery stock. Oakland city directories at the Oakland Public Library list a Brown Phosphate Co. that operated from 1896-


If You Don't Drink

BROWN'S CELERY PHOSPHATE

You're missing A GOOD THING

I'ts the most deliciousand healthful beverage in the market.

It combines the valuable medicinal properties of Fresh Celery and the Acid Phosphates of Iron, Lime, Magnesia, and Soda.

Brown's Celery Phosphate

IS A MOST WONDERFUL

NERVE, BLOOD and BRAIN TONIC

Especially recommended for Mental and Physical Exhaustion, Indigestion, Headache, Wakefulness, Impaired Vitality, Etc.

It is in the form of a concentrated Syrup, and is prepared for use by simply adding one or two table spoonfuls to a glass of either hot, cold, or carbonated water.

Taken with liquor it imparts a delightful flavor and prevents the bad effects of alcoholic stimulents.

SOLD IN PINTS AND QUARTS

MANUFACTURED ONLY BY

The Brown Phosphate Co.

460 TWELFTH STREET,

OAKLAND, CAL.

For Sale by

ALL DRUGGISTS AND GROCERS.

Figure 21 *Brown Phosphate Co. advertisement from the 1914 Oakland City Directory.*

The company was run by Louis P. Shelby (president) and David F. Shelby (treasurer). The company had several offices in downtown Oakland during its existence. In 1897 they were located at 460 12th Street, moved to 1057 Washington Street and finally 442 11th Street. There is no listing for the company past 1914; it is possible that the closure was related to the onset of World War I. The 1914 Brown Phosphate date provides an additional and consistent chronological fix on the formation of the Bluebird dump.

***Motor Vehicle Registration Tag* (1915)** -- A hexagonal brass plate measuring five cm. in diameter and bearing the stamped words "Register Motor Vehicle No. 1289 1915 State of California" was found during the surface collection (see Figure 22). Attempts to research this item with the California Department of Motor Vehicles in Sacramento were completely unsuccessful. Fortunately, however, John Witt, a Concord resident known among local old car buffs as "The License Plate Man", was able to identify it as a "dashboard disk" of the type that was required to be mounted on the wooden dashboards of cars prior to 1916. Mr. Witt stated that the dashboard disk originated in 1907 and prior to 1914 was used exclusively to identify vehicles registered in California. During 1914 and 1915, the disk and two license plates, one for the front and one for the rear, were issued by the State of California. Following 1915, only the standard front and rear license plates were issued. Mr. Witt further stated that the low serial number (1289) on the Bluebird specimen indicates that this disk was of a very early issue as there were approximately 200,000 of these dashboard disks distributed between 1907 and 1915. Mr. Witt's final comment was that although this plate appears to be brass, it was originally plated with nickel, which has obviously worn off over the years.

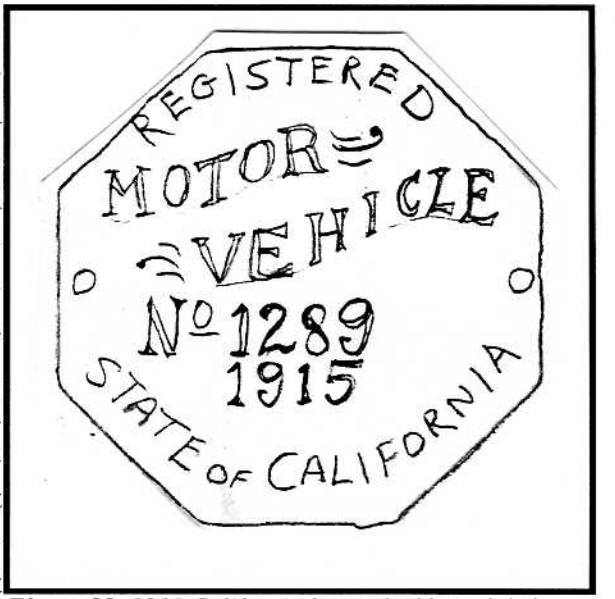


Figure 22 *1915 California brass dashboard disk.*

CERAMICS AND PATTERNS OF CONSUMPTION

A total of 809 fragments of pottery were encountered in the Bluebird surface collection and excavations. All specimens were fragmentary; no complete vessels were found. The reconstructed shapes of these vessels represent the spectrum of common table vessels as well as several larger domestic crockery shapes (see Figure 23).

Among the specimens that were large enough to identify, the standard tableware shapes (plates, bowls, cups and saucers) constitute the bulk of the assemblage (n = 205, 90.3%). Dinner plates appear to be represented in disproportionate numbers (40.0%) but this may be largely a product of the intentional collection of ceramic bases that exhibit makers' marks information.

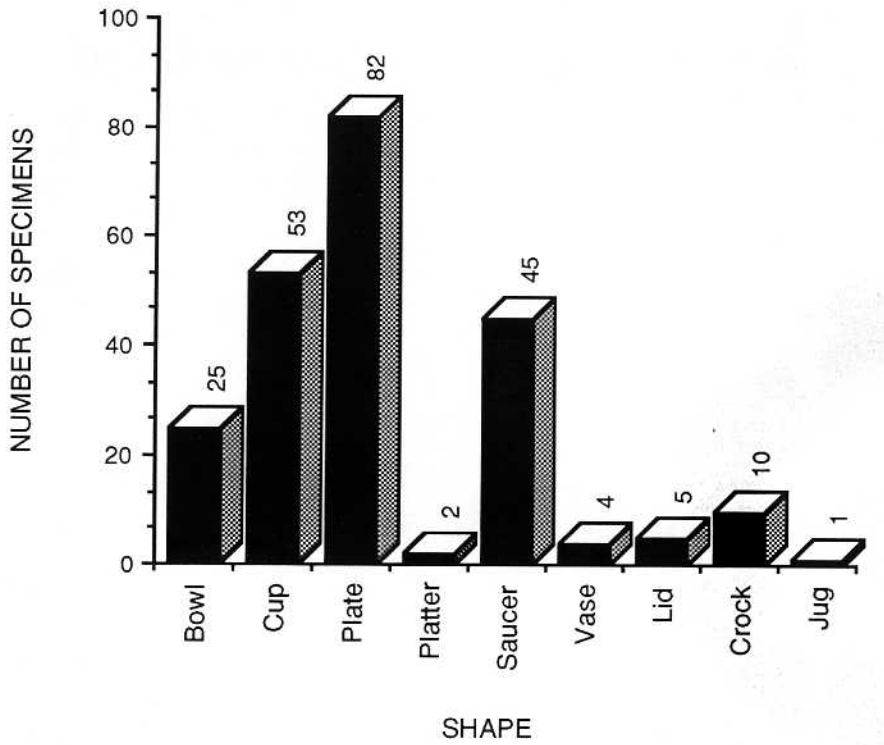


Figure 23 *Relative frequency of identifiable ceramic shapes found at Bluebird.*

Three major clay fabrics are found among the Bluebird ceramics. The most frequently occurring clay body is of earthenware, alternately referred to as "China", "Stone China", "Ironstone", "Granite Ware", "Semi-Porcelain", etc. Low-fired earthenware constitutes 54% of the Bluebird collection, the great majority of items being plain white utilitarian wares that were probably quite inexpensive at the time of purchase.

Compared to documented historic sites of the same time period or slightly before, (Pastron 1982; Benté 1975) the Bluebird site exhibits a surprising proportion of porcelain ceramics (n = 348, 43.1%). The non-random nature of the surface collection and the unconscious selection of highly decorated porcelains has undoubtably inflated their total number. The excavated subsurface collection, however, still manifests an unusually high proportion of porcelain specimens (n = 159, 31.5%).

The Bluebird ceramic assemblage is characterized by an extremely wide variety of decorative patterns, the majority of which are of the transfer printed underglaze variety. Every seemingly imaginable combination of colors occurs in the assemblage, but blue on white predominates. The motifs found on the pottery are similarly varied, but Oriental themes are more common than others. One hundred eighty-six separate styles of decoration were counted in the collection and a representative sample of these decorative styles is provided below in Figures 24a and 24b.

The great majority of these decorative styles are single occurrences in the Bluebird site, making analysis of their nature and origin difficult. The diversity of styles is most probably an indicator of the multiple sources of refuse and vectors of deposition that formed the Bluebird site. Judging by the ceramic diversity alone, it seems likely that the Bluebird deposit represents a general city dump that received contributions from numerous households.

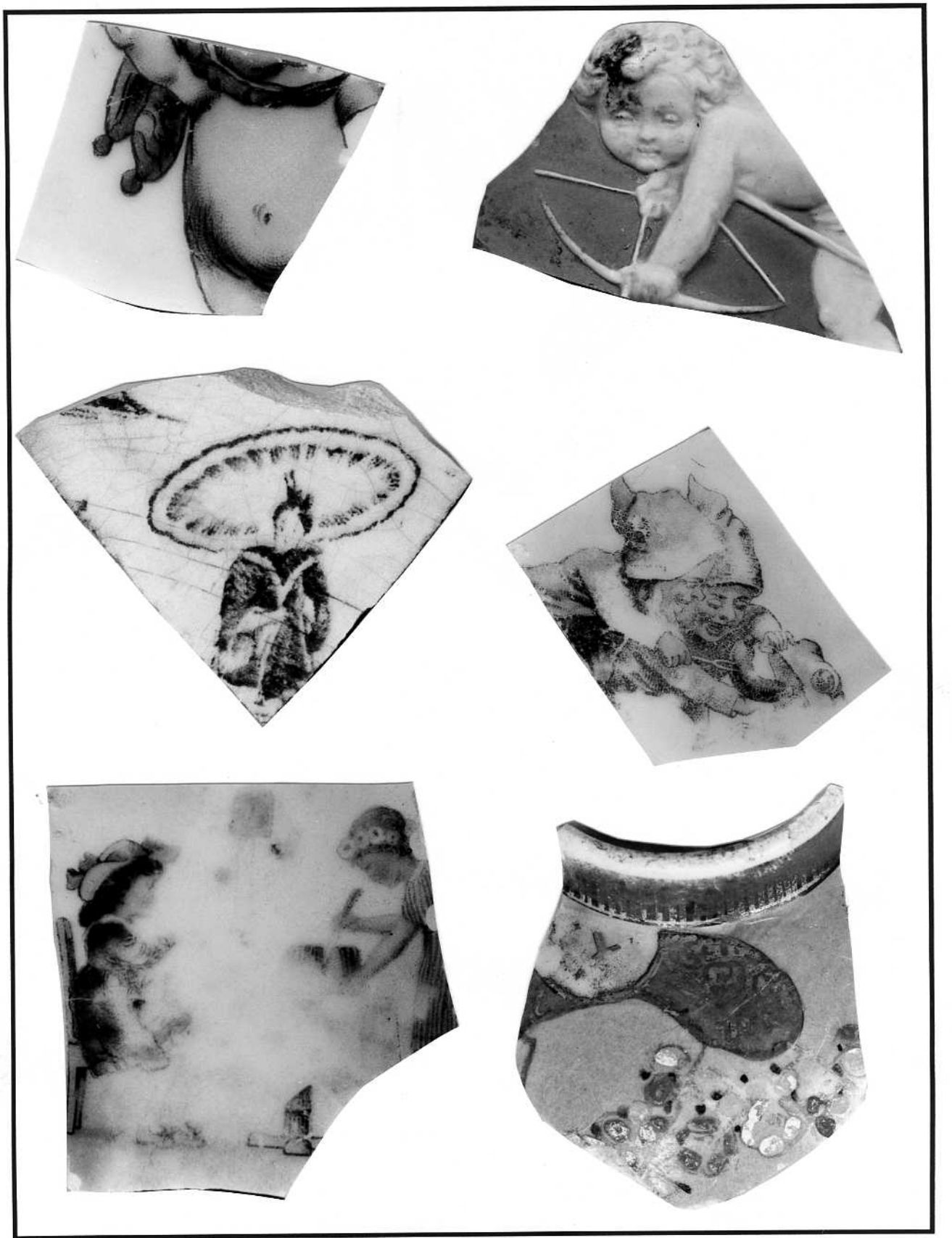


Figure 24a *Representative sample of decorative motifs found on Bluebird ceramics.*

Figure 24b *Representative sample of decorative motifs found on Bluebird ceramics.*

Forty-one ceramic specimens in the Bluebird collection possess makers' marks that are identifiable to country of origin. Of these forty-one specimens, thirty-one have been identified as to both the specific manufacturer and country; the remaining ten have been identified only by country of origin. The Bluebird ceramics were manufactured in the United States, England, Japan, Germany and Austria in the proportions shown below.

