A CULTURAL RESOURCES STUDY FOR 1834 SPINDRIFT DRIVE

CITY OF SAN DIEGO

Project No. 584820

Prepared for:

City of San Diego
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And:

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November 1, 2017; Revised February 13, 2018; Revised June 1, 2018

Archaeological Information Page

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Report Date:	November 1, 2017; Revised February 13, 2018; Revised June 1, 2018
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Lead Agency Identifier:	Project No. 584820
USGS Quadrangle:	Township 15 South, Range 4 West of the *La Jolla, California* Quadrangle
Study Area:	0.55 acre; APN 346-44-010
Key Words:	USGS *La Jolla* Quadrangle (7.5 minute); archaeological survey and subsurface investigation; disturbed and intact cultural deposits; direct impacts to SDI-39/W-1; Historical Resources Board-designated significant prehistoric site; data recovery and archaeological Mitigation Monitoring and Reporting Program recommended.

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1.0 MANAGEMENT SUMMARY/ABSTRACT

This report describes an archaeological assessment conducted by Brian F. Smith and Associates, Inc. (BFSA) for cultural resources located at 1834 Spindrift Drive in the city of San Diego, California (Plate 1.0–1). The property owner has applied for a development permit for the demolition of the existing residence, construction of a new residence and guest house, and property improvements. As the project is located within a culturally sensitive area within the Spindrift neighborhood of the La Jolla community, the City of San Diego requires a cultural resource investigation to determine the status of any cultural resources within the Area of Potential Effect (APE).

Plate 1.0–1: Aerial view of 1834 Spindrift Drive.

As part of assessing the potential to encounter archaeological deposits associated with SDI-39 within the property during construction, BFSA conducted an archaeological survey and subsurface test excavations between November of 2016 and July of 2017. These investigations followed the protocol listed in the Archaeological Test Plan (ATP) that BFSA submitted to the City of San Diego in 2016 (Smith 2016). This included a survey of the property and the excavation of archaeological shovel test pits (STPs) and archaeological test units to search for potentially significant subsurface deposits associated with the prehistoric village complex of SDI-39. Native American representatives were present with the BFSA archaeological team during the survey and subsurface investigations.

A records search provided by the South Coastal Information Center (SCIC) at San Diego State University (SDSU) indicated that 1834 Spindrift Drive is situated within the boundaries of recorded significant prehistoric Site SDI-39/W-1. The archaeological survey and research indicated that the property was previously disturbed as a result of the residential development of this neighborhood between the 1920s and the 1950s. Based upon the data from the field investigations, the portion of SDI-39 within the 1834 Spindrift Drive property is evaluated as significant under California Environmental Quality Act (CEQA) and City of San Diego Historical Resources Guidelines.

The cultural resource study was adequate to evaluate the status of archaeological resources within the property and the potential impacts represented by the proposed project. The new residence and associated improvements will represent an encroachment of 3,322 square feet into the area of SDI-39 outside of the footprint of the current residence. The data from the field

investigations indicates that construction excavations will encounter disturbed and intact subsurface deposits associated with the prehistoric occupation of Site SDI-39. As part of the cultural resources study, BFSA calculated the level of encroachment into the recorded boundaries of SDI-39 within the 1834 Spindrift Drive property. This analysis is required under San Diego Municipal Code (SDMC) Section 143.0253 because encroachment into a significant cultural resource cannot exceed 25.00 percent of the resource outside of the existing residence footprint. Based upon the data collected, the encroachment into SDI-39 within this parcel for the proposed new residence will not exceed 23.75 percent. This value is within the acceptable encroachment percentage described in SDMC Section 143.0253.

The construction of the new, proposed residence, guest house, and property improvements will represent a source of direct impacts to SDI-39, which will be mitigated though the implementation of a Mitigation Monitoring and Reporting Program (MMRP). The MMRP will include an Archaeological Data Recovery Program (ADRP) consisting of archaeologically excavated test units and bulk screening of midden soil for the recovery and repatriation of any human remains encountered. Archaeological and Native American monitoring shall be included as a mitigation monitoring requirement in order to identify, evaluate, and recover any cultural materials that might be revealed during earthwork.

A copy of this report will be permanently curated at the SCIC at SDSU. All notes, photographs, and business materials related to this project will be curated at the offices of BFSA in Poway, California.

2.0 UNDERTAKING INFORMATION/INTRODUCTION

The project APE is located at 1834 Spindrift Drive in the Spindrift neighborhood of La Jolla, generally situated between La Jolla Shores and La Jolla Cove, as shown on the *La Jolla*, *California* USGS 7.5-minute topographic quadrangle (Township 15 South, Range 4 West of the San Bernardino Base and Meridian) (Figures 2.0–1 and 2.0–2). The location of the project is depicted on a portion of the 800-foot-scale City Engineering Map in Figure 2.0–3.

The proposed project will include the demolition of the existing two-story, single-family residence, the construction of a new two-story, single-family residence with a basement and a garage, the construction of a guest house over an open cabana, and a new pool (Figure 2.0–4). The existing structure was previously determined by the City of San Diego Historical Resources Board (HRB) to not be historically significant, and therefore, it will not be preserved. The new residence will be constructed in the same location as the existing building, but the proposed project excavations will result in an estimated 3,189 square feet of construction beyond the footprint of the existing residence. Current views of the property are provided in Plates 2.0–1 and 2.0–2.

The archaeological assessment and impact evaluation for the development permit were conducted in conformance with CEQA, Section 15064.5, and City of San Diego Historical Resources Guidelines (amended September 7, 2001). The records search for this project indicated that previously recorded archaeological Site SDI-39 encompasses the general area of the Spindrift neighborhood, including 1834 Spindrift Drive. Archaeological studies for several properties in this neighborhood, such as those on Viking Way, St. Louis Terrace, and Princess Street, have encountered parts of SDI-39, including the discovery of human remains.

BFSA conducted the preliminary survey and the subsequent testing program at 1834 Spindrift Drive between November of 2016 and July of 2017. A Native American monitor from Red Tail Monitoring & Research, Inc. (Red Tail) was present for all archaeological investigations. The majority of the property was disturbed when the neighborhood was graded between the 1920s and the 1950s. Ground visibility during the survey was obscured over much of the APE due to the existing residential structure, hardscape, and landscaping.

The limited subsurface investigation of the property involved the excavation of 23 STPs and two archaeological test units, which identified subsurface cultural deposits throughout the property. Some locations within the property have removed most of the cultural deposit, such as the location of the existing swimming pool or parts of the residence foundation. Excavations indicated that the majority of the intact cultural deposits are located on the north side of the property, while more disturbed cultural deposits were noted on the southern half of the property. With the authorization of the City of San Diego, the shovel tests and test units were excavated around the existing residence, focusing upon areas of potential construction for the new residence.

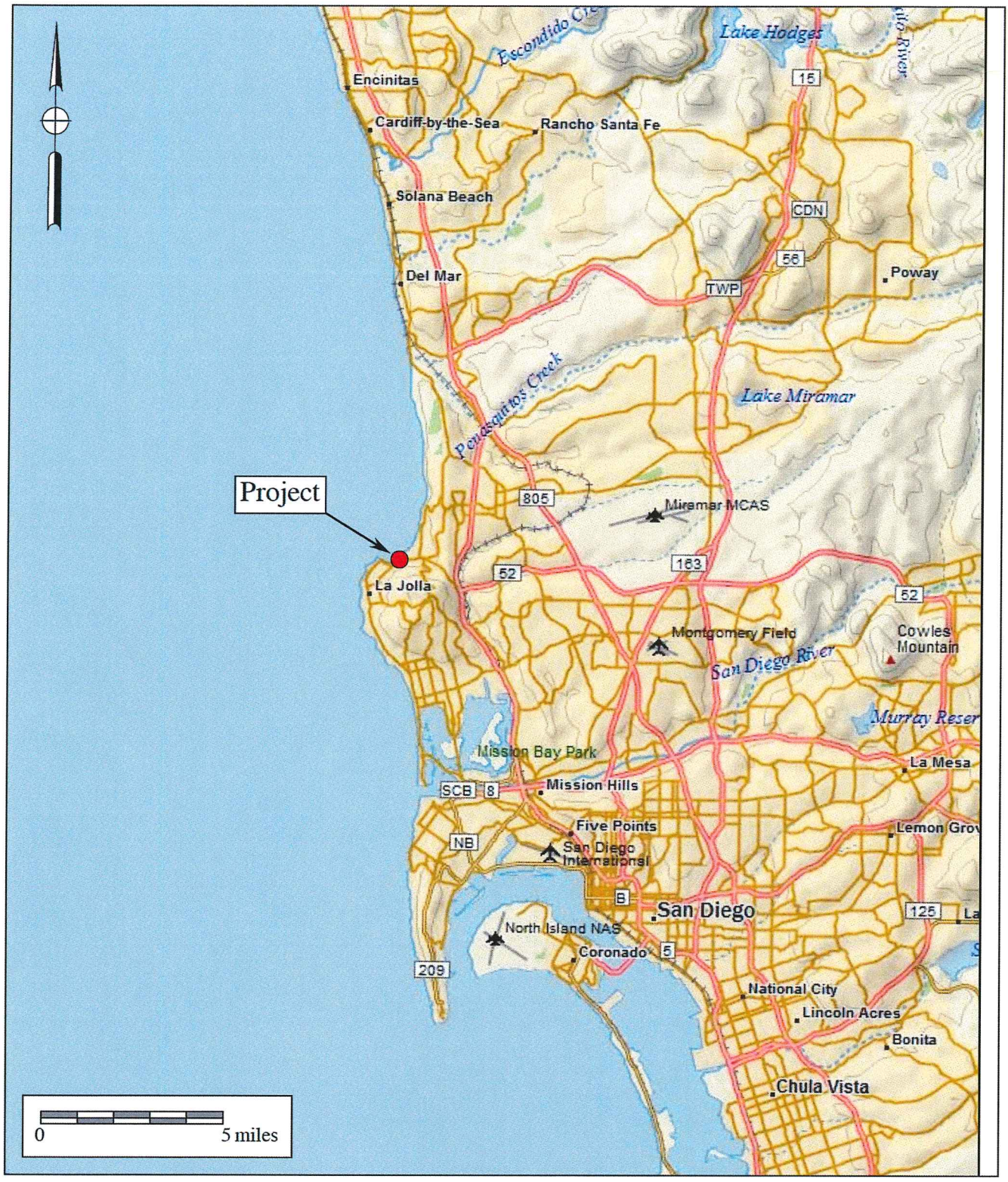


Figure 2.0–1

General Location Map

The 1834 Spindrift Drive Project

DeLorme (1:250,000)

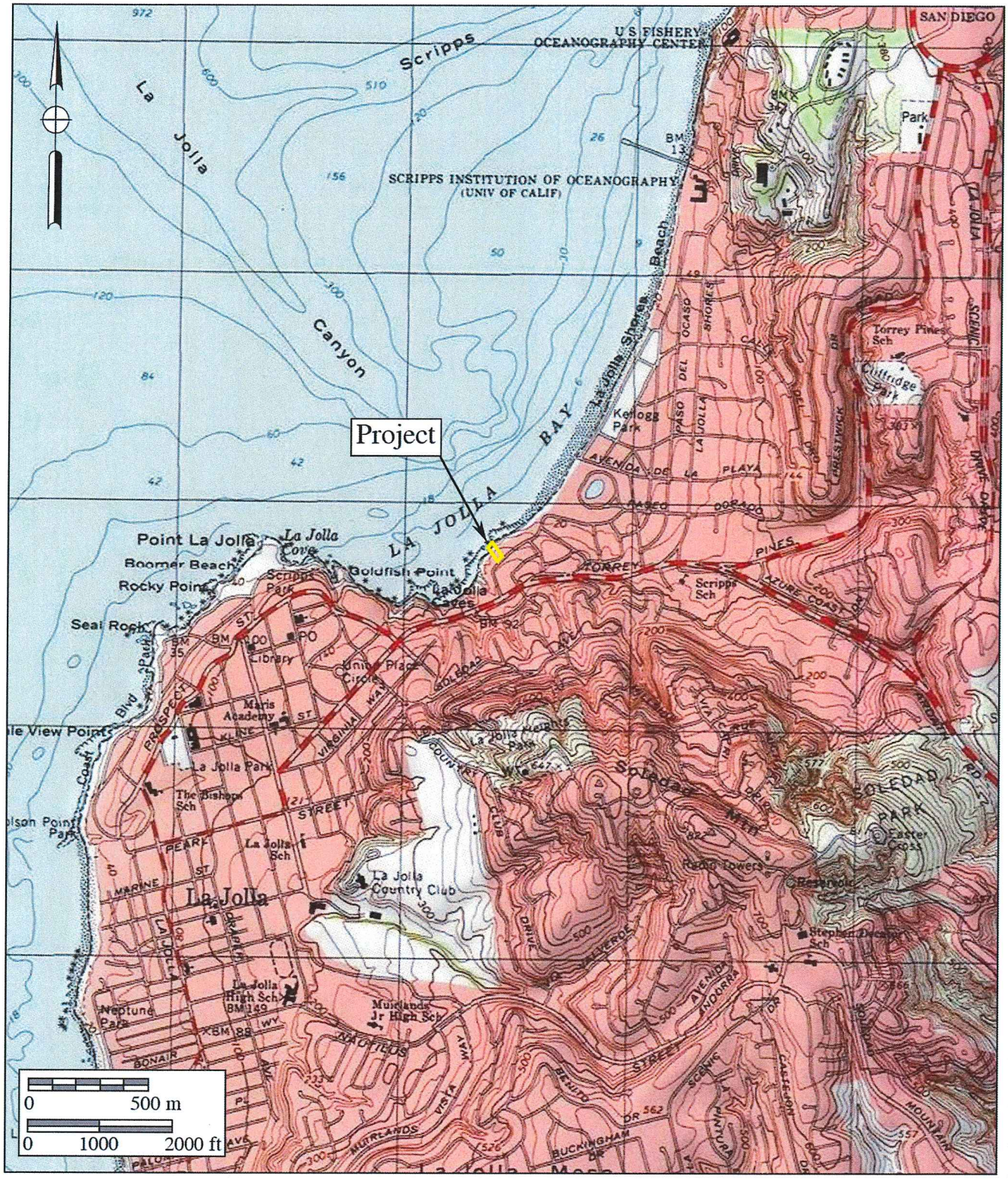


Figure 2.0–2

Project Location Map

The 1834 Spindrift Drive Project

USGS *La Jolla OE W* Quadrangle (7.5-minute series)

Figure 2.0–3

Project Location Map

The 1834 Spindrift Drive Project

Shown on The City of San Diego 1" to 800' Scale Engineering Map

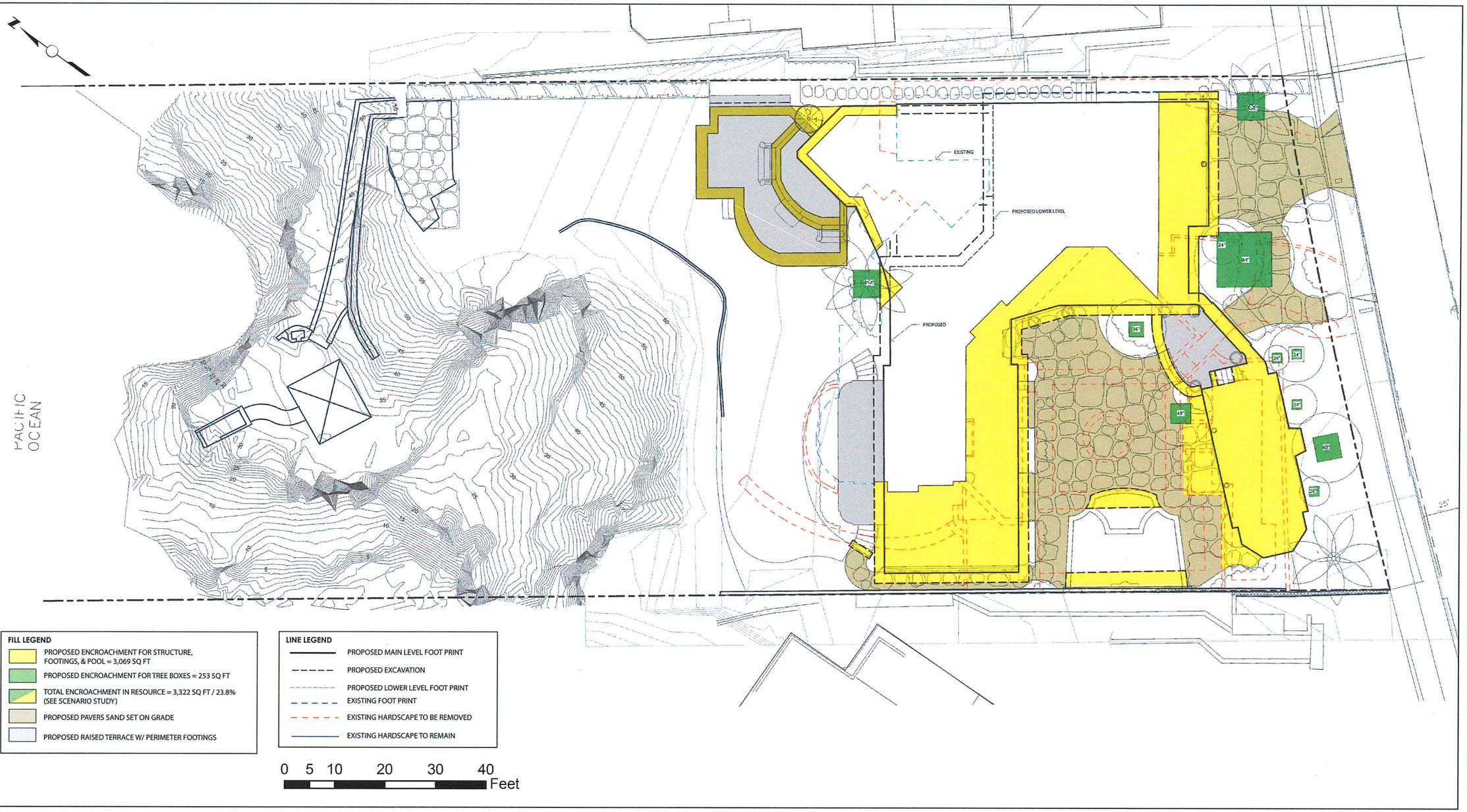


Figure 2.0–4
Project Development Map
The 1834 Spindrift Drive Project

Plate 2.0–1: View of the existing residence from Spindrift Drive, facing northwest.

Plate 2.0–2: View of the property backyard showing the existing ground cover and landscaping, facing southeast.

The recovery from these subsurface excavations confirmed the presence of elements of SDI-39 within the APE, primarily concentrated between zero and 60 centimeters deep on the north side of the lot. The test unit recovery included shell, pottery, lithic production waste, ground stone, hammerstones, shell beads, flake-based tools, bifaces, marine shell, and faunal bone. No human remains were identified during the investigations.

The limited subsurface investigation of the property involved the excavation of 23 STPs and two archaeological test units, which identified subsurface cultural deposits throughout the property. Some locations within the property have removed most of the cultural deposit, such as the location of the existing swimming pool or parts of the residence foundation. Excavations indicated that the majority of the intact cultural deposits are located on the north side of the property, while more disturbed cultural deposits were noted on the southern half of the property. With the authorization of the City of San Diego, the shovel tests and test units were excavated around the existing residence, focusing upon areas of potential construction for the new residence. The recovery from these subsurface excavations confirmed the presence of elements of SDI-39 within the APE, primarily concentrated between zero and 60 centimeters deep on the north side of the lot. The test unit recovery included shell, pottery, lithic production waste, ground stone, hammerstones, shell beads, flake-based tools, bifaces, marine shell, and faunal bone. No human remains were identified during the investigations.

The archaeological study has provided sufficient information to conclude that the proposed development will likely encounter disturbed and intact elements of SDI-39. BFSA has estimated that excavations for the new residence will encroach into 3,322 square feet of SDI-39 outside of the existing building footprint. Based upon this archaeological investigation, the area of SDI-39 within the APE is calculated as 13,984 square feet from the bluff edge on the west to the Spindrift Drive property line on the east. This total does not include the square footage of the existing residence or pool. The new construction's encroachment into 3,322 square feet of the 13,984-square-foot area of SDI-39 within the APE represents an encroachment level of 23.75 percent.

The area of SDI-39 within the APE is evaluated as significant under CEQA Criterion D and HRB Criterion A; however, the 23.75 percent encroachment is less than the 25.00 percent encroachment limitation threshold set forth in SDMC Section 143.0253. Because a significant cultural deposit was noted within the APE, mitigation of potential impacts will require an MMRP with a data recovery component to reduce the effects of the proposed project to a level below significant. The MMRP would require archaeological excavation of data recovery units at locations where soil identified as intact midden would be impacted, as well as monitoring by a qualified archaeologist and Native American representative for all excavations in disturbed midden soil. Because of the potential for the discovery of human remains, all excavated midden soil will be subjected to screening to recover human bone and sacred/ceremonial items. Furthermore, all midden soil shall either be retained on-site following screening or transported to the Santa Ysabel Reservation for repatriation.

All aspects of the project were directed by Consulting Archaeologist and Principal Investigator Brian Smith. Project Archaeologist Tracy Stropes and field archaeologists David Grabski, James Shrieve, Sabrina Corcoran, and Stephen Anderson completed the field investigations. Red Tail provided Native American monitoring and consultation. Jillian Hahnlen conducted the laboratory analysis and data entry. Tracy Stropes and Brian Smith prepared the report text and Tracy Stropes generated the report graphics. Elena Goralogia completed technical editing and report production with the assistance of Caitlin Foote. A copy of this evaluation report will be submitted to the SCIC at SDSU.

3.0 SETTING

The project setting includes both the physical and biological contexts of the project, as well as the cultural setting of prehistoric and historic human activities in the general area. The following section discusses both the environmental and cultural settings of the study area, the relationship between the two, and the relevance of that relationship to the project.

3.1 Natural Setting

The project is located in the La Jolla Community Plan Area of the city of San Diego. The project encompasses 0.55 acre of flat to gently sloping land that is situated on the cliffs above La Jolla Bay. The elevation at the property is approximately 30 feet above mean sea level (AMSL). The lot currently contains limited hardscape and landscaping for a single-family residence.

3.1.1 Geology and Hydrology

San Diego County lies in the Peninsular Ranges Geologic Province of southern California. The mountainous zone, which extends from northwest to southeast through the county, ranges to a maximum height of 6,533 feet AMSL (Beauchamp 1986). Foothills and valleys, which comprise the cismontane region, extend west from the mountains. This region typically receives more rainfall than the mesas and less than the mountainous region. Between the foothills and the coast lies the coastal mesa region, which is cut by several large drainages originating in the mountains and foothills. The coast is characterized by large bays and lagoons, major rivers, which empty into the sea, and mesas, which terminate at the ocean in the form of bluffs (Beauchamp 1986).

The project and the portion of SDI-39 being investigated are mapped as disturbed and graded; however, the Bay Point Formation (Kennedy 1975) surrounding the project consists of a geologic deposit of mostly marine and nonmarine fossiliferous sandstone. The project lies just west of several faults, including Ardath, Mount Soledad, and Rose Canyon.

3.1.2 Soils

Soils in the area fall within the Huero-Stockpen Association and are characterized by moderately well drained loams to gravelly clay loams that have a subsoil of clay or sandstone (Bowman et al. 1973). Soil in the immediate vicinity of the project is mapped as Urban Land, which consists of densely urbanized and developed areas where soil identification is not possible. The soil at the project location can be characterized as tan (10YR 7/3) silt that contains rocks and cobbles and represents approximately two-meter-thick artificial material. The soil underneath the overburden represents an intact cultural layer of loose, dark grayish-brown (10YR 4/1), loamy midden soil that is approximately 60 to 100 centimeters thick. The cultural layer lies on top of a light brown to reddish-orange (10YR 8/5), hard-packed, sandy clay that is generally devoid of cultural materials.

3.1.3 Biology

The prehistoric biological community was characterized by a variety of soft, low, aromatic, drought-deciduous shrubs, such as California sagebrush, flat-top buckwheat, California bush sunflower, and sage, with scattered evergreen shrubs including lemonadeberry, laurel sumac, coyote bush, and toyon. Plants in the understory included native needlegrass, mariposa lily, golden yarrow, everlasting, deerweed, rattlesnake weed, soap plant, San Diego barrel cactus, ashy spike moss, San Diego goldenstar, and blue dicks (Beauchamp 1986; Sawyer 1995).

Many different terrestrial and aquatic animals live in these habitat types. Terrestrial animals include mule deer, black-tailed hare, cottontail rabbit, California ground squirrel, Botta's pocket gopher, deer mouse, woodrat, bat, coyote, gray fox, striped skunk, raccoon, bobcat, mountain lion, California quail, pied-billed grebe, cormorant, great blue heron, mallard, and a variety of reptiles and amphibians. A number of different pelagic fish, such as perch and marine mollusks, including scallops, oysters, and clams, would have been available in the La Jolla Cove and the associated mudflats.

3.2 Cultural Setting

The area of western San Diego County has a rich and extensive record of both prehistoric and historic human activity. The cultures that have been identified in the general vicinity of the project area include the Paleo Indian manifestation of the San Dieguito Complex, the Archaic Stage and Early Milling Stone horizons represented by the La Jolla Complex, and the Late Prehistoric Kumeyaay Native Americans. Following the Hispanic intrusion into the region (1769), the Presidio of San Diego, the Mission San Diego de Alcalá, and the Pueblo of San Diego were established. The project area was possibly used in conjunction with the agricultural activities of the mission until the period of mission secularization. The pastoral activities of the Mexican Period (1822 to 1846) likely included use of the areas near the project for grazing purposes. Farming also blossomed and gradually replaced cattle ranching in many of the coastal areas. A brief discussion of the prehistoric and historic cultural elements documented for the project area is provided below.

3.2.1 Paleoenvironment

Because of the close relationship between prehistoric settlement and subsistence patterns and the environment, it is necessary to understand the setting in which these systems operated. At the end of the final period of glaciation, approximately 11,000 to 10,000 years before the present (YBP), the sea level was considerably lower than it is now; the coastline at that time would have been two to two and a half miles west of its present location (Smith and Moriarty 1985a, 1985b). At approximately 7,000 YBP, the sea level rose rapidly, filling in many coastal canyons that had been dry during the glacial period. The period between 7,000 and 4,000 YBP was characterized by conditions that were drier and warmer than they were previously, followed by a cooler, moister environment similar to the present-day climate (Robbins-Wade 1990).

Changes in sea level and coastal topography are often manifested in archaeological sites through the types of shellfish that were utilized by prehistoric groups. Different species of shellfish prefer certain types of environments, and dated sites that contain shellfish remains reflect the setting that was exploited by the prehistoric occupants.

Unfortunately, pollen studies have not been conducted for this area of San Diego; however, studies in other areas of southern California, such as Santa Barbara, indicate that the coastal plains supported a pine forest between approximately 12,000 and 8,000 YBP (Robbins-Wade 1990). After 8,000 YBP, this environment was replaced by more open habitats, which supported oak and non-arboreal communities. The coastal sage scrub and chaparral environments of today appear to have become dominant after 2,200 YBP (Robbins-Wade 1990).

3.2.2 Prehistory

In general, the prehistoric record of San Diego County has been documented in many reports and studies, several of which represent the earliest scientific works concerning the recognition and interpretation of the archaeological manifestations present in this region. Geographer Malcolm Rogers initiated the recordation of sites in the area during the 1920s and 1930s, using his field notes to construct the first cultural sequences based upon artifact assemblages and stratigraphy (Rogers 1966). Subsequent scholars expanded the information gathered by Rogers and offered more academic interpretations of the prehistoric record. Moriarty (1966, 1967, 1969), Warren (1964, 1966), and True (1958, 1966) all produced seminal works that critically defined the various prehistoric cultural phenomena present in this region (Moratto 1984). Additional studies have sought to further refine these earlier works (Cardenas 1986; Moratto 1984; Moriarty 1966, 1967; True 1970, 1980, 1986; True and Beemer 1982; True and Pankey 1985; Waugh 1986). In sharp contrast, the current trend in San Diego prehistory has also resulted in a revisionist group that rejects the established cultural historical sequence for San Diego. This revisionist group (Warren et al. 1998) has replaced the concepts of La Jolla, San Dieguito, and all of their other manifestations with an extensive, all-encompassing, chronologically undifferentiated cultural unit that ranges from the initial occupation of southern California to around A.D. 1000 (Bull 1983, 1987; Ezell 1983, 1987; Gallegos 1987; Kyle et al. 1990; Stropes 2007). For the present study, the prehistory of the region is divided into four major periods including: Early Man, Paleo Indian, Early Archaic, and Late Prehistoric.

Early Man Period (Prior to 8500 B.C.)

At the present time, there has been no concrete archaeological evidence to support the occupation of San Diego County prior to 10,500 YBP. Some archaeologists, such as Carter (1957, 1980) and Minshall (1976), have been proponents of Native American occupation of the region as early as 100,000 years ago. However, their evidence for such claims is sparse at best and they have lost much support over the years as more precise dating techniques have become available for skeletal remains thought to represent early man in San Diego. In addition, many of

the "artifacts" initially identified as products of early man have since been rejected as natural products of geologic activity. Some of the local proposed early man sites include Texas Street, Buchanan Canyon, Brown, Mission Valley (San Diego River Valley), Del Mar, and La Jolla (Bada et al. 1974; Carter 1957, 1980; Minshall 1976, 1989; Moriarty and Minshall 1972; Reeves 1985; Reeves et al. 1986).