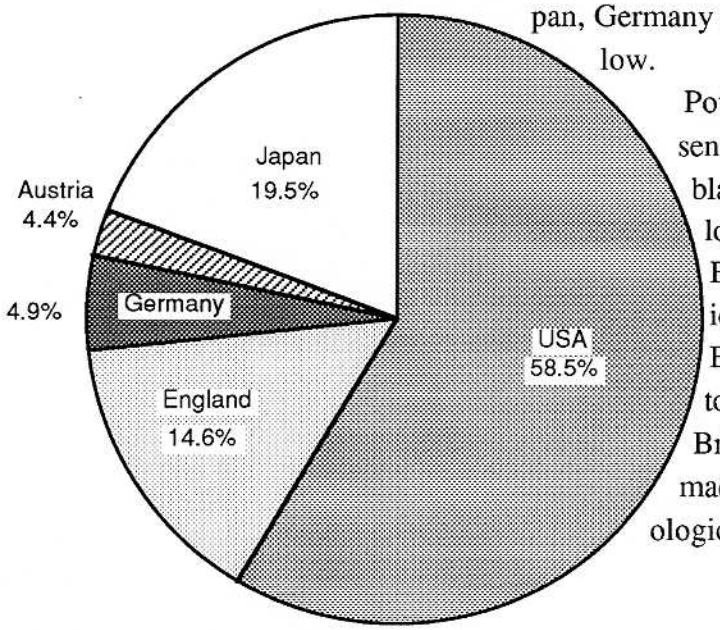


Figure 25 *The relative proportions of different countries' makers' marks found in the Bluebird ceramic assemblage.*

Pottery manufactured in the U.S.A. represents the lion's share of the Bluebird assemblage with 24 separate makers' marks, followed by Japan with eight and Great Britian with six. The rank order of American versus British pottery popularity at Bluebird is especially interesting in regard to the frequently observed dominance of British ceramic consumption over U.S. made products in nineteenth century archaeological sites in California (see Figure 26).

Throughout most of the nineteenth century, British ceramic manufacturers held an almost absolute monopology over the United States tableware market. This condition prevailed, despite the fact that American potters, especially in the Midwest, had developed competitive products by the middle of the century (Gates and Omerod, 1982: 9). The American preference for British wares was still so strong in the 1870's that some American manufacturers resorted to trickery by marking their pottery with Victorian Royal Arms and other British contrivances (Praetzellis and Praetzellis 1979: 160). Aided in part by congressional legislation that levied restrictive tarifs on imported ceramics the U.S. consumer became more accepting of American-made dinnerware in the last years of the nineteenth century and early twentieth century (Pastron 1981: 475). The high frequency of American-made ceramics in the Bluebird deposit of the 1910's and 1920's would seem to represent a watershed period in the history of American ceramic consumption.

The relative frequency of American and British makers' marks, however, does not tell the entire story of consumer preference at Bluebird. Japanese pottery is most probably greatly underrepresented in the makers' marks sample due to the inconsistent use of back stamping by Japanese importers. The blue phoenix porcelains, found in large numbers in the Bluebird collection and discussed in detail below, are likely all of Japanese origin but can be so demonstrated in only a few cases by means of makers' marks. From the time of the passage of the McKinley Tariff Act in 1891, goods imported into the United States were required to be marked with the country

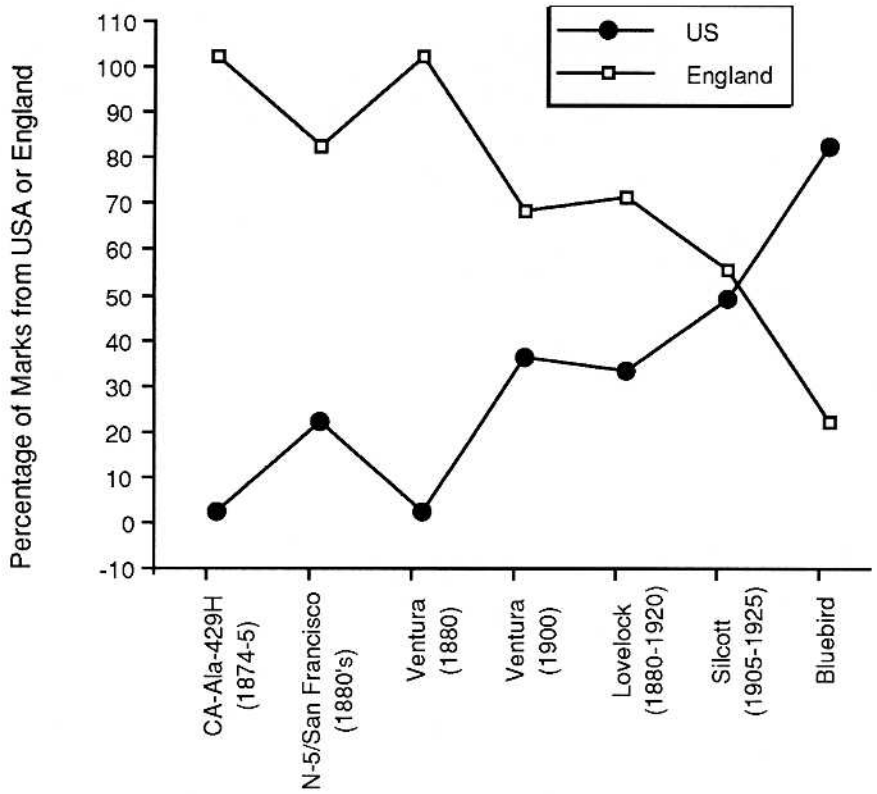


Figure 26 *The relative proportions of American and British ceramics recovered at seven archaeological sites in the western United States.*

of origin written in English. Japanese pottery manufacturers complied with this regulation by identifying their wares with "Nippon" from 1891 to 1921 and "Made in Japan" from 1921 to 1940. Not all pieces of a set, however, bore the identifying back stamp and many ceramics were imported with the required identification enscribed only on paper labels (Stitt 1974: 149-179). Had the marking of Japanese export pottery of this period been more consistent, Japan's contribution to Figure 25 might have been quite different.

The Homer Laughlin China Company of East Liverpool, Ohio is the most frequently represented manufacture in the Bluebird collection (n = 12). During the last third of the nineteenth century Homer Laughlin's production of fine white ironstone was instrumental in modifying the attitudes of American consumers toward U.S. made pottery. A "Buy American" campaign was initiated at the time of the1876 Centennial Exhibition and the Homer Laughlin Company exemplified the campaign by the use of a backstamp showing the American Eagle triumphant over the prostrate British Lion (Pastron 1982: 160). The second most common ceramic manufacturer represented at Bluebird was the Knowles, Taylor & Knowles Company with four backstamps, followed by the Edwin M. Knowles Company with three. The remainder of the makers' marks appear only once in the collection.

The Bluebird Decorative Motifs -- The single most common artifact category encountered at CA-Ala-416H during the 1978 survey, and the one that inspired the naming of the site, consists of 123 porcelain and earthenware sherds decorated with blue colored bird designs on a white or cream background. During the early 20th century, English and American ceramics showed a strong preference for underglaze cobalt blue designs on a white ground; this color scheme and many of the motifs taking their inspiration from the blue and white Chinese porcelains that had

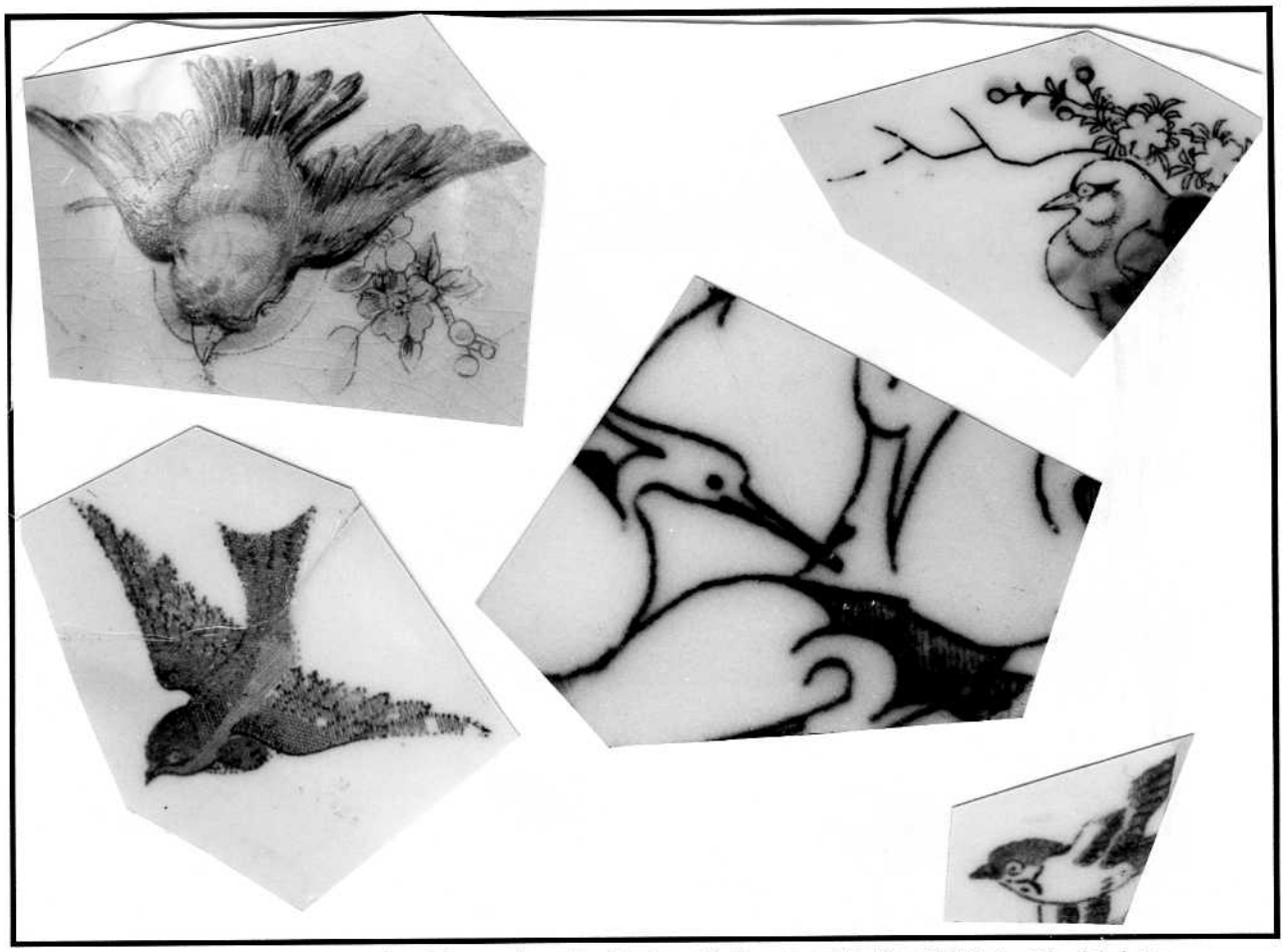


Figure 27 *A representative sample of the various bluebird motifs found at CA-Ala-416H, the Bluebird site.*

been popular since the Ming Dynasty (Garner 1964). The bluebird motif seems to have been especially popular among British and American potteries between 1900 and 1920. The bluebird motifs found in the CA-Ala-416H collection occur in ten separate styles, a representative sample of which is shown above in Figure 27.

Like the majority of the other decorative styles found at CA-Ala-416H, most of these bluebird motifs are single occurrences in the collection. One bluebird decorative style, however, is represented by 107 separate sherds. This style, designated as bluebird pattern #1 or the blue phoenix pattern, warrants special discussion. The central motif of bluebird pattern #1 is a stylized eagle, pheasant or turkey with upraised wings, much in the style of the classical phoenix. The bird is surrounded by and, in some cases is directly connected to, an elaborate array of vines and floral elements (see Figure 28 and the design on the title page).