Paleo Indian Period (8500 to 6000 B.C.)

For the region, it is generally accepted that the earliest identifiable culture in the archaeological record is represented by the material remains of the Paleo Indian Period San Dieguito Complex. The San Dieguito Complex was thought to represent the remains of a group of people who occupied sites in this region between 10,500 and 8,000 YBP, and who were related to or contemporaneous with groups in the Great Basin. As of yet, no absolute dates have been forthcoming to support the great age attributed to this cultural phenomenon. The artifacts recovered from San Dieguito Complex sites duplicate the typology attributed to the Western Pluvial Lakes Tradition (Moratto 1984; Davis et al. 1969). These artifacts generally include scrapers, choppers, large bifaces, and large projectile points, with few milling tools. Tools recovered from San Dieguito Complex sites, along with the general pattern of their site locations, led early researchers to believe that the people of the San Dieguito Complex were a wandering hunter/gatherer society (Moriarty 1969; Rogers 1966).

The San Dieguito Complex is the least understood of the cultures that have inhabited the San Diego County region. This is due to an overall lack of stratigraphic information and/or datable materials recovered from sites identified as belonging to the San Dieguito Complex. Currently, controversy exists among researchers regarding the relationship of the San Dieguito Complex and the subsequent cultural manifestation in the area, the La Jolla Complex. However, firm evidence has not been recovered to indicate whether the San Dieguito Complex "evolved" into the La Jolla Complex, the people of the La Jolla Complex moved into the area and assimilated with the people of the San Dieguito Complex, or the people of the San Dieguito Complex retreated from the area because of environmental or cultural pressures.

Early Archaic Period (6000 B.C. to A.D. 0)

Based upon evidence suggesting climatic shifts and archaeologically observable changes in subsistence strategies, a new cultural pattern is believed to have emerged in the San Diego region around 6000 B.C. Archaeologists believe that this Archaic Period pattern evolved from or replaced the San Dieguito Complex culture, resulting in a pattern referred to as the Encinitas Tradition. In San Diego, the Encinitas Tradition is believed to be represented by the coastal La Jolla Complex and its inland manifestation, the Pauma Complex. The La Jolla Complex is best recognized for its pattern of shell middens and grinding tools closely associated with marine resources and flexed burials (Shumway et al. 1961; Smith and Moriarty 1985a). Increasing numbers of inland sites have been identified as dating to the Archaic Period, focusing upon

terrestrial subsistence (Cardenas 1986; Smith 1996; Raven-Jennings and Smith 1999a, 1999b).

The tool typology of the La Jolla Complex displays a wide range of sophistication in the lithic manufacturing techniques used to create the tools found at their sites. Scrapers, the dominant flaked tool type, were created by either splitting cobbles or by finely flaking quarried material. Evidence suggests that after about 8,200 YBP, milling tools began to appear in La Jolla Complex sites. Inland sites of the Encinitas Tradition (Pauma Complex) exhibit a reduced quantity of marine-related food refuse and contain large quantities of milling tools and food bone. The lithic tool assemblage shifts slightly to encompass the procurement and processing of terrestrial resources, suggesting seasonal migration from the coast to the inland valleys (Smith 1996). At the present time, the transition from the Archaic Period to the Late Prehistoric Period is not well understood. Many questions remain concerning cultural transformation between periods, possibilities of ethnic replacement, and/or a possible hiatus from the western portion of the county.

Late Prehistoric Period (A.D. 0 to 1769)

The transition into the Late Prehistoric Period within the project area is primarily represented by a marked change in archaeological patterning known as the Yuman Tradition. This tradition is primarily represented by the Cuyamaca Complex, which is believed to have derived from the mountains of southern San Diego County. The people of the Cuyamaca Complex are considered ancestral to the ethnohistoric Kumeyaay (Diegueño). Although several archaeologists consider the local Native American tribes to be relatively latecomers, the traditional stories and histories passed down through oral tradition by the local Native American groups speak both presently and ethnographically to their presence here since the time of creation.

The Kumeyaay Native Americans were a seasonal hunting and gathering people with cultural elements that were very distinct from the people of the La Jolla Complex. Noted variations in material culture include cremation, the use of the bow and arrow, and adaptation to the use of the acorn as a main food staple (Moratto 1984). Along the coast, the Kumeyaay made use of marine resources by fishing and collecting shellfish for food. Seasonally available plant food resources (including acorns) and game were sources of nourishment for the Kumeyaay. By far the most important food resource for these people was the acorn. The acorn represented a storable surplus, which in turn allowed for seasonal sedentism and its attendant expansion of social phenomena.

Firm evidence has not been recovered to indicate whether the people of the La Jolla Complex were present when the Kumeyaay Native Americans migrated into the coastal zone. However, stratigraphic information recovered from Site SDI-4609 in Sorrento Valley may suggest a hiatus of 650 ± 100 years between the occupation of the coastal area by the La Jolla Complex (1,730 ± 75 YBP is the youngest date for the La Jolla Complex inhabitants at SDI-4609) and Late Prehistoric cultures (Smith and Moriarty 1983). More recently, a reevaluation of

two prone burials at the Spindrift Site excavated by Moriarty (1965) and radiocarbon dates of a pre-ceramic phase of Yuman occupation near Santee suggest a comingling of the latest La Jolla Complex inhabitants and the earliest Yuman inhabitants about 2,000 YBP (Kyle and Gallegos 1993).

3.2.3 History

Exploration Period (1530 to 1769)

The historic period around San Diego Bay began with the landing of Juan Rodríguez Cabrillo and his men in 1542 (Chapman 1925). Sixty years after the Cabrillo expeditions (1602 to 1603), Sebastian Vizcaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Vizcaíno had the most lasting effect on the nomenclature of the coast. Many of the names he gave to various locations have survived, whereas nearly every one of Cabrillo's has faded from use. Cabrillo gave the name "San Miguel" to the first port at which he stopped in what is now the United States; 60 years later, Vizcaíno changed it to "San Diego" (Rolle 1969).

Spanish Colonial Period (1769 to 1821)

The Spanish occupation of the claimed territory of Alta California took place during the reign of King Carlos III of Spain (Engelhardt 1920). José de Gálvez, a powerful representative of the king in Mexico, conceived the plan to colonize Alta California and thereby secure the area for the Spanish Crown (Rolle 1969). The effort involved both military and religious components, where the overall intent of establishing forts and missions was to gain control of the land and the native inhabitants through conversion. Actual colonization of the San Diego area began on July 16, 1769, when a Spanish exploration party commanded by Gaspar de Portolá (with Father Junípero Serra in charge of religious conversion of the native populations) arrived by the overland route to San Diego to secure California for the Spanish Crown (Palou 1926). The natural attraction of the harbor at San Diego and the establishment of a military presence in the area solidified the importance of San Diego to the Spanish colonization of the region and the growth of the civilian population. Missions were constructed from San Diego to as far north as San Francisco. The mission locations were based upon a number of important territorial, military, and religious considerations. Grants of land were made to persons who applied, but many tracts reverted back to the government due to lack of use. As an extension of territorial control by the Spanish Empire, each mission was placed so as to command as much territory and as large a population as possible. While primary access to California during the Spanish Period was by sea, the route of El Camino Real served as the land route for transportation, commercial, and military activities within the colony. This route was considered to be the most direct path between the missions (Rolle 1969; Caughey 1970). As increasing numbers of Spanish and Mexican peoples, as well as the later Americans during the Gold Rush, settled in the area, the Native American populations diminished as they were displaced or decimated by disease

(Carrico and Taylor 1983).

Mexican Period (1821 to 1846)

Father Miguel Hidalgo y Costilla and a group of Native American followers began a revolt against Spanish rule on September 16, 1810. Hidalgo did not succeed in the fight against the Spanish, and was ultimately executed. However, the revolt continued and the Spanish were finally defeated in 1821. Mexican Independence Day is celebrated on September 16 of each year in honor of Father Hidalgo's bravery. The revolution also had repercussions in the northern territories, and by 1834, all of the mission lands in Alta California had been removed from the control of the Franciscan Order under the Acts of Secularization. Without proper maintenance, the missions quickly began to disintegrate. After 1836, missionaries ceased to make regular visits to the outlying Native American communities to minister their needs (Engelhardt 1920). Large tracts of land continued to be granted to those who applied or who had gained favor with the Mexican government. Grants of land were also made to settle government debts, and the Mexican government was also called upon to reaffirm some older Spanish land grants shortly before the Mexican-American War in 1846 (Moyer 1969).

Anglo-American Period (1846 to Present)

California was invaded by United States troops during the Mexican-American War from 1846 to 1848. The acquisition of strategic Pacific ports and California land was one of the principal objectives of the war (Price 1967). At the time, the inhabitants of California were practically defenseless, and they quickly surrendered to the United States Navy in July of 1847 (Bancroft 1886).

The cattle ranchers of the "counties" of southern California prospered during the cattle boom of the early 1850s. They were able to "reap windfall profit … pay taxes and lawyer's bills … and generally live according to custom" (Pitt 1966). However, cattle ranching soon declined, contributing to the expansion of agriculture. With the passage of the "No Fence Act," San Diego's economy shifted from stock raising to farming (Robinson 1948). The act allowed for the expansion of unfenced farms, which was crucial in an area where fencing material was practically unavailable. Five years after its passage, most of the arable lands in San Diego County had been patented as either ranchos or homesteads, and growing grain crops replaced raising cattle in many of the county's inland valleys (Blick 1976; Elliott 1883 [1965]).

By 1870, farmers had learned to dry farm and were coping with some of the peculiarities of San Diego County's climate (*San Diego Union,* February 6, 1868; Van Dyke 1886). Between 1869 and 1871, the amount of cultivated acreage in the county rose from less than 5,000, to more than 20,000 acres (*San Diego Union,* January 2, 1872). Of course, droughts continued to hinder the development of agriculture (Crouch 1915; *San Diego Union,* November 10, 1870; Shipek 1977). Large-scale farming in San Diego County was limited by a lack of water and the small size of arable valleys. The small urban population and poor roads also restricted commercial

crop growing. Meanwhile, cattle continued to be grazed in parts of inland San Diego County. In the Otay Mesa area, for example, the "No Fence Act" had little effect on cattle farmers because ranches were spaced far apart and natural ridges kept the cattle out of nearby growing crops (Gordinier 1966).

During the first two decades of the twentieth century, the population of San Diego County continued to grow. The population of the inland portion of the county declined during the 1890s, but between 1900 and 1910, it rose by about 70 percent. The pioneering efforts were over, the railroads had broken the relative isolation of southern California, and life in San Diego County became similar to other communities throughout the west. After World War I, the history of San Diego County was primarily determined by the growth of San Diego Bay. In 1919, the United States Navy decided to make the bay the home base for the Pacific Fleet (Pourade 1967), as did the aircraft industry in the 1920s (Heiges 1976). The establishment of these industries led to the growth of the county as a whole; however, most of the civilian population growth occurred in the coastal areas in the northern portion of the county where the population almost tripled between 1920 and 1930. During this time, the history of inland San Diego County was subsidiary to that of the city of San Diego, which had become a Navy center and an industrial city (Heiges 1976). In inland San Diego County, agriculture became specialized and recreational areas were established in the mountain and desert areas. Just before World War II, urbanization began to spread to the inland parts of the county.

3.2.4 History of the La Jolla Area

A limited research effort was initiated in order to characterize the circumstances of the early development of La Jolla so that the current project could be placed in context with the surrounding community. Several early land developments contributed to the overall disturbance of the major prehistoric sites in the area of the project. However, small development projects continuously encounter pockets of cultural sites that have survived grading and construction impacts over the years.

Most researchers agree that the origin of the name La Jolla is a variation of the original "La Hoya," which literally translated from Spanish means "pit, hole, grave, or valley." The equivalent American translation is "river basin" (Castillo and Bond 1975). James Pascoe, the city surveyor, spelled it "La Joya" on his 1870 map of city land, which translates as "the jewel." The location of La Hoya (or La Joya) was consistently shown as the canyon in which the southern portion of Torrey Pines Road is currently located. The first post office was established on February 28, 1888 and closed on March 31, 1893, but reopened as "Lajolla" (one word) on August 17, 1894. On June 19, 1905, the name of this post office was changed to "La Jolla" (two words) (Salley 1977).

The first purchase of Pueblo Lands in this area occurred on February 27, 1869, when the City of San Diego sold Pueblo Lot 1261 to Samuel Sizer. On the same day, the City sold Pueblo Lot 1259 to Daniel Sizer. These lots sold for $1.25 per acre and were both located south of "La

Hoya Valley." The *San Diego Union* (March 31, 1869) referred to the canyon as "La Hoya" when describing Sizer's agricultural development to the south. By the 1870s, excursions to the point and cove were offered by the Horton House in their Concord Coach, a stagecoach drawn by four horses (*San Diego Union,* August 9, 1932).

The boom of the 1880s extended to La Jolla with the construction of a hotel and rental cottages (Randolph 1955). Initially, water supplies were unreliable, consisting of only two sources: a small well in Rose Canyon and a small pipeline connected to the Pacific Beach water supply. Reliable transportation to La Jolla came with the extension of the San Diego, Old Town, and Pacific Beach Railway in 1894. This narrow-gauge railroad was responsible for bringing passengers and prefabricated cottages (on flat cars) to the growing community (Randolph 1955). The railroad was dismantled in 1919, but not before an unsuccessful experiment with a gasoline-powered rail car (known locally as the "Red Devil") was conducted.

As the number of residences and businesses increased in La Jolla, so did the need for public services. On July 10, 1888, the San Diego City Council passed an ordinance providing for the disposal of garbage, night soil, dead animals, ashes, and rubbish (Document 101817). In 1909, natural gas was brought to La Jolla, and in 1911, electricity was made available to the community (Randolph 1955). An electric railway provided service to La Jolla between 1924 and 1940. In 1918, street paving began, and by 1922, the Girard Street business section was completely paved.

Visitors to La Jolla enjoyed the park at Alligator Head from the earliest days of stagecoach excursions. Trees and shrubs were planted around the park, but a months-long failure of the water supply during 1890 caused many of the plants to die. During the 1890s, the park was also the focus of construction for guest cottages and hotels, such as the La Jolla Beach House, which indicates that developmental impacts to prehistoric archaeological resources, as well as impacts from increased visitation, occurred from this early period. Randolph (1955) wrote about a Native American settlement at La Jolla (probably SDI-39), which was supported by Native American informants and the recovery of several artifacts, including metates, stone utensils, and other relics from La Jolla Cove. As the development of La Jolla continued, other subdivisions and plots were converted from farming and/or grazing to residential use. The "La Jolla Vista" subdivision of 1923, located on the east side of Spindrift Drive, was one of those subdivisions (San Diego County Engineering Map Records). A photograph showing La Jolla Cove in 1894 is provided in Plate 3.2–1.

Plate 3.2–1: La Jolla Cove in 1894.
(Photograph Courtesy of the San Diego Historical Society)

The earliest notable development in this area was the construction of the Spindrift Inn northeast of the subject property in 1916. Roy Clarke Rose built the inn as a bathhouse and restaurant using lumber salvaged from the ruins of the Congretional Church (Plate 3.2–2). Rose and the original renters, a Mr. and Mrs. Wilder, decided to name the inn "Spindrift" for "the wind driven foam from the breast of the waves" (Hannay n.d.).

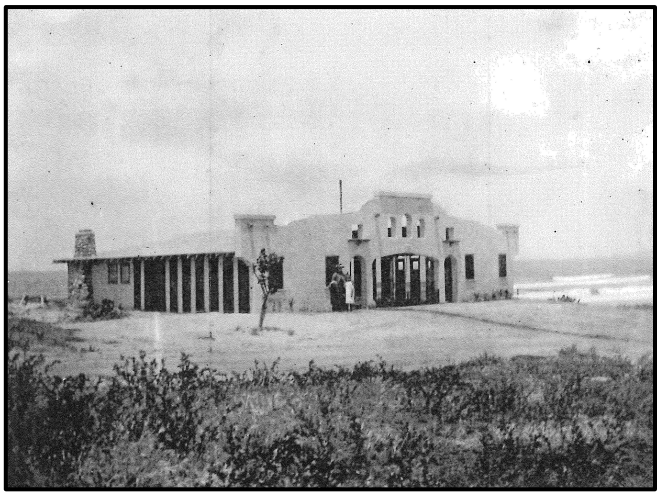


Plate 3.2–2: The Spindrift Inn prior to completion in 1916. ***(Photograph Courtesy of Margaret Hannay)***

Peter and Margaret Hannay purchased the inn in 1922. According to Margaret Hannay, "at that time Spindrift was at the end of nowhere"; only a trail ran down to the inn, which was widened when homes began to be built in the area (Hannay n.d.). The Pelican Club (a social club) was established around the same time as the inn, where the club members met approximately once a month before gathering afterward at different members' residences for cocktails. The club was originally organized by W.L. Maloon, Dr. Truman A. Parker, W.L. Peete, and Ivan Rice. The original

members included W.C. Crandall, John R.E. Sumner, William Trump, and Billy Woods. Later members included Laurence Burdick, H.G. Lazelle, William McDonald, Remsen McGinnis, J. Lewis Morse, William E. Pate, Thomas A. Rothwell, F.P. Sherwood, A.B. Smith, E.C. Stimpson, H.U. Sverdup, Keith Trask, Dr. T. Wayland Vaughn, Morris T. Weeks (the original owner of 1834 Spindrift Drive), and William C. Zimmerman (Randolph 1955). The last meeting of the Pelican Club was held in 1937, and the Hannays sold the inn shortly thereafter (Hannay n.d.).

In 1926, the initial development of the La Jolla Beach and Yacht Club (Plate 3.2–3) took place immediately adjacent to the Spindrift Inn.

Plate 3.2–3: La Jolla Beach and Yacht Club in 1927.
(Photograph Courtesy of the San Diego Historical Society)

The board of governors, who helped sponsor the $1,000,000 project, included Charles H. Bencini (the second owner of 1834 Spindrift Drive), A.J. Bickerstaff, Arthur H. Braly, T.A. Davis, Arthur D. Dodworth, George Harbaugh, William Kettner, J.D. Marsden, Sherman A. Paddock, Robert B. Stacy-Judd, and Will J. Thayer (*San Diego Union* 1926). Designed by Hollywood architect Robert B. Stacy-Judd as a "unique architectural adaptation of [an] ancient Mayan building method," the La Jolla Beach and Yacht Club facility was opened in 1927 (*San Diego Union* 1927a). The Beach and Yacht Club and the Spindrift Inn gained in popularity in the 1920s and 1930s and were successful in spite of the Depression that gripped the country between the stock market crash of 1929 and the opening of World War II. The La Jolla Vista subdivision, on the other hand, was slow in building to capacity, possibly because of the real estate bust from 1925 to 1926 (Brandes et al. 1999).

In 1935, Frederick William Kellogg purchased the La Jolla Beach and Yacht Club and transferred ownership to himself and his wife, Florence Scripps Kellogg, niece of Ellen Browning Scripps. After taking ownership, Kellogg renamed the facility the La Jolla Beach and Tennis Club and built four tennis courts, an Olympic-sized swimming pool, and 42 apartments (Randolph 1955). Once the apartments were complete, Kellogg began a remodel of the Spindrift Inn to convert it into a restaurant. Kellogg "knocked a hole through the wall" of the Spindrift Inn and built the Marine Room dining room immediately adjacent to the inn (Daily-Lipe and

Dawson 2002). However, Kellogg passed away in 1940 before the project was complete. His son, William J. Kellogg, ultimately finished the remodel and the new Marine Room restaurant opened in 1941 (Daily-Lipe and Dawson 2002) (Plate 3.2–4). A year after the Marine Room opened, the windows were smashed in by rising surf caused by a winter storm. Each time that the windows would be replaced after a storm, they were smashed in again by the surf. In 1948, the Spindrift Lounge was constructed and the plate glass was replaced with Herculite three-fourth-inch glass (Olten et al. 2011).

Plate 3.2–4: The Marine Room during a storm in 1944.
(Photograph Courtesy of the Marine Room)

During World War II, two military training camps came to La Jolla (Camp Callan and Camp Elliot) and two emplacements on Mount Soledad and one on the beach in La Jolla were established (Pierson 2001). Although these military installations were replaced after the Korean War with the University of California at San Diego campus and the expansion of the Scripps Institution of Oceanography, La Jolla's economic base gained a substantial business element. This trend continues with ever-present tourism playing a significant part in the local economy. The residential population has historically included permanent and seasonal residents, many of whom have achieved a significant degree of financial and historical notoriety and success.

3.3 Research Results

The project APE is located within the boundary of SDI-39, a previously recorded prehistoric occupation complex spanning the Early Archaic to Late Prehistoric cultural periods. Site SDI-39, the Spindrift Site, has been determined to be significant according to CEQA and City of San Diego criteria. An important element of the significance of the Spindrift Site is the numerous human burials that have been discovered and the abundance of human bone encountered in graded lots and streets within this neighborhood.

Site SDI-39 has been identified as an important, significant site since it was first recorded by Welty in 1912, when he noted that the site stretched for as long as 1,000 feet along the shore and up to 1,200 feet inland. Welty noted depths from one to eight feet, a dense black midden, shell, charcoal, and fragments of human remains.

Archaeological work by Malcolm Rogers in 1931 named SDI-39 the "Spindrift Site," after the street name. In a joint effort, the 1931 San Diego/Smithsonian Project sought to uncover the origins of human occupation on the west coast. As a result of this project, Rogers excavated a series of sites throughout La Jolla (Rogers 1929). Although these studies were conducted at a time when La Jolla was undergoing development for homes, much of Rogers's

work was conducted prior to the massive impacts to cultural resources that occurred in San Diego after World War II. Rogers's site record for SDI-39 indicates that the site covered 20 acres and exhibited occupation materials including cobble hearths and whale bone, which were hypothesized to have been used as housing materials. Over the next several years, Rogers excavated an estimated 40 cubic feet of soil across three areas of Spindrift Drive. His excavations uncovered human remains and large amounts of prehistoric materials. During this time, Rogers's work identified intact strata from the earliest to the latest periods of occupation at SDI-39. As a result of his studies, Rogers divided the cultural deposit into three distinct layers of occupation: the earliest (Stratum 1) was composed of invertebrate faunal remains, milling equipment, lithic tools, fire-cracked rock, and charcoal; the next layer (Stratum 2) contained a lower frequency of cultural materials and the majority of inhumations; and the last layer (Stratum 3) was considered the most dense and contained ceramics, cremations, and large amounts of other Late Prehistoric cultural materials. According to information in Pigniolo and Brodie (2009), Rogers's trenching studies were located directly north of the current project.

The next notable work at SDI-39 was conducted by Dr. James Moriarty, III in 1961 on what was known as the Oliver Gill Lot, located just north of 1834 Spindrift Drive. Moriarty's work resulted in the collection of a large range of milling equipment (manos, metates, mortars, pestles, and stone bowls), projectile points, and ceramics. His salvage work at the site identified (at the time) the earliest known evidence of ceramics along the coast (1,270 ± BP). Moriarty's detailed stratigraphic analysis allowed for the identification of transitions between La Jollan and Yuman populations.

Since Moriarty's work in 1961, several limited test excavations have taken place across portions of SDI-39. Examples of these limited excavations include Berryman and Roth (1993), Wade (1998b, 1998c), Gross and Robbins-Wade (1999), Case et al. (2003), Rosenberg and Smith (2007), Stropes and Smith (2011a), Berryman et al. (2014), and Smith et al. (2015a, 2015b). Based upon these previous investigations at SDI-39 throughout the Spindrift neighborhood, the deposit is characterized as one to one and a half meters in depth, containing a variety of marine shell, lithic materials, faunal bone, ceramics, milling tools, and potentially human remains (Stropes and Smith 2011a). The early documentation, large quantity, and wide range of materials identified for SDI-39 clearly indicate that the site served a habitation function.

Although the majority of radiocarbon analysis from the site has been limited to only identifying the Late Prehistoric Period component (Gross and Robbins-Wade 1999; Berryman and Roth 1993), more recent studies by Stropes and Smith (2011a) and Smith et al. (2015a, 2015b) have identified additional Late Period and Archaic Period dates that place occupation of the site between 990 B.C. to A.D. 1950. This occupation range is also supported by C-14 studies conducted by Berryman et al. (2014), who analyzed 11 radiocarbon samples, which resulted in an average date range for the site between 780 B.C. and A.D. 1950. These studies clearly indicate the presence of a large Archaic Period component that is only now being ratified through conventional C-14 methods.

3.4 Records Search Results

The SCIC records search (Appendix C) identified both prehistoric and historic sites recorded within one mile of the project (Table 3.4–1). All previous archaeological investigations conducted within one mile of the project have been provided in Table 3.4–2 (Appendix B).

Table 3.4–1
Cultural Resources Located Within a
One-Mile Radius of 1834 Spindrift Drive

Site(s)	Description
SDI-18,307/W-2	Prehistoric shell midden with artifacts
I-546	Prehistoric chopper/historic railroad spike
I-465	Prehistoric flake
P-37-016719, P-37-17086, P-37-17063, P-37-017306, P-37-018366, P-37-018661, P-37-018775, P-37-018792, P-37-018991, P-37-019081, P-37-025496, P-37-027507, P-37-027608, P-37-027666, P-37-028511, P-37-033149, P-37-035587, and P-37-035644	Historic single-family residence
P-37-016720 and P-37-016721	Historic commercial building
P-37-013773	Prehistoric marine shell scatter
P-37-016278	Historic concrete bridge
P-37-016198	Historic base end station
P-37-024275	Historic trash dump
SDI-21,950	Historic refuse deposit
P-37-033117	Historic isolate
P-37-034697, P-37-034699, P-37-034701, P-37-034702, and P-37-034704	Historic sidewalk/curb stamp
SDI-17,373	Prehistoric camp
SDI-1, SDI-2, and SDI-17,377	Prehistoric underwater artifacts
SDI-17,383	Prehistoric residential site
SDI-17,372	Major prehistoric campsite with human remains
SDI-14,306 and SDI-12,990	Prehistoric and historic artifact scatter
SDI-14,281, SDI-14,282, SDI-12,989, SDI-14,280, SDI-14,279, and SDI-19,056	Prehistoric artifact and shell scatter
SDI-39/W-1	Prehistoric shell midden/ village with human remains
SDI-17,374/W-38	Incomplete site form
SDI-20,129/W-199	Prehistoric habitation debris

A review of reports from projects in the immediate area of 1834 Spindrift Drive indicate that elements of SDI-39 have been discovered throughout the area south of the La Jolla Beach and Tennis Club. A component of SDI-39 was recorded by Gross and Robbins-Wade (1998) at the Spindrift Drive/St. Louis Terrace intersection, and another component was recorded one block north on Roseland Drive by Berryman and Roth (1993). Additional portions of SDI-39 were identified by Rosenberg and Smith (2007d) at 1905 Spindrift Drive.

The largest archaeological study of SDI-39 on record at the SCIC was at 1900 and 1912 Spindrift Drive, where substantial quantities of the prehistoric deposit were excavated to allow a large residential complex to be constructed. The majority of this work was conducted by BFSA, but some elements were also completed by HDR in 2013. Laguna Mountain Environmental, Inc. (LMEI) is presently preparing a draft report on testing/monitoring of underground utility trenching conducted by the City of San Diego, where human remains were discovered in an affected portion of Site SDI-39 (Pigniolo and Brodie 2009). Although the report is unfinished, LMEI and the City have shared sensitive burial information with BFSA for the purpose of evaluating potential impacts from the proposed project. The actual locations of the various human remains must remain confidential, but will be used to elevate the cultural resource sensitivity of the immediate surroundings.

The characteristics of SDI-39 recorded by Welty (the original recorder of the 1912 site form), Rogers (1931 site form), Moriarty (1965), Berryman and Roth (1993), Wade (1998 site forms), and Gross and Robbins-Wade (1998) generally depict the site as a widespread shell midden spanning both the Archaic and Late Prehistoric periods. Human burials have been recorded along with hearth features and a wide spectrum of artifacts. Certainly, SDI-39 represents a significant prehistoric occupation site that was closely associated with the marine resources present in the La Jolla Bay area, as well as terrestrial resources associated with the marsh that was present where the La Jolla Beach and Tennis Club currently exists.

The expanded boundary for SDI-39 was submitted to the SCIC in 2009 at the request of the City of San Diego and LMEI, and now includes the areas studied by Gross and Robbins-Wade (1998, 1999), Berryman and Roth (1993), Smith (2000), Rosenberg and Smith (2007), Wade (1998), Pigniolo and Brodie (2009), Case et al. (2007), and Cheever (2001). A site boundary configuration has been proposed by Pigniolo and Brodie (2009) as a consequence of their research on the Princess Street/Spindrift Drive undergrounding project.

In addition, BFSA requested a records search of the Sacred Lands File (SLF) of the Native American Heritage Commission (NAHC). The SLF did not indicate the presence of any sacred sites or locations of religious or ceremonial importance within the search radius. All correspondence has been provided in Appendix D.

3.5 Regulatory Setting

The cultural resources study for 1834 Spindrift Drive followed the appropriate local and state protocols and procedures for this type of study. Statutory requirements of CEQA and

subsequent legislation (Section 15064.5), as well as the guidelines of the City of San Diego, would be followed in evaluating the significance of identified cultural resources. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO 1995).