The blue phoenix pattern occurs on cups (n= 24, 26.6%), saucers (n= 10, 11.1%), bowls (n= 14, 15.5%), plates (n= 40, 44.4%), and egg cups (n= 2, 2.2%). The pattern is seen most clearly on the interior surface of plates (see Figure 28) and in this form shows some resemblance to the

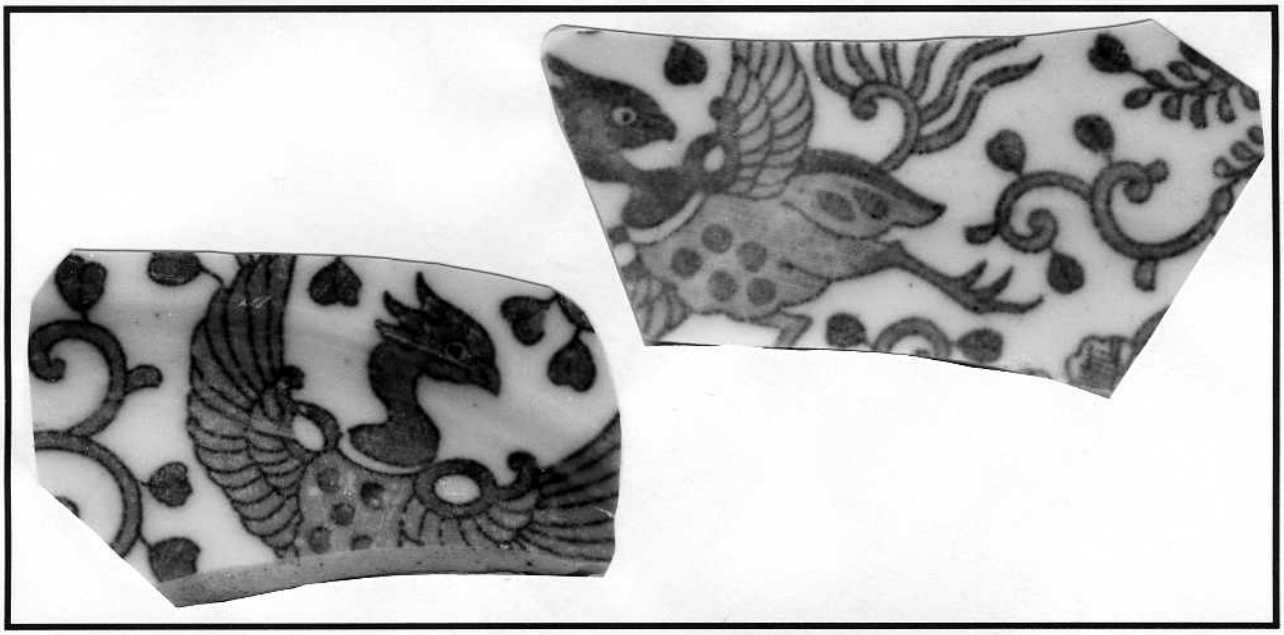


Figure 28 *Two examples of the blue phoenix pattern, the most frequent ceramic design found at the Bluebird site*

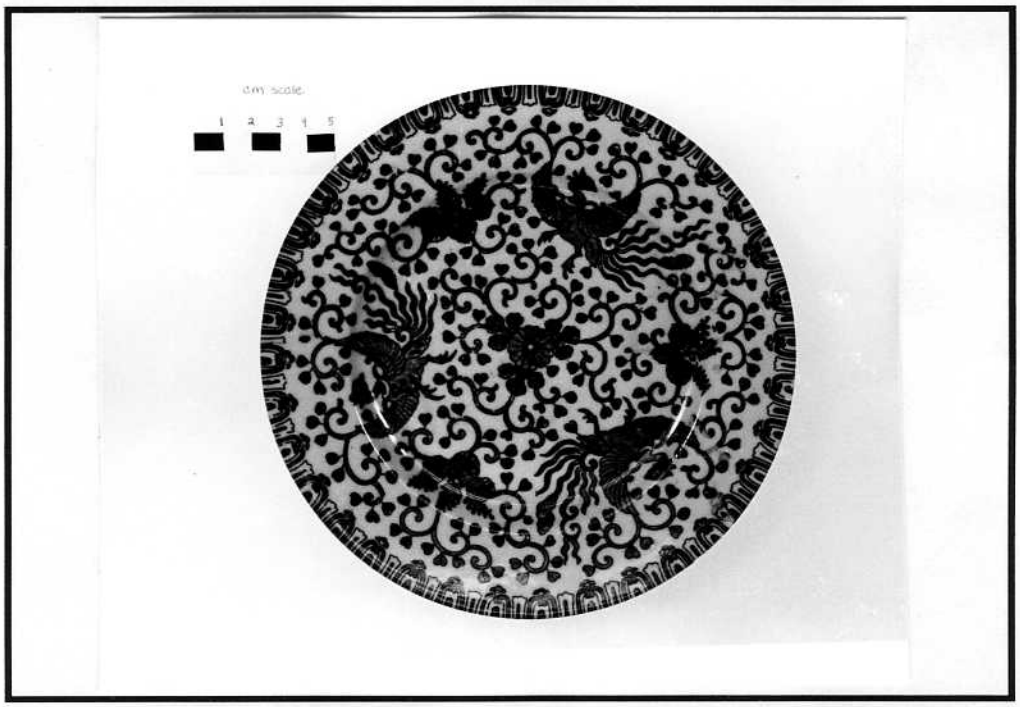


Figure 29 *The full blue phoenix pattern as seen on a plate obtained from a local antique shop.*

Figure 30 *A fifteenth century Chinese dish exhibits a design similar to the blue phoenix pattern.*

central phoenix in lotus scroll design found on a dish from the Ch'eng Hua Period of the Fifteenth Century (see Figure 29).

The form of the bird and its accompanying vines and flowers is also strikingly similar to a Japanese design produced by the Noritake Company, Ltd. in the 1920's and/or 1930's and popularly known as the "Flying Turkey" (see Figure 31).

More specifically, the fowl shown on this piece is identified as the Hö-ö bird and the flowers as chrysanthemum and paulownia. The Hö-ö is a mythological creature described as something between a bird of paradise and a phoenix, that has been popular in Japanese art for centuries (Stitt 1974:134, 187). Although the blue phoenix design from the Bluebird site is not identical to either of these examples, it is probable that the San Leandro blue phoenix owes its pedigree to some ancient Chinese design that was modified over the centuries in China and Japan to eventually become the form that was imported during the early 20th Century to the San Francisco East Bay region.

All 107 of the blue phoenix specimens in the Bluebird collection are porcelain and appear to have been executed as stencils under a clear glaze. The workmanship is of fair quality but flaws in matching one section of the stencil to the next are common, especially

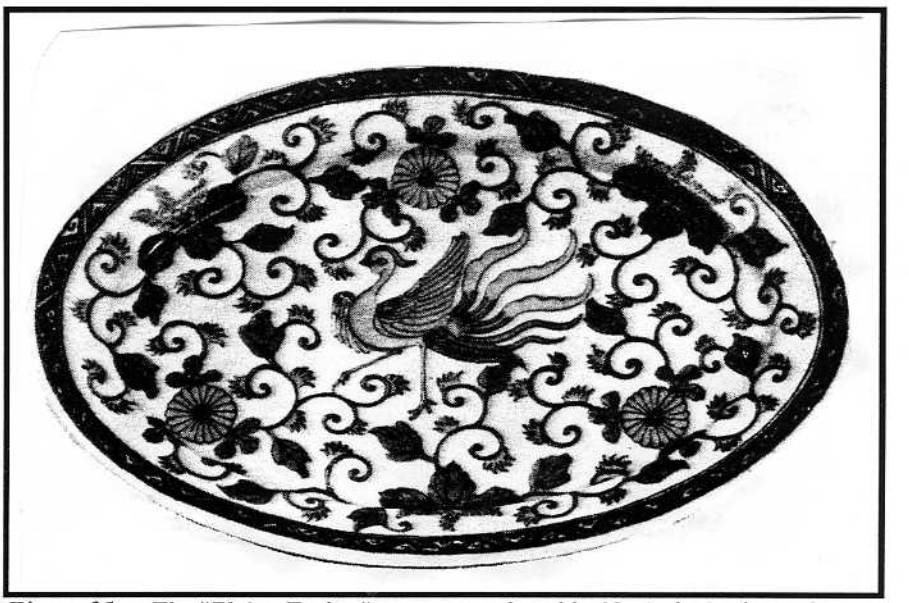


Figure 31 *The "Flying Turkey" pattern produced by Noritake in the early twentieth century.*

along the rims of plates, and several of the specimens show pitting flaws in the glaze. These flaws suggest that the blue phoenix ware, although utilizing a porcelain body, was not particularly expensive.

Although we have categorized all 107 specimens as belonging to the same basic blue phoenix pattern, scrutiny of the artifacts reveals that four or more variants of the pattern are found in the collection. Details of composition, shape of flowers, leaves and vines, as well as execution of the painting suggest that several different pottery decoration shops produced the blue phoenix pattern. This inference is supported by known practices of the Japanese ceramic industry. At the turn of the century, Japanese export agents would often act as middlemen between pottery factories and local decorators. The agents arranged for the pieces to be sent "in the white" from the factories to the decorators, and then returned to the agent for export (Stitt 1974: 149).

Six maker's marks on the bases of blue phoenix plates and/or saucers demonstrate that this ware was produced in Japan for the American export market. Three specimens from Bluebird exhibit complete or partial "Made in Japan" blue backstamps, one has a modified "M-in-Wreath" mark and another sports five partial Japanese characters. The right side of the Japanese characters mark translates as "Great Japan". The left side, although it could not be deciphered, is probably the unique mark of the pottery or exporter. Since "Made in Japan" marks were used only between 1921 and 1940 (Stitt 1974: 176), the three Bluebird specimens are identified as to both country and time of manufacture. The partial "M-in-Wreath" stamp is similar but not identical to a number of backstamp devices utilized by the Noritake pottery company between 1911 and 1940 (Donahue 1979: 68-87). All documented Noritake "M-in-Wreath" marks, however, exhibit a tri-lobed leaf at the bottom of the wreath, below the "M". The position of the tri-lobed leaf on the Bluebird specimen is reversed. We suspect that this piece, and perhaps all the blue phoenix specimens, represent the work of a Japanese manufacturer that was immitating the style and good reputation of Noritake pottery. The unsuspecting American consumer would see a mark that resembled the well-known Noritake "M-in-Wreath" mark and never think to scrutinize it. Support for this inference was gained during the course of our research by the purchase of two complete blue phoenix plates from a St. Vincent de Paul store in Fremont (Lewis ms.). One of these plates is marked with an even more modified and abreviated "M-in-Wreath" above "Japan" backstamp. This example, with its outwardly rounded "M" and simplified wreath appears as a caricature of the Noritake "M-in-Wreath" mark. The second plate bears the word "Nippon" on its reverse side. This stamp indicates that the plate was manufactured between 1891 and 1921, and suggests that blue phoenix ware was an export commodity whose production may have begun before World War I.

Although we have successfully reconstructed the above information about blue phoenix ware, we are still left with several unanswered questions. Why is this ware so common at the Bluebird site? Is its popularity in the Bluebird collection reflective of its popularity in the community that contributed to the dump? As discussed above, several variants of the blue phoenix pattern were noted during analysis, indicating that at least four separate dinner sets are represented in the collection. This fact, along with the occasional occurrence of blue phoenix sherds in the excavated subsurface materials, suggests that the blue phoenix pattern was exceptionally popular in its community of origin.

Red Wing Union Crockery -- A number of fragments of thick-walled, grey to cream colored, stoneware bearing parts of the blue logo "Red Wing Union Stoneware Co. Red Wing Minn" within a circle were recovered from both the surface and from the subsurface excavation. There is also a partial motif in orange that may be the feathers of a "red wing". Red Wing was an utilitarian brand of household crockery particularly popular in the 1930's and 40's. These fragments were probably parts of large crocks used for pickling, putting up fruit, or storing grain. The Union Stoneware company was in business from around 1870 until 1967 (Don Shelwood, personal communication).

GLASS BOTTLES AND THEIR CONTENTS

Analysis of glass bottles from the Bluebird site was performed to discern functional categories and to establish chronology. Bottle type and content was based on comparison of bottle remains with source material. The number of intact bottles was very limited (n =8) making it necessary to base much of the analysis on the fragmentary remains of bottle bases, lips, and sides.

The shape of the bottle and lip provides information about its use and content. The Bluebird bottles fall into the following use categories:

LIQUOR: A minimum number of seven brandy or whisky bottles were found in amber, clear, green and violet glass.