3.5.1 California Environmental Quality Act

According to CEQA, Section 15064.5(a), the term "historical resource" includes the following:

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (CRHR) (Public Resources Code [PRC] SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (PRC SS5024.1, Title 14, Section 4852), including the following:

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

4) The fact that a resource is not listed in, or determined eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the PRC), or identified in an historical resources survey (meeting the criteria in

Section 5024.1[g] of the PRC), does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

According to CEQA, Section 15064.5(b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change as:

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:

    a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR; or,
    b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
    c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for the purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

1) When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in Subsection (a).
2) If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the PRC, Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the PRC do not apply.
3) If an archaeological site does not meet the criteria defined in Subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the

PRC, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in PRC Section 21083.2(c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.

4) If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5(d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, Subsection (d) provides:

(d) When an initial study identifies the existence of, or the probable likelihood, of Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC as provided in PRC SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).
2) The requirements of CEQA and the Coastal Act.

3.5.2 City of San Diego Historical Resources Board Eligibility Criteria

Because this project requires approval from the City of San Diego, HRB eligibility criteria were used for this evaluation. Therefore, criteria for listing on the San Diego Register of Historical Resources (SDRHR), the CRHR, and the National Register of Historic Places (NRHP) would be followed in evaluating the significance of identified resources.

A resource must be significant at the local, state, or national level, under one or more of the following criteria in order to be eligible for designation on the SDRHR:

- **City of San Diego HRB Criterion A:**
  It exemplifies or reflects special elements of the city's, a community's, or a neighborhood's historical, archaeological, cultural, social, economic, political, aesthetic, engineering, landscaping, or architectural development;

- **City of San Diego HRB Criterion B:**
  It is identified with persons or events significant in local, state, or national history;

- **City of San Diego HRB Criterion C:**
  It embodies distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship;

- **City of San Diego HRB Criterion D:**
  It is representative of the notable work of a master builder, designer, architect, engineer, landscape architect, interior designer, artist, or craftsman;

- **City of San Diego HRB Criterion E:**
  It is listed or has been determined eligible by the National Park Service for listing on the NRHP, or is listed or has been determined eligible by the State Historic Preservation Office for listing on the State (California) Register of Historical Resources; or

- **City of San Diego HRB Criterion F:**
  It is a finite group of resources related to one another in a clearly distinguishable way or is a geographically definable area or neighborhood containing improvements, which have a special character, historical interest, or aesthetic value, or which represent one or more architectural period or styles in the history and development of the city.

The four primary evaluation criteria to determine a resource's eligibility to the NRHP, in accordance with the regulations outlined in 36 CFR 800, are identified by 36 CFR 60.4. Historic resource properties may be considered eligible for listing on the NRHP if they meet one or more of the following criteria identified in 36 CFR 60.4:

(A) Is associated with events that have made a significant contribution to the broad patterns of our history;
(B) Is associated with the lives of persons important in our past;
(C) Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(D) Has yielded, or may be likely to yield, information important in prehistory or history.

According to PRC Section 5024.1(c), a resource may be listed as a historic resource in the CRHR if it meets any of the following NRHP criteria:

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

3.5.3 Development Regulations for Important Archaeological Sites (Section 143.0253)

In addition to the general development regulations in Section 143.0250 of the City's Historical Resources Guidelines, the following regulations apply to important archaeological sites.

(a) Important archaeological sites shall be preserved in their natural state, except that development may be permitted as provided in this section or as provided in Section 143.0260. Ch. Art. Div. 14 3 2 14 San Diego Municipal Code Chapter 14: General Regulations (6-2017).

    (1) Development may be permitted in areas containing important archaeological sites if necessary to achieve a reasonable development area, with up to 25.00 percent encroachment into any important archaeological site allowed. This 25.00 percent encroachment includes all grading, structures, public and private streets, brush management, except as provided in Section 143.0225, and any project-serving utilities.

(b) Any encroachment into important archaeological sites shall include measures to mitigate for the partial loss of the resource as a condition of approval. Mitigation shall include the following methods, consistent with the Historical Resources Guidelines of the Land Development Manual:

    (1) The preservation through avoidance of the remaining portion of the important archaeological site; and,
    (2) The implementation of a research design and excavation program that recovers the scientific value of the portion of the important archaeological site

that would be lost due to encroachment.

3.6 Native American Consultation

Assembly Bill (AB) 52, the Native American Historic Resource Protection Act, sets forth as proactive approach intended to reduce the potential for delay and conflicts between Native American and development interests. Projects subject to AB 52 are those that file a notice of preparation for an Environmental Impact Report or notice of intent to adopt a negative, or mitigated negative, declaration on or after July 1, 2016. AB 52 adds Tribal Cultural Resources (TCRs) to the specific cultural resources protected under CEQA. Under AB 52, a TCR is defined as a site, feature, cultural landscape (must be geographically defined in terms of size and scope), sacred place, or object with cultural value to a California Native American tribe that is either included or eligible for inclusion in the CRHR, or included in a local register of historical resources. A Native American tribe or the lead agency, supported by substantial evidence, may choose at its discretion to treat a resource as a TCR. AB 52 also mandates lead agencies to consult with tribes, if requested by the tribe, and sets the principles for conducting and concluding consultation.

4.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to reconstruct the way in which humans have used the land and resources within the project area through time. As people used the area, evidence of their activities has been preserved on and in the ground. Archaeological methods are used to retrieve and analyze portions of this evidence to reconstruct past lifeways. This type of inquiry is part of the cultural resources management aspect of environmental conformance studies.

The testing program employed as the basis for excavations at 1834 Spindrift Drive includes a records search, background research, test excavations, and the mapping of features, artifacts, and locations of subsurface archaeological tests. Primary objectives, such as determining the boundaries of any discoveries, depth of any archaeological deposits, stratigraphy, integrity, content, and spatial distribution of any subsurface artifacts and cultural ecofacts, are essential to the current test phase of the program. Normally, a research orientation transcends these goals by expanding the meaning of information extracted from a site through the use of archaeological questions important in current scientific research. Regional and temporal research issues should be taken into consideration when posing such questions; however, because the boundary of buried intact cultural resources is uncertain, the research design for the current project is limited in scope. The topics and associated research questions provided below address concerns specific to the project.

The research design included in the ATP for 1834 Spindrift Drive (Smith 2016), which was previously submitted to the City of San Diego for review, incorporates information derived from other studies in the neighborhood that have encountered elements of SDI-39. The list of relevant studies is presented in Table 3.4–2 (see Appendix B). Site SDI-39, in its entirety, has been previously listed as significant by the City, regardless of the status of site disturbance, which varies throughout the Spindrift neighborhood. Therefore, this research design is not focused upon the determination of the integrity of the deposit at the property, but rather the extent of the site within the property and the potential of the excavation data to address current scientific research issues.

Regional and locally specific questions were employed to approach focused archaeological research questions for 1834 Spindrift Drive. Many of these research questions overlap, as they address environmental setting and prehistoric occupation patterns. Although a wide range of research questions may be possible for investigations at SDI-39, the primary research areas were selected based upon previous work in the neighborhood, potential of available data to address these questions, and possible overall contribution to the archaeological record. The specific research questions focus upon chronology, lithic technology, settlement patterning, and subsistence strategy. The goal of the testing program was to determine if data from 1834 Spindrift Drive could possibly contribute to the proposed research questions that reflect research conducted elsewhere in the Spindrift neighborhood. The research topics listed

below were used to guide the study and to determine the sample size necessary to provide sufficient materials to address these posed research questions.

Chronology

What was the period(s) of use and/or occupation for Site SDI-39? Is there evidence of multiple periods of occupation at SDI-39 and can they be identified through radiocarbon analysis? Temporally, how does this site fit into the overall pattern for San Diego County? That is, what group or culture are we examining in the context of the known culture history, and can we differentiate between periods of occupation(s)?

Determining the period(s) of occupation of a site or region can be accomplished through radiocarbon dating and relative dating techniques. Radiocarbon dating depends upon the retrieval of dateable materials, such as bone or shell. In San Diego County, radiocarbon dates range from approximately 9,000 years ago to historic contact. In contrast, relative dating is based upon the recovery of specific artifacts that are temporally diagnostic, such as atlatl dart points, arrow points, and ceramics. Stratigraphic analyses, obsidian sourcing, and hydration rind measurements may also serve as relative dating measures. Combining radiocarbon and relative dating techniques helps to provide a greater chronological picture for any given site.

Previous work at SDI-39 has produced radiocarbon dates that document its occupation as being within the Archaic and Late periods. The dating of different areas within the large area representative of SDI-39 would provide greater understanding of the site's occupation history, and dates from 1834 Spindrift Drive will add to the general information base for the site. In addition, this research helps to delineate (where possible) divisions between Late Prehistoric and Early Archaic occupation. Finally, further chronological analyses may also reveal if the site may be better understood synchronically, diachronically, or both. However, in order to address the posed research questions, a more accurate temporal placement of the site was necessary.

Study Topics

1. Can multiple periods of occupation be determined through chronological analysis of SDI-39?
2. Does the chronological data suggest longer periods of occupation during the Late Prehistoric Period or Early Archaic Period?
3. Where does SDI-39 place chronologically in the overall pattern for sites along the San Diego coast and southern California in general?
4. How do temporally diagnostic artifacts from SDI-39 compare to C-14 data, and does the data suggest stratigraphic mixing of the assemblage?

Data Needs

Previous work in this general area of La Jolla indicates that, at a minimum, shell and bone ecofacts are present within SDI-39. Therefore, materials used for radiocarbon dating should be selected based upon context and quality. If the recovered data permits, relative dating may be possible using point types, the presence of ceramics, and obsidian analysis. If obsidian is present in the collection, samples may be tested for hydration values that can be used to relatively date the site by using comparable hydration rates.

Lithic Technology

What technological lithic trajectories were employed by the prehistoric inhabitants of SDI-39? Which lithic reduction strategies were in use and when? What role did milling technology play at SDI-39? Is there notable variation in observable lithic technologies between coastal sites and inland sites of the same time period?

Several flake tool reduction strategies have been identified for the southern California coastal region. These strategies include biface reduction, split-nodule core reduction, small blade core reduction, bipolar core reduction, and nodule reduction. The decision to use one or the other of these techniques was dependent upon several factors, the most important of which being the type of material being worked, the morphology of the parent material, and the intended tool. For example, some lithic materials, such as Monterey chert and Piedra de Lumbre (PDL) chert, are more easily worked, and with heat treatment become some of the best knappable material in the western United States. Problems exist, however, when material is in its raw state. PDL chert generally occurs in small pieces, and was therefore used extensively in the late Holocene for small arrow points (Pigniolo 1992). However, this material has been recovered from a site dating to 8,000 years ago (Gallegos 1991). Monterey chert occurs in small cobbles and in layers. For small cobbles, bipolar reduction would be the most efficient method of producing usable flakes. For the layered Monterey chert, biface reduction was the most expedient method of producing tools, as the layers were already thin and only the outer perimeter needed to be worked (Cooley 1982).

Other chert sources in San Diego need to be identified and the material chemically characterized. Large biface production and reduction requires pieces of material large enough to be reduced and homogeneous enough to produce workable items. Santiago Peak Volcanics, found in San Diego, have been used extensively for the production of large tools (*i.e.,* adzes, scrapers, scraper planes, cores, and hammerstones) and bifaces (Schroth and Flenniken 1997). The use of quarry material from these formations may be an early to middle Holocene marker, as the larger spear and dart points would have necessitated the use of larger blocks of parent material.

Nodule core reduction comprises numerous techniques with specific trajectories such as

pyramidal-shaped, split-nodule core reduction (used to produce thick, contracting flakes for flake tools), the production of teshoa flakes for large flake tools, and nodule core tools wherein the parent material, rather than the removed flakes, becomes the tool. Cobble layers found in streambeds, across coastal terraces, and along the coast provided materials for these reduction sequences. Nodule core reduction is known in southern California archaeological literature as "Cobble Core Reduction" (Gallegos et al. 2002; Gallegos et al. 2003). The term "nodule" was substituted for "cobble" because a cobble is geologically defined as a size clast (64 to 256 millimeters), and many prehistoric core and core-based artifacts (such as some battered implements) were manufactured from boulders (>256 millimeters), and to a lesser extent, pebbles (four to 64 millimeters). The term "nodule" was selected because nodules as a class are not size-specific and tend to be rounded to sub-rounded.

For coastal areas of San Diego, nodule core reduction technology is the most common core technology identified in archaeological sites that range from the early Holocene to historic contact with native peoples (Stropes 2007). In addition, products of nodule core reduction are some of the most abundant tool forms identified in assemblages throughout the region. This simple and expedient technology may have been so commonly employed because it provided a simple and relatively effortless way to produce useful flakes and flake blanks intended for immediate use or further reduction into a wide range of tool forms. Effort is defined in reference to the lithic technology described herein as the amount of energy needed to reduce stone into a viable product. Because of the local abundance of metavolcanic materials in nodule form, there was little need for more material-efficient, and consequently more time-consuming, technology.

Prehistorically, the use of ground stone implements (*i.e.,* manos, metates, and pestles) is common throughout San Diego County archaeology sites. However, when viewed chronologically, many researchers have suggested that lithic milling equipment was either absent or rare in assemblages identified to the Paleo Indian Period (Chartkoff and Chartkoff 1984; Moratto 1984; Moriarty 1966; Rogers 1939), suggesting a greater reliance upon food packages that required minimal milling-based processing for consumption. In contrast, it is also believed that a lack of milling at Paleo Indian Period sites is a reflection of site-use patterning rather than the absence of milling technology for the time period. To date, minimal research has been conducted regarding ground stone manufacture and the use, or change of use, through time in San Diego County. However, studies such as Flenniken's 1993 analysis of tools from SDI-10,148 have demonstrated that sites exist in San Diego that demonstrate ground stone manufacture and rejuvenation activities (Flenniken et al. 1993). Therefore, analysis of debitage and tools from habitation sites can provide information regarding manufacture, use, and rejuvenation of ground stone, if present. In addition, variation in resource exploitation and changes in site function should be analyzed to determine if ground stone tools were designed for specific functions (*i.e.,* mortar and pestle use for acorn processing) and if technological changes in milling equipment occurred through time as climate and resources changed.

Previous work at various Spindrift area properties that contain elements of SDI-39 have

recovered a wide range of flaked lithic materials and ground stone. With this knowledge, we can predict that the recovery from 1834 Spindrift Drive may provide enough data to characterize the general lithic trajectories present. Therefore, the following study topics will be addressed.

Study Topics

1. Which technological reduction strategies are present based upon a technological analysis of flaked stone at the property?
2. Which reduction strategies were used to produce which tools? Were these strategies the same or different?
3. Is there variation between flake-based tool kits at sites where shellfish processing is the dominant activity and sites focused upon other subsistence activities from the same time period?
4. How do the technologies identified at SDI-39 and the stages of tool reduction relate to site function and tools recovered at the site?
5. Were the prehistoric lithic tools present within the property manufactured on-site or at another location?
6. Have specific lithic reduction techniques changed through time at SDI-39 (*i.e.,* does large biface reduction predominate during the Paleo Indian Period and do nodule-based technologies predominate during the Early Archaic Period and Late Prehistoric Period)? What function did milling technologies serve at SDI-39?

Data Needs

Previous work in the Spindrift neighborhood indicates that flaked lithics and ground stone implements are present throughout SDI-39. Therefore, all lithic materials recovered from 1834 Spindrift Drive will be selected for technological analysis based upon replicative data. In order to address the proposed research questions, the following will be required:

- Collection of an appropriate sample of cores, tools, and debitage;
- Technologically-based analysis of cores, tools, debitage, and milling equipment; and
- Identification of the technological attributes and reduction sequences used to produce the tools.

<u>*Settlement and Subsistence*</u>

Which settlement and subsistence patterns can be identified at SDI-39 and have these patterns changed over time? Did the pattern of shellfish collection change over time? If so, what influenced the changes: environmental change, population change, technological change, or a combination of these factors? If this site is representative of a continuously occupied habitation site, how does this site relate to other sites such as base camps, special-use sites, or

extractive sites? How did occupation and use of this site contribute to seasonal or year-round occupation of the region in general?

Traditionally, sites such as prehistoric habitation sites are archaeologically differentiated from specialized function sites (*i.e.,* quarries, shellfish processing sites, and milling stations) by the range of materials identified in the assemblage. In addition, there is also a notable amount of variability between habitation sites as a group with regards to site size, artifact density, and diversity of material culture. This observed variation may relate to differences in the quantity of people who occupied a given site, the duration of site occupation, the frequency with which a site was reused, and the range of activities performed at a site. Identifying such variations in site patterning may help to facilitate the reconstruction of prehistoric social organization and economic adaptations to environmental change.

Although many attempts have been made to discern settlement patterns for Late Prehistoric Period sites based upon ethnographic data, the same cannot be said for Early Archaic Period sites in San Diego. The study of earlier settlement systems represented in the archaeological record has gone largely unstudied with the exception of research pertaining to whether coastal Early Archaic Period habitation sites (such as SDI-39) represent permanent settlements or short-term, seasonal camps (Davis 1976) primarily focused upon economic exploitation of shellfish. The data gathered from SDI-39 will help to further illuminate settlement and site type issues for the region and may provide a greater understanding for Early Archaic Period site patterning.

Seasonal site use at SDI-39 is implicit in the availability of fresh water only during the rainy season (winter). However, the attraction of fresh water may have been strongest during the summer months due to the seasonal availability of preferred resources (Jochim 1976). Seasonality of coastal sites may be determined in two ways. The first is the analysis of fish otoliths, which provide information regarding the season of capture, and hence, the season of site occupation. Since SDI-39 is located near the original La Jolla Estuary, seasonal concentrations of perennially available species must be considered. In addition, the presence of fish that inhabit the nearshore or the bay purely on a seasonal basis, such as some skates, rays, and sharks, must also be considered. For instance, if a seasonally sensitive fish species is identified that is only available near the shore during a certain period, but the otolith analysis indicates that the fish was captured during a season when it would not normally have been present, then not only is seasonality addressed, but other activities, including seagoing vessel construction and deep-water fishing, must also be considered.

Invertebrate faunal analysis from SDI-39 may also help to identify environmental change for coastal southern California based upon the rise in sea level that occurred during the early to middle Holocene. This change is believed to have prompted the flooding of coastal valleys and the formation of much of the San Diego lagoon system. The majority of evidence for environmental change in or near lagoons is based upon the analysis of core samples combined

with radiocarbon dates and radiocarbon-dated shellfish samples taken from prehistoric sites near lagoons. Several studies have employed shellfish analysis to explain site patterning and environmental change (Miller 1966; Warren et al. 1961; Warren and Pavesic 1963; Bull and Kaldenberg 1976; Masters 1988).

Environmental studies suggest that circa 3,500 years ago, sea levels stabilized, which resulted in an increase in the siltation of the majority of northern San Diego County lagoons during the late Holocene. In contrast, San Diego Bay formed in the early Holocene and stayed open to the ocean throughout the Holocene (Gallegos and Kyle 1988). Taking this into consideration, some prehistoric sites around more northern lagoons may reflect a changing environment and the loss of certain lagoon shellfish and fish species. Sites reflecting exploitation of bay resources, however, may not reflect a change in the exploitation pattern of shellfish species, type of shellfish, and/or absence of shellfish.

Previous studies within SDI-39 have produced large amounts of shellfish remains and a moderate amount of faunal remains (including marine mammal). Cultural materials recovered as a result of the testing program provided enough data to characterize the general subsistence and settlement pattern for the portion of SDI-39 within 1834 Spindrift Drive. Therefore, the following study topics can be addressed:

Study Topics

1. Does Site SDI-39 represent Early Archaic Period and/or Late Prehistoric Period components, and if so, is environmental change/change in resource exploitation over time reflected in the faunal assemblage?
2. Does Site SDI-39 represent a specialized food processing site or a campsite where a wide range of foods were gathered and processed?
3. As very little is known about Early Archaic Period settlement patterns, what information does SDI-39 provide to add to our prehistoric understanding of site occupation and use patterning?
4. Does the faunal assemblage indicate if SDI-39 was occupied on a seasonal or year-round basis?

Data Needs

In order to address questions about economic exploitation of resources at SDI-39, floral and faunal remains need to be recovered from 1834 Spindrift Drive to permit the reconstruction of diet or dietary practices and preferences of site occupants. The presence of particular plant and animal species allows for a more complete understanding of the range of environments exploited by the occupants of SDI-39. Methods for interpreting available data include speciation of vertebrate and invertebrate faunal materials, protein residue analysis, and the subsequent identification of habitats based upon species information. Based upon previous studies of intact strata, pollen and phytolith preservation may have been possible and should be considered when

intact subsurface levels and/or features are identified. Artifacts recovered from the site can also provide inferential information regarding subsistence exploitation. For example, if plant material is not found, the presence of mortars, manos, pestles, bowls, and metates provides evidence that floral and faunal materials were processed at the site. Immunological studies of residues on tools from the site may provide data relating to both the use of tools and to resources exploited. As such, protein residue analysis from recovered ground stone implements and flaked tools may also be required. Often, it is necessary to process relatively large numbers of lithic tools to obtain protein residue information for a given site.

In order to understand settlement patterning for SDI-39, the recovered archaeological assemblage must be viewed in its entirety. It is through the comparison of chronological studies, faunal studies, environmental reconstruction, and prehistoric technology studies that an understanding of the settlement patterning of the site will be achieved. In addition, although the number of otoliths commonly found in a midden is very small, if present, otoliths can be identified by species and subjected to seasonality study. The resulting data can then be assumed to reflect the species sample, and consequently, at a minimum, the seasonality of the site occupation.

5.0 METHODOLOGY

The goal of this study is to evaluate archaeological data obtained from research and field investigations for 1834 Spindrift Drive. All investigations conducted by BFSA related to this project conformed to CEQA and City of San Diego guidelines, as well as project-specific requirements provided by city staff.

5.1 Archaeological Methodology

The archaeological assessment program for this project included a field investigation that incorporated subsurface excavations (23 STPs and two test units) to produce an evaluation of resource significance. This archaeological study conformed to City of San Diego Historical Resources Guidelines and project-specific requirements. Statutory requirements of the City's guidelines, CEQA, and subsequent legislation (Section 15064.5) were followed in evaluating the significance and integrity of the cultural resource. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO 1995).

5.1.1 Field Methodology

The archaeological survey was conducted by inspecting areas of exposed soil within the property, generally in the landscaped areas, to search for cultural materials. As part of the initial survey and evaluation, 14 STPs and two one-square-meter test units were excavated to explore the potential for subsurface cultural deposits. The 30-by-30-centimeter-wide shovel tests were excavated in decimeter levels to between 40 and 100 centimeters below the surface. The test units were excavated in decimeter levels to 50 (TU 1) and 80 (TU 2) centimeters, respectively. The placement of the STPs was determined by accessible ground surface and the locations that will be directly impacted by the proposed project. The test units were excavated following standard archaeological protocol and City of San Diego guideline requirements. The positive shovel tests triggered the need to excavate nine additional STPs as part of the sampling program in order to conduct a qualitative sample of the prehistoric midden deposit.

All excavated soils were sifted through one-eighth-inch hardware mesh screens and all collected ecofacts were placed in plastic Ziploc bags and labeled with the appropriate provenience information. All STPs were mapped using a Trimble Geo XT Global Positioning System (GPS) unit equipped with TerraSync software. Photographs were taken to document field conditions during the current study. A Native American representative from Red Tail was present for all field investigations.

5.1.2 Laboratory Methodology

In keeping with generally accepted archaeological procedures, any cultural materials collected from the property were categorized as to typology, material, and function. Comparative collections curated in the BFSA laboratory are often helpful in identifying unusual or highly fragmentary specimens. The cataloging process for recovered specimens utilizes a classification system commonly employed in this region. After cataloging and identification, collections are marked with the appropriate provenience and catalog information, then packaged for permanent curation. A sample of the shell recovered from the site excavations was identified to the most precise taxonomic level; however, no radiocarbon dating or other specialized studies were conducted as part of this phase of the project. The complete recovery catalog has been provided in Appendix F.

5.1.3 Curation

The project field notes, photographs, and report will be curated at the offices of BFSA in Poway, California. All artifact collections will be temporarily housed at BFSA until permanent curation can be arranged at a curation facility approved by the City of San Diego. All fees associated with this curation will be the responsibility of the project applicant(s).

5.1.4 Native American Consultation

Native American consultation is being conducted by the BFSA and the City of San Diego. BFSA requested a review of the SLF by the NAHC. In accordance with the recommendations of the NAHC, BFSA contacted all Native American consultants listed in the NAHC response letter. All correspondence is provided in Appendix D.

In addition, the current project is subject to AB 52. The AB 52 process, which includes new requirements by the legislature regarding TCRs, will require a minimum of two months to complete for the current project. On January 26, 2018, formal consultation began between the City of San Diego and representatives from the Iipay Nation of Santa Ysabel and the Jamul Indian Village of California. Both representatives have demonstrated interest in the project and have requested a review of the archaeological technical documents. Any reports concerning this project will be made available to the tribes at the discretion of the City.

6.0 REPORT OF FINDINGS

The recorded evidence of significant prehistoric archaeological Site SDI-39 within the entire Spindrift neighborhood has heightened the City of San Diego's concern for archaeological resources in this area. As a consequence, the BFSA archaeologists were extremely diligent when searching for evidence of cultural materials at every opportunity within the project APE. The subject property was previously graded when the area was developed between the 1920s and the 1950s, which has compromised the potential to discover cultural resources. In addition, the property is covered by landscaping, hardscape, and a residential structure, which masked much of the ground surface.

The following discussion presents the results of the current field investigations. Evidence of prehistoric Site SDI-39 was discovered within the property boundaries during the current study. As will be discussed below, the testing program identified both disturbed and intact cultural deposits within the property. Based upon the findings of this study, which conclude that the proposed development will impact a portion of SDI-39, measures will be required to mitigate the resulting impacts.

6.1 Fieldwork Results

6.1.1 Field Reconnaissance

The entire property was closely inspected for any evidence of prehistoric Site SDI-39 during the cultural resources survey. The survey process included the accessible areas along the side yards and backyard of the property, while the hardscape in the front yard adjacent to Spindrift Drive obscured ground visibility. The existing built environment includes the single-family residence, the associated brick or paved walkways (hardscape), patios, landscaping, a pool, and a driveway. Non-native landscaping and gravel beds that cover the majority of the APE limited the observable ground surface.

The archaeological survey focused upon all areas of bare soil or rodent burrows, which were closely inspected for artifacts and ecofacts. The survey identified evidence of prehistoric occupation on the erosional slopes along the western bluff edge of the property and in garden areas or lawns where soil was observed. Cultural materials, including marine shell, identified on the surface indicate the presence of elements of the prehistoric village complex referred to as the Spindrift Archaeological District. Photographs were taken to record project conditions at the time of the survey (see Plates 2.0–1 and 2.0–2).

6.1.2 Subsurface Investigation

Subsurface excavations within the project APE were conducted at two different times during the evaluation of the property. As part of the survey process, shovel tests were planned and approved by the City as a means to sample areas beneath the landscape cover and search for any evidence of prehistoric deposits associated with SDI-39. Between November 18 and 28, 2016,

BFSA archaeologists excavated 14 STPs within the 1834 Spindrift Drive APE. The general pattern of the shovel tests effectively encircled the existing residence. The shovel test data revealed the presence of a subsurface deposit associated with SDI-39 in most areas east of the bluff edge. In order to determine the potential of the cultural deposit to contain undisturbed elements, two one-square-meter test units were excavated. The test units were placed in locations west and east of the existing residence where intact deposits were anticipated. Subsequently, in July of 2017, an additional nine STPs were excavated within the APE in order to further refine the variation in density of the deposit across the site. The locations of the STPs and test units are illustrated on Figure 6.1–1. The existing residence generally sits in the center of the parcel. For purposes of this discussion, we will refer to the backyard as the west side of the property and the front yard facing Spindrift Drive as the east side of the property.

STPs 1 through 23

The shovel tests placed along the southwest, west, north, and northeast edges of the APE (STPs 1, 2, 3, 8, 9, 12, 14, 15, 17, 18, and 20) only produced minimal recovery within a disturbed soil matrix. For example, STP 9 was located in the southwest corner of the property where most of the topsoil had been previously graded away as part of the initial terracing of the lot. Only a single fragment of debitage and 2.9 grams of marine shell were identified before geologically sterile soil was encountered at 30 centimeters. STP 8 had an equally marginal recovery to 40 centimeters; the observed materials also likely represent the bottom zone of the previously existing prehistoric deposit at this location. The subsurface testing along the south side of the property produced only marginal recovery and indicated prior disturbance associated with grading of the lot beginning in the 1920s, which removed most of the cultural deposit from this location.

A denser deposit was encountered in the west-central portion of the APE, in the backyard near the existing residence. STPs 4, 6, 7, 16, 21, and 22 were excavated to near 100 centimeters deep and included a moderate density of shell (between 30.0 and 150.0 grams, on average) and an increased density of debitage, faunal bone, ceramics, and other artifacts. The soil characteristics observed in these shovel tests suggest that this portion of the property has been previously impacted by grading, but some of the midden remains.

Shovel tests in the east-central portion of the property revealed an intact midden deposit and produced a substantial quantity and variety of prehistoric materials associated with SDI-39. STPs 5, 10, 11, 13, 19, and 23 were excavated to approximately 100 centimeters deep and contained a variety of lithic artifacts, pottery, ground stone, faunal bone, and marine shell.