DAIRY: A minimum of six clear milk or cream bottles.

CLOROX BLEACH: A minimum of 18 amber/brown bottles.

CONDIMENT: A minimum of 34 clear and aqua bottles that would have contained sauces, peppers, pickles, preserves, etc.

MEDICAL: A minimum of 19 patent medicine, prescription, potion and pill bottles.

COSMETIC: A minimum of six identifiable cold cream or hair oil clear, purple and milk white bottles or jars.

FRUIT JARS: A minimum of four clear and aqua Kerr or Mason jars marketed for fruit packing.

The bottle and jar categories are notable in their selectivity. Missing from the list are some

common bottle types. There are no identifiable soda or wine bottles. There is only one possible beer bottle. The selective nature of the bottles runs contrary to the variety expected in common residential garbage. In addition, if the Bluebird debris was produced by Trojan Powder Works employees, one would expect soda and beer bottles to be found. It would be rather strange to find any group drinking nothing but milk, whisky and patent medicines.

A significant part of the total glass assemblage, however, consists of small, totally unidentifiable fragments. It is possible that these unidentifiable fragments represent parts of soda, beer and wine bottles, but it is still striking that in the identifiable material there is a distinct lack of these categories.

Though the type of bottle may be identified by a characteristic lip shape or base design the actual contents of the bottles can only be assumed. As noted in the chronology section, the Bluebird bottles come from a transitional era in bottle technology, circa 1880-1930. Technological overlap occurred during this period with three bottle making techniques in existence at once. Hand-blown bottles were being replaced by semi-automatic mold techniques which in turn were replaced by fully automatic bottle machines. As a consequence, the technological change produced a change in bottle reuse. Automatic machines led to a rapid decrease in bottles prices. Prior to the machine bottle era, bottles were relatively expensive (especially hand blown bottles) and were often cleaned and reused. A large second hand glass industry existed which sold used bottles. As bottles became cheaper they became disposable since there was no motivating economic reason to keep them. During the time most of the Bluebird bottles were made, however, bottles were still commonly reused and resold (Busch 1987). Considering the reuse factor, caution should be used in assuming exact correspondence between bottle type and content.

MISCELLANEOUS ARTIFACTS

Decorative Glass -- Forty-three pieces of decorative glass were recovered from the Bluebird site during surface collection and excavation. The pieces were found in all units and at all levels. Decorative glass is characterized by the presence of patterns, motifs and designs. The pieces are thicker than standard bottle or window glass. This type of glass is used in fancy tableware, drinking goblets, and fruit bowls and has the added function of ornamentation. Decorative glassware that is handmade is quite expensive and is of heirloom quality. None of the Bluebird fragments are handmade. They are all made from pressed glass, a mold technique, resulting in relatively inexpensive products.

Several discernable types can be identified at Bluebird. Seven fragments were copies of European cut glass patterns; true cut glass was incised by hand, and copies were made by the use of press molds. Three fragments are stippled which refers to a pattern of small raised bumps used

within an enclosed area as a design motif. Six fragments have incised leaf patterns. Fifteen fragments show designs based upon raised bars combined with other geometric figures. Two pieces of decorative milk glass with embossed figures were collected. A variety of other patterns and motifs appear on the remaining fragments. Unfortunately, the fragmentary nature of the decorative glass pieces limits functional identification.

Artifact No. 0-0-482 is identifiable as either a candlestick stem or part of a pedestaled cake plate or fruit bowl. This piece also shows three mold seams which are characteristic of the 3 Blown Mold. Artifact No. 0-0-123 is molded in a concave-convex manner and is a deep ruby red; these are both characteristics of 3 Blown Molds. The 3 Blown Molds, however, were used between 1820 and 1840. This time frame significantly predates other glass artifacts and represents a chronological anomaly.

Ten decorative glass fragments have the purple hue which indicates the presence of manganese. The use of manganese in the manufacture of these pieces dates these ten fragments to between 1880 and 1914.

Beer Barrel Faucet -- One of the most distinctive artifacts recovered at Bluebird was a uniquely shaped brass plumbing faucet which was encountered protruding just above the surface immediately to the northeast of Unit N14E15. This object measures 23.3 cm. in length, 17.7 cm. in height and is shown at approximately two-thirds its actual size in Figure 32.

After carefully cleaning in dilute sulfuric acid, the anterior decorative knob revealed the letters "SFB LTD" stamped in its surface. Consultation with Fritz Maytag of the Anchor Brewery in San Francisco confirmed that this "plumbing fixture" was really an antique beer barrel spigot and that "SFB LTD" stood for *San Francisco Breweries, Ltd.* This company was a British syndicate formed in 1890 and continued in operation until the enactment of prohibition in 1920. It never reopened. San Francisco Breweries, Ltd. bought out ten local breweries, including the West Coast's largest brewery, the Philadelphia Brewery, as well as two in Oakland: Kramm and Diezer and the Brooklyn Brewery (Anderson 1973; Rich 1903).

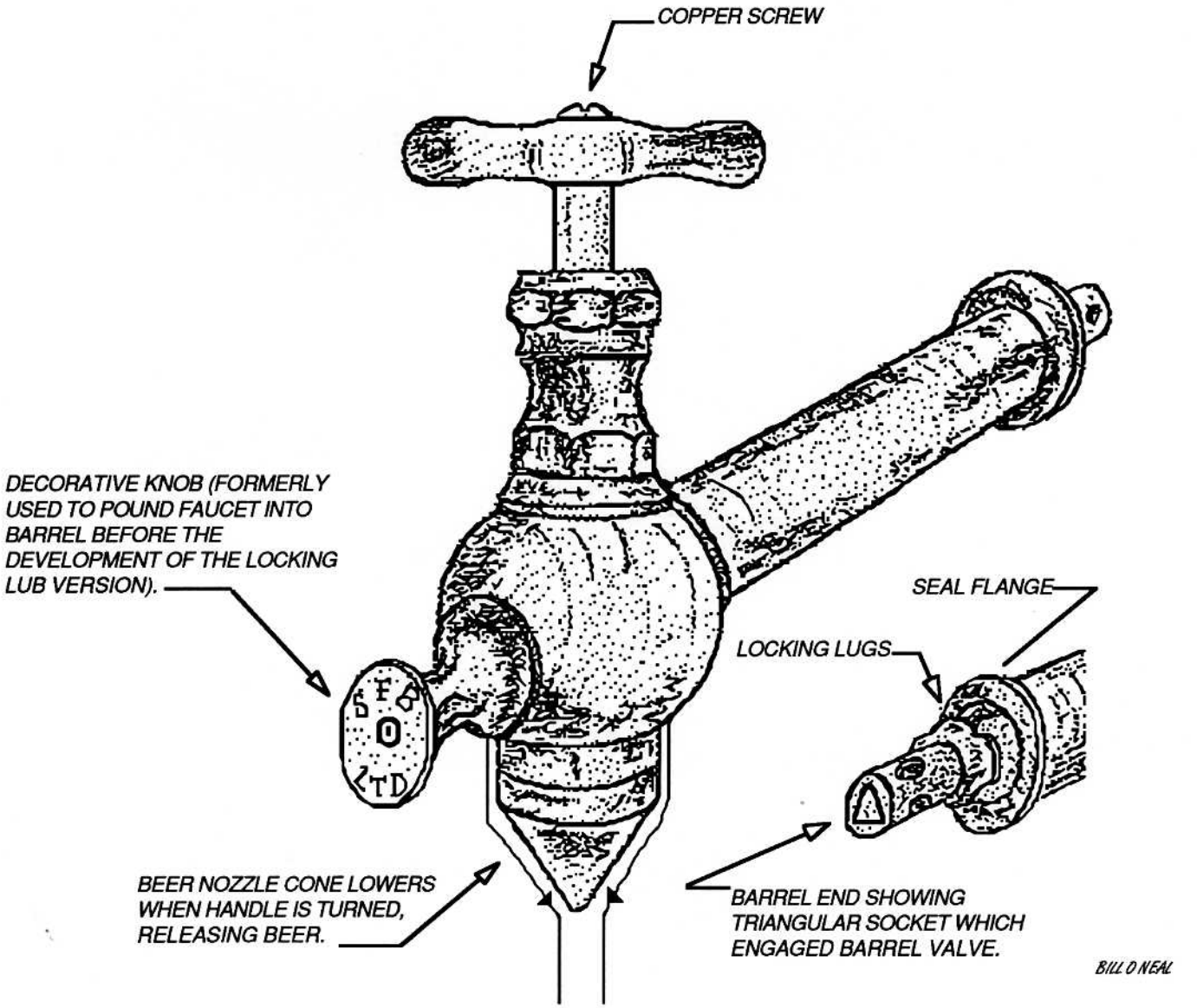


Figure 32 *Brass beer barrel faucet.*

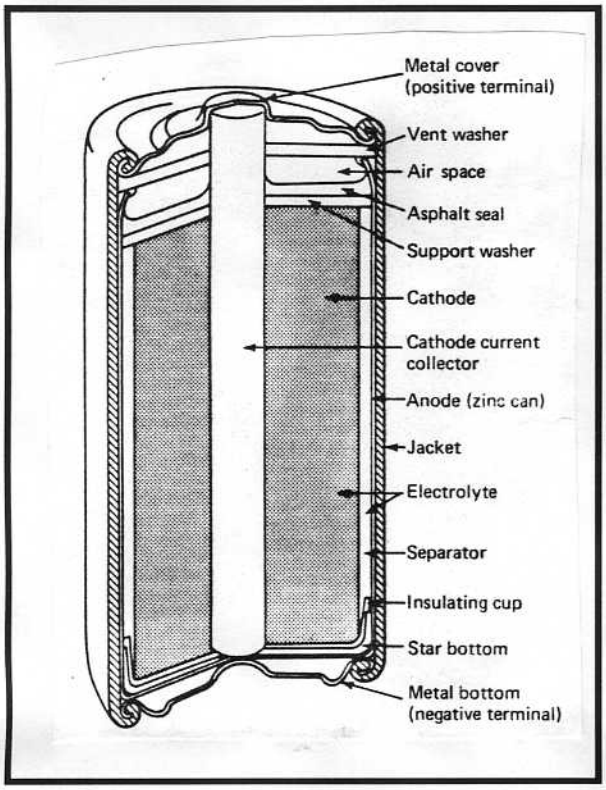


Figure 33 *Cross section of a Leclanche cylindrical battery cell.*

Leclanche Battery Core--Three zinc-carbon cores of Leclanche dry cell batteries were recovered from the Bluebird site. The basic design was developed by Georges Leclanche in 1866. The first dry cell was produced in 1888 by Dr. Carl Gassner and commercial production followed in 1898. Standard size cells of 6 cm. in length were produced soon after that; one intact core is of that size. In the original battery the Leclanche core would have been surrounded by a chemical electrolyte encased in a zinc cylinder; the zinc cylinder being the negative pole and the carbon rod acting as the positive pole. After being discarded, the zinc cylinder and electrolyte slowly disintegrate, leaving behind the carbon rod core (see Figure 33).

Rubber Nipple -- A rubber bottle cap with feeding nipple was found in level 4 of Unit N14W15 (see Figure 34). The size indicates it was used for weaning calves. The thick band around the base of the cap is embossed with the date "Dec 1916". This could refer to a patent date.

Figure 34 *Rubber nipple from a baby or calf feeding bottle.*

Safety Glass -- Artifact No. 1-1-44 is a pale green fragment bearing the distinctive inner fractures of safety glass. The invention of safety glass is credited to Dr. Benedictus in 1903. The first patent for his invention was issued in 1909. The fragment could be automobile safety glass which was first introduced in 1928.

Cosmetic Case -- Artifact No. 14-2-10 is a two-piece circular brass case four cm. in diameter. The edge of the case is ribbed and the top piece fits inside the rim. Inside the case are three glass fragments which fit together and once formed a mirror. The top of the case is embossed with a crown design below which are the words: "Princess Pat" above "Gordon Gordon Chicago". The design is similar to the advertisement in Hechtlinger (see Figure 35).


Pocket Book Toilet Case.

Handy Little Toilet Case. Appeals to every woman. Small silver plated box, hinged cover with mirror within, small down puff with handle. Being small enough to carry in pocket book, is just the article for parties, traveling, etc. Regular price, 25 cents.

No. 8F3193 Price **18c**

Handy Toilet Box.