The recovery pattern and soil characteristics within the shovel tests demonstrate that intact cultural deposits are present beneath a lens of disturbed or mixed midden soil. The depth of disturbed midden, or a combination of non-midden and midden graded spoil soil, varied across the property as a result of past grading. Non-cultural soil, or a combination of imported top soil and midden soil, covered most of the property above 10 centimeters. The results of the individual shovel tests are provided in Table 6.1–1.

Figure 6.1–1
Excavation Location Map
Site SDI-39

(Deleted for Public Review; Bound Separately)

Table 6.1–1
Shovel Test Excavation Data
Site SDI-39 at 1834 Spindrift Drive

Object Type	Shovel Test																							Total	Percent
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Flaked Stone																									
Projectile Point	-																	1	-					1	0.27
Flake Tool	-									1	1	-					1	-						3	0.80
Debitage	1	6	8	4	23	4	8	3	1	14	66	2	25	4	6	10	4	4	40	7	5	25	35	305	81.77
Angular Hammer	-																					1	-	1	0.27
Ground Stone																									
Mano	-				1	-								1	-									2	0.54
Pestle	-												1	-										1	0.27
Ground Stone	-				1	-				1	1	-	2	-						1	-			6	1.61
Other Formed Objects																									
Bead	-				1	1	-																	2	0.54
Bone Tool	-	1	-																					1	0.27
Pottery	2	-	2	1	7	3	1	-		3	12	1	2	-	1	-	2	1	2	3	5	-	3	51	13.67
Bulk Items (in grams)																									
Faunal Bone	-			0.5	1.3	0.3	4.1	-		0.7	31.9	-	2.2	-	0.2	1.1	0.7	2.7	10.4	0.9	3.7	6.0	13.6	80.3	
Fire-Affected Rock	-				254.5	-	251.9	-			91.4	-	438.4	-	112.3	1,299.2	-	94.1	2,062.9	92.0	-	1,359.1	1,048.1	7,103.9	-
Marine Shell	2.9	5.3	27.9	146.4	268.7	180.7	30.8	7.8	34.4	132.1	1,254.9	7.8	158.5	33.8	57.1	111.3	28.1	15.4	93.8	33.4	121.5	152.8	381.1	3,286.5	
Total*	3	7	10	5	33	8	9	3	1	19	80	3	30	5	7	10	7	6	42	11	10	26	38	373	100.00†
Percent	0.80	1.88	2.68	1.34	8.85	2.14	2.41	0.80	0.27	5.09	21.45	0.80	8.04	1.34	1.88	2.68	1.88	1.61	11.26	2.95	2.68	6.97	10.19	100.00†	

**Totals do not include grams*

†Rounded totals may not equal 100.00 percent

TU 1

TU 1 was placed on the west side of the existing residence, roughly in the center of the property. The test unit was excavated in standard decimeter levels to 50 centimeters. All removed soils were wet-screened through one-eighth-inch mesh hardware cloth. The recovery from TU 1 consists of one adze, two angular hammers, 397 debitage, one flake tool, two projectile points, one pendant preform, 14 manos/mano fragments, one metate/metate fragment, five ground stone fragments, seven beads, 66 prehistoric ceramic fragments, 179.6 grams of faunal bone, 4,063.7 grams of marine shell, and 12,076.6 grams of fire-affected rock. Recovery information for TU 1 is summarized in Table 6.1–2.

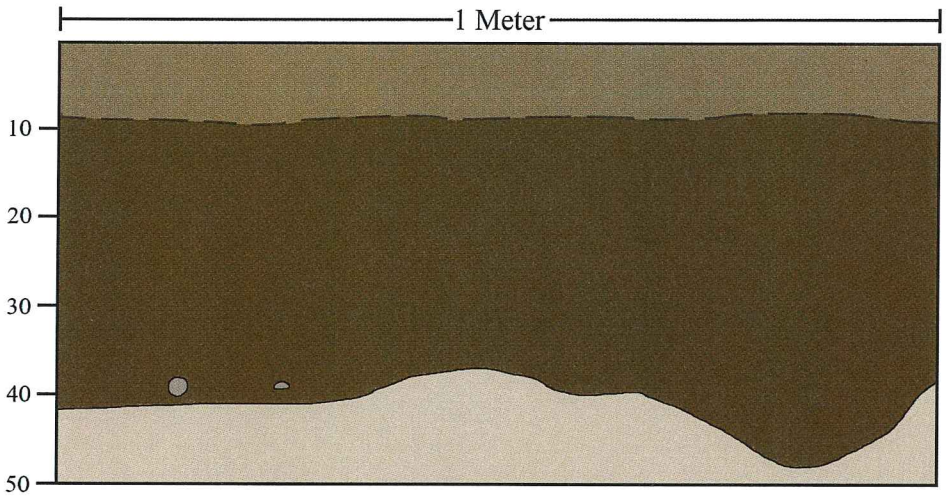
Table 6.1–2
TU 1 Excavation Data
Site SDI-39 at 1834 Spindrift Drive

Object Type	Depth (cm)					Total	Percent
	0-10	10-20	20-30	30-40	40-50		
Flaked Stone							
Projectile Point	1	1	-			2	0.40
Adze	-			1	-	1	0.20
Debitage	90	124	73	87	23	397	79.88
Flake Tool	-		1	-		1	0.20
Angular Hammer	-			1	1	2	0.40
Ground Stone							
Ground Stone	3	2	-			5	1.01
Mano	4	6	1	1	2	14	2.82
Metate	-		1	-		1	0.20
Other Formed Objects							
Bead	2	3	1	1	-	7	1.41
Pendant Preform	-	1	-			1	0.20
Pottery	20	18	15	8	5	66	13.28
Bulk Items (in grams)							
Faunal Bone	39.3	38.5	32.3	48.5	21.0	179.6	-
Fire-Affected Rock	1,818.1	1,537.6	3,585.9	3,788.2	1,346.8	12,076.6	
Marine Shell	959.6	928.5	868.0	889.8	417.8	4,063.7	
Total*	120	155	92	99	31	497	100.00
Percent	24.14	31.19	18.51	19.92	6.24	100.00	

**Totals do not include grams*

The intensity of recovered items corresponds to the stratigraphic observations for TU 1. It is clear that the majority of the TU 1 deposit was concentrated between the zero- and 40-centimeter levels, where the intact midden was encountered. This concentration represents a fine-grained, dark brown (10YR 3/3), silty midden deposit that extends for almost 40 centimeters. The soil horizon below the midden concentration begins between 40 and 50 centimeters and is characterized as a pale brown (10YR 6/3), compact, silty sand. The majority of the soils from this horizon showed a significant decrease in cultural material, terminating at 50 centimeters. The east wall soil profile of TU 1 is presented in Plate 6.1–1 and Figure 6.1–2. A copper water pipe was encountered at a depth of 15 centimeters running from north to south through the unit.

Plate 6.1–1: East wall profile of TU 1, zero to 50 centimeters.



Legend

- Organic/dense roots - Disturbed midden with mixed topsoil, medium brown sandy loam
- Possibly disturbed midden - Dark brown, fine-grained, mixed, silty midden deposit
- Subsoil - Pale brown, silty sand

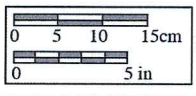


Figure 6.1–2

East Wall Profile of TU 1

Site SDI-39

The 1834 Spindrift Drive Project

TU 2

TU 2 was placed on the east side of the project, in the front yard of the property, near Spindrift Drive. The test unit was excavated in standard decimeter levels to 80 centimeters. Because of existing construction, the test unit measured 50 centimeters by one meter. All removed soils were wet-screened through one-eighth-inch mesh hardware cloth. The recovery from TU 2 consists of one biface, 56 debitage, one projectile point, two manos/mano fragments, four prehistoric ceramic fragments, 2.7 grams of faunal bone, 90.2 grams of marine shell, and 1,154.1 grams of fire-affected rock. Recovery information for TU 2 is summarized in Table 6.1–3.

Table 6.1–3
TU 2 Excavation Data
Site SDI-39 at 1834 Spindrift Drive

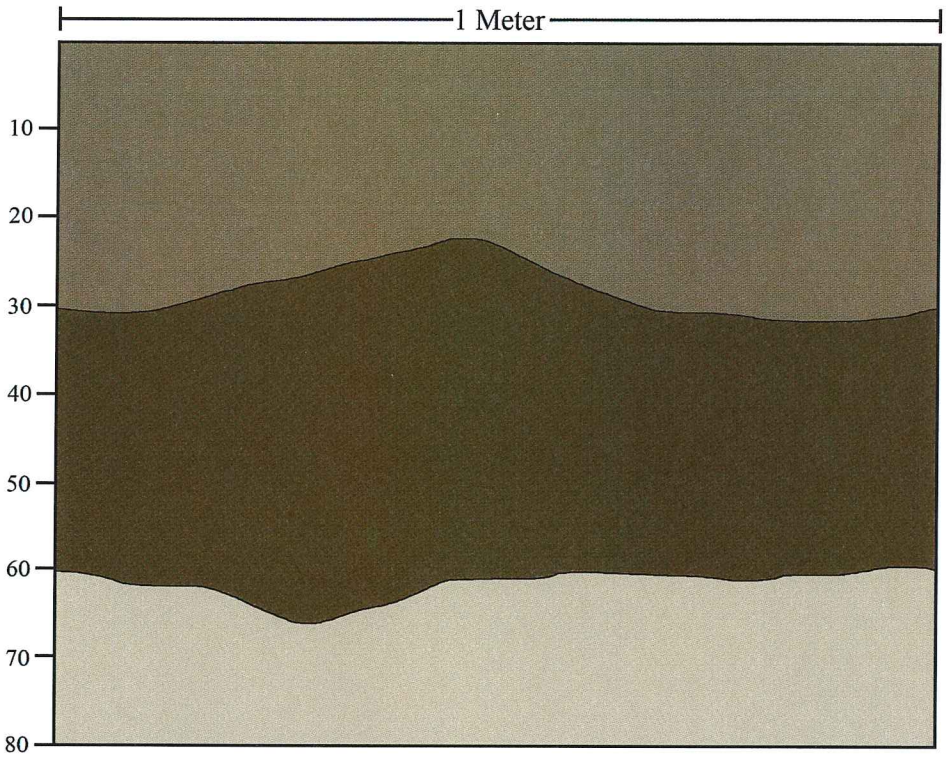
Object Type	Depth (cm)								Total	Percent
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80		
Flaked Stone										
Projectile Point	-				1	-			1	1.56
Biface	-			1	-				1	1.56
Debitage	4	8	7	15	10	12	-		56	87.50
Ground Stone										
Mano	-				2	-			2	3.13
Other Formed Objects										
Pottery	1	1	2	-					4	6.25
Bulk Items (in grams)										
Faunal Bone	0.2	-		1.4	0.6	0.5	-		2.7	-
Fire-Affected Rock	-	89.0	-	248.9	315.6	500.6	-		1,154.1	
Marine Shell	-	3.9	0.5	35.6	49.2	1.0	-		90.2	
Total*	5	9	9	16	13	12	-		64	100.00†
Percent	7.81	14.06	14.06	25.00	20.31	18.75	-		100.00†	

**Totals do not include grams*

†*Rounded totals may not equal 100.00 percent*

The intensity of recovered items corresponds to the stratigraphic observations for TU 2. It is clear that the majority of the TU 2 deposit was concentrated between the 30- and 60-centimeter levels, where the midden was encountered. This concentration represents a loosely compacted, sandy loam with minimal artifact recovery that has been impacted by development over time and mixed with additional fill soils. This impacted, brown (10YR 5/3), sandy loam deposit extends for almost 30 centimeters. The horizon observed between the 30- and 60-centimeter levels represents a fine-grained, dark brown (10YR 3/3), mixed, silty midden deposit that also extends for almost 30 centimeters. This horizon contained the majority of artifacts for the unit and likely represents a disturbed midden layer. The soil horizon between 60 and 80 centimeters is characterized as a pale brown (10YR 6/3), compact, silty sand that was largely devoid of artifacts. The northwest wall soil profile of TU 2 is presented in Plate 6.1–2 and Figure 6.1–3.

Plate 6.1–2: Northwest wall profile of TU 2, zero to 80 centimeters.



Legend

- Organic/dense roots - Disturbed midden with mixed topsoil, medium brown sandy loam
- Possibly disturbed midden - Dark brown, fine-grained, mixed, silty midden deposit
- Subsoil - Pale brown, silty sand

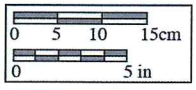


Figure 6.1–3

Northwest Wall Profile of TU 2

Site SDI-39

The 1834 Spindrift Drive Project

6.2 Flaked Lithic Artifacts

6.2.1 Debitage Analysis

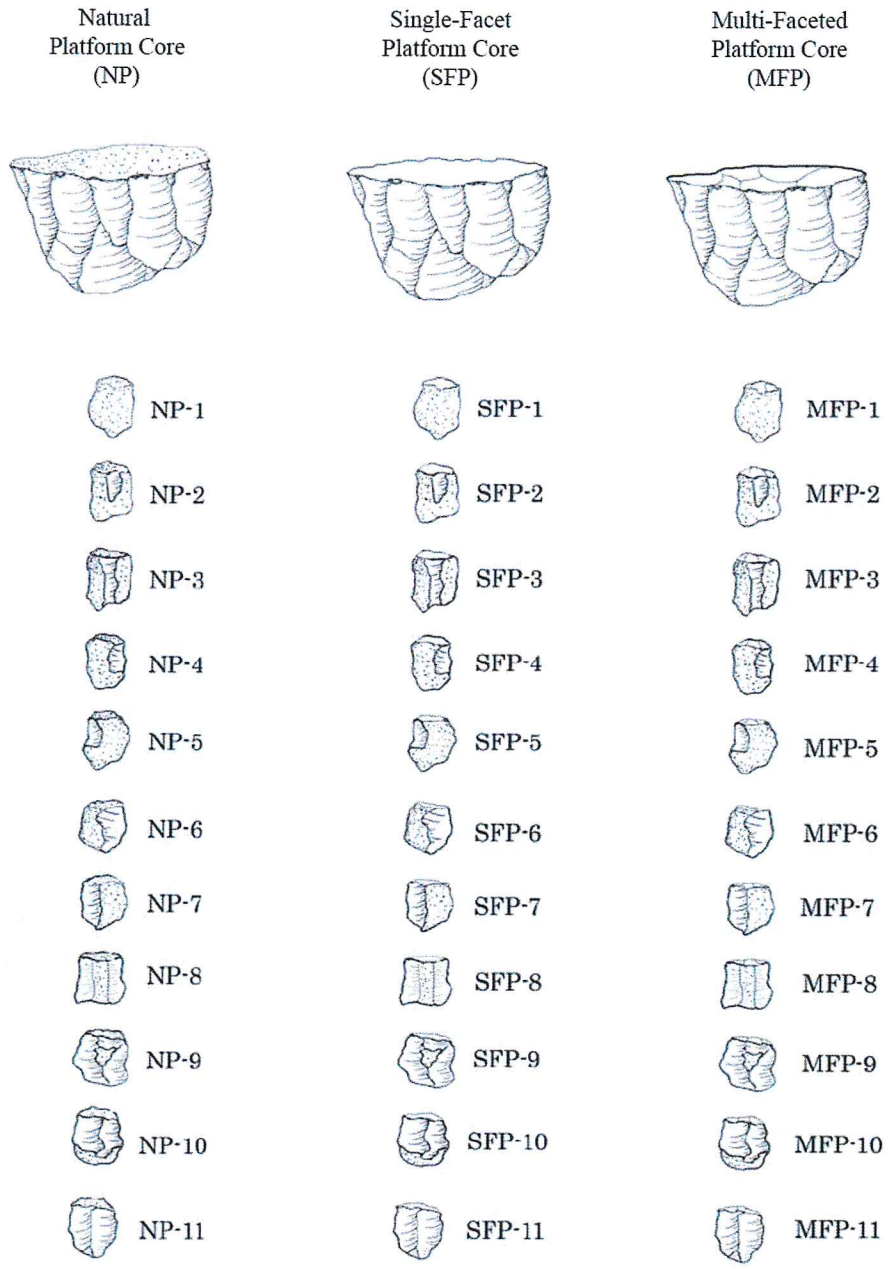
Methodology

The preliminary technological identification of all debitage sampled was based upon analysis and interpretation work done by Flenniken (1978, 1981). A technologically-based review was conducted of lithic materials from TU 1 and TU 2, based upon replicative data. Technological reduction stage flake categories were defined by comparing technological attributes of replicated artifacts from known stone tool reduction technologies to the recovered lithic assemblage. By comparing the recovered assemblage to the replicated assemblage in terms of manufacture, reduction stages were generally determined for technologically diagnostic debitage. Some debitage, however, was considered technologically undiagnostic because of its fragmented condition.

In general, materials from each excavated level of the test units were compared to identify changes in the percentages of diagnostic debitage, which can be used to: define a change in reduction techniques in separate and distinct flintknapping activities at different locations throughout the site; delineate different depths in site stratigraphy; or define homogeneity of the deposit. Although technological analysis of flaked stone artifacts from each excavated level is designed to segregate differences in reduction technology, preliminary analysis indicates that technological differences were not identified either horizontally or vertically within the site matrix. The flaked stone assemblage recovered from SDI-39 at 1834 Spindrift Drive is extremely homogeneous in terms of reduction technology.

Debitage classification attributes were divided into reduction-oriented technological categories, and then these categories were segregated into stages. By segregating the technologically diagnostic debitage into technological categories that represent and identify reduction techniques, two different reduction sequences were defined as a result of this preliminary review. Both nodule core reduction and biface reduction were identified within the present assemblage. Nodule core debitage was recognized and grouped into technological categories based upon the amount and location of dorsal cortex, platform attributes, dorsal arris count and direction, and flake cross/long-section shape.

Debitage was classified according to three platform types identified among the flakes from nodule core reduction: natural/cortical platforms (NP), single-facet platforms (SFP), and multi-faceted platforms (MFP). Flakes were further subdivided according to the location of dorsal cortex (*i.e.,* flake categories NP-1 through NP-11 and SFP-1 through SFP-11) (Figure 6.2–1). The reduction-oriented technological categories of diagnostic flakes were also separated on the basis of geologic material types (*i.e.,* metavolcanic, quartz, chert, and obsidian). Flake fragments that lacked the necessary attributes to be placed in one of these categories were classified as undiagnostic fragments. Only the raw material type and presence or absence of cortex was recorded for these artifacts. Interpretation of the reduction sequence from this site was determined using only the technologically diagnostic debitage.



Adapted from Stropes (2007)

Figure 6.2–1

Nodule Core Reduction Flake Type Categories

The 1834 Spindrift Drive Project

Often, it is possible that two different reduction sequences may or may not be part of a single, interrelated, reduction continuum. For instance, bifacial artifacts may have been manufactured from flake blanks produced from nodule cores, and thus, the collection may be viewed as a single continuum. Reduction stage, as employed for this analysis, is a concept designed to separate a flintknapping continuum for analytical purposes only. The reduction-oriented technological stages (processes) employed in this review, the flake categories (based upon replicated artifacts that correspond to the processes), and the flake attributes used to define those categories are all within the nodule core reduction technology that was well established in prehistoric southern California.

All debitage recovered from TU 1 and TU 2 was reviewed, identified, and generally assigned to technological categories and stages to characterize and provide a basis for understanding the lithic technology(ies) present at the site. Technologically diagnostic debitage was assigned to a specific reduction category, which served as the basis for interpretation of lithic technology. Preliminary analyses indicate that artifacts recovered from SDI-39 at 1834 Spindrift Drive are intra-site similar in technological character. As such, the sample of the test unit assemblage is considered homogeneous. No technological change within the debitage sample was identified either horizontally through the site or vertically across the site. In light of this lack of technological change, all artifacts from the test units were combined for the purpose of interpretation of the site's overall lithic technology.

Technological Assessment

Technological analysis of the artifact sample identified two specific reduction technologies employed by the site's prehistoric knappers: nodule core reduction and, to a lesser extent, biface reduction. As stated previously, these reduction technologies may be part of the same continuum, as flakes from nodule core reduction may have been used as flake blanks for flake-based biface production. In order to ensure an adequate flaked stone assemblage sample, artifacts collected from all test units were combined for analytical purposes.

Nodule Core Reduction

The most common reduction technology identified in the sample assemblage is nodule core reduction, which is known in southern California archaeological literature as "Cobble Core Reduction" (Gallegos et al. 2002; Gallegos et al. 2003). The term "nodule" was substituted for "cobble" because the term "cobble" is geologically defined as a size clast (64 to 256 millimeters) and many core and core-based artifacts (such as some battered implements) were manufactured from boulders (>256 millimeters) and, to a much less extent, pebbles (four to 64 millimeters). The term nodule was selected because nodules can be any size and tend to be somewhat rounded to subrounded in shape. All three nodule core platform types (NP, SFP, and MFP) are represented by the debitage recovered from SDI-39 at 1834 Spindrift Drive. These three platform configurations suggest three different platform preparations on cores, with the most frequent

category represented by SFP specimens.

Biface Reduction

For this review, biface reduction debitage was divided into four reduction-oriented technological categories, as defined by Flenniken (2001), which were in turn employed to define the reduction sequences used at SDI-39. These include core reduction (Stage 1), edge preparation (Stage 2), percussion bifacial thinning (Stage 3), and pressure bifacial thinning (Stage 4). No Stage 1 bifacial reduction debitage was identified during the current study; however, this debitage may be identified during the later data recovery phase of the project. The following are technological definitions by Flenniken (2001) for bifacial technological categories:

1. Core reduction, that is, primary decortication debitage segregated on the basis of approximately 100.00 percent cortex on the dorsal surface and platform configuration; secondary decortication debitage separated based upon partial dorsal cortex and platform type; and interior debitage categorized by platform attributes, dorsal arris count and direction, flake cross/long-section configuration, and especially, absence of dorsal cortex.
2. Edge preparation, that is, bifacial reduction debitage classified on the basis of multi-faceted platform configuration and location, location of remnant bulb of force, dorsal arris count and direction, flake termination, flake cross/long-section orientation, and presence or absence of detachment scar.
3. Percussion bifacial thinning, that is, debitage segregated on the basis of multi-faceted platform configuration, size, lipping, and location, dorsal arris count and direction, flake termination, cross/long-section orientation, and presence or absence of detachment scar.
4. Pressure bifacial thinning, that is, debitage separated on the basis of multi-faceted platform configuration and location, dorsal arris count and direction, flake termination, platform-to-long-axis geometry, cross/long-section orientation, and presence or absence of detachment scar.

Stage 2 edge preparation debitage, including edge preparation flakes and alternate flakes, is present in the current assemblage. Edge preparation flakes are created by preparing the margin (moving the margin by percussion into the mass) of a flake blank for reduction into a biface. The presence of these flakes supports the technological assumption that flake blanks were manufactured at the site (or flake blanks were transported to the site), and some partially reduced there by direct, free-hand percussion.

Stage 3 technologically diagnostic flakes recovered from excavations at SDI-39 primarily include early percussion bifacial thinning flakes and late percussion bifacial thinning flakes. The general size of these flakes indicates that small bifaces were thinned at the site. Some of the early

bifacial thinning flakes were produced as a result of bifacial blank manufacture by direct, free-hand percussion flaking. All of the Stage 3 flakes are small, which indicates small biface production. Small (arrow point-size, or less than approximately six by two and a half by one centimeters), technologically diagnostic debitage indicates that small bifaces were manufactured at the site. It is not possible to produce large bifaces via the production of small debitage, as this would fail to thin the biface. In general, the length of complete bifacial thinning flakes represents approximately two-thirds the width of the biface being reduced. Virtually all of the complete bifacial thinning flakes from SDI-39 at 1834 Spindrift Drive are within the arrow point blank size range.

Pressure bifacial thinning flakes (Stage 4) were also identified and include early and late pressure flakes. All of these pressure flakes are small and are the result of bifacial thinning and shaping of bifacial tools. This representation of pressure flakes suggests that pressure flaking was an important flintknapping activity conducted at the site, most likely for the production and/or rejuvenation of pressure-flaked tools, such as projectile points. The initial review suggests that many of the pressure flakes are very small, which suggests that shaping bifacial tools was more common than thinning bifacial tools by pressure. Given that the dominant tool stone materials are volcanic, metavolcanic, and quartzite, much of the arrow point blank thinning was completed by percussion.

Undiagnostic Debitage

A large number of undiagnostic debitage is also present within the reviewed assemblage. The cortex noted on these flakes includes both incipient cone cortex common on local lithic materials and cortex indicative of direct removal from the original geologic source. The amount of cortex on debitage across the site suggests that the cores used to produce flakes at SDI-39 may have been prepared (decorticated and shaped) away from the site; however, it is likely that the majority of raw tool stone material was gathered relatively close to the site. In the case of SDI-39, this would have likely been from the Eocene nodule deposits that run along drainages and are abundant along the coastline directly adjacent to the site. These nodules tend to be fairly well rounded, are coarse-grained, and form a major component of the coastal mesas across the county (Dietler 2004). As with the technologically diagnostic debitage, undiagnostic flake fragment materials were collected from both primary geologic contexts (primary geologic cortex) and alluvial contexts (incipient cone cortex).

It should be noted that much of the primary geologic cortex discussed herein is calcium carbonate found on many rounded and subrounded metavolcanic materials. These nodules were most likely collected from the local Lindavista cobble formations in the area. Because these formations have been *in situ* for so long, geologically speaking, they have formed "primary geologic cortex." Incipient cone cortex herein refers to materials with thin exterior rinds that are punctuated by hundreds, if not thousands, of intersecting Hertzian cones caused by being transported by moving water in the not-so-distant past.

Anthropological Interpretation

Based upon the technological review of the debitage assemblage, the following anthropological interpretation is offered. Nodule core reduction technology is the most common technology identified in the lithic sample from SDI-39 at 1834 Spindrift Drive, as measured by the presence of technologically diagnostic flakes. This simple and expedient technology was commonly used because local nodule metavolcanic/volcanic materials were abundant. Furthermore, this technology provided a simple and relatively effortless method to produce useful flake blanks intended for further reduction. Variability can be studied at two scales: individual artifacts and artifact assemblages. This variability can be explained by several factors: the shape and size of raw material packages, stages of reduction, and site-specific knapping activities. Pebbles, cobbles, and, to a lesser extent, boulders, were selected for size, shape, material quality, and platform location.

Nodules with natural platforms were reduced directly by percussion in a circular manner around the natural platform. The location of dorsal cortex indicates the sequence of flake removals. Cores with faceted platforms are nodules that required platform preparation prior to reduction. This usually occurred when a nodule of high quality material was selected, but the nodule did not possess an appropriate platform. If that was the case, it was necessary to create a functioning platform by percussion flaking. The desired products of nodule core reduction were flake blanks that were thin in cross-section, long and narrow in plan view, and effectively ranged between four and 10 centimeters in length.

Debitage produced from nodule core reduction (*i.e.,* NP and SFP cores) was identified according to the pattern of dorsal cortex present (if any) and platform attributes. Dorsal cortex attributes provide clues concerning both the stage of reduction and the overall patterning of flake removals. Generally, the amount of cortex will decrease through the reduction sequence. Flakes with 100.00 percent dorsal cortex (NP/SFP/MFP-1s) usually result from earlier portions of the sequence, while flakes with no dorsal cortex (NP/SFP/MFP-11s) result from the latter portions of the sequence. The abundance of flakes that lack dorsal cortex is explained by the fact that once cortex is removed from a nodule, perhaps early in the reduction sequence, all subsequent flakes will no longer have dorsal cortex. The positioning of dorsal cortex results from the patterning of flake removals (clockwise, counterclockwise, or unpatterned in relation to the platform). The review of the SDI-39 sample assemblage did not reveal any meaningful patterns regarding the sequence of flake removals. It is clear that cores were not consistently reduced in a clockwise sequence, but were instead reduced in whatever configuration was suggested by the overall morphology of the raw material.

Another aspect of variability seen in the nodule core reduction debitage relates to platform characteristics. This variability appears to result purely from technological considerations rather than from a given mental template that might suggest either chronological or ethnic significance. The three types of platforms found (NP, SFP, and MFP) vary in part according to the amount of shaping required to obtain a suitable platform configuration for successful flake removals (a

uniform platform surface and an adequate platform angle). Some nodules required no shaping (NP) to obtain a proper platform configuration; others required more (MFP) or less (SFP) shaping. It is expected that these different platform types could have been produced within a single reduction sequence as a result of adjustments made in response to the changing shape of the core as it was reduced. This is supported by the highest frequencies of "late stage" debitage (NP/SFP/MFP-11s) that occur in combination with faceted platforms.

An additional source of inter-site variation may result from: initial nodule core reduction conducted at one site and subsequent transportation and further reduction at a second location or site; or, different manufacturing areas occurring at a single site. Given the proximity of large amounts of raw material to the site, it is likely that the initial decortications of materials occurred just off-site. However, a number of early reduction stage flakes and a high frequency of late reduction stage flakes do occur within the assemblage. In addition, the intended end products of this technology (flake blanks and flake tools) were not abundant. It is likely that these flakes were transported for use or further reduction outside of the site area, cycled into a different tool form at SDI-39, or used only briefly and then discarded, resulting in use-wear that is not generally detectable.