Beautiful round blue and gold box of handsome design, contains a round glass mirror, and down puff box, is leather covered, filled with imported rice face powder. This article is especially imported by us from France. A very handy toilet set for traveling.

No. 8F3195 Price.....**21c**

Figure 35 *A late 19th century advertisement featuring an item similar to the Princess Pat cosmetic case from Bluebird.*

Micarta -- The Bluebird excavation yielded a surprising number of micarta fragments. Micarta was a trade name common before 1950 and used for paper, fabric based laminated phenolic plates. Other trade names include Aqualite, Ohmoid and Phenolite. Micarta was manufactured to provide a non-conductive, moisture resistant medium on which to mount electrical parts such as resistors, radio tubes, and wiring. The material could be milled and machine cut to specification. Laminated phenolic products were produced in 12 grades, varying in degrees of electrical conductivity, moisture resistance, thickness and machinability. The strongest grades (C, L) were used to make gears and gaskets (Knowlton 1907: 381-382). The use of the material in radios was largely eliminated by the introduction of transistorized circuit boards in the 1950's. Phenolic laminates are still used in electrical fixtures and flashlights.

One hundred sixty-three micarta fragments were recovered in the excavation at Bluebird; 60.7% (n = 99) of which were found concentrated in Unit N14E15. The great majority of these items were small, non-diagnostic fragments, but many possessed shapes similar to portions of the complete micarta specimen illustrated in Figure 36. The exact function of this board could not be determined but it resembles an early radio circuit board. Some of the other small specimens appear to be the positive punch-outs from the spaces evident in the example seen in Figure 36. The presence of these positive punch-outs suggests that a manufacturer of micarta circuit boards dumped quantities of its waste products at the Bluebird site.

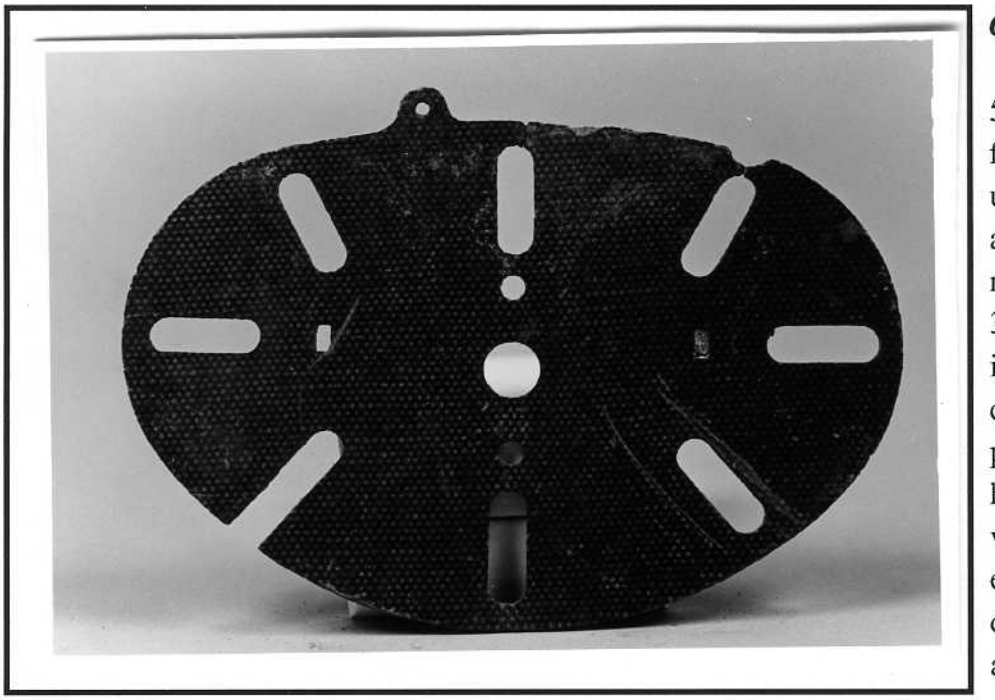


Figure 36 *An example of a complete micarta board.*

Carbon Electrode

Artifact No. 0-0-587 is a carbon rod fragment of the type used in arc lamps and in industrial furnaces (see Figure 37). In their working context two machined cores with tapered ends would have been mounted with the ends facing each other. The cores were placed in a sealed housing containing rarified gas. Opposing currents were driven through the cores, causing an arc. "The arc discharge occurs when two carbon electrodes are brought into contact with each other and are then moved apart a distance of about an eigth of an inch (the voltage should be at least 55 volts). Just before the carbon rods separate and direct material contact between them is broken, such a high electric resistance is developed at their boundary that the tips of the carbon begin to glow" (The Way Things Work: 1967:100). The glow of the rods is the light source in arc lamps. In furnaces, the heat of the rods (up to 4000° C) was used to melt materials. One common use of carbon rods was in the processing of bauxite.

Due to the high temperatures involved, the core tips burned off and became pitted. The cores had to be adjusted and moved closer. Though automatic feeding devices were invented, other technologies have largely replaced the use of carbon electrodes. For example, high pressure gas discharge lamps, i.e.; mercury vapor, have replaced the arc lamp.

REVELATIONS OF ORAL HISTORY

During the analysis for this report , Peggy Shannon of Western Ecological Services Company, Inc. (WESCO) brought a 1966 aerial photograph of the Bluebird area to our attention. This photo, in contrast to several early images from the 1940's and 1950's, shows massive and fresh disturbance in the area of the northern extension of the Trojan Powder Works. Although the scale of the photograph makes it impossible to state with certainty, the disturbance appears to be fresh-

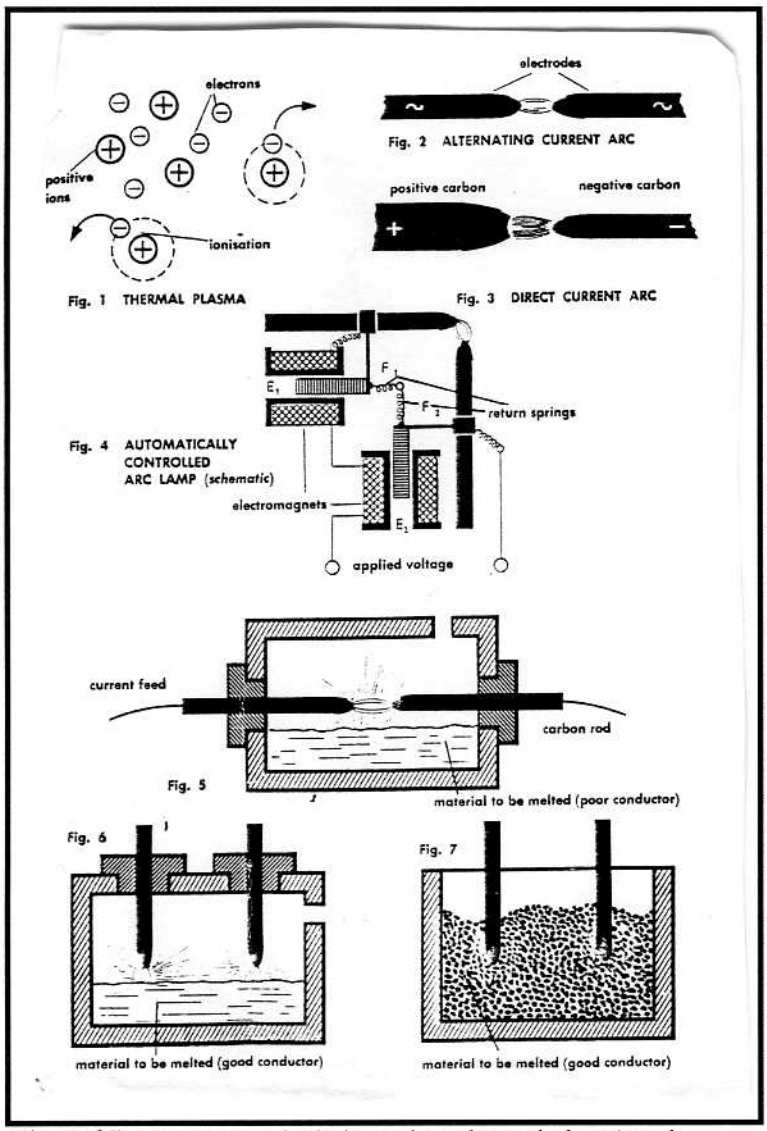


Figure 37 *The way in which the carbon electrode functioned (from The Way Things Work 1967: 100).*

ly dumped materials.

At the suggestion of Ms. Shannon, we contacted Wayne Caporusso of the East Bay Excavating Company of Hayward, who claimed to have knowledge of the dumping that had occurred in the area of the Trojan Powder Works during the middle 1960's. Mr. Caporusso informed us that he had worked on an excavation project in 1966 or 1967 connected with the building of the Oakland Coliseum Complex and the 66th Street overcrossing. He further stated that much of the material from this construction excavation had been transported some eight miles to the south and dumped at the end of Lewelling Boulevard in San Leandro near the Trojan Powder Works. The interview with Mr. Caporusso revealed several important facts about the origin and nature of the original Oakland deposit and the formation of the Bluebird site in San Leandro:

1) According to the informant, the 66th Street deposit was a historic dump encountered some ten feet below the surface of an open field that had an area of approximately one-half city block. The depth of the deposit was some 30 to 40 feet and went all the way down to blue bay mud. The historic materials encountered in the digging attracted a large number of scavengers and bottle collectors, who recovered artifacts at both the Oakland and San Leandro sites.

2) Some of the excavated materials were redeposited in a field directly to the west of the Coliseum across the Nimitz Freeway and others in an area to the south of the Coliseum near Hegenberger Road. Much of the material, however, was transported to the San Leandro bayshore, a process that required the use of several large trucks over several days.

3) The west end of Lewelling Boulevard was a designated fill site at the timeof the dumping. Although Mr. Caporusso did not travel to San Leandro, it was common knowledge among the people involved in the project that the material was being taken to an area around the abandoned Trojan Powder Works. The transfer was to contribute to a large land fill project in the area surrounding the Trojan factory . One of the main purposes of the fill was to raise the level of the ground just east of the factory to provide a foundation for the Mission Bay Trailer Park.

4) Land fill projects require not only the transfer of fill material from one site to another, but the systematic distribution of that material. The material must be spread out over a large area and compacted before more material is deposited. Mr. Caporusso said that the "gumbo", the bay mud encountered at the bottom of the Oakland operation, had to be spread out over the fill areas and allowed to dry before being covered by leveling operations. Apparent from his account is a picture of purposeful redistribution and compaction of the dump material. In addition, his account corroborates a number of the excavation findings, such as the mechanical surface scar found in Unit NØW15 and the compaction surface found in Unit N4W6.

To corroborate and expand upon Mr. Caporusso's account, a search for *Oakland Tribune* articles relating to the construction of the 66th Street overcrossing was conducted at the History room at the Oakland Public Library. Newspaper photos show the open field that contained the Oakland dump site. Bidding on the overpass job was not initiated until April, 1967 and the project was not completed until 1968.

The documented date of the 66th Street overcrossing project is significant. This date demonstrates that the disturbance observed in the area of Bluebird in the 1966 aerial photo cannot be the result of the Oakland dump excavation. Instead, the photographic evidence may represent the destruction of the Trojan Powder Works and/or an earlier episode of landfilling in the area.

SUMMARY AND CONCLUSIONS

Analysis of the Bluebird excavation records and artifacts has sought to establish the origin of the archaeological materials and their mode of deposition at CA-Ala-416H. While many aspects of the site's formation processes still remain unclear, a number of definite statements about its formation can be made:

(1) Ceramic, glass bottle and several miscellaneous artifacts from the Bluebird

dump site indicate that the assemblage was formed during the first third of the twentieth century. More specifically, the site's mean ceramic date, mean bottle date and at least four miscellaneous artifacts (California Department of Motor Vehicles dashboard disk, patented rubber nipple, calendar plate and Brown Phosphate Company lid) point to a modal date of approximately 1915. Based on the available evidence, it is probable that the deposit received its major contribution in the period immediately prior to, during, and after World War I. No evidence was recovered to support the idea that nineteenth century cultural activities, such as Robert's Landing and/or Squattersville, may have contributed materials to the lower levels of the site.

(2) Despite a surprisingly high frequency of blue-on-white porcelain fragments manufactured in Japan, no evidence of ethnic or demographic clustering was encountered at the Bluebird site.