Products of biface reduction represent a measurable amount of the flintknapping activities at SDI-39, based upon the frequency of technologically diagnostic flakes. The flaked stone reduction technology identified at SDI-39 was also directly related to arrow point production and rejuvenation. Furthermore, the formed artifacts are supported by the technologically diagnostic debitage, in that the debitage may have resulted directly from arrow point production and rejuvenation. Nodule core reduction in the assemblage is dominated by non-cortical, SFP flakes that were either brought to the site or produced at the site during the production of flake blanks for arrow points from flake cores. Flake cores were either transported from the site and/or laterally cycled into other tools, such as angular hammers or steep-edged unifacial tools (SEUTs), as flake cores were not well represented in the assemblage. Based upon the observed frequency of cortical debitage, non-cortical flake blanks and/or partially prepared cores (free of most of the cortex) were transported to the site. Both flake blanks (as evidenced in the Stage 2 biface reduction debitage) and bifacial blanks were reduced into preforms and arrow points. By definition, Stage 2 debitage represents flake blank production.

Stage 3 percussion bifacial thinning is not as well represented at SDI-39 at 1834 Spindrift Drive, which supports arrow point manufacture, as percussion bifacial thinning is not extensively employed when manufacturing arrow points from smaller flake blanks. However, given the raw material constraints, percussion bifacial thinning was employed to thin arrow point blanks. In addition, the bifacial thinning flakes were small, suggesting small biface manufacture, such as blanks for arrow points.

Stage 4 pressure bifacial thinning debitage was well distributed between early and late pressure flakes. A predominance of early pressure flakes indicates original tool manufacture over bifacial tool rejuvenation. The presence of both suggests that arrow points were being

manufactured and rejuvenated on-site. Overall, this may imply more intense hunting activities occurring within the vicinity of the site. The presence of arrow point preforms also supports Stage 4 bifacial reduction at SDI-39.

Complete, but exhausted, arrow points and broken arrow points (proximal ends and distal ends) were also deposited into the archaeological context of SDI-39. This discard behavior most likely represents activities associated with retooling bow and arrow hunting equipment. Broken arrow points were disposed of and replaced with new arrow points manufactured on-site. The presence of formed artifacts and debitage strongly supports this interpretation. Even the small, undiagnostic, pressure-flaked biface fragments are most likely arrow point fragments. Given the presence of flake tools, site activities may have been associated with not only arrow point manufacture and replacement, but also with arrow shaft production. For this site, it is clear that a significant portion of lithic-based activities were associated with arrow point manufacture and replacement, and potentially, arrow shaft manufacture. Additional excavations at SDI-39 may contain an even more diverse portion of the assemblage, which may represent more diverse human behavior patterns. It is clear, based upon the overall assemblage, that the debitage from SDI-39 at 1834 Spindrift Drive represents the convergence of two technological trajectories operating as part of a single system.

Analysis Summary

Based upon the flaked lithic assemblage recovered from SDI-39, flintknapping activities within the 1834 Spindrift Drive Project APE included the reduction of nodule cores for useable flake blanks and the production/rejuvenation of arrow points/small bifaces. The primary flintknapping activity that occurred at the site was clearly associated with the production of flake blanks from nodule cores and arrow point manufacture. Of the technologically diagnostic flakes present, the majority are related to nodule technology and the remainder are related to bifacial reduction. Therefore, the primary flintknapping activity that occurred at SDI-39 was nodule reduction. Selection of nodule core tool stone, nodule core platform preparation, nodule core decortication and manufacture, and extensive nodule core reduction occur with relatively high frequency within the project area.

Based upon the lithic technology identified at those portions of SDI-39 located within the APE, this area of the site may have served as a secondary reduction loci where flake blanks were produced and likely used. Most likely, primary decortications of raw materials occurred just off-site, or at other portions of the site not within the boundary of the current study. Given the recovered assemblage, it is clear that arrow points were also manufactured and retooled on-site. The evidence for manufacture of arrow points suggests that hunting activities may have also occurred near the site. The presence of flake tools and adzes supports non-flintknapping activities. These tools imply the possible processing of a range of materials. The identification of angular hammers in the assemblage also supports active ground stone tool use. This is not surprising given the large amount of milling tools identified at the site. Further analyses of lithic materials from

SDI-39 may also serve to more fully understand the dynamic nature of the site assemblage.

6.2.2 Formed Artifacts

Bifaces and Projectile Points

Five bifaces were recovered during the current testing program at Site SDI-39. This sample includes four complete or nearly complete specimens and one fragmentary specimen. The shape, size, and weight indicate that four of the recovered specimens are arrow points (Fenenga 1953) or arrow point fragments. The remaining specimen is an unidentifiable biface fragment that may have failed during manufacture.

Of the four specimens identified as arrow points/arrow point fragments, three are identifiable to the Cottonwood Series (Cat. Nos. 266, 329, and 389) and one may be attributed to the Desert Side-Notched Series (Cat. No. 248) (Plate 6.2–1). For the Cottonwood projectile points, all three specimens maintain concave bases with relatively straight margins; two of these specimens maintain remnants of their original detachment scar, indicating manufacture directly from flake blanks. The Desert Side-Notched projectile point maintains a set of two notches on both margins with a concave base.

One bifacial mid-section fragment (Cat. No. 325) was also recovered from the site, which displays impact damage that may be indicative of hunting activities. Often, projectile points were broken on impact with inanimate objects (missed targets) or inside animals (Flenniken 1985). Because of their small, unusable condition, tips and mid-sections were not retrieved and may have remained at kill sites. Alternatively, these fragments may have been deposited at the butchering location inside the dispatched animals. Additionally, these arrow point fragments may have been the result of flintknapping errors that occurred during arrow point manufacture.

For the entire assemblage of arrow points and fragments recovered from the site, the ratio of complete points/bases to tips/mid-sections was nearly 4:1. This technological observation suggests possible circumstances that relate to site function. First, bases and complete points are often indicative of rejuvenation and weapon repair, while tips and mid-sections are indicative of hunting activities. If this scenario is true for SDI-39, then the site is associated with occupation rather than functioning as a kill site wherein game was hunted. The actual kill site, however, may be in the vicinity of, or a minimal distance away from, SDI-39. Based upon the abundance of faunal remains in the assemblage, the intended prey could have included sea and small terrestrial mammals. As a result of this hunting behavior, it is likely that some small arrow point fragments would have been brought back to the site in the hunted meat package, where hunters would then repair the broken, reusable arrow point bases and discard badly broken and exhausted arrow points, replacing them with new arrow points made at the site.

Cottonwood Triangular
Arrow Point
Cat. No. 266

Cottonwood Triangular
Arrow Point
Cat. No. 329

Cottonwood Triangular
Arrow Point
Cat. No. 389

Desert Side-Notched
Arrow Point
Cat. No. 248

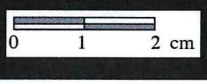


Plate 6.2–1

Bifaces Recovered From Site SDI-39

The 1834 Spindrift Drive Project

Angular Hammers

Prehistoric flaked stone assemblages from southern California and the Southwest contain a common artifact identified by archaeologists by a variety of names including chopper, hammerstone, pounder, muller, milling stone, flaked hammerstone, handstone, battered hammerstone, masher, basher, utilized core, scraper plane, pecking stone, fist ax, and hand ax, to name a few (*cf.* Dodd 197; Wallace 1978). Many of these artifacts are employed as archaeological identifiers of specific prehistoric cultures (Wallace 1954; Kowta 1969). Others are simply weighed, measured, and generally described as plant and animal resource processing tools. Dodd (1979) and others (*cf.* Ambler 1985; Geib 1986), however, have devoted considerable time and energy to the identification and function of a rather unsophisticated, yet highly specialized and important, prehistoric tool class: angular hammers.

Angular hammers are separated from other artifact classes base upon pockmarks located on one or more intentionally prepared areas on a single tool, which are the result of repeated pounding against another hard object. These implements are most frequently produced from conchoidally fractured, subrounded to subangular, spherical to discoidal, cobble-sized quartzite, metavolcanic, and volcanic nodular alluvial materials. Three angular hammers were identified at SDI-39 at 1834 Spindrift Drive. Angular hammers were employed prehistorically and ethnographically to shape, sharpen, and resharpen ground stone (Flenniken et al. 1993). The presence of angular hammers at SDI-39 is not surprising given the frequency of milling features and the intensity of milling behavior that took place at the site.

Adzes

Southern California archaeology has been plagued for years with amorphous lumps of metavolcanic stone that possess steep, unifacial edges. However, archaeologists have long recognized these objects as artifacts. SEUTs have been subjected to numerous morphological and functional categories (*i.e.,* horse hoof scraper, scraper plane, flake scraper, biscuit scraper, and various core types). Schroth and Flenniken's (1997) analysis of flaked stone tools from SDI-11,424 is, by far, the best effort to sort these artifacts into techno-functional categories. The category of adze, or woodworking tool, defines these tools.

One adze was identified at SDI-39 at 1834 Spindrift Drive. Adzes were manufactured from thick flake blanks (eight centimeters or thicker) and, more commonly, from exhausted cobble cores. Adzes are plano-convex in cross-section, have steep sides, are almost circular in plan view, are heavy, and most importantly, have strong, acute cutting edges. These tools are ideal woodworking tools because they are sharp, weighted, and durable. Brian Hayden's (1979) ethnographic study in Australia, *Paleolithic Reflections,* describes the manufacture and use of SEUTs in extreme detail. Given that the environments of Australia and southern California are very similar, and that wood was essential for prehistoric artifacts, southern California SEUTs were most likely used in a similar manner. This functional interpretation is supported by the fact that these tool categories (SEUTs and adzes) are the same in terms of manufacture, material quality,

size, shape, wear patterns, and overall variation. Additionally, experimentation described by Schroth and Flenniken (1997) supports the use of SEUTs as adzes.

Morphological variation within the adze category is, perhaps, the main reason for the numerous scraper, plane, and core categories. However, this variation in size and weight was an important technological consideration for the various tasks required of these tools. With basically the same attributes, except those of size and weight, SEUTs functioned as adzes where different sizes and weights were essential for the different tasks at hand. The most critical attribute in addition to size and weight was an acute, sharp cutting edge. When this edge became dulled during woodworking, the tool was resharpened or rejuvenated by removing flakes from the steep face while employing the plano-surface as a platform.

Flake Tools and Utilized Flakes

Utilized flakes have minimal or no shaping, with modification (if any) generally restricted to the working edge and often resulting from naturally occurring use-wear. These tools are frequently used for a short period of time and then discarded. Four flake tools/flake tool fragments were identified in the present collection.

Two of the specimens are laterally utilized flakes, which exhibit use or modification along a single lateral margin from which the tools were produced. In addition, small areas of polish are present on natural arrises on the flake tools, which suggests use in a scraping activity on some of the specimens. Both of the laterally utilized flakes maintain relatively straight edges. The angle of the working faces is relatively low (less than 45 degrees). It is likely that these flake tools were used in a scraping motion for various purposes, including working opposing curved surfaces (such as vegetable products), animal materials (such as animal hides), and even other softer stone.

Two unaltered flake fragments (produced from nodule core reduction) were identified as tools during this analysis. The fragments exhibit small areas of polish on natural arrises, suggesting that these unmodified flake fragments were used to perform an activity that involved scraping with an obtuse edge. The flake collection as a whole demonstrates only a limited amount of wear. Given the proximity of an abundance of readily available tool stone, it is likely that freshly removed flakes served the needs of the inhabitants of SDI-39 and were quickly discarded as they dulled in favor of a new, sharper flake. This may explain the relatively small amount of wear present on the identifiable flake tools within the assemblage.

6.3 Ground Lithic Artifacts

All ground stone materials identified at SDI-39 at 1834 Spindrift Drive were selected for analysis and interpretation. Ground stone implements/features include a wide range of objects used for or created by the processes of abrasion, impaction, or polishing (Adams 2002). Often, ground stone tools are associated with the processing/milling of seeds, nuts (*i.e.,* acorns, walnuts, and holly leaf cherry), and small mammals. In addition, ethnographic evidence indicates that bone, clay, and pigments may have also been processed using the same tools (Gayton 1929; Kroeber

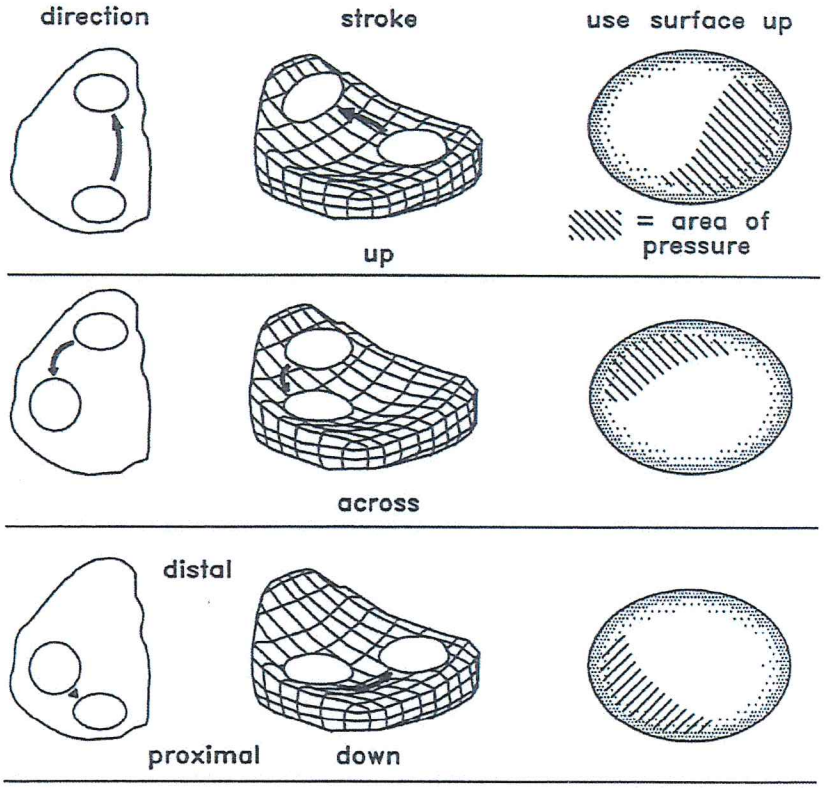
1976; Spier 1978). Implements or features of this type may be identified by the pattern of wear developed through milling stone against stone. This process often results in a smooth and/or polished surface, depending upon the substance, grinding method, and lithic material type. These surfaces were frequently pecked or resharpened when ground too smooth. These implements/features are sometimes shaped into a desired form through pecking, grinding, and/or flaking. Thus, tool identification is based upon the presence of ground or smooth surfaces, pecked or resharpened surfaces, and evidence of shaping the tool form.

6.3.1 Manos

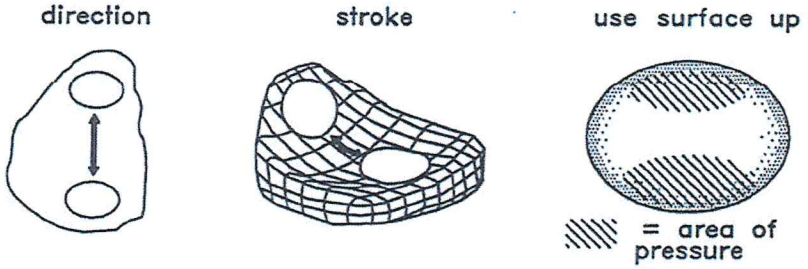
A total of 18 manos/mano fragments were recovered during the current excavations at SDI-39. Two of these specimens are complete or nearly complete and 16 are fragmentary. The recovered manos are granitic (N=15) and volcanic (N=3) cobbles. Analysis indicates that bifacial use-wear (N=10) predominates the collection. Two of the manos show evidence of shaping, such as pecking, flaking, and end-battering, which suggests extended use. Extended use and mano curation may imply long-term occupation of the site. The overall curvature of most of the mano faces is slight, indicating that the opposing milling surface, which the manos were ground against (*i.e.,* metate or milling slick), was shallow in form. In addition, the grinding patterns evident on the faces of many of the manos indicate that they were used as basin manos, primarily in a reciprocal stroke manner in concert with shallow basin metates (Adams 2002) (Figure 6.3–1). As with much of the rock present at SDI-39, most of the collected manos (N=14) have been thermally damaged to various degrees.

The presence of angular hammers in the 1834 Spindrift Drive collection documents the maintenance of ground stone tools during site occupation. Angular hammerstones were needed to constantly recreate rough surfaces on milling stones to enhance the abrasion process and thereby make the grinding of seeds more efficient. It is possible, however, that a large number of the manos present were recycled and used in rock hearth/earth ovens. This idea is supported by the presence of multiple manos and metate fragments in many of the rock features identified at SDI-39. In general, where milling tools are present, the ratio of manos to metates at a site is much greater. It has been suggested that the reason for this is that manos wear out much faster than metates (Wright 1993), and as such, more manos are produced as needed. The larger milling assemblage recovered from SDI-39 suggests that the site inhabitants depended upon food packages that required milling for processing (*i.e.,* seeds). It is evident that a portion of the inhabitants' diet at SDI-39 was derived from plant foods that required milling to process plant foods.

Example of Circular Stroke Wear Patterns
from Basin Metates



Example of Reciprocal Stroke-Wear Patterns
from Basin Metates



Adapted from Adams (2002)

Figure 6.3–1

Wear Patterns From Basin Metates

The 1834 Spindrift Drive Project

6.3.2 Metates

Metates are identified based upon the presence of at least one concave ground surface. One slab-style metate was identified in the present collection. Slab metates, compared to block metates, may be considered portable, as block metates are too heavy to transport and are defined by Binford (1980) as "site furniture." The presence of large block metates may be evidence of a more permanent site occupation; however, the presence of a slab metate at this portion of SDI-39 may indicate that although the occupants may have been primarily sedentary, they did have occasion to seasonally procure resources (as most groups did) outside of their primary habitation area. Flat basins retain a planer grinding surface that may have been used to process less oily products such as fibers (Kowta 1969). Shallow basins may have been used to process products such as hard seeds. The fragmented nature of the specimen recovered during the current study does not allow for the identification of overall basin morphology. The single metate fragment appears to be thermally damaged and it is possible that it was recycled for use in rock hearths and/or earth ovens at SDI-39, based upon similar evidence from the mano sample.

6.3.3 Pestles

A single volcanic pestle was recovered during the current excavations at SDI-39 (Plate 6.3–1). The pestle specimen is small (only 108.5 millimeters in length) and exhibits a high level of polish on both ends. It is plausible that the specimen may have been employed with a small stone bowl, like those previously identified from other portions of SDI-39. Small stone bowls and mortars are traditionally known to process pigments and medicinal plants. The use of the current specimen is unclear; however, it is clear that use of a mano/metate tool set was preferred at SDI-39 over the use of pestles and mortars.

6.3.4 Ground Stone Fragments

Eleven ground stone fragments were identified in the present collection. A ground stone fragment is a piece of a ground stone implement that has some grinding, but lacks any defining attributes that would facilitate tool identification. The majority of fragments recovered from SDI-39 are granitic, although some are volcanic. As with the manos recovered from the site, all of the ground stone fragments are thermally damaged.

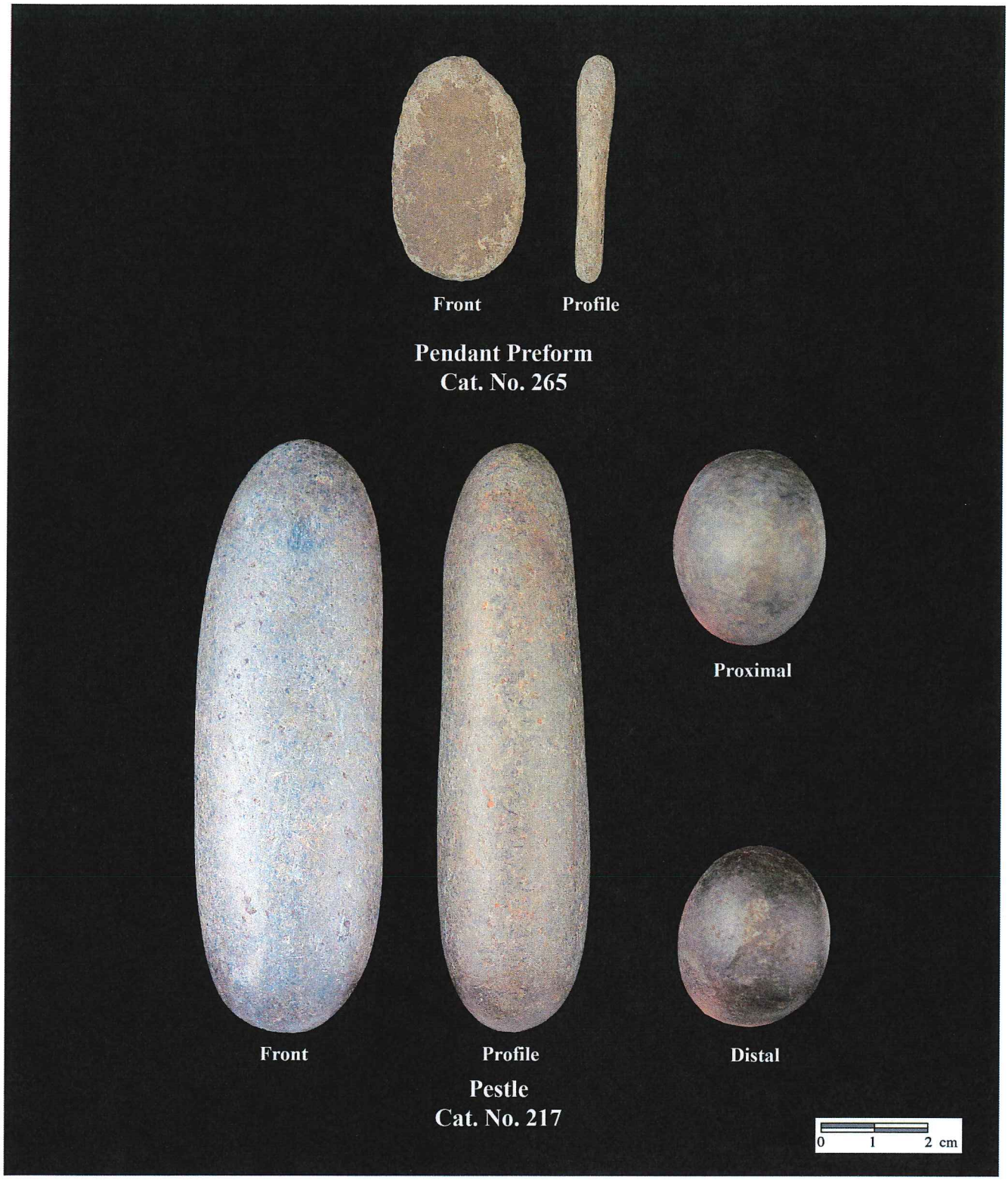


Plate 6.3–1

Pendant Preform and Pestle Recovered From Site SDI-39

The 1834 Spindrift Drive Project

6.3.5 Fire-Affected Rock

A large volume of fire-affected rock was recovered from the current excavations at SDI-39. Although several concentrations were identified, no distinct, formal rock/hearth features were able to be clearly defined. This may be a result of the limitations of the study and/or potential mixing within the midden deposit. In total, 20,334.6 grams of fire-affected rock were recovered from the site, the majority of which is heavily thermally damaged, suggesting continued reuse of the specimens. The majority of the ground stone was also heavily burned, suggesting recycling of broken or discarded ground stone into rock features. Given the scale of the assemblage, the fire-affected rock from SDI-39 at 1834 Spindrift Drive likely served multiple functions: cooking food in baskets; manufacturing ceramics; general warmth; earth ovens; cremations; and open fires. Additional excavations at the site would hopefully reveal intact rock features to provide a greater understanding of their use at the site.

6.4 Miscellaneous Stone Artifacts (Paraphernalia)

In general, paraphernalia may include a wide range of items including personal and group ritual items, weights, beads, pendants, gaming devices, ornaments, and items whose true functions are unclear (*i.e.,* cog stones and donut stones). These items may be actively or passively manipulated, whether they include a ball used for a ball game (active manipulation) or a string of beads used to convey social standing (passive manipulation). Although the social implications may be difficult to convey, a technological review of such items may suggest the overall intrinsic value of a specimen (based upon the level of effort required to procure and manufacture it), where a specimen was distributed, and finally, where a specimen was discarded. The greater the volume of data for such items, the greater the knowledge for discussion.

6.4.1 Pendants

A pendant is a personal ornament with a perforation or suspension hole generally positioned toward one end. Pendants are ideally strung so that the widest surface is the most visible. One volcanic pendant preform (possible) was recovered from the 10- to 20-centimeter level of TU 1 (see Plate 6.3–1). The volcanic specimen was bifacially ground and pecked along the edges to bring the specimen into shape. However, the final grinding, shaping, polishing, and drilling work never appears to have been completed. Overall, the specimen measures 43.1 by 24.9 by 6.8 millimeters with a weight of 6.8 grams. The original final size of the specimen could be determined and the intended symbolism behind the ornament is unknown.

6.5 Ceramic Analysis

A total of 121 prehistoric pottery fragments were recovered during the current testing program at SDI-39, all of which were included in the study sample. The specimens include 115 fragmented body sherds and seven rim sherds. The highest amount of pottery recovery was from TU 1, suggesting that the central area of the site may have served a different function than other

portions of the site. The specimens were visually analyzed under a microscope to identify specific mineral inclusions and their possible corresponding geologic locales. Results of this analysis indicate that the sherds appear to be Tizon Brown Ware with a low frequency of Lower Colorado Buff Ware. The manufacturing patterns observed in a small number of the body specimens indicate that coil pattern production methods were used on-site in at least a portion of the ceramic assemblage. The presence of Lower Colorado Buff Ware ceramics from the former lake bottoms and alluvial deposits in the Colorado Desert and Imperial County (near ancient Lake Cahuilla) suggests that trade and/or travel occurred east from SDI-39. As the site is located in a coastal area, inland and mountainous trade and/or travel was utilized for the procurement of mountain clays.

6.6 Shell Artifact Analysis

A processual understanding of manufacture, distribution, and use of shell artifacts has not been achieved for San Diego County. In addition, the range of morphological bead types used in the San Diego region is not well understood. When compared to other regions of California, there is little information concerning the process by which shell artifacts were manufactured and used, or of the evolutionary changes these artifacts may have gone through over time. The analysis of shell artifacts from other regions of California (most notably the Chumash culture area) has demonstrated considerable anthropological value in understanding prehistoric economies, trade systems and networks, and the organization of wealth and status in prehistoric societies (Fenenga 1988). For these regions, particular styles of shell artifacts have been established as chronologically diagnostic in a number of archaeological sites.

The shell artifacts in the present analysis were recovered across the site within the midden deposit of SDI-39. The use of one-eighth-inch hardware mesh cloth, in addition to wet-screening the recovered midden, likely increased the recovery of shell artifacts. The use of larger screen sizes can often bias the recovery of specific small bead types, possibly removing them from the assemblage altogether. It should also be noted that none of the present specimens were identified in context with any identifiable cultural features, and appear to be randomly distributed across the site. Although, according to Fenenga (1988), "scattered, isolated beads often are found in and around living areas of aboriginal villages in California."

When compared to many sites in the San Diego region, the SDI-39 shell artifact assemblage is considered large. Although the present data will not answer some of the larger questions that could be resolved by a greater regional study of multiple archaeological sites, it will certainly contribute to the present limited body of data and will be of value to future research issues regarding shell artifacts.

6.6.1 Olivella sp. Shell Beads

The typology developed by Gifford (1947) will be employed for this analysis. A total of nine shell artifacts were recovered as a result of the current study at SDI-39. All of the specimens are beads made from the shells of *Olivella biplicata,* a relatively small marine gastropod. Of the

nine Gifford Type F5 *Olivella* sp. shell beads, two primary manufacturing techniques are present: spire-lopped and spire-ground (Plate 6.6–1).

Although these two manufacturing techniques have often been separated by various archaeologists (Bennyhoff and Heizer 1958; Bennyhoff and Fredrickson 1967; King 1982; Bass and Andrews 1977; Bennyhoff 1986; Bennyhoff and Hughes 1987), it is more likely that the difference in techniques utilized is a matter of manufacturing preference rather than stylistic change. This hypothesis is supported by the fact that the two manufacturing techniques often occur at the same time within the same assemblage. These specimens are primarily whole shells that have the spire end modified by breaking or grinding to produce a hole for stringing or attaching. These are the simplest and most easily produced form of shell bead.

In general, whole *Olivella* sp. beads are not considered to be reliable time markers throughout California. However, spire-lopped/spire-ground *Olivella* sp. beads are likely the oldest form of shell bead known from California (Fenenga 1988). Evidence from Site SDI-11,079 in Otay Mesa suggests the employment of *Olivella* sp. shells for beads as early as 9,000 years ago (Kyle et al. 1998), and ethnographic evidence demonstrates that their use continued throughout historic times (Howard 1974; Dietz and Jackson 1981; Roop and Flynn 1978).

In addition to the whole *Olivella* sp. beads recovered from SDI-39 at 1834 Spindrift Drive, a single sidewall *Olivella* sp. bead was also recovered. The presence of a large amount of unmodified *Olivella* sp. shells in the invertebrate faunal assemblage suggests local manufacture of the bead specimens at SDI-39.

6.7 Bone Artifact Analysis

One modified bone fragment was recovered during the current excavations at SDI-39. Gifford's 1940 publication was used to assign a typological category when possible. The modified bone fragment is burned, polished, and displays evidence of shaping. However, because of the fragmented nature of the specimen, its intended use cannot be determined. These kinds of specimens may represent remains from the manufacturing process of other bone artifacts at SDI-39, or simply unidentifiable portions of larger tools. However, their true purpose is not clear.

6.8 Invertebrate Faunal Analysis

Dense invertebrate faunal (shell) deposits are present across Site SDI-39 within the APE. A total of 7,440.3 grams of marine shell was recovered; however, only the shell assemblage from TU 1, which totals 4,063.7 grams, was used for this review. The majority of the shell recovery from TU 1 came from the zero- to 40-centimeter level. Preliminary data suggests that the majority of shellfish appear to have been gathered from rocky shore/outer coast environments, followed by sandy beach environments and minimally from bay/lagoon/estuary environments. This correlates to the marine environment that existed closest to the site location. The majority of the identifiable shellfish species identified include *Mytilus* sp., *Tivela stultorum*, *Chiton* sp., *Haliotis* sp., *Donax gouldii*, *Argopecten* sp., and *Pseudochama* sp.

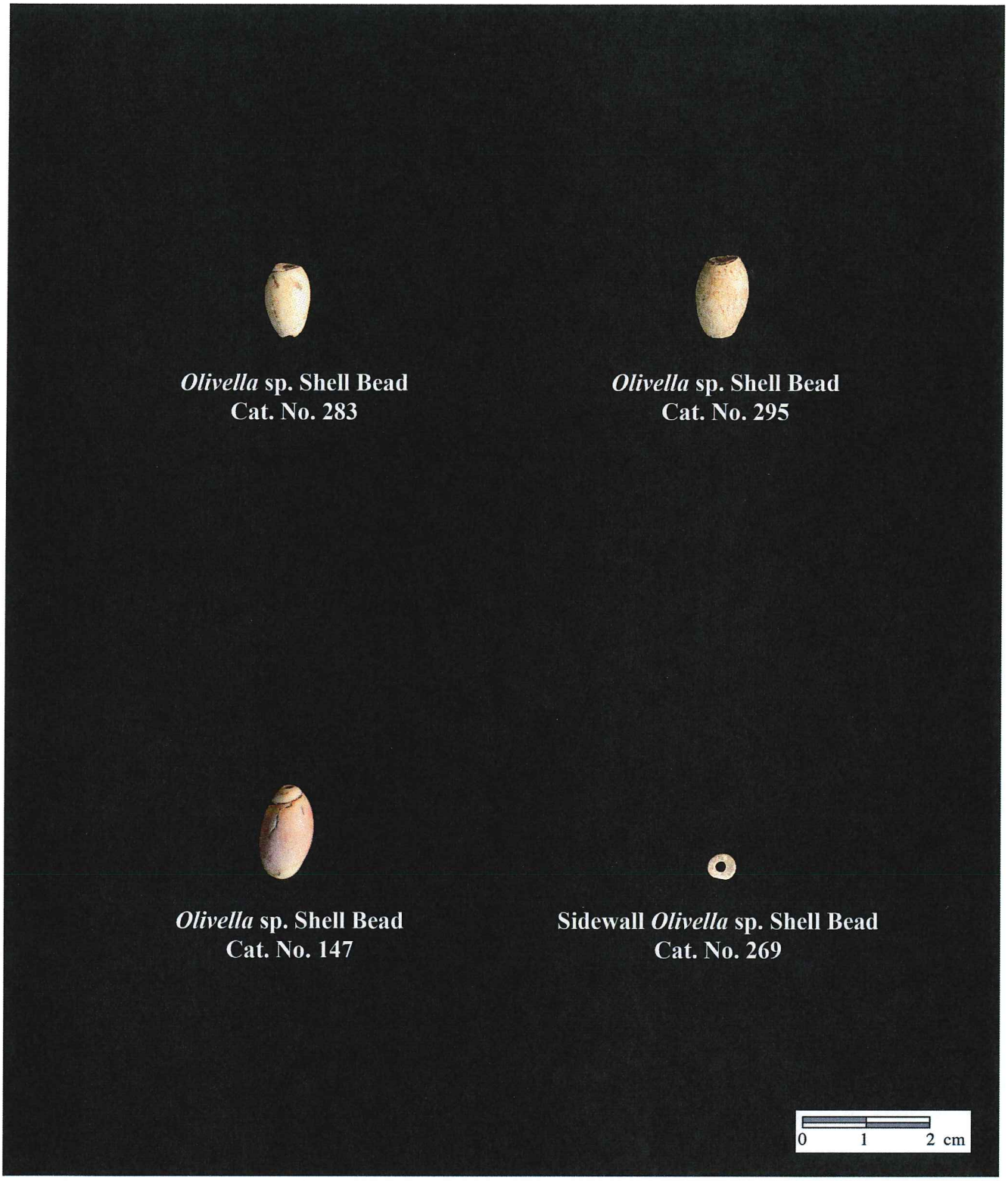


Plate 6.6–1

Olivella sp. Shell Beads Recovered From Site SDI-39

The 1834 Spindrift Drive Project

Based upon the review of the invertebrate faunal remains from TU 1, the prehistoric inhabitants of Site SDI-39 primarily exploited the rocky shore/outer coast marine habitats for shellfish. However, there is also evidence of exploitation of sandy beach and bay/lagoon/estuary habitats. This exploitation pattern identifies a focus upon a single marine environment with opportunistic gathering from sandy beach and bay/lagoon/estuary locations. Given the results of the shellfish review for this portion of SDI-39, the inhabitants would have exploited the nearby shoreline areas and occasionally visited the nearest bay habitat around La Jolla Cove.

Since a sizeable shell bead assemblage was also identified at SDI-39, the archaeological invertebrate faunal assemblage was culled to identify the presence of shell bead manufacture detritus. The results of the investigation indicate that some of the invertebrate faunal materials were being used not only as a source of food, but also for the manufacture of shell tools and beads, just like other locations of SDI-39.

6.9 Vertebrate Faunal Remains

A total of 262.6 grams of vertebrate faunal remains was recovered from SDI-39 at 1834 Spindrift Drive. A species-specific analysis was not conducted during this phase of work, but instead, remains were identified to categories including medium/large mammals, small mammals, birds, reptiles, and fish; exclusive species distinctions were observed and noted.

The faunal remains recovered from SDI-39 are extremely diverse and indicate a primary reliance upon marine animals. Several animals, including fish, small mammals, medium/large mammals, birds, and reptiles were identified in the archaeofaunal assemblage. Nearly all of the species present would have made for easy exploitation in the open ocean, coves, lagoons, or chaparral habitats near the site. The abundance of fish and small mammals suggests that the cove and chaparral habitats were generally similar to the modern environment. The lagoon, however, which was possibly a key source of fresh water, only existed before the 1900s.

The faunal remains from this site indicate that fish and small mammals were the primary animal resources exploited; their presence at multicomponent Archaic and Late Prehistoric sites suggests that these resources were very important to the subsistence regimen throughout prehistory. The animal remains represented suggest that the site functioned as a long-term camp. The diverse nature of the assemblage, the lack of low-utility elements for larger mammals that are typically discarded at butchering sites, and the representation of nearly all elements for small mammals would suggest that only smaller carcasses were brought back for butchering, and that those animal remains were deposited very near where they were processed. The large quantity of fragmentary small mammal remains recovered indicates that marrow and grease extraction activities were occurring at the site.

6.10 Human Remains

The excavations at 1834 Spindrift Drive did not encounter any in situ burials or cremations. Due to the sensitivity of the project APE, all faunal materials were reviewed for the presence of

human remains. To date, no human remains have been identified in the 1834 Spindrift assemblage. However, human remains have been previously identified in other portions of SDI-39.

6.11 Summary and Discussion

The archaeological testing program at 1834 Spindrift Drive identified a portion of known prehistoric Site SDI-39, which has demonstrated further research potential. The focus of the current investigation was to determine if the portion of SDI-39 located within the project APE is intact and retains integrity. The test units and STPs excavated at 1834 Spindrift Drive identified the presence of both intact and disturbed subsurface deposits associated with SDI-39. All 23 STPs and both test units were positive for cultural material, with a maximum depth in some units of 100 centimeters. Tests located along the southern margins of the property indicate that past grading impacts have removed most of the cultural deposit; however, traces of cultural material were still noted. A summary of the total recovery from SDI-39 during the current excavations is provided in Table 6.11–1. Although no archaeological tests could be placed west of the bluff edge on the west side of the property, evidence of the cultural deposit could be observed in the slope leading down to the beach. Erosion and bluff retreat have caused the deflation and gradual shifting of midden soil downslope to the steep cliff edge and ocean.

Table 6.11–1
Excavation Data Summary
Site SDI-39 at 1834 Spindrift Drive

Object Type	Recovery		Total	Percent
	STPs	TUs		
Flaked Stone				
Projectile Point	1	3	4	0.43
Biface	-	1	1	0.11
Adze	-	1	1	0.11
Flake Tool	3	1	4	0.43
Debitage	305	453	758	81.16
Angular Hammer	1	2	3	0.32
Ground Stone				
Mano	2	16	18	1.93
Pestle	1	-	1	0.11
Metate	-	1	1	0.11
Ground Stone	6	5	11	1.18
Other Formed Objects				
Pendant Preform	-	1	1	0.11
Bead	2	7	9	0.96
Bone Tool	1	-	1	0.11

Object Type	Recovery		Total	Percent
	STPs	TUs		
Pottery	51	70	121	12.96
Bulk Items (in grams)				
Faunal Bone	80.3	182.3	262.6	-
Fire-Affected Rock	7,103.9	13,230.7	20,334.6	
Marine Shell	3,286.4	4,153.9	7,440.3	
Total*	373	561	934	100.00†
Percent	39.94	60.06	100.00†	

**Totals do not include grams*

†*Rounded totals may not equal 100.00 percent*

Site SDI-39 is interpreted as being part of a large coastal occupation site. The data from the current excavations at 1834 Spindrift Drive suggests that subsistence practices within the APE focused upon a range of activities including hunting, fishing, shellfish acquisition, and floral food resource extraction and processing. Essentially, the cultural deposit observed within the APE reflects the same expansive prehistoric occupation recorded elsewhere in the Spindrift neighborhood and La Jolla shores area. The long-term occupation of SDI-39 is evident in the material remains recovered from the portion of the site within the APE. The wide range and volume of artifacts imply that site activities included deep water fishing (presumably with the use of boats), manufacture and use of baskets, manufacture and use of arrow points and arrow shafts, manufacture and use of shell beads, use and potential manufacture of ceramics, manufacture and use of bone tools, potential trade with local and non-local communities, and hunting of marine mammals, birds, and occasionally terrestrial mammals. The amount of materials recovered from only 23 STPs and two test units within the APE is indicative of a substantial and long-term occupation around La Jolla Bay.

Despite the potential for mixing within the midden, a high level of preservation and site integrity was observed below the level of grading disturbance. This is supported by the presence of multiple shells and beads that still retain some of their original coloring. Although the reason for such a high level of preservation is not clear, it may relate to the high amount of carbon in the soil from prehistoric hearth features. It is plausible that the carbon is deoxygenating the soils, and thus behaving as a natural preservative for cultural materials within the midden deposit. It is essential that any future research at the site take all potential special studies into account during excavation, including soil studies, pollen studies, phytolith studies, protein residue analyses, petrographic analyses of ceramic materials, obsidian source studies, replication studies, comparative chronological studies, dietary studies, and neutron activation studies for ceramics. Because SDI-39 is considered a CEQA-significant resource, this testing program has provided the data to conclude that the proposed project will impact portions of this significant resource.

7.0 DISCUSSION/IMPACT ANALYSIS

The property at 1834 Spindrift Drive is located within an area of documented prehistoric occupation where Archaic and Late Prehistoric populations focused upon the abundant marine resources around La Jolla Cove and La Jolla Shores. The cultural resources study conducted for 1834 Spindrift Drive consisted of a field survey of the property, a review of archival material and previous work in the area, subsurface excavations, and preparation of this report. All documentary materials pertinent to this study have been identified and included in this report.

The objective of the study is to ascertain the likelihood that cultural resources associated with SDI-39 existed within the 1834 Spindrift Drive property. A survey and subsurface testing determined the presence of intact and disturbed elements of the prehistoric village complex within the project, generally from the western bluff above the beach to the eastern property boundary at Spindrift Drive. The total area of SDI-39 within the APE was calculated as 16,087 square feet (from the bluff area on the west to Spindrift Drive on the east, including the existing residence footprint and pool). Therefore, any soil disturbance associated with the proposed development has the potential to encounter both disturbed and intact cultural deposits. Although the deposit displays a low frequency of materials along the southern and southeastern edges of the property, the central area contains an intact midden deposit overlain with a disturbed and mixed cultural deposit.

The proposed project will include the demolition of the existing two-story, single-family residence, the construction of a new two-story, single-family residence with a basement and a garage, the construction of a guest house over an open cabana, and a new pool. The new residence will be constructed in the same location as the existing building, but the proposed project excavations will result in an estimated 3,332 square feet of construction beyond the footprint of the existing residence. The installation of 10 boxed trees will intrude below the superficial level of less than 12 inches. Impacts to cultural deposits will be avoided by cutting down any trees or large shrubs at ground level and leaving the roots in the ground. Only 253 square feet will be needed for large tree planting, which is part of the 3,332 square feet of disturbance.

Figure 7.0–1 illustrates the area of the existing residence and landscape/hardscape with the new, proposed development areas calculated, which obviously represent areas of impact to SDI-39. Impacts to SDI-39 within the property are unavoidable and potentially significant. Because of constraints to building on this lot, particularly due to the mandatory bluff setback, the new residence, guest house, and property improvements are focused upon the central and eastern sides of the property, thereby impacting elements of SDI-39. Because SDI-39 is listed with the City of San Diego as a designated resource, intrusion into the cultural resource, beyond the existing footprint, is limited to 25.00 percent, as dictated by SDMC Section 143.0253. Therefore, the applicable encroachment limitations were analyzed to determine if the proposed development is within acceptable limits.

Figure 7.0–1
Impact Location Map

(Deleted for Public Review; Bound Separately)

Based upon the encroachment calculations, the 16,087 square feet of SDI-39 within the APE, plus the 1,064 square feet of the site on the slope, minus the areas containing the existing residence and pool, leaves 13,984 square feet of site area. This allows for a total additional development area of 3,496 square feet based upon a total encroachment of 25.00 percent into the unbuilt portion of the lot. Encroachment into the lot beyond the limits of the existing residence will be 23.75 percent, or 3,322 square feet (based upon the archaeologically defined midden). By limiting encroachment to less than 25.00 percent, the proposed design is in compliance with SDMC Section 143.0253.

The cultural resources study has identified intact and disturbed elements of SDI-39 within the areas of the property that will be directly impacted by the project. Impacts to significant cultural resources can be mitigated through data recovery and monitoring of grading/excavations. The mitigation program is outlined in Section 8.0.

7.1 Cultural Resource Evaluation

Within the Spindrift neighborhood, segments of prehistoric Site SDI-39 have been encountered beneath existing streets, landscaping, and residences. These residential elements of SDI-39 represent surviving parts of the large prehistoric village complex, which encompassed land surrounding the location of the La Jolla Beach and Tennis Club southward toward La Jolla Cove. The area of SDI-39 is tentatively identified as the Spindrift Archaeological District, a designation that reflects the abundance of cultural materials associated with the large Native American population that occupied this site for approximately 8,000 years.

Although SDI-39 has been substantially disturbed by land development over the past 80 years, the site is generally considered to be CEQA-significant due to the presence of human remains and associated cultural materials/features that represent a substantial human occupation at this location. The information from the analysis of the 1834 Spindrift Drive Project has been analyzed according to City of San Diego HRB designation criteria, City Historic Property Guidelines, and CEQA significance criteria. An updated California Department of Parks and Recreation (DPR) form has been completed (Appendix B).

The archaeological site was evaluated under CEQA criteria. The site within the subject property and in the general neighborhood is considered significant under Criterion D listed in Sections 15064.5 and 21083.2, for the potential to yield information important to the prehistory of this area. The subject property is located within the boundary of the Spindrift Archaeological Site (SDI-39), a previously recorded prehistoric occupation complex spanning the Early Archaic to the Late Prehistoric cultural periods. The Spindrift Site has been determined to be significant according to CEQA and City of San Diego criteria and encompasses a large area known to its Kumeyaay inhabitants as *Mut kula xuy/Mut lah hoy ya* (place of many caves). An important element of the significance of the Spindrift Site is the numerous human burials that have been discovered and the abundance of human bone encountered in graded lots and streets within this neighborhood. The subject property lies within this highly sensitive archaeological area. Site SDI-

39 has been identified as an important, significant site since it was first recorded by Welty in 1912, when he noted that the site stretched for as long as 1,000 feet along the shore and up to 1,200 feet inland. Welty noted depths from one to eight feet, a dense black midden, shell, charcoal, and fragments of human remains.

The early documentation, large quantity, and wide range of materials identified for SDI-39 clearly indicates that the site served a habitation function. To date, radiocarbon analysis from the site has been limited to only identifying the Late Prehistoric Period component. Despite this, previous studies clearly indicate the presence of a large Archaic component that has yet to be ratified through conventional C-14 methods.

Within the Spindrift neighborhood, segments of prehistoric Site SDI-39 have been encountered beneath existing streets, landscaping, and residences. These residential elements of SDI-39 represent surviving parts of the large prehistoric village complex, which encompassed land surrounding the location of the La Jolla Beach and Tennis Club and southward toward La Jolla Cove. The area of SDI-39 is tentatively identified as the Spindrift Archaeological District, a designation that reflects the abundance of cultural materials associated with the large Native American population that occupied this site for approximately 8,000 years. Although SDI-39 has been substantially disturbed by land development over the past 80 years, the site is generally considered to be CEQA-significant due to the presence of human remains and associated cultural materials/features that represent a substantial human occupation at this location.

Between November of 2016 and July of 2017, BFSA conducted a preliminary survey and testing program at the subject property. A Native American monitor from Red Tail was present for all archaeological investigations. Previous grading and construction activities disturbed the majority of the property when the parcel was graded in the 1920s. The limited subsurface investigation of the property involved the excavation of 23 STPs and two archaeological test units, which identified subsurface cultural deposits throughout the property. Some locations within the property have removed most of the cultural deposit, such as the location of the existing swimming pool or parts of the residence foundation. Excavations indicated that the majority of the intact cultural deposits are located on the north side of the property, while more disturbed cultural deposits were noted on the southern half of the property. With the authorization of the City of San Diego, the shovel tests and test units were excavated around the existing residence, focusing upon areas of potential construction for the new residence. The recovery from these subsurface excavations confirmed the presence of elements of SDI-39 within the APE, primarily concentrated between zero and 60 centimeters deep on the north side of the lot. The test unit recovery included shell, pottery, lithic production waste, ground stone, hammerstones, shell beads, flake-based tools, bifaces, marine shell, and faunal bone. No human remains were identified during the investigations.

7.1.1 City of San Diego Historical Resources Board Evaluation

The intact elements of SDI-39 noted on the northern portion of the subject property can be designated as a historic resource under City of San Diego HRB Criterion A. This designation reflects the characteristics of the Spindrift Archaeological Site (SDI-39), which contains numerous human burials, thousands of artifacts, features, ecofacts (shell and bone), and trade material. Whether or not the portion of SDI-39 that is present within the subject property reflects all aspects of the prehistoric village could not be confirmed, particularly whether or not human remains are present. However, intact midden was documented to a depth of 60 centimeters, which highlights the potential for important cultural materials to be present.

City of San Diego HRB Criterion A

The key distinction provided by the City in HRB Criterion A for cultural resources exhibiting significant archaeological development is that the resource "must exemplify archaeological development through subsurface deposits and may include associated surface features." Consideration for designation is therefore established based upon whether or not the resource reflects special elements of archaeological development as listed under Criterion A.

When evaluating an archaeological resource, integrity is the authenticity of the resource's physical identity clearly indicated by the retention of characteristics that existed during its period of significance. It is important to note that integrity is not the same as condition. Integrity directly relates to the presence or absence of historic materials and character-defining features, while condition relates to the relative state of physical deterioration of the resource. In most instances, integrity is more relevant to the significance of a resource than condition; however, if a resource is in such poor condition that original materials and features may no longer be salvageable, then the resource's integrity may be adversely impacted. The eight aspects of integrity used in evaluating a historic resource are:

1. ***Location*** is the place where a resource was constructed or where an event occurred.
2. ***Design*** results from intentional decisions made during the conception and planning of a resource. Design includes form, plan, space, structure, and style of a property.
3. ***Setting*** applies to a physical environment, the character of a resource's location, and a resource's relationship to the surrounding area.
4. ***Materials*** comprise the physical elements combined or deposited in a particular pattern or configuration to form a property.
5. ***Workmanship*** consists of the physical evidence of crafts employed by a particular culture, people, or artisan, which includes traditional, vernacular, and high styles.
6. ***Feeling*** relies upon present physical features of a property to convey and evoke an aesthetic or historic sense of past time and place.
7. ***Association*** directly links a property with a historic event, activity, or person of past time and place, and requires the presence of physical features to convey the property's

character.

8. ***Depositional Integrity*** addresses whether or not the archaeological deposit has retained its overall integrity.

In order to assess each aspect of integrity when evaluating the portion of SDI-39 present at 1834 Spindrift Drive, the following steps were taken, as recommended in the City of San Diego *Guidelines for the Application of Historical Resources Board Designation Criteria*, Land Development Manual, Historical Resources Guidelines, Appendix E, Part 2, adopted August 27, 2009:

1. ***Integrity of location*** was assessed through the implementation of archaeological excavations of the portion of SDI-39 located within the 1834 Spindrift Drive APE. Intact deposits were encountered in the northern portion of the property at depths from 20 to 60 centimeters below the surface. These intact deposits indicate that this portion of SDI-39 has remained undisturbed in its present location since its period of significance.
2. ***Integrity of design*** was assessed by evaluating the spatial arrangement of the portion of SDI-39, and any features present, within the 1834 Spindrift Drive APE. It was discovered through archaeological investigations that the intact portion of SDI-39 located in the north portion of the property does not contain any features or specific site use areas, and therefore, integrity of design could not be determined.
3. ***Integrity of setting*** was assessed by inspecting the elements of the property, which include topographic features, open space, views, landscapes, vegetation, man-made features, and relationships between buildings and other features. While many of the topographic features and ocean views are still intact, integrity of setting has been significantly reduced due to the residential development of the property and surrounding parcels.
4. ***Integrity of materials*** is normally assessed by determining the presence or absence of original materials used in the construction of features, as well as the possible introduction of materials that may have altered any features of the resource. Because no features were discovered during archaeological investigations of this portion of SDI-39, integrity of materials could not be determined.
5. ***Integrity of workmanship*** is normally assessed by evaluating the quality of the features present within the resource boundaries. Because no features were located within this portion of SDI-39, integrity of workmanship could not be determined.
6. ***Integrity of feeling*** is normally assessed by evaluating whether or not the resource's features, in combination with its setting, convey a historic sense of the property during its period of significance. Because no features were identified within this portion of SDI-39, integrity of feeling could not be determined.

7. ***Integrity of association*** was assessed by evaluating the resource's data or information and its ability to answer any research questions relevant to the history of the city of San Diego or the state of California. Since the 1834 Spindrift Drive property involves a portion of a single site, the research questions are more focused, rather than intended to answer wide-reaching theories regarding the prehistoric settlement and subsistence of southern San Diego County, or even the San Diego coastal area. Research questions, which this portion of SDI-39 may provide answers for, include those regarding cultural chronology, subsistence strategies and the environment, and the trade and procurement of lithic materials. The cultural chronology questions include:

    - When did the occupation/utilization of Site SDI-39 occur? What culture group is represented at this portion of Site SDI-39?
    - What type of activities occurred at the site? Do the remains from Site SDI-39 represent a wide resource base that might suggest a habitation or temporary camp, or are the remains more typical of a task-specific resource extraction site?
    - Did the utilization of Site SDI-39 occur during a time period similar to the occupation of regional sites such as the Village of La Rinconada de Jamo, Ystagua, Torrey Pines, Mesa, and W-20?
    - How does the occupation of Site SDI-39 compare to other sites in the area? How does it relate to these sites spatially and temporally?
    - Are the previously accepted culturally diagnostic artifact types (marine shell, ground stone tools, and cobble-based tools for La Jolla; ceramics, small projectile points, and bedrock milling for Late Prehistoric) accurate cultural markers for this site?

    The subsistence strategies and the environment questions include:

    - What activities were undertaken at Site SDI-39 and what resources were exploited?
    - Do the faunal remains from the deposit at Site SDI-39 reflect a narrow range of animals taken in keeping with the predicted narrow resource breadth at Archaic sites, or do they represent a more widespread subsistence base suggestive of the Late Prehistoric?
    - How important were coastal resources (fish and mollusks) to the inhabitants of the site?
    - Can faunal and plant residue remains provide information about the seasonality of use of the sites?
    - In what manner were subsistence resources processed and prepared?
    - How does subsistence and settlement data from Site SDI-39 compare to other

La Jolla and Late Prehistoric sites in the area?

- If contemporary, how does the evidence for subsistence at Site SDI-39 compare to that from nearby sites in Rose Canyon?
- Is there evidence of changes in subsistence strategies, as observed in faunal and marine shell assemblages, either over time or through seasonal use of the site?
- How does Site SDI-39 fit existing models of local settlement and subsistence?
- What types of environments were exploited by the occupants of Site SDI-39?
- Are there changes in the artifact assemblage of Site SDI-39 that can be related to environmental or cultural change?

The trade and procurement of lithic materials questions include:

- What types of non-local items are present at Site SDI-39?
- What fine-grained lithic materials were utilized at Site SDI-39? Are these materials found in La Jolla or Late Prehistoric contexts?
- What are the sources for these materials, and what do these sources imply in terms of group interactions? How were they transported to the site, as raw material or as finished tools?
- What procurement range is indicated by the source of the non-local items? What intergroup relations are implied by the presence of these items?
- What is the role of Site SDI-39 in the exchange system? How does that role vary over the occupation of the site?
- What kinds of tools are made from fine-grained materials?

8. ***Depositional Integrity*** was assessed by evaluating whether or not intact deposits exist within the 1834 Spindrift Drive APE. Intact midden was documented in the northern portion of the property through shovel test and test unit excavations. The intact midden was located at a depth of 20 to 60 centimeters. It would appear that all elements of SDI-39 within the 1834 Spindrift Drive APE have been disturbed to a depth of minimally 20 centimeters. In some areas, intact cultural deposits exist below the disturbed midden layer. Although these pockets of intact midden hold research potential, the cultural deposit as a whole within this property lacks depositional integrity.

The area of SDI-39 within the northern portion of the 1834 Spindrift Drive APE meets the basic criteria to be considered a HRB-significant cultural resource. Specifically, this portion of SDI-39 meets the listing requirements in City of San Diego HRB Criterion A as containing significant archaeological deposits linked to the larger prehistoric village complex identified throughout the Spindrift neighborhood. Impacts to HRB-significant cultural deposits within the

northern area of the property can be mitigated through data recovery and mitigation monitoring.

City of San Diego HRB Criterion B

The portion of SDI-39 located within the 1834 Spindrift Drive APE is not associated with any specific persons or events significant in local, state, or national history. Therefore, this portion of the site is not eligible for listing under HRB Criterion B.

City of San Diego HRB Criterion C

Because no features were encountered during archaeological investigations of the portion of SDI-39 located within the 1834 Spindrift Drive APE, this portion of SDI-39 does not embody distinctive characteristics of a style, type, period, or method of construction, nor is it a valuable example of the use of indigenous materials or craftsmanship. Therefore, this portion of the site is not eligible for listing under HRB Criterion C.

City of San Diego HRB Criterion D

Because no features are associated with this portion of SDI-39, it is not representative of the notable work of a master builder, designer, architect, engineer, landscape architect, interior designer, artist or craftsman. Therefore, this portion of the site is not eligible for listing under HRB Criterion D.

City of San Diego HRB Criterion E

This portion of SDI-39 has not been listed or determined eligible by the National Park Service for listing on the NRHP, nor is it listed or been determined eligible by the State Historic Preservation Office for listing on the CRHR. Therefore, this portion of the site is not eligible for listing under HRB Criterion E.

City of San Diego HRB Criterion F

This portion of SDI-39 is located within the proposed Spindrift Archaeological District and qualifies as a contributing element of that district. However, because this district has not yet been adopted by the HRB, this portion of the site is not currently eligible for listing under HRB Criterion F.

8.0 MANAGEMENT CONSIDERATIONS

The archaeological study of 1834 Spindrift Drive identified evidence that prehistoric Site SDI-39 exists within the parcel. In accordance with City of San Diego Historical Resources Guidelines, efforts were undertaken to minimize impacts to a designated cultural resource. Essentially, the entire property east of the top of the bluff edge to the west side of Spindrift Drive contains disturbed and intact elements of SDI-39. In the design of the new residence, efforts were made by the architects and the archaeologists to place construction where mainly disturbed deposits were identified and to limit impacts to intact midden deposits. This process resulted in the expansion beyond the existing residence footprint, primarily in the inner courtyard between the southern wing of the existing residence and the front retaining wall. Most of the existing pool and front courtyard have been disturbed and only traces of midden were present. The largest expansion of new living space is located in this area. Where expansion will intrude into areas where intact midden is present, the architect will use stem walls or caissons and grade beams to span across midden areas and achieve preservation of the midden beneath the living space. Furthermore, in those areas outside of the new residence footprint, landscaping will be minimized and only two new large-boxed trees will be placed within the midden areas. Otherwise, all landscaping will be minimally invasive. These measures have the benefit of preserving as much of the intact midden as possible, including areas beneath the new residence that fall outside of the new basement footprint.