(3) Despite an early working hypothesis (cf. Parkman 1978, Miller and Sawyer 1979, Roop et al. 1981), little evidence was discovered to support the idea that the Bluebird site represents an *in situ* and accretionary dump formed from industrial and domestic trash from the Trojan Powder Works. Although many of the non-diagnostic artifacts and certain diagnostic artifacts, such as laboratory glassware and building materials could have been used at the Trojan facility, no artifact could be positively linked to the production of dynamite or munitions.

(4) The diversity of the Bluebird artifactual assemblage also militates against the single source, Trojan Powder Works explanation of Bluebird's origin. Had the Bluebird domestic refuse originated in the Trojan workers' bunkhouse or mess hall, we would expect to find a much more limited number of ceramic tableware styles. Instead, the diversity of styles is most probably an indicator of the multiple sources of refuse and vectors of deposition that formed the Bluebird site. Judging by the ceramic diversity alone, it seems likely that the Bluebird deposit represents a general city dump that received contributions from numerous households and industrial sources.

(5) Several lines of evidence converge to suggest that prior to its present state the Bluebird deposit suffered several episodes of disturbance and redeposition:

> a) The average size of the Bluebird artifactual fragments is quite small and many show evidence of compression fracture. The general condition of the artifacts indicates that, in addition to the act of primary discard, heavy equipment probably impacted the assemblage.

b) Several features indicating the use of heavy equipment also were encountered during the excavation (e.g., mechanical surface scar, compaction surfaces, snapped and frayed heavy timbers, etc.). These features, along with the degree of artifact fragmentation, suggest that heavy earth moving equipment repeatedly moved across the surface of the site. The combined stratigraphy of the five excavated units indicates that such large machinery was used to dump materials, level it out over a wide area and then compact it. These observations are supported by oral interviews and archival research.

c) Evidence derived from the analysis of the Bluebird glass bottles suggests that the Bluebird deposit is the product of stratigraphic reversal. While a significant number of applied (i.e., early) lips were found on the surface of the site (n = 17), only two applied lips and many machine-made (i.e., late) bottle lips were encountered in the lower levels of the excavation. This finding, in combination with similar purple glass evidence, suggests that the Bluebird site represents a secondary or even a tertiary deposit formed by first dumping upper levels of a primary deposit on the sterile Bluebird surface and later dumping the deepest and oldest portion of the primary deposit on the accumulated Bluebird mound. These observations are supported by oral interviews and archival research.

d) Interviews with Wayne Caporusso of the East Bay Excavating Company of Hayward documented that in the late 1960's a historic dump in Oakland was excavated and much of its contents transported to a designated landfill site at the end of Lewelling Boulevard in San Leandro. Mr.Caporusso's report correlates well with the evidence discussed above and strongly suggests that the Bluebird dump site of San Leandro is a relatively recent phenomenon, whose original incarnation was as a neighborhood dump in Oakland's Brooklyn Township.

Other vectors of deposition also may have been involved in the formation of the Bluebird site. A 1966 aerial photograph obtained from Pacific Air Photo of Oakland shows a massive surface scar in the area of the present Bluebird site. Although the scale of the photograph makes it impossible to determine with certainty, the scar appears to be recently dumped fill material. This possible dumping evidence dates to between 1964 (razing of the Trojan Powder Works) and 1966 (aerial photograph date), and predates the construction of the 66th Street overcrossing in Oakland by at least a year. The combination of Wayne Caporusso's account of the Oakland dump excavation/transport and the 1966 aerial photograph evidence suggests that at least two, if not more, episodes of landfill dumping contributed to the total assemblage of materials found at Bluebird in 1978.

SIGNIFICANCE

Following Schiffer and Gummerman (1977) we have evaluated CA-Ala-416H, the Bluebird site, in terms of scientific, ethnic and public significance. Fundamental to this evaluation is the issue of site integrity. As discussed above, several lines of evidence point to the fact that the Bluebird site was badly disturbed after the original deposition of the majority of its artifacts in the 1910's and 1920's. Moreover, it is likely that the disturbance of the Bluebird deposit was of a much greater magnitude than the simple *in situ* redistribution that is common in an urban area. Instead, the Bluebird material seems to represent a completely redeposited assemblage, much of whose original resting place was not on the San Leandro bayshore but rather in the urban context of Oakland some eight miles to the north. The loss of integrity represented by this finding dictates the evaluation of significance that follows:

Scientific Significance

"A site or resource is said to be scientifically significant when its further study may be expected to answer current research questions, that is, scientific significance is defined as research potential" (Schiffer and Gumerman, 1977:241).

In its original context(s) the Bluebird assemblage may have possessed some degree of scientific significance in its ability to provide material information concerning the early twentieth century development of an East Bay community. In its current state, however, the origin of the Bluebird collection is unclear and its linkage to any discrete cultural phenomenon is unrecoverable. Therefore, the Bluebird assemblage is not deemed to be scientifically significant.

Public Significance

"The area of public significance includes, but is not limited to, the use of archaeological sites to educate the public about the past and the ways it is studied: the use of research findings to enrich our present existence... the use of objects, ruins and stabilized or restored structures for public exhibit and enjoyment" (Schiffer and Gumerman, 1977:245).

It is difficult to conceive of a way in which the preservation and exhibit of the Bluebird site could contribute educational value to the public of the San Francisco Bay Area. Except as an arcane object lesson in stratigraphic reversal and a testimonial to the magnitude of modern urban land alteration, the site, as known from this study, does not possess public significance.

Ethnic Significance

"An archaeological entity which has religious, mythological, social or other special importance for a discrete population is said to be ethnically significant" (Moratto, 1975:5 cited in Schiffer and Gumerman, 1977:244).

No ethnic, demographic or occupational identity could be established for the Bluebird site.

Background research concerning the original dump excavated by Mr. Caporusso and associates in Brooklyn Township of the city of Oakland might yield information about a discrete cultural entity that contributed to the Bluebird site. Such a possibility, however, seems remote. Given our present understanding of the Bluebird assemblage, we judge that it does not possess ethnic significance.

CONSTRAINTS AND RECOMMENDATIONS

In light of the above analysis and lack of significance of the Bluebird site, we recommend that the Citation Homes construction project proceed as planned. Since we do not consider the Bluebird site to represent a significant cultural resource, we do not anticipate that construction will produce an adverse impact. It should be noted, however, that our analysis has covered the materials excavated from only 0.02% of the site's total area (Parkman 1978). In consideration of this small sample size we recommend that if any portion of the site is to be removed or destroyed, a qualified archaeologist be contracted to monitor the excavation.

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NOTE:

[1] The original plan was to follow the five units chosen by intuitive means by at least an equal number of units chosen randomly. The relatively small enrollment of the class, the hardness of the soil and inclement weather on two occasions, however, prevented us from ever extending the project beyond the initial five units.

APPENDIX 1

CERAMIC MAKER'S MARK INVENTORY

CATALOGUE NUMBER	MAKER AND MARK DESCRIPTION	ATTRIBUTED DATE	REFERENCE
0-0-540	Royal Arms above "STONE, CHINA" above "1844" above "GOODWIN'S". *Goodwin Pottery Company, E. Liverpool, Ohio, 1844-1913.*	ca. 1893-1906	Gates and Omerod, 1982
0-0-438	"VITREO(US)" above "EDWIN M. KNOW(LES)" above "CHINA CO." above "21-1-2". (Possibly manufactured in 1921). *Edwin M. Knowles China Company, East Liverpool, Ohio, 1900-1963.*	ca. 1900-1948	Gates and Omerod, 1982
0-0-538	"(VI)TREOUS" above "(EDWI)N M. KNOWLES" above "CHINA CO." above "(1)8-2-10". (Possibly manufactured in 1918).	ca. 1900-1948	Gates and Omerod, 1982
0-0-453	Partial vase above "EDWIN M. K(NOWLES)" above "CHINA C(O)" above "21-2-5". (Possibly manufactured in 1921).	ca. 1900-1948	Gates and Omerod, 1982
0-0-185	"K.T.&K." above "S----V"above "CHINA." above "S. G. C.". *Knowles, Taylor and Knowles, East Liverpool, Ohio, 1870-1929.*	ca. 1905-1929	Gates and Omerod, 1982
0-0-454	"___ " above "S----V" above "CHINA." above "P. E. K.".	ca. 1905-1929	Gates and Omerod, 1982
0-0-428	"K.T.&K." above "S----V" above "CHINA." above "F. Q. D.".	ca. 1905-1929	Gates and Omerod, 1982
0-0-424	"K.T.&K." above "S----V" above "CHINA." above "S. E. J.".	ca. 1905-1929	Gates and Omerod, 1982
0-0-542	Fleur de Lis above "HOMER LAUGHLIN" above "...e ANGELUS". *Homer Laughlin China Company, East Liverpool, Ohio, 1877 - present.*	ca. 1909	Gates and Omerod, 1982
0-0-450	Fleur de Lis above "HOMER LAUGHLIN" above "(HU)DSON".	ca. 1908-1928	Gates and Omerod, 1982
0-0-430	Fleur de Lis above "HOMER LAUGHLIN" above "MADE IN U.S.A." above "A 2 N".	ca. 1912	Gates and Omerod, 1982
0-0-175	"HOMER LAUGHLIN" above "HOTEL" above "CHINA", enclosed by a circle.	ca. 1901-1915	Gates and Omerod, 1982

0-0-180	Partial Fleur de Lis above "(LAU)GHLIN"above "U. S. A.".	ca. 1900-1960	Gates and Omerod, 1982
0-0-435	Fleur de Lis above "...MER LAUGHLIN" above "... IN U.S.A." above "A 2 N".	ca. 1912	Gates and Omerod, 1982
0-0-440	Partial Fleur de Lis above "HOMER LAUGHLIN" above "MADE IN U.S.A." above "B 3 N".	ca. 1913	Gates and Omerod, 1982
0-0-179	Partial Fleur de Lis above "... LAUGHLLIN" above "(A)NGEL(US)".	ca. 1913	Gates and Omerod, 1982
0-0-181	Partial Fleur de Lis above "HOMER L ..." above "MAD(E)".	ca. 1900-1960	Gates and Omerod, 1982
5-0-42	Fleur de Lis above "HOMER LAUGHLIN".	ca. ?	Gates and Omerod, 1982
5-3-999	"HOMER LAUG(HLIN)" above "MADE IN U.S.A." above "B 2 N".	ca. 1912	Gates and Omerod, 1982
0-0-426	"...(U) S.A." above "A 2 N" (Same A 2 N as on #430) Homer Laughlin China Company.	ca. 1912	Gates and Omerod, 1982
0-0-559	Fleur de Lis above "HOMER L(AUGHLIN)" above "MADE".	ca. 1900-1960	Gates and Omerod, 1982
4-2-999	"D.E. McNICOL" above "EAST LIVERPOOL, O." above "W C P". *D. E. Mc Nicol Pottery Company, E. Liverpool, Ohio, 1892-1954 .*	ca. 1915-1929	Gates and Omerod, 1982
0-0-431	"1912 OCT 1912" and "1912 NOV 19(12)" at the top of two calendar pages. Partial pink and green floral design on left. Possibly manufactured by D.E. McNicol.	ca. 1912	Gates and Omerod, 1982
0-0-212&448	Crown and Shield with "MERCER" inscribed inside. *The Mercer Pottery Co., Trenton, N.J., 1868-?.*	ca. ?	Barber, Edwin 1909
0-0-183	"(SMI)TH-PHILLIPS (CHINA)" above a pitcher, enclosed by a circle. *Smith-Phillips China Co., E. Liverpool, Ohio, 1901-1929.*	ca. 1901-1915	Gates and Omerod, 1982
3-1-12	Wreath above "R(OYAL)" above "AUSTR(IA)". *Gutherz, Oscar & Edgar, Austria, 1899-present.*	ca. ?	Cushion, J.P. 1980
0-0-519	Crown above banner inscribed with "ALLERTO(N)" above "ENGLAN(D)" above "WILLO(W)".*Charles Allerton and Sons, Staffordshire, England, 1859-1942.*	ca. 1903-1912	Godden, G.A. 1964
0-0-447	"ROYAL" above "SEMI-POR(CELAIN) above crown? *Johnson Bros. Ltd., Hanley& Tunstsll, Staffordshire, England, 1883-present.*	ca. ?	?
0-0-520	Crown above encircled "JOHN MADDOCK & SONS Ltd. ROYAL-VITREOUS","ENGLAND" in center. *John Maddock & Sons Ltd., Burslem, Staffordshire, England, 1855-present.*	ca. 1896+	Godden, G.A. 1964