Significant elements of SDI-39 will be impacted by the proposed development, which will result in an estimated 3,322 square feet of construction beyond the footprint of the existing residence. Based upon the development calculations, the maximum encroachment into the cultural deposit would be 23.75 percent. This level or percentage of encroachment is permissible under City of San Diego SDMC Section 143.0253, which states that any encroachment into a significant resource must be less than 25.00 percent beyond the existing footprint. Encroachment into a significant archaeological site at a level of less than 25.00 percent must still mitigate impacts to the cultural resource in accordance with established protocols, guidelines, and tribal participation. The potential impacts to disturbed and intact midden deposits at this project can be mitigated to a level below significant through the implementation of the mitigation monitoring program outlined below. These measures are consistent with other mitigation programs conducted recently in the Spindrift neighborhood. A copy of this report will be provided to Native American representative Clint Linton to review and confirm his consent to the mitigation protocol.

8.1 Historical Resources Archaeological Data Recovery Program

In order to comply with City of San Diego guidelines and the SDMC for the treatment of cultural resources, the following ADRP shall be implemented as a requirement of the development permit. The goal of this plan is the successful mitigation of impacts and the preservation of

valuable, nonrenewable cultural resources, where possible, within the property.

1. This project requires implementation of an ADRP to mitigate impacts to archaeological Site SDI-39. Data recovery will be performed following demolition of the existing structure and will be part of the demolition permit process. Data recovery work should be completed prior to the issuance of ANY construction permits, or the start of ANY construction if no permits are required, unless the consulting archaeologist and the Mitigation Monitoring Coordination (MMC) section of the City of San Diego Development Services Department (DSD) determine that construction permits may be issued because data recovery excavations are dependent upon grading work. The ADRP with Native American participation consists of a 100.00 percent archaeological excavation of all intact cultural deposits and 100.00 percent controlled and monitored mechanical excavation of disturbed cultural deposits. All soils from both the archaeological excavations and the controlled mechanical excavations will be hydro-screened through fine-mesh screen to recover all cultural materials and any human remains. The ADRP shall be completed as outlined in this document. The elements of the MMRP are provided below:

    a. The area of development that must include archaeological monitoring and potentially data recovery (if intact deposits are encountered) is approximately 3,322 square feet.
    b. For the demolition permit and the process of removing the existing residence and hardscape, the archaeologist and Native American representative shall attend a preconstruction meeting with the applicant's representatives, the City's MMC, and the contractors. The protocols to be followed during demolition shall include archaeological and Native American monitoring whenever soil is disturbed.
    c. For the mitigation program, the governing protocol will be that all intact cultural deposits to be affected by grading, drilling, or excavation will be hand-excavated by archaeologists and then hydro-screened to provide the greatest opportunity to identify and recover human remains. All grading excavations within the disturbed midden deposits shall be closely monitored by an archaeologist and a Native American monitor to watch for cultural materials and possible human remains. All cultural soil, whether disturbed or intact, will be hydro-screened for maximum recovery of cultural materials and human remains.
    d. All field operations will include the participation of Kumeyaay Native American representatives as monitors. Because human remains have already been identified, this monitor may also be the Most Likely Descendent (MLD), or the MLD may be on-site independent of the Native American monitor.

e. A laboratory program will be completed for all recovered cultural materials. All items in the collection will be subjected to standard laboratory procedures of cleaning, cataloging, data entry, and artifact analysis of: lithics; ceramics; faunal materials (marine and terrestrial species, including fish and sea mammals); seasonality; shell; lithic reduction; residue; radiocarbon dating; obsidian hydration and sourcing; shell beads; fishing equipment; and trade materials. Based upon the substantial quantity of all varieties of artifacts and ecofacts from excavations in and around 1834 Spindrift Drive, the projection can be made that the laboratory analysis will likely be exhaustive.
f. Curation of all materials recovered during the ADRP, with the exception of human remains and any associated burial goods, shall be prepared in compliance with local, state, and federal standards and shall be permanently curated at an approved facility that meets the City's standards.
g. ADRP provisions for the discovery of human remains shall be invoked in accordance with the California PRC and the Health and Safety Code. In the event that human remains are encountered during the ADRP, soil shall only be exported from the project site after it has been cleared by the MLD and the project archaeologist. Any potential human remains recovered during the ADRP will be directly repatriated to the MLD or MLD Representative at the location of the discovery.
h. Disturbance of SDI-39 within the property cannot exceed the 25.00 percent encroachment level. No grading or excavations outside of the designated limits of construction will be permitted.
i. Archaeological and Native American monitoring shall be conducted for all excavations and earthwork after completion of the ADRP and acceptance of a draft progress report for the program. The detailed MMRP is identified below in Section 8.2.
j. Upon completion of the ADRP and prior to issuance of grading permits, the qualified archaeologist and Native American monitor shall attend a second preconstruction meeting to make comments and/or suggestions concerning the proposed grading process.

8.2 Monitoring Program

As CEQA-significant Site SDI-39 is located within the APE and cultural deposits may be impacted by the project, in addition to the data recovery program, the following mitigation monitoring program shall be incorporated into the development permit:

I. Prior to Permit Issuance

A. Entitlements Plan Check

1. Prior to issuance of any construction permits, including, but not limited to, the first grading permit, demolition plans/permits, building plans/permits, or a Notice to Proceed for Subdivisions, but prior to the first preconstruction meeting, whichever is applicable, the Assistant Deputy Director (ADD) environmental designee shall verify that the requirements for archaeological and Native American monitoring have been noted on the applicable construction documents through the plan check process.

B. Letters of Qualification Have Been Submitted to the ADD

1. The applicant shall submit a letter of verification to MMC identifying the PI for the project and the names of all persons involved in the archaeological monitoring program, as defined in the City of San Diego Historical Resources Guidelines.
2. MMC will provide a letter to the applicant confirming that the qualifications of the PI and all persons involved in the archaeological monitoring of the project meet the qualifications established in the Historical Resources Guidelines.
3. Prior to the start of work, the applicant must obtain written approval from MMC for any personnel changes associated with the monitoring program.

II. Prior to Start of Construction

A. Verification of Records Search

1. The PI shall provide verification to MMC that a site-specific records search (one-quarter-mile radius) has been completed. Verification includes, but is not limited to, a copy of a confirmation letter from the SCIC, or, if the search was in-house, a letter of verification from the PI stating that the search was completed.
2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.
3. The PI may submit a detailed letter to MMC requesting a reduction to the one-quarter-mile radius.

B. PI Shall Attend Preconstruction Meetings

1. Prior to beginning any work that requires monitoring, the applicant shall arrange a preconstruction meeting that shall include the PI, the Native American consultant/monitor (where Native American resources may be impacted), the Construction Manager (CM) and/or Grading Contractor (GC), the Resident Engineer (RE), the Building Inspector (BI), if appropriate, and MMC. The qualified archaeologist and Native American monitor shall attend any

grading/excavation-related preconstruction meetings to make comments and/or suggestions concerning the archaeological monitoring program with the CM and/or GC.

a. If the PI is unable to attend the preconstruction meeting, the applicant shall schedule a focused preconstruction meeting with MMC, the PI, the RE, the CM and/or GC, or the BI, if appropriate, prior to the start of any work that requires monitoring.

2. Identify Areas to Be Monitored

a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based upon the appropriate construction documents (reduced to 11x17) to MMC identifying the areas to be monitored including the delineation of grading/excavation limits.
b. The AME shall be based upon the results of a site-specific records search as well as information regarding existing known soil conditions (native or formation).

3. When Monitoring Will Occur

a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC through the RE indicating when and where monitoring will occur.
b. The PI may submit a detailed letter to MMC prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based upon relevant information such as review of final construction documents that indicate site conditions such as depth of excavation and/or site graded to bedrock, etc., which may reduce or increase the potential for resources to be present.

III. During Construction

A. Monitor(s) Shall Be Present During Grading/Excavation/Trenching

1. The archaeological monitor shall be present full-time during all soil-disturbing and grading/excavation/trenching activities that could result in impacts to

archaeological resources as identified on the AME. The CM and/or GC is responsible for notifying the RE, the PI, and MMC of changes to any construction activities, such as in the case of a potential safety concern within the area being monitored. In certain circumstances, OSHA safety requirements may necessitate modification of the AME.

2. The Native American consultant/monitor shall determine the extent of their presence during soil-disturbing and grading/excavation/trenching activities based upon the AME and provide that information to the PI and MMC. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop and the Discovery Notification Process detailed in Sections III.B-C and IV.A-D shall commence.
3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition, such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or encountering native soils, that may reduce or increase the potential for resources to be present.
4. The archaeological and Native American consultant/monitor shall document field activity via the Consultant Site Visit Record (CSVR). The CSVRs shall be faxed by the CM and/or GC to the RE on the first day of monitoring, the last day of monitoring, monthly (Notification of Monitoring Completion), and in the case of ANY discoveries. The RE shall forward copies to MMC.

B. Discovery Notification Process
   1. In the event of a discovery, the archaeological monitor shall direct the contractor to temporarily divert all soil-disturbing activities, including but not limited to, digging, trenching, excavating, or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources, and immediately notify the RE or BI, as appropriate.
   2. The monitor shall immediately notify the PI (unless monitor is the PI) of the discovery.
   3. The PI shall immediately notify MMC by phone of the discovery, and shall also submit written documentation to MMC within 24 hours by fax or email with photographs of the resource in context, if possible.
   4. No soil shall be exported off-site until a determination can be made regarding the significance of the resource, specifically if Native American resources are encountered.

C. Determination of Significance
   1. The PI and Native American consultant/monitor, where Native American resources are discovered, shall evaluate the significance of the resource. If

human remains are involved, follow protocol in Section IV, below.

a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required.
b. If the resource is significant, the PI shall submit an ADRP, which will have been reviewed by the Native American consultant/monitor, and obtain written approval from MMC. Impacts to significant resources must be mitigated before ground-disturbing activities in the area of discovery will be allowed to resume. Note: If a unique archaeological site is also a historic resource as defined in CEQA, then the limits on the amount(s) that a project applicant may be required to pay to cover mitigation costs as indicated in CEQA Section 21083.2 shall not apply.
c. If the resource is not significant, the PI shall submit a letter to MMC indicating that artifacts will be collected, curated, and documented in the final monitoring report. The letter shall also indicate that no further work is required.

IV. Discovery of Human Remains

If human remains are discovered, work shall halt in that area and no soil shall be exported off-site until a determination can be made regarding the provenance of the human remains. The following procedures as set forth in CEQA Section 15064.5(e), the California PRC (Section 5097.98), and the State Health and Safety Code (Section 7050.5) shall be undertaken:

A. Notification
   1. The archaeological monitor shall notify the RE or BI as appropriate, MMC, and the PI, if the monitor is not qualified as a PI. MMC will notify the appropriate senior planner in the Environmental Analysis Section (EAS) of the DSD to assist with the discovery notification process.
   2. The PI shall notify the medical examiner after consultation with the RE, either in person or via telephone.

B. Isolate Discovery Site
   1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the medical examiner in consultation with the PI concerning the provenance of the remains.

2. The medical examiner, in consultation with the PI, will determine the need for a field examination to determine the provenance.
3. If a field examination is not warranted, the medical examiner will determine, with input from the PI, if the remains are, or are most likely to be, of Native American origin.

C. If Human Remains ARE Determined to Be Native American
1. The medical examiner will notify the NAHC within 24 hours. By law, ONLY the medical examiner can make this call.
2. The NAHC will immediately identify the person or persons determined to be the MLD and provide contact information.
3. The MLD will contact the PI within 24 hours or sooner after the medical examiner has completed coordination, to begin the consultation process in accordance with CEQA Section 15064.5(e), the California PRC, and the State Health and Safety Code.
4. The MLD will have 48 hours to make recommendations to the property owner or representative for the treatment or disposition with proper dignity of the human remains and associated grave goods.
5. Disposition of Native American human remains will be determined between the MLD and the PI, and, if:

    a. The NAHC is unable to identify the MLD; OR the MLD failed to make a recommendation within 48 hours after being notified by the NAHC; OR the landowner or authorized representative rejects the recommendation of the MLD and mediation in accordance with PRC 5097.94 (k) by the NAHC fails to provide measures acceptable to the landowner; THEN, in order to protect these sites, the landowner shall do one or more of the following:

        (1) Record the site with the NAHC.
        (2) Record an open space or conservation easement on the site.
        (3) Record a document with the County.

D. If Human Remains Are NOT Native American
1. The PI shall contact the medical examiner and notify them of the historic-era context of the burial.
2. The medical examiner will determine the appropriate course of action with the PI and city staff (PRC 5097.98).

3. If the remains are of historic origin, they shall be appropriately removed and conveyed to the San Diego Museum of Man for analysis. The decision for internment of the human remains shall be made in consultation with MMC, the EAS, the applicant/landowner, any known descendant group, and the San Diego Museum of Man.

V. Night and/or Weekend Work

A. If Night and/or Weekend Work is Included in the Contract

1. When night and/or weekend work is included in the contract package, the extent and timing shall be presented and discussed at the preconstruction meeting.
2. The following procedures shall be followed:

a. **No Discoveries**
In the event that no discoveries were encountered during night and/or weekend work, the PI shall record the information on the CSVR and submit to MMC via fax by 8:00 a.m. of the next business day.

b. **Discoveries**
All discoveries shall be processed and documented using the existing procedures detailed in Sections III and IV. Discovery of human remains shall always be treated as a significant discovery.

c. **Potentially Significant Discoveries**
If the PI determines that a potentially significant discovery has been made, the procedures detailed under Sections III and IV shall be followed.

d. The PI shall immediately (or by 8:00 a.m. of the next business day) contact MMC to report and discuss the findings as indicated in Section III-B, unless other specific arrangements have been made.

B. If Night and/or Weekend Work Becomes Necessary During the Course of Construction

1. The CM and/or GC shall notify the RE, or BI, as appropriate, a minimum of 24 hours before the work is to begin.
2. The RE, or BI, as appropriate, shall notify MMC immediately.

C. All Other Procedures Described Above Shall Apply, as Appropriate.

VI. Post-Construction

A. Preparation and Submittal of Draft Monitoring Report

1. The PI shall submit two copies of the draft monitoring report (even if negative), prepared in accordance with the Historical Resources Guidelines (Appendix

C/D), which describe the results, analysis, and conclusions of all phases of the archaeological monitoring program (with appropriate graphics) to MMC for review and approval within 90 days following the completion of monitoring. It should be noted that if the PI is unable to submit the draft monitoring report within the allotted 90-day timeframe resulting from delays with analysis, special study results, or other complex issues, a schedule shall be submitted to MMC establishing agreed due dates and the provision for submittal of monthly status reports until this measure can be met.

a. For significant archaeological resources encountered during monitoring, the ADRP shall be included in the draft monitoring report.
b. The PI shall be responsible for recording (on the appropriate State of California DPR forms-523 A/B) any significant or potentially significant resources encountered during the archaeological monitoring program in accordance with City of San Diego Historical Resources Guidelines, and submittal of such forms to the SCIC with the final monitoring report.

2. MMC shall return the draft monitoring report to the PI for revision or for preparation of the final monitoring report.
3. The PI shall submit the revised draft monitoring report to MMC for approval.
4. MMC shall provide written verification to the PI of the approved report.
5. MMC shall notify the RE or BI, as appropriate, of receipt of all draft monitoring report submittals and approvals.

B. Handling of Artifacts
1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and cataloged.
2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area, that faunal material is identified as to species, and that specialty studies are completed, as appropriate.
3. The cost for curation is the responsibility of the property owner.

C. Curation of Artifacts: Accession Agreement and Acceptance Verification
1. The PI shall be responsible for ensuring that all artifacts associated with the survey, testing, and/or data recovery for this project are permanently curated with an appropriate institution. This shall be completed in consultation with MMC and the Native American representative, as applicable.
2. The PI shall include the Acceptance Verification from the curation institution in the final monitoring report submitted to the RE or BI and MMC.

3. When applicable to the situation, the PI shall include written verification from the Native American consultant/monitor indicating that Native American resources were treated in accordance with state law and/or applicable agreements. If the resources were reinterred, verification shall be provided to show what protective measures were taken to ensure that no further disturbance occurs in accordance with Section IV.

D. Final Monitoring Report(s)

1. The PI shall submit one copy of the approved final monitoring report to the RE or BI as appropriate, and one copy to MMC (even if negative), within 90 days after notification from MMC that the draft monitoring report has been approved.
2. The RE shall, in no case, issue the Notice of Completion and/or release of the Performance Bond for grading until receiving a copy of the approved final monitoring report from MMC, which includes the Acceptance Verification from the curation institution.

9.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria as defined in Section 15064.5 and the City of San Diego Historical Resources Guidelines.

June 1, 2018

Brian F. Smith
Principal Investigator

Date

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APPENDIX A

Resumes of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History, and Anthropology, University of San Diego, California **1975**

Professional Memberships

Society for California Archaeology

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc. **Poway, California**

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. Over the past 32 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Mr. Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Crops of Engineers, the Bureau of Land Management, the Bureau of Reclamation, the Department of Defense, and the Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts that have added significantly to the body of knowledge concerning the prehistoric life ways of cultures once present in the Southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large numbers of downtown San Diego mitigation and monitoring projects submitted to the Centre City Development Corporation, some of which included Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and

Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven-block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark Project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade (2000-2007).

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, containing primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the city of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the city of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs documenting this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the city and county of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the city. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the city showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Mid-Bayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the city. The study included the analysis of some potentially historic features and numerous prehistoric sites.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Audie Murphy Ranch, Riverside County, California: Project manager/director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural Resources Evaluation of Sites Within the Proposed Development of the Otay Ranch Village 13 Project, San Diego County, California: Project manager/director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural Resources Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project manager/director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee West GPA, Riverside County, California: Project manager/director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of An Archaic Cultural Resource for the Eastlake III Woods Project for the City of Chula Vista, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural Resources Survey and Test of Sites Within the Proposed French Valley Specific Plan/EIR, Riverside County, California: Project manager/director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Lawson Valley Project, San Diego County, California: Project manager/director of the investigation of 28 prehistoric and two historic sites—included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resource Survey and Geotechnical Monitoring for the Mohyi Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; field survey; assessment of parcel for potentially buried cultural deposits; monitoring of geotechnichal borings; authoring of cultural resources project report. Brian F. Smith and Associates, San Diego, California. June 2000.

Enhanced Cultural Resource Survey and Evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee Ranch, Riverside County, California: Project manager/director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage Mitigation of a Portion of the San Diego Presidio Identified During Water Pipe Construction for the City of San Diego, California: Project archaeologist/director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project, Pacific Beach, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage Mitigation of a Portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project achaeologist/ director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and Testing of Two Prehistoric Cultural Resources for the Airway Truck Parking Project, Otay Mesa, California: Project archaeologist/director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural Resources Phase I and II Investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Westview High School Project for the City of San Diego, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project archaeologist/director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of

site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of Grading for the Herschel Place Project, La Jolla, California: Project archaeologist/ monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and Testing of a Historic Resource for the Osterkamp Development Project, Valley Center, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Testing of a Prehistoric Cultural Resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project manager/director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project manager/director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural Resources Phase I, II, and III Investigations for the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II Investigations for the Scripps Poway Parkway East Project, Poway California: Project archaeologist/project director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Archaeological Evaluation of Cultural Resources Within the Proposed Corridor for the San Elijo Water Reclamation System Project, San Elijo, California: Project manager/director —test excavations; direction of artifact identification and analysis; graphics production; coauthorship of final cultural resources report. December 1994-July 1995.

Evaluation of Cultural Resources for the Environmental Impact Report for the Rose Canyon Trunk Sewer Project, San Diego, California: Project manager/Director —direction of test excavations; identification and analysis of prehistoric and historic artifact collections; data synthesis; co-authorship of final cultural resources report, San Diego, California. June 1991-March 1992.

Reports/Papers

Author, coauthor, or contributor to over 2,500 cultural resources management publications, a selection of which are presented below.

2015 An Archaeological/Historical Study for the Safari Highlands Ranch Project, City of Escondido, County of San Diego.

2015 A Phase I and II Cultural Resources Assessment for the Decker Parcels II Project, Planning Case No. 36962, Riverside County, California.

2015 A Phase I and II Cultural Resources Assessment for the Decker Parcels I Project, Planning Case No. 36950, Riverside County, California.

2015 Cultural Resource Data Recovery and Mitigation Monitoring Program for Site SDI-10,237 Locus F, Everly Subdivision Project, El Cajon, California.

2015 Phase I Cultural Resource Survey for the Woodward Street Senior Housing Project, City of San Marcos, California (APN 218-120-31).

2015 An Updated Cultural Resource Survey for the Box Springs Project (TR 33410), APNs 255-230-010, 255-240-005, 255-240-006, and Portions of 257-180-004, 257-180-005, and 257-180-006.

2015 A Phase I and II Cultural Resource Report for the Lake Ranch Project, TR 36730, Riverside County, California.

2015 A Phase II Cultural Resource Assessment for the Munro Valley Solar Project, Inyo County, California.

2014 Cultural Resources Monitoring Report for the Diamond Valley Solar Project, Community of Winchester, County of Riverside.

2014 National Historic Preservation Act Section 106 Compliance for the Proposed Saddleback Estates Project, Riverside County, California.

2014 A Phase II Cultural Resource Evaluation Report for RIV-8137 at the Toscana Project, TR 36593, Riverside County, California.

2014 Cultural Resources Study for the Estates at Del Mar Project, City of Del Mar, San Diego, California (TTM 14-001).

2014 Cultural Resources Study for the Aliso Canyon Major Subdivision Project, Rancho Santa Fe, San Diego County, California.

2014 Cultural Resources Due Diligence Assessment of the Ocean Colony Project, City of Encinitas.

2014 A Phase I and Phase II Cultural Resource Assessment for the Citrus Heights II Project, TTM 36475, Riverside County, California.

2013 A Phase I Cultural Resource Assessment for the Modular Logistics Center, Moreno Valley, Riverside County, California.

2013 A Phase I Cultural Resources Survey of the Ivey Ranch Project, Thousand Palms, Riverside County, California.

2013 Cultural Resources Report for the Emerald Acres Project, Riverside County, California.

2013 A Cultural Resources Records Search and Review for the Pala Del Norte Conservation Bank Project, San Diego County, California.

2013 An Updated Phase I Cultural Resources Assessment for Tentative Tract Maps 36484 and 36485, Audie Murphy Ranch, City of Menifee, County of Riverside.

2013 El Centro Town Center Industrial Development Project (EDA Grant No. 07-01-06386); Result of Cultural Resource Monitoring.

2013 Cultural Resources Survey Report for the Renda Residence Project, 9521 La Jolla Farms Road, La Jolla, California.

2013 A Phase I Cultural Resource Study for the Ballpark Village Project, San Diego, California.

2013 Archaeological Monitoring and Mitigation Program, San Clemente Senior Housing Project, 2350 South El Camino Real, City of San Clemente, Orange County, California (CUP No. 06-065; APN-060-032-04).

2012 Mitigation Monitoring Report for the Los Peñasquitos Recycled Water Pipeline.

2012 Cultural Resources Report for Menifee Heights (Tract 32277).

2012 A Phase I Cultural Resource Study for the Altman Residence at 9696 La Jolla Farms Road, La Jolla, California 92037.

2012 Mission Ranch Project (TM 5290-1/MUP P87-036W3): Results of Cultural Resources Monitoring During Mass Grading.

2012 A Phase I Cultural Resource Study for the Payan Property Project, San Diego, California.

2012 Phase I Archaeological Survey of the Rieger Residence, 13707 Durango Drive, Del Mar, California 92014, APN 300-369-49.

2011 Mission Ranch Project (TM 5290-1/MUP P87-036W3): Results of Cultural Resources Monitoring During Mass Grading.

2011 Mitigation Monitoring Report for the 1887 Viking Way Project, La Jolla, California.

2011 Cultural Resource Monitoring Report for the Sewer Group 714 Project.

2011 Results of Archaeological Monitoring at the 10th Avenue Parking Lot Project, City of San Diego, California (APNs 534-194-02 and 03).

2011 Archaeological Survey of the Pelberg Residence for a Bulletin 560 Permit Application; 8335 Camino Del Oro; La Jolla, California 92037 APN 346-162-01-00 .

2011 A Cultural Resources Survey Update and Evaluation for the Robertson Ranch West Project and an Evaluation of National Register Eligibility of Archaeological sites for Sites for Section 106 Review (NHPA).

2011 Mitigation Monitoring Report for the 43rd and Logan Project.

2011 Mitigation Monitoring Report for the Sewer Group 682 M Project, City of San Diego Project #174116.

2011 A Phase I Cultural Resource Study for the Nooren Residence Project, 8001 Calle de la Plata, La Jolla, California, Project No. 226965.

2011 A Phase I Cultural Resource Study for the Keating Residence Project, 9633 La Jolla Farms Road, La Jolla, California 92037.

2010 Mitigation Monitoring Report for the 15th & Island Project, City of San Diego; APNs 535-365-01, 535-365-02 and 535-392-05 through 535-392-07.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Sewer and Water Group 772 Project, San Diego, California, W.O. Nos. 187861 and 178351.

2010 Pottery Canyon Site Archaeological Evaluation Project, City of San Diego, California, Contract No. H105126.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Racetrack View Drive Project, San Diego, California; Project No. 163216.

2010 A Historical Evaluation of Structures on the Butterfield Trails Property.

2010 Historic Archaeological Significance Evaluation of 1761 Haydn Drive, Encinitas, California (APN 260-276-07-00).

2010 Results of Archaeological Monitoring of the Heller/Nguyen Project, TPM 06-01, Poway, California.

2010 Cultural Resource Survey and Evaluation Program for the Sunday Drive Parcel Project, San Diego County, California, APN 189-281-14.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Emergency Garnet Avenue Storm Drain Replacement Project, San Diego, California, Project No. B10062

2010 An Archaeological Study for the 1912 Spindrift Drive Project

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological Constraints Study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an Archaeological Review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.

2007 Archaeology at the Ballpark. Brian F. Smith and Associates, San Diego, California. Submitted to the Centre City Development Corporation.

2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3,115-180-049-1, 115-180-042-4, 115-180-047-9) in the City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.

2005 Results of Archaeological Monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6.

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2000 An Archaeological/Historical Study for the Menifee Ranch Project. Brian F. Smith and Associates, San Diego, California.

2000 An Archaeological Survey and Evaluation of Cultural Resources for the Bernardo Mountain Project, Escondido, California. Brian F. Smith and Associates, San Diego, California.

2000 A Cultural Resources Impact Survey for the Nextel Black Mountain Road Project, San Diego, California. Brian F. Smith and Associates, San Diego, California.

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2000 A Cultural Resources Impact Survey for the Poway Creek Project, Poway, California. Brian F. Smith and Associates, San Diego, California.

2000 Cultural Resource Survey and Geotechnical Monitoring for the Mohyi Residence Project. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Prewitt/Schmucker/ Cavadias Project. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project. Brian F. Smith and Associates, San Diego, California.

2000 Salvage Excavations at Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project, Carlsbad, California. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California. Brian F. Smith and Associates, San Diego, California.

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2000 An Archaeological Evaluation of Cultural Resources for the Airway Truck Parking Project, Otay Mesa, County of San Diego. Brian F. Smith and Associates, San Diego, California.

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1999 An Archaeological Survey of the Home Creek Village Project, 4600 Block of Home Avenue, San Diego, California. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological Survey for the Sgobassi Lot Split, San Diego County, California. Brian F. Smith and Associates, San Diego, California.

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1999 Results of an Archaeological Evaluation for the Anthony's Pizza Acquisition Project in Ocean Beach, City of San Diego (with L. Pierson and B. Smith). Brian F. Smith and Associates, San Diego, California.

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1995 Results of an Archaeological Evaluation of Cultural Resources Within the Proposed Corridor for the San Elijo Water Reclamation System. Brian F. Smith and Associates, San Diego, California.

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1993 Results of an Archaeological Survey and Evaluation of Cultural Resources at the Stallion Oaks Ranch Project. Brian F. Smith and Associates, San Diego, California.

1992 Results of an Archaeological Survey and the Evaluation of Cultural Resources at the Ely Lot Split Project. Brian F. Smith and Associates, San Diego, California.

1991 The Results of an Archaeological Study for the Walton Development Group Project. Brian F. Smith and Associates, San Diego, California.

Tracy A. Stropes, MA, RPA

Senior Project Archaeologist

Brian F. Smith and Associates, Inc.
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Education

Master of Arts, Anthropology, San Diego State University, California **2007**

Bachelor of Science, Anthropology, University of California, Riverside **2000**

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Archaeological Institute of America

Experience

Project Archaeologist **March 2009–Present**
Brian F. Smith and Associates, Inc. **Poway, California**

Project Management of all phases of archaeological investigations for local, state, and federal agencies, field supervision, lithic analysis, National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations, and authoring/coauthoring of cultural resource management reports.

Archaeological Principal Investigator **June 2008–February 2009**
TRC Solutions **Irvine, California**

Cultural resource segment of Natural Sciences and Permitting Division; management of archaeological investigations for private companies and local, state, and federal agencies, personnel management, field and laboratory supervision, lithic analysis, Native American consultation and reporting, MRHP and CEQA site evaluations, and authoring/coauthoring cultural resource management reports.

Principal Investigator and Project Archaeologist **June 2006–May 2008**
Archaeological Resource Analysts **Oceanside, California**

As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc., including field direction, project and personnel management, lab analysis, and authorship of company reports.

Project Archaeologist **September 1996–June 2006**
Gallegos & Associates **Carlsbad, California**

Project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship/technical editing, and composition of several data recovery/preservation programs for both CEQA and NEPA level compliance.

Project Archaeologist **September 1993–September 1996**
Macko Inc. **Santa Ana, California**

Project management, laboratory management, lithic analysis, field supervision, and report authorship/technical editing.

Archaeological Field Technician **January 1993–September 1993**
Chambers Group Inc. **Irvine, California**

Archaeological excavation, surveying, monitoring, wet screen facilities management, and project logistics.

Archaeological Field Technician **May 1992–September 1992**
John Minch and Associates **San Juan Capistrano, California**

Archaeological excavation, surveying, monitoring, wet screen facilities management, and project logistics.

Reports/Papers

Principal Author

2012 A Class III Cultural Resources Study for the USGS Creepmeter Project; July 20, 2012; Tracy Stropes and Brian Smith.

2011 Results of the Mitigation Monitoring Program for the Mission Brewery Villas Project City of San Diego (Project No. 52078) / April 9, 2012 / Tracy A. Stropes.

2011 Mitigation Monitoring Report for the 43rd and Logan Project; June 7, 2012; Tracy A. Stropes and Brian F. Smith.

2011 Mitigation Monitoring Report for the Sewer and Water Group 768 Project; April 10, 2012; Tracy A. Storpes and Brian F. Smith.

2010 A Phase I Cultural Resource Study for the Butterfield Residence Project, La Jolla, California / January 17, 2011 / Tracy A. Stropes and Brian F. Smith.

2010 A Cultural Resources Literature Review for the 11099 North Torrey Pines Road Project, San Diego, California; November 17, 2010; Tracy A. Stropes and Brian F. Smith.

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2010 Phase I Cultural Resources Survey for the San Jacinto Poultry Ranch Storage Building Project; November 11, 2010; Tracy Stropes and Brian Smith.

2010 Cultural Resource Monitoring Report for the Salvation Army Vehicle Storage Area Project; 1015 West 12th Street, City of San Diego; Project #217113; December 5, 2011, Tracy A. Stropes, Principal Investigator.

2010 Cultural Resource Monitoring Report for the Sunset Cliffs Trunk Sewer Project, City of San Diego, Project No. 178901, January 5, 2012, Tracy A. Stropes.

2010 Mitigation Monitoring Report for the Sewer Group 682 Project; April 16, 2012; Tracy A. Stropes and Brian F. Smith.

2010 A Phase III Cultural Resource Data Recovery Program for CA-SDI-16986, Hidden Meadows, San Diego County, California (TPM 20794) Tracy A. Stropes and Brian F. Smith.

2010 Research Design, Data Recovery Program, and Mitigation, Monitoring, and Reporting Program for 1900 Spindrift Drive La Jolla, California; APN 346-44-05; January 26, 2011; Tracy Stropes and Brian F. Smith.

2010 An Archaeological Study for the 1912 Spindrift Drive Project La Jolla California, Project No. 214654; L64A-003A; APN 346-44-04; January 26, 2011; Tracy Stropes and Brian F. Smith.

2009 An Archaeological Assessment for the Rivera-Placentia Project, City of Riverside, California. Prepared for Riverside Construction Company.

2009 Cultural Resource Data Recovery Plan for the North Ocean Beach Gateway Project. Prepared for the City of San Diego and KTU+A.

2009 Cultural Resource Letter Report for the Borrego Substation Feasibility Study, Borrego Springs, California. Prepared for RBF Consulting.

2009 A Cultural Resource Study for the Gatto Residence Project, La Jolla, California. Prepared for Marengo Martin Architects Inc.

2008 Phase I Cultural Resource Survey for the 28220 Highridge Road Development Project, Rancho Palos Verdes, California. Prepared for REC Development.

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

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2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc.

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

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2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

1994 Final Report: Data Recovery Excavations at Five Late Prehistoric Archaeological Sites Along the Los Trancos Access Road, Newport Coast Planned Community, Orange County, California. Prepared for the Coastal Community Builders, a division of The Irvine Company.

Contributing Author

2008 Lithic Analysis for Thirteen Sites Along the Transwestern Phoenix Expansion Project, Loops A and B. Prepared for Transwestern Pipeline Company, LLC.

2005 Cultural Resource Survey and Testing for the Star Ranch Property, San Diego, California.

2004 Cultural Resource Test Report for the Palomar Point Project: Site CA-SDI-16205, Carlsbad, California. Prepared for Lanikai Management Corp.

2004 Cultural Resource Survey and Test Report for the Canyon View Project, Carlsbad, California. Prepared for Shapouri & Associates.

2004 Cultural Resource Test Report for the Yamamoto Property: Site SDM-W-2046, Carlsbad, California. Prepared for Cunningham Consultants, Inc.

2004 Historical Resources Report for the Kuta and Mascari Properties, Otay Mesa, California. Prepared for Centex Homes.

2004 Cultural Resource Monitor and Test Report for the Encina Power Plant Project, Carlsbad, California. Prepared for Haley & Aldrich, Inc.

2004 Cultural Resource Test Report for Site CA-SDI-16788, Otay Mesa, California. Prepared for Otay Mesa Property, L.P.

2004 Cultural Resource Survey and Test Report for the Lonestar Project, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2003 Cultural Resource Mitigation Program for the Torrey Ranch Site CA-SDI-5325, San Diego, California. Prepared for Garden Communities.

2003 Cultural Resource Survey and Test Report for the Johnson Canyon Parcel, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2002 Cultural Resource Data Recovery Plan for the Shaw Project: Sites CA-SDI-13025 and CA-SDI-13067, San Diego County, California. Prepared for Shapouri & Associates.

2001 Archaeological Test Program for CA-SDI-14112 Mesa Norte Project, San Diego, California. Prepared for Hunsaker & Associates.

2001 The Vista-Oceanside Cultural Resource Survey and Test Program, Vista, California. Prepared for Shapouri & Associates.

2001 Cultural Resource Test Program for the Wilson Property, Carlsbad, California. Prepared for the City of Carlsbad.

2001 Cultural Resource Test Plan for the Oceanside-Escondido Project, County of San Diego, California. Prepared for Dudek & Associates.

2001 Cultural Resource Test Program for the Kramer Junction Expansion Project Adelanto, California. Prepared for AMEC.

2001 Cultural Resource Test Program for CA-SDI-12508 San Diego, California (LDR. No. 99-1331). Prepared for Garden Communities.

2000 Archaeological Testing of Prehistoric Sites CASDI-14115 and CA-SDI-14116 for The Mesa Grande Project, San Diego, California. Prepared for Solana Mesa Partners, LLC.

2000 Cultural Resource Survey and Test Report for the Wetmore Property, Otay Mesa, San Diego County, California. Prepared for Mr. Andy Campbell.

2000 The Torrey Ranch Cultural Resource Test Program, San Diego County, California. Prepared for Garden Communities.

2000 Cultural Resource Test Results for the Otay Mesa Generating Project. Prepared for the California Energy Commission and Otay Mesa Generating Company, LCC.

2000 The Eternal Hills Cultural Resource Survey and Test Program, City of Oceanside, California. Prepared for Eternal Hills Memorial Park.

2000 The Quail Ridge Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning Inc.

2000 Cultural Resource Testing Program for CA-SDI-5652/H and CA-SDI-9474H SR 78/Rancho Del Oro Interchange Project, Oceanside, California. Prepared for Tetratech Inc.

2000 Cultural Resource Test Results for a Portion of CA-SDI-8654 (Kuebler Ranch) Otay Mesa, San Diego County, California. Prepared for Shapouri & Associates.

2000 Historical/Archaeological Monitoring and Data Recovery Program for Prehistoric Site CA-SDI-48, Locus C Naval Base Point Loma, San Diego, California. Prepared for Department of the Navy, Southwest Division.

2000 Cultural Resource Evaluation Report for the Palomar College Science Building Project San Marcos, California. Prepared for Parsons Engineering Science Inc.

1999 Cultural Resource Monitoring Report for the Village of Ystagua Water Main Break City of San Diego, California. Prepared for the City of San Diego Water Department.

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1999 Silver Oaks Estates Cultural Resource Enhanced Survey and Test Report for a Portion of CA-SDI-7202 San Diego, California. Prepared for Helix Environmental Planning Inc.

1999 Historical Archaeological Test of a portion of CA-SDI-8303 for the Faraday Road Extension Carlsbad, California. Prepared for the City of Carlsbad.

1999 Cultural Resource Literature Review for the North Coast Transportation Study Arterial Streets Alternative San Diego County, California. Prepared for MLF/San Diego Association of Govt.

1998 Archaeological Test Report for a Portion of CA-SDI-9115/SDM-W-122 Carlsbad, California. Prepared for Industrial Developments International.

1998 Rainforest Ranch Cultural Resource Survey and Significance Test for Prehistoric Sites CA-SDI-14932, CA-SDI-14937, CA-SDI-14938, and CA-SDI-14946 County of San Diego, California. Prepared for Boys and Girls Club of Inland North County.

1998 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California.

1998 Final Report: Cultural Resource Survey Report for the Sterling Property, Carlsbad, California. Prepared for SPT Holdings LCC.

1996 Final Report: Archaeological Survey and Test for the Huber Property Carlsbad, California. Prepared for Gene Huber.

1996 Final Report: Results of Phase II Test Excavations and Phase III Data Recovery Excavations at Nine Archaeological Sites Within the Newport Coast Planned Community Phase III Entitlement Area, San Joaquin Hills, Orange County, California. Prepared for Coastal Community Builders, a division of The Irvine Company.

1995 Preliminary Report: Phase II Test Results From Nine Prehistoric Archaeological Sites Within The Proposed Upper Newport Bay Regional County Park. Prepared for EDAW, Inc.

1995 Final Report: A Phase II Test Excavation at CA-ORA-136, Block 800 City of Newport Beach, Orange County California. Prepared for the Irvine Apartment Communities, a division of The Irvine Company.

Presentations

2004 Guest Lecturer and Flintknapping Demonstration Mission San Luis Rey Band of Mission Indians Annual Inter-tribal Pow-Wow. Mark Mojado, Tribal Contact.

2003 Steep Edge Unifacial Tools of Otay Mesa: An Analysis of Edge Types from CA SDI-7215 SCA Southern California Data Sharing Meetings

2001 Identification of Late Period Behavior Patterns in Elfin Forest: Three Sites in Northern San Diego County.

2001 Society for California Archaeology Data Sharing Meetings, San Luis Obispo, California.

1996 Trans-Tehachapian Lithic Trade at the Canebreak/Sawtooth Transition. Thirteenth Annual Meeting, Society of California Archaeology, Bakersfield, California.

1994 Point Size and Atlatl Dart Efficiency. Twenty Fourth Annual Meeting, Great Basin Anthropological Conference, Elko, Nevada.

1994/96 Guest Lecturer and Flint Knapping Instruction - Archaeological Field Class Fall Semester ,Cypress College, Cypress, California. Paul Langenwalter/Henry C. Koerper, Directors.

1994/95 Annual Guest Lecturer - "Living History Days" at the Mission, Mission San Juan Capistrano, San Juan Capistrano, California.

APPENDIX B

Updated Site Record Form

(Deleted for Public Review; Bound Separately)

APPENDIX C

Archaeological Records Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX D

NAHC Sacred Lands File Results

(Deleted for Public Review; Bound Separately)

APPENDIX E

Table 3.4–2

Table 3.4–2

Previous Archaeological Investigations Conducted
Within a One-Mile Radius of 1834 Spindrift Drive

Affinis

1992 Archaeological Monitoring of Sewer and Water Main Replacement Group 96 Pacific Beach, San Diego County. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Alter, Ruth C.

1998 Letter Report: Results of the Historic Building Assessments for 2220, 2222-24, and 2226 Avenida De La Playa, La Jolla, California 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

1999 Results of Archaeological Monitoring Conducted at the La Jolla Cove Clubhouse, 1160 Coast Boulevard, La Jolla, California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

1999 Results of the Historic Building Assessment for 1417 Park Row, La Jolla, California. Archaeos. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

1999 Results of the Historic Building Assessment for 7655 Mar Avenue, La Jolla, California 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2000 Results of the Historic Building Assessment for 18888 Torrey Pines Road, La Jolla, California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2000 Results of the Historic Building Assessment for 7760 Sierra Mar Drive, La Jolla, California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2001 Archaeological Resources Survey, 1341 Park Row, La Jolla, California. Affinis. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2001 Letter Report: Results of the Historic Building Assessment for 1296 Silverado Street, La Jolla, California. Enviromine. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2001 Letter Report: Results of the Historic Building Assessment for 7744 Eads Avenue, La Jolla, California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2002 Cultural Resources Report for the Historical Evaluation of the 7890 Torrey Lane Residence, La Jolla, CA 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2007 Cultural Resources Report for the Historical and Architectural Evaluation of the 7755 Sierra Mar Drive Residence, La Jolla, CA 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Alter, Ruth and Andrew Giletti

2002 Archaeological Resource Testing of the Residence at 1908 Hypathia Way, La Jolla, CA. Archaeos. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Berryman, Judy and Linda Roth

1993 Survey, Significance Testing and Proposed Mitigation on a Portion of SDM-W-1 (SDI-39) and Historic Evaluation of Parcel #346-461-6, San Diego, California. TMI Environmental Services. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Berryman, Judy, Amy E. Gusick, Adriane Dorrler, and Shannon Erikson

2014 Final Report Excavation at CA-SDI-39: The Spindrift Site, 1912 Spindrift Drive, La Jolla, California. HDR. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Bevil, Alexander

1996 Historical Assessment of the Property Located at APN 350-121-27, San Diego County, State of California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

1998 830 Kline St., La Jolla California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Brandes, Ray

1999 Historical and Architectural Report for 945; 947; 949 Coast Blvd., South La Jolla, CA 92038. The Terrace Sub, Parcel 1. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

1999 Historical and Archaeological Report for 7971 Prospect Place La Jolla, California 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Brandes, Ray and Scott A. Moomjian

1998 Architectural, Historical, and Archaeological Investigations, and a Cultural Resource Search for 1345 Torrey Pines Road, La Jolla, California, 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Branscomb, Constance M.

2006 The Robinson House, 1600 Ludington Lane, La Jolla, California 92037. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Brown, Joan

2001 Archaeological Monitoring of Excavation During Construction of Sewer Group Job 641, LDR No. 96-7309, Located in La Jolla California. RMW/SWCA, Inc. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Burke Lia, Marie

2008 Historical Designation of 7961 St. Louis Terrace, HRB Agenda for October 30, 2008. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Case, Robert P.

2002 Cultural Resources Survey of a One-Acre Lot, 1600 Torrey Pines Road, La Jolla, City of San Diego, California. Mooney and Associates. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2004 Cultural Resources Monitoring Report for the Willis Residential Project, APN No. 346-483-02, La Jolla, California. Mooney and Associates. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2005 Cultural Resources Monitoring Report for the Samimi Residential Project (Coastal Permit No. 99-1630), La Jolla, California. Mooney Jones and Stokes. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2007a Final Phase I Archaeological Survey Report for the Fargo Residential Project, 1590 Coast Walk, La Jolla, California. Jones & Stokes Associates. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2007b Extended Phase I Archaeological Survey Report for the Fargo Residential Project, 1590 Coast Walk, La Jolla, California. Jones & Stokes Associates. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2008 Draft Cultural Resources Mitigation Monitoring Report for the O'Connor Residential Project (PTS No. 76635), 1819 Spindrift Drive, La Jolla, California. ICF Jones & Stokes. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

2010 Cultural Resource Monitoring Report for Construction Excavation at the Levis Residence, 7974 Paseo Del Ocaso, La Jolla, City of San Diego, California. Laguna Mountain Environmental, Inc. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Case, Robert P. and Koji Tsunoda

2008 Extended Phase I Archaeological Report for the Kretowicz Residential Project, 7957 Princess Street, La Jolla, California. Jones & Stokes Associates. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Case, Robert P., Carol Serr, and Laura Barrie

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APPENDIX F

Artifact Catalog

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
101	STP	14	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.10	1
102	STP	14	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.40	1
103	STP	14	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.00	1
104	STP	14	80-90	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.30	1
105	STP	14	90-100	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.50	1
106	STP	1	0-10	Flaked Stone	Debitage		Chert				Complete	1	0.15	2
109	STP	2	10-20	Flaked Stone	Debitage		Volcanic				Complete	3	0.39	2
110	STP	2	10-20	Paraphrenalia	Bone Tool	Unknown	Mammal	11.40	3.30	1.90	Fragment	1	0.10	1
111	STP	2	20-30	Flaked Stone	Debitage		Volcanic				Complete	1	14.50	2
112	STP	2	40-50	Flaked Stone	Debitage		Volcanic				Complete	1	18.30	2
113	STP	3	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	2.01	1
114	STP	3	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	6.67	1
115	STP	3	0-10	Flaked Stone	Debitage		Metavolcanic				Complete	1	1.03	2
116	STP	3	0-10	Flaked Stone	Debitage		Quartzite				Complete	1	10.00	2
117	STP	3	0-10	Flaked Stone	Debitage		Volcanic				Complete	1	11.10	2
118	STP	3	10-20	Flaked Stone	Debitage		Quartzite				Complete	1	58.40	2
119	STP	3	10-20	Flaked Stone	Debitage		Quartz				Complete	1	0.14	2
120	STP	3	10-20	Flaked Stone	Debitage		Chert				Complete	1	0.98	2
121	STP	3	10-20	Flaked Stone	Debitage		Volcanic				Complete	1	0.09	2
122	STP	3	20-30	Flaked Stone	Debitage		Volcanic				Complete	1	120.40	2
123	STP	4	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	2.40	1
124	STP	4	10-20	Flaked Stone	Debitage		Quartzite				Complete	1	0.90	2
125	STP	4	30-40	Flaked Stone	Debitage		Volcanic				Complete	1	4.50	2
126	STP	4	70-80	Flaked Stone	Debitage		Metavolcanic				Complete	1	2.90	2
127	STP	4	70-80	Flaked Stone	Debitage		Quartzite				Complete	1	36.20	2
128	STP	5	30-40	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	4.50	1
129	STP	5	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	3.80	1
130	STP	5	50-60	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	3.80	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
131	STP	5	70-80	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	7.50	1
132	STP	5	0-10	Flaked Stone	Debitage		Quartzite				Complete	1	1.30	2
133	STP	5	0-10	Flaked Stone	Debitage		Granite				Fragment	1	1.50	2
134	STP	5	0-10	Flaked Stone	Debitage		Chert				Complete	1	1.00	2
135	STP	5	60-70	Flaked Stone	Debitage		Volcanic				Complete	1	11.90	2
136	STP	5	70-80	Flaked Stone	Debitage		Quartzite				Fragment	1	2.30	2
137	STP	5	0-80	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	3	10.40	1
138	STP	5	0-80	Paraphrenalia	Bead		Olivella	12.40	7.60	6.20	Complete	1	6.20	1
139	STP	5	0-80	Ground Stone	Mano		Granite	80.00	44.50	49.10	Fragment	1	174.90	2
140	STP	5	0-80	Ground Stone	Ground Stone		Volcanic	57.00	36.50	27.10	Fragment	1	55.20	1
142	STP	5	0-80	Flaked Stone	Debitage		Granite				Complete	1	21.90	2
143	STP	5	0-80	Flaked Stone	Debitage		Volcanic				Complete	11	215.80	2
1	STP	1	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.29	1
2	STP	1	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.42	1
3	STP	1	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.19	1
4	STP	2	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.75	1
5	STP	2	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.72	1
6	STP	2	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.43	1
7	STP	2	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.69	1
8	STP	2	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.68	1
9	STP	3	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.29	1
10	STP	3	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		12.31	1
11	STP	3	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		13.33	1
12	STP	4	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.70	1
13	STP	4	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.00	1
14	STP	4	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		19.40	1
15	STP	4	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		16.40	1
16	STP	4	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		14.20	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
17	STP	4	40-50	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		0.50	1
18	STP	4	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		43.50	1
19	STP	4	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		17.10	1
20	STP	4	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		21.80	1
21	STP	4	80-90	Fauna	Shell	Unmodified	Undifferentiated				Fragment		8.60	1
22	STP	4	90-100	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.70	1
23	STP	5	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		10.60	1
24	STP	5	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.10	1
25	STP	5	10-20	Fauna	Bone	Unmodified	Avian				Fragment		0.05	1
26	STP	5	20-30	Fauna	Bone	Unmodified	Fish				Fragment		0.10	1
27	STP	5	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		16.10	1
28	STP	5	30-40	Fauna	Bone	Unmodified	Mammal				Fragment		0.30	1
29	STP	5	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		17.00	1
30	STP	5	40-50	Fauna	Bone	Unmodified	Fish				Fragment		0.80	1
31	STP	5	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		23.60	1
32	STP	5	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		22.80	1
33	STP	5	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		7.60	1
34	STP	5	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		12.40	1
35	STP	5	0-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		152.50	1
36	STP	6	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		16.90	1
37	STP	6	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		38.30	1
38	STP	6	10-20	Fauna	Bone	Unmodified	Mammal				Fragment		0.10	1
39	STP	6	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		61.90	1
40	STP	6	20-30	Fauna	Bone	Unmodified	Fish				Fragment		0.12	1
41	STP	6	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		32.30	1
42	STP	6	40-50	Fauna	Bone	Unmodified	Fish				Complete		0.12	1
43	STP	6	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		10.90	1
44	STP	6	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		20.40	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
45	STP	7	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.30	1
46	STP	7	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		10.60	1
47	STP	7	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		9.10	1
48	STP	7	30-40	Fauna	Bone	Unmodified	Mammal				Fragment		1.20	1
49	STP	7	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.50	1
50	STP	7	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.30	1
51	STP	7	50-60	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		2.90	1
52	STP	8	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.60	1
53	STP	8	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.30	1
54	STP	8	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.90	1
55	STP	8	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.00	1
56	STP	9	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.30	1
57	STP	9	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.20	1
58	STP	9	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		29.90	1
59	STP	10	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		14.50	1
60	STP	10	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		23.80	1
61	STP	10	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		34.10	1
62	STP	10	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		33.10	1
63	STP	10	30-40	Fauna	Bone	Mammal	Mammal				Fragment		0.50	1
64	STP	10	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		21.40	1
65	STP	10	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.20	1
66	STP	10	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.10	1
67	STP	10	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.90	1
68	STP	11	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		91.50	1
69	STP	11	0-10	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		6.80	1
70	STP	11	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		202.10	1
71	STP	11	10-20	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		3.70	1
72	STP	11	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		353.30	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
73	STP	11	20-30	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		9.80	1
74	STP	11	30-40	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		5.10	1
75	STP	11	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		287.10	1
76	STP	11	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		172.30	1
77	STP	11	40-50	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		4.80	1
78	STP	11	50-60	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		1.02	1
79	STP	11	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		127.00	1
80	STP	11	60-70	Fauna	Bone	Unmodified	Avian, Fish				Fragment		0.70	1
81	STP	11	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		19.60	1
82	STP	11	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.00	1
83	STP	12	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.10	1
84	STP	12	80-90	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.40	1
85	STP	12	90-100	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.30	1
86	STP	13	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.40	1
87	STP	13	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		23.80	1
88	STP	13	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		14.90	1
89	STP	13	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		21.00	1
90	STP	13	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		8.50	1
91	STP	13	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		23.00	1
92	STP	13	50-60	Fauna	Bone	Unmodified	Fish				Fragment		1.20	1
93	STP	13	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		22.90	1
94	STP	13	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		24.70	1
95	STP	13	70-80	Fauna	Bone	Unmodified	Fish				Fragment		1.00	1
96	STP	13	80-90	Fauna	Shell	Unmodified	Undifferentiated				Fragment		13.20	1
97	STP	13	90-100	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.10	1
98	STP	14	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.20	1
99	STP	14	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.10	1
100	STP	14	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		8.20	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
107	STP	1	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	2	3.25	1
108	STP	2	0-10	Flaked Stone	Debitage		Quartzite				Fragment	1	0.93	2
141	STP	5	0-80	Flaked Stone	Debitage		Quartzite				Fragment	6	128.50	2
144	STP	5	0-80	FAR	FAR		FAR						254.50	X
145	STP	6	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	3.20	1
146	STP	6	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	2	2.20	1
147	STP	6	20-30	Paraphrenalia	Bead		Olivella	14.40	8.60	7.40	Complete	1	0.80	1
148	STP	6	0-10	Flaked Stone	Debitage		Volcanic				Complete	1	2.00	2
149	STP	6	10-20	Flaked Stone	Debitage		Volcanic				Complete	1	0.20	2
150	STP	6	20-30	Flaked Stone	Debitage		Volcanic				Complete	2	32.00	2
151	STP	7	30-40	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	7.00	1
152	STP	7	20-30	Flaked Stone	Debitage		Volcanic				Complete	2	159.80	2
153	STP	7	20-30	Flaked Stone	Debitage		Quartzite				Fragment	1	1.00	2
154	STP	7	20-30	Flaked Stone	Debitage		Chert				Complete	1	0.20	2
155	STP	7	30-40	Flaked Stone	Debitage		Quartzite				Complete	1	0.20	2
156	STP	7	30-40	Flaked Stone	Debitage		Volcanic				Fragment	3	4.60	2
157	STP	7	30-40	FAR	FAR		FAR						59.80	X
158	STP	7	40-50	FAR	FAR		FAR						192.10	X
159	STP	8	0-10	Flaked Stone	Debitage		Quartzite				Complete	1	20.20	2
160	STP	8	0-10	Flaked Stone	Debitage		Volcanic				Complete	1	1.10	2
161	STP	8	10-20	Flaked Stone	Debitage		Volcanic				Complete	1	17.10	2
162	STP	9	30-40	Flaked Stone	Debitage		Volcanic				Complete	1	13.40	2
163	STP	10	50-60	Fauna	Bone	Mammal					Fragment		0.20	1
164	STP	10	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	2	2.30	1
165	STP	10	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	1.90	1
166	STP	10	40-50	Ground Stone	Ground Stone		Granite	63.60	68.40	49.00	Fragment	1	248.20	1
167	STP	10	0-10	Flaked Stone	Debitage		Chert				Complete	1	0.50	2
168	STP	10	0-10	Flaked Stone	Debitage		Volcanic				Fragment	2	10.50	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
169	STP	10	10-20	Flaked Stone	Flake Tool		Quartzite	50.80	56.20	9.30	Complete	1	26.00	2
170	STP	10	10-20	Flaked Stone	Debitage		Volcanic				Complete	1	1.90	2
171	STP	10	10-20	Flaked Stone	Debitage		Granite				Complete	1	15.90	2
172	STP	10	20-30	Flaked Stone	Debitage		Volcanic				Complete	2	15.50	2
173	STP	10	30-40	Flaked Stone	Debitage		Volcanic				Complete	2	2.20	2
174	STP	10	30-40	Flaked Stone	Debitage		Quartzite				Fragment	3	81.30	2
175	STP	10	40-50	Flaked Stone	Debitage		Quartzite				Complete	1	25.00	2
176	STP	10	70-80	Flaked Stone	Debitage		Volcanic				Complete	1	2.00	2
177	STP	11	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	3	4.80	1
178	STP	11	0-10	Flaked Stone	Debitage		Quartzite				Complete	2	21.90	2
179	STP	11	0-10	Flaked Stone	Debitage		Volcanic				Fragment	8	180.50	2
180	STP	11	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	6	10.20	1
181	STP	11	10-20	Flaked Stone	Debitage		Volcanic				Fragment	14	41.90	2
182	STP	11	10-20	Flaked Stone	Debitage		Quartzite				Fragment	2	4.00	2
183	STP	11	20-30	Flaked Stone	Debitage		Obsidian				Complete	1	0.11	2
184	STP	11	20-30	Flaked Stone	Debitage		Quartz				Complete	1	1.73	2
185	STP	11	20-30	Flaked Stone	Debitage		Quartzite				Complete	1	22.20	2
186	STP	11	20-30	Flaked Stone	Debitage		Volcanic				Complete	3	2.90	2
187	STP	11	30-40	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	0.60	1
188	STP	11	30-40	Flaked Stone	Debitage		Quartz				Complete	1	0.10	2
189	STP	11	30-40	Flaked Stone	Debitage		Volcanic				Fragment	9	54.40	2
190	STP	11	30-40	Flaked Stone	Debitage		Quartzite				Complete	3	13.60	2
191	STP	11	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	1.30	1
192	STP	11	40-50	Flaked Stone	Debitage		Quartzite				Complete	1	22.90	2
193	STP	11	40-50	Flaked Stone	Debitage		Volcanic				Fragment	12	16.60	2
194	STP	11	40-50	Flaked Stone	Debitage		Obsidian				Fragment	1	0.03	2
195	STP	11	40-50	Flaked Stone	Debitage		Quartz				Complete	1	0.60	2
196	STP	11	50-60	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	2.20	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
197	STP	11	50-60	Flaked Stone	Flake Tool		Volcanic	74.40	45.90	18.20	Complete	1	69.80	2
198	STP	11	50-60	Ground Stone	Ground Stone		Granite	84.00	56.40	53.80	Fragment	1	312.80	1
199	STP