0-0-507	Crown above banner inscribed with "(ALF)RED MEAKIN Ltd" above "ENGLAND." *Alfred Meakin Ltd., Tunstall, Great Britain , 1875-1937+.*	ca. 1897	Godden, G.A. 1964
0-0-442	"WEDG...". Possible impressed mark used by Wedgwood & Co. as early as 1860. *Josiah Wedgwood (& SONS LTD.) Burslem, England ,1759-present.*	ca. ?	Godden, G.A. 1964
0-0-173	Banner inscribed with "MELBOURNE" above "TRADE MARK" above second banner inscribed with "WHAFINGSEY & Co ENGLAND". In center of banners is a ship above a globe.	ca. ?	?
0-0-425	Crown above "HOTELWARE" above "(MA)DE IN (ENG)LAND".	?	?
0-0-187	Crown above crossed swords above "R. C.". *Phillip Rosenthal & CO., Kronach, Bavaria, Germany 1879-present.*	ca. 1901-1956	Kovel, Ralph 1986
0-0-462	"(E)MPIRE" above S. & C:" above "(B)AVARIA".	?	?
0-0-404	"MADE IN JAPAN".	ca. 1921-1941	Stitt, Irene 1974
0-0-579	"MADE IN JAPAN".	ca. 1921-1941	Stitt, Irene 1974
0-0-541	"HANA PAINTED" above M-in-wreath above "NIPPON", in green. *The Noritake Company Ltd. Nagoya, Japan, 1876-present.*	ca. 1911	Donahue, L.A., 1979
0-0-182	"NORITAK(E)" above M-in-Wreath, in green.	ca. 1925	Donahue, L.A., 1979
0-0-222	"(M)ADE".	1921-1941	Stitt, Irene 1974
0-0-170	"MA(DE)".	1921-1941	Stitt, Irene 1974
0-0-176	"(MA)DE" above "(I)N" above "(JAP)AN".	1921-1941	Stitt, Irene 1974
0-0-539	Japanese characters. "GREAT JAPAN ...".	?	?
0-0-233	M-in-Wreath. Suspected imitation as no marks in the literature match this one.	?	?
2-2-30	"...DERWOOD" above "...GE K?GE" above "1 1 10?".	?	?
0-0-433	"FLORENCE" (Writing similar to Homer Laughlin).	?	?
0-0-427	Mark blurred.	?	?

3-3-7	"(E)MPIRE" above "...NA", beside a small bottle.	?	?
0-0-452	"...PHALZ C..." above blurred ensignia.	?	?
0-0-455	Ensignia above "...NS Ltd".	?	?
0-0-211	Crown and Circle, "J&..." inside cirle.	?	?
0-0-470	"...EN" above ensignia above "CHINA".	?	?
0-0-459	"DERWCO" above "N. S.".	?	?
0-0-464	"...RUS" above "CHINA".	?	?
3-1-13	"AL..." above "SEMI-...".	?	?
3-1-30	Mark blurred.	?	?
1-2-7	"...AN".	?	?
0-0-999	Flag above "K" above tent? with crown inside.	?	?
0-0-578	"...OYAL IRONSTO...".	?	?
5-3-113	"THOMAS".	?	?
0-0-999	"...LIMENTS OF ... OUTFIT". Stoneware crock.	?	?
0-0-463	"...Zn & M...". Stoneware crock.	?	?
0-0-135	"RED WING UNION". Stoneware crock. *Red Wing Union Stoneware Co., Red Wing, Minn., 1870-1960.*	ca. 1870-1960	Shelwood P.C.
0-0-214	"STONEWARE - RED WING UNION". Crock.	ca. 1870-1960	Shelwood P.C.
0-0-512	"UNION S-/RED...". Stoneware crock.	ca. 1870-1960	Shelwood P.C.

APPENDIX 2

EMBOSSED GLASS BOTTLE INVENTORY

CATALOGUE	MAKER AND MARK DESCRIPTION	DATE	REFERENCE
4-1-52	Aqua bottle missing neck embossed with "LEA & PERRINS' vertically on wall, "WORCESTERSHIRE SAUCE" on shoulder, and "J 6 D S" on base. "JDS" indicates *John Duncan and Sons,* New York.	1880-1920	Hattori, et. al. 1979
0-0-111	Aqua wall fragment embossed "LEA & PE(RRINS)".	1880-1920	Hattori, et. al. 1979
0-0-98	Aqua whole base embossed "J D S".	1880-1920	Hattori, et. al. 1979
4-1-19	Aqua base fragment embossed "J 74 D S".	1880-1920	Hattori, et.al. 1979
0-0-125 0-0-126 0-0-127 0-0-128 0-0-129 0-0-130	Opaque white glass lid fragments of a 'BOYDS GENUINE MASON PORCELAIN LINED CAP". Manufactured by *Illinois Pacific Glass Co.*. San Francisco, Ca. or by the parent company *Illinois Glass Co.* Alton, Ill.	c.1900	Toulouse, 1969
1-1-43	Clear bottle base fragment embossed "P.C.G.W." *Pacific Coast Glass Works.* San Francisco, Ca. P.C.G.W. was the predecessor of Pacific Coast Glass Co.	1902-24	Hattori, et. al. 1979
0-0-91 4-2-58	Clear base,whisky flask shape,embossed with a dual quadrangle containing "PC" ; the logo of the *Pacific Coast Glass Company.* San Francisco, Ca.	1925-30	Toulouse, 1972
5-0-32 4-2-58	Clear wall fragment of bottle or jar embossed with a dual quadrangle containing "PC"; the logo of the *Pacific Coast Glass Company.* San Francisco, Ca.	1925-30	Toulouse, 1972

4-3-47	Clear whole stopper-top medicine bottle embossed on base with the "IPG" inside a diamond logo of the *Illinois Pacific Glass Co.* (1902-30) or the*llinois Pacifi* c*Glass Corp.* (1925-30). IPG used the same logo after changing name in 1925. The IPG Glass factory was located at 15th and Folsom, San Francisco, Ca.	1902-30	Toulouse, 1972
0-0-566	Clear octagonal bottle or jar base embossed with "IPGCO". *Illinois Pacific Glass Co.*	1902-30	Toulouse, 1972
0-0-79 0-0-80 0-0-81 0-0-568 5-5-153a-b	Amber bottle or jar base fragments embossed with the "IPG" in a diamond logo of the *Illinois Pacific Glass Co.*	1902-30	Toulouse, 1972
0-0-88	Clear bottle or jar base embossed with "IPGCO" in diamond logo of the *Illinois Pacific Glass Co.*	1902-30	Toulouse, 1972
0-0-569 4-2-62	Clear rectangular medicine bottle bases embossed with the "IPGCO" in diamond logo.	1902-30	Toulouse, 1972
0-0-93 0-0-567 4-3-52 5-6-187	Clear bottle bases with partial walls embossed with 3 diamonds above "IPGCO" in diamond logo.	1902-30	Toulouse, 1972
0-0-114	Clear fruit jar wall fragment embossed with "S" in diamond. Manufactured by *Illinois Pacific Glass Co.* for Ben Schloss Manufacturing Co. San Francisco, Ca.	c.1910	Toulouse, 1972
4-1-21	Amber base fragment embossed with "IPCCO" in diamond logo of the *Illinois Pacific Coast Co.* San Francisco Ca. The "C" replaced "G" in the logo after company changed name in 1930. The Illinois Pacific Co. ended in 1932 when it merged with Owens-Illinois Co.	1930-32	Toulouse, 1972
0-0-90	Clear whole base of condiment bottle embossed with an "H" inside a diamond below "191" and encircled with "H.J.HEINZ CO PATD."	1900-43	Toulouse, 1972
0-0-87	Clear base fragment of condiment bottle embossed with the circle in a square logo of the *Owens Bottle Co.* below "57" and encircled with 'H.J.HEINZ CO. PATD."	1911-29	Toulouse, 1972
0-0-89	Clear base fragment of condiment bottle embossed with circle in square logo of the *Owens Bottle Co.* with "N" on left side and encircled with "H.(J. HEINZ) CO. PATD."	1911-29	Toulouse, 1972

5-2-65	Clear base and partial walls of medicine bottle embossed with dosage ladder on side and the circle in the square logo of the *Owens Bottle Co.* Toledo, Oh.	1911-29	Toulouse, 1972
0-0-548	Amber base fragment embossed with the circle in the square logo of the *Owens Bottle Co.*	1911-29	Toulouse, 1972
0-0-200 0-0-72	Clear base fragments of fruit jars embossed "KERR MFG. CO. SAND SPRINGS. OKLA. encircling "PATENTED AUG. 31 1915".	1912-46	Toulouse, 1972
5-3-135	Aqua base and partial wall embossed with "PERFECT MASON" on wall and "6" on base Position of lettering and Sans Serif script indicates a *Ball Perfect Mason* fruit jar.	c.1915	Toulouse, 1969
0-0-546	Aqua side wall fragment embossed with "(PERF)ECT (MAS)ON". Same lettering and style as 5-3-135.	c.1915	Toulouse, 1969
0-0-547	Clear base with partial walls of octagonal bottle or jar embossed on base with "PACKED BY CAL-PACK CORP." California Packing Co. was formed in 1916 by California Fruit Canners Assoc. merging 18 companies into a single corporation. According to Toulouse embossed bottles and jars were quickly replaced by the use of paper labels on unmarked containers. Thus, embossed Cal-Pack containers may be assumed to date closer to 1916 rather than later. Headquarters: San Francisco, Ca.	1916-present	Toulouse, 1972
0-0-103	Clear base fragment embossed with "(PACK)ED BY (CA)L-PACK CORP."	1916-present	Toulouse, 1972
1-2-8	Clear base fragment embossed with "PAC(KED) BY "CAL-PACK (CORP.)"	1916-present	Toulouse, 1972
3-1-3	Clear base fragment embossed with "BY CAL- (PAC)K".	1916-present	Toulouse, 1972
5-3-137	Clear base fragment, octagonal, embossed with "BY CAL-PACK CO(RP)".	1916-present	Toulouse, 1972
0-0-74	Clear whole bottle base with partial wall embossed with the H over A logo of the *Hazel-Atlas Glass Co.* Wheeling W.Va.	1920-64	Toulouse, 1972
0-0-496	Opaque square white glass jar (intact) embossed with "ELMO" and the H over A logo of the *Hazel-Atlas Glass Co.* Wheeling W. Va.	1920-64	Toulouse, 1972

5-2-66	Opaque round white glass jar base fragment embossed with the H over A logo of the *Hazel-Atlas Glass Co.* Wheeling W. Va.	1920-64	Toulouse, 1972
0-0-102	Clear rectangular base fragment embossed with "60..." within the diamond logo of the *Diamond Glass Co.* Royersford, Pa.	1924-Present	Hattori, et. al. 1979
0-0-545	Amber whole base embossed with "691" within the diamond logo of *Diamond Glass Company.*	1924-Present	Hattori, et. al. 1979
2-2-1	Clear round bottle or jar base embossed with small case "b" within the diamond logo of the *Diamond Glass Company.*	1924-Present	Hattori, et. al. 1979
0-0-82 0-0-83 0-0-84 0-0-85	Amber base fragments embossed with "CLOROX" in diamond logo of the *The Clorox Company* , Oakland, Ca. Diamond logo on base only used from 1929-30.	1929-30	Clorox Collectors Guide
0-0-101	Clear base of small jar embossed with "K.A.P. L.A. CAL". Shows "valve marrk of the Miller Glassmaking machine". (Toulouse,72:302).	1930-40	Toulouse, 1972
4-4-18	Clear square base fragment embossed with "S" within a diamond. Toulouse identifies logo as "SIERRA CLUB" , a "franchised beverage". Colcleaser identifies the Sierra Club Beverage Co. which was located in Glendale, Ca.	c.1930-50	Toulouse, 1972 Colcleaser, 1967
4-3-53	Clear base fragment with embossed diamond across a circle containing the letter "I" above "PEPSODENT" above "(ANTI)SEPTIC"*Owens-Illinois Pacific Coast Co.* San Francisco, Ca.	1932-43	Toulouse, 1972
0-0-482	Glass bottle stopper with applied top manufactured from glass containing manganese. Manganese used in U. S. glass industry from 1880-1914.	1880-1914	Kendrick, 1971
0-0-563	Bottle base fragment embossed with 'MCILHENNY TABASCO SAUCE". Manufactured from glass containing manganese.	1880-1914	Kendrick, 1971
0-0-92 0-0-107 0-0-536 5-0-24	Bottle and jar base fragments manufactured with glass containing manganese.	1880-1914	Kendrick, 1971

0-0-34 0-0-112 0-0-118 0-0-481 0-0-499 0-0-500 0-0-501 0-0-504 4-2-65 5-0-27	Cut-glass fragments manufactured with glass containing manganese.	1880-1914	Kendrick, 1971
0-0-78 0-0-199 3-1-22	Unmarked base fragments, with Owens machine mark and purple tint. Date range indicated by the combination of the two factors. Manganese was used in glass making from 1880-1914. When exposed to sunlight glass turned purple. Owens machine first used in glass production 1904.	1904-1914	Kendrick, 1971 Toulouse, 1972
0-0-3 0-0-5	Bottle neck fragments with machine made lips manufactured with glass containing manganese.	1904-1914	Kendrick, 1971
0-0-1 0-0-4 0-0-9 0-0-10 0-0-16 0-0-32 0-0-38 0-0-67 0-0-197 0-0-492 0-0-522 0-0-523 0-0-562 0-0-564 0-0-565 3-1-29 3-2-3 4-4-20	Bottle neck fragments with applied lips. Prior to the invention (1899) and implementation (1904) of Michael Owens automatic bottle making machine, bottles were made either by hand blowing or by semi-automatic machines using molds. In either case the lip was applied in a separate step and is smooth. Machine made bottles have a mold seem that runs the entire length of the bottle and through the lip. A precise terminus date for applied lips is not possible. However, according to Miller and Sullivan by 1924-25 90% of all bottles were machine made. Hand blown and semi-automatic machine-made bottles for pharmaceuticals, and cosmetics continued to be made into the 1930's but were rare. 1940 becomes the Terminus Ante Quem for applied lip bottles and jars.	pre- 1940	Kendrick, 1971

According to G. Kendrick (69:65) "About 1869 the American bottle manufacturers adopted the habit of inscribing in the glass the names of the contents, manufacturers, distributors, slogans and messages of all sorts. This custom seems to have come to an end with the machine made bottles, and paper labels have taken over that function. " Thus, we may assign a date range of 1869-1940, unless otherwise noted, to the following embossed fragments found at the Bluebird site.

0-0-571	Wall fragment embossed "PRE...DR.PETER... CHIC...'. The remains of the label strongly resemble a patent medicine bottle label shown in Colcleaser: 'PREPARED BY DR. PETER FAHRNEY AND SONS CO. CHICAGO, ILL. U.S.A.".	1869-1940	Kendrick, 1971 Colcleaser, 1967
0-0-71	Clear bottle or jar base embossed with "MJC".		
0-0-75	Clear bottle base and partial wall of bottle or possibly a drinking glass embossed on base with horseshoe encircling a star.		
5-1-15	Clear base fragment embossed with horseshoe (without star).		
0-0-86	Dark green base fragment embossed "VO...5".		
0-0-94 0-0-96	Cobalt blue base fragments embossed with concentric triangles. Identified as Vicks Vapo-Rub container. Date unspecified.		Koch, 1979
0-0-113	Clear wall fragment embossed with "OA.." below "695...".		
0-0-115	Pale green wall fragment embossed "ENG...".		
0-0-116	Clear base fragment embossed "TORY...".		
0-0-117 0-0-122	Clear wall fragments that when joined form one piece embossed "(OA)KLAND".		
2-2-23	Clear wall fragment embossed "(O)AKLAND (C)REAMERY".		
4-1-32	Clear wall fragment embossed "OA...CRE...".		
0-0-119	Clear wall fragment embossed "...TRATE OF (M)AGNESIA".		
0-0-120	Clear rectangular base fragment embossed "...CEDAR...(M)ADE IN U.S.A.".		
0-0-572	Clear rectangular base fragment embossed "0-6-CEDAR MADE IN U.S.A.".		
0-0-121	Clear fragment embossed "...RUG (CO)".		
0-0-76	Clear base fragment embossed with "DESIG... FEB. 21...".		
0-0-110	Pale green wall fragment embossed "PRIMR... (R)EGISTERED...TERN".		
0-0-570	Pale green wall fragment embossed "ROS... BRA(ND)...(COMP)ANY". Similar design to 0-0-110 and may complete word "primrose".		

APPENDIX 3

CA-ALA-416H ARTIFACT CATALOGUE

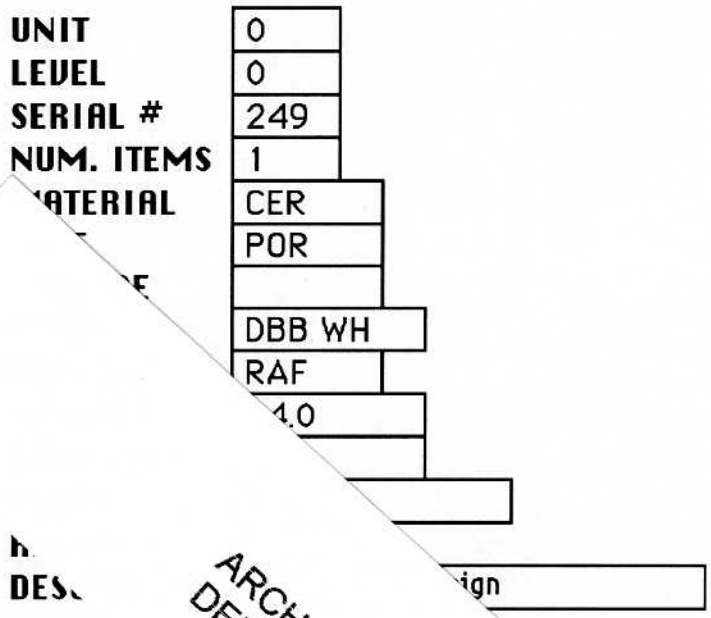
SURFACE

0	0	529	1	?	MAR	MX	COM			1,216	Cat's eye marble
0	0	446	1	CE	CH	PLYWT	ANF			1,637	Gr leaves+fruit= pink flowers
0	0	436	1	CE	CH	PLYWT	BAS		13.0	1,634	Thick base w/blk+gr+blu motif
0	0	486	1	CE	CH	BLUWT	BD			1,199	Porcelain doll leg
0	0	487	1	CE	CH	WTWT	BD			1,200	Porcelain doll arm
0	0	390	1	CE	CH	BLUWT	BOD			1,639	Med. blue +white motif
0	0	417	1	CE	CH	PLYWT	BOD			1,631	Bowl ? w/ gr+blu flwrs/berries
0	0	152	1	CE	CH	PLYWT	BOD			1,636	Rd+prd flwrs+blk+pnk rim band
0	0	471	1	CE	CH	PLYWT	BOD			1,640	Green leaf+ purple flower
0	0		1	CE	CH	BLUWT	RIM	24.0		1,632	Plate w/ med.blue flowers +
0	0			CE	CH	GGWT	RIM	13.0		1,629	Bowl w/gr. flowers + diamonds
0	0				CH	GYWT	RIM	10.0		1,633	Saucer ? w/ grey flower motif
0	0				CH	PLYWT	RIM	8.0		1,630	Cup w/childs tea party motif
0						PLYWT	RIM	22.0		1,635	Plate w/gr+bl+gy floral motif
0						PLYWT	RIM	18.0		1,638	Plate? w/ gr+rd+gld motif
						WTWT	RM	12.0		1,203	
						MX	BD			1,193	Porcelain doll frags
							BOD			1,641	Green leaf motif
0							COM		INS	1,196	Electrical insulator
0	0						COM			1,667	Oblong lid w/ handle w/gold edge
0	0	451								1,653	Light blue and white motif
0	0	423	1					5.0		215	"LLOW" blurred mark
0	0	317	1					8.0		216	"MELBOURNE"
0	0	433	1	CE				.0		208	"FLORENCE"
0	0	426	1	CER						209	"A2N"
0	0	211	1	CER	CH					210	"J & H"
0	0	455	1	CER	CHIN					211	"NS LIE"
0	0	507	1	CER	CHIN					14	"ALFRED MEAKIN LTD"
0	0	520	1	CER	CHIN	L					"JOHN MADDOCK"
0	0	181	1	CER	CHIN	LWI					"HOMER LAUGHLIN"
0	0	435	1	CER	CHIN	LWILW					MER LAUGHLIN"
0	0	450	1	CER	CHIN	LWILWT	b.				LAUGHLIN"
0	0	464	1	CER	CHIN	LWILWT	BAS				N"
0	0	427	1	CER	CHIN	LWILWT	BAS				
0	0	212	1	CER	CHIN	LWILWT	BAS				
0	0	459	1	CER	CHIN	LWILWT	BAS				
0	0	470	1	CER	CHIN	LWILWT	BAS				
0	0	448	1	CER	CHIN	LWILWT	BAS				
0	0	354	1	CER	CHIN	BBWT	BOD				
0	0	456	1	CER	CHIN	BBWT	BOD			1,6	
0	0	411	1	CER	CHIN	BBWT	BOD			1,65	
0	0	461	1	CER	CHIN	GRWT	BOD			1,644	M
0	0	432	1	CER	CHIN	PLYWT	BOD			1,648	Pink a
0	0	473	1	CER	CHIN	PLYWT	BOD			1,650	Blue flow
0	0	467	1	CER	CHIN	PLYWT	BOD			1,655	Rose flower+
0	0	513	1	CER	CHIN	RRWT	BOD			1,645	Red tree etched m
0	0	457	1	CER	CHIN	WT	BOD			1,660	imp "M-7-D..MARS
0	0	582	1	CER	CHIN	BRWT	RIM	25.0		1,654	Brn scallop band+floral n
0	0	173	1	CER	CHIN	DBLDBL	RIM	32.0		219	"MELBOURNE +"
0	0	472	1	CER	CHIN	PLYWT	RIM	18.0		1,651	Plate gilt+blk trim+gr+br motif n
0	0	632	1	CER	CHIN	PLYWT	RIM	20.0		1,656	Brn floral rim motif+dk bl. ctr.
0	0	519	1	CER	CHIN	DBLWT	ANF		9.0 ?	166	"CHARLES ALLERTON"
0	0	425	1	CER	CHIN	DGGLWT	ANF		6.4 ?	190	"-HOTELWARE ++"
0	0	210	1	CER	CHIN	LWILWT	ANF		9.0 ?	168	"J. MADDOCK & SONS"
0	0	175	1	CER	CHIN	LWILWT	ANF		6.5 ?	170	"HOMER LAUGHLIN"

APPENDIX 4

COMPUTER CODE BOOK

Fourteen attributes or categories of information were recorded for each artifact from CA-Ala-416H on a computer form like that illustrated below:



Following is found a detailed expla… … of the fourteen information fields:

UNIT The five excavation units and t… …ned simple one digit codes.

UNIT	CODE
SURFACE	= 0
N25W27	= 1
N0W15	= 2
N4W6	= 3
N14E15	= 4
S16W16	= 5

APPENDIX 5

CULTURAL AND ENVIRONMENTAL IMPLICATIONS OF THE CORRODED LUMPS OF IRON EXCAVATED AT THE BLUEBIRD HISTORICAL DUMP SITE.

William C. O'Neal*

INTRODUCTION

979, a historical dump site was excavated by a Field

Archaeo. tate University at Hayward, under Dr. George Miller.

The Site is loc. ear San Leandro, California. A general site

survey surface colle. eral period of from late 1800's to the

1930's.

Surface artifacts found were c s, bricks, slag and clinkers, rusted iron clumps and pieces, mi d equipment, wood, broken asphalt paving and concrete, building fix utomobile parts and other similar artifacts.

EXCAVATION

A total of 5 pits were excavated to depths of 0.4 to 0.6 meters, a reached in one pit (N4W6) at about 0.6 meters. All pits contained artifacts sin surface artifacts described above, and all pits contained corroded lumps of iron ofte with a sulphurous-appearing yellow powder. It was decided to chemically analyze the ye powder since it aroused considerable curiosity. The corroded lumps themselves were assumed

* Student paper submitted for Anthropology 4240, Archaeological Data Analysis, August, 1979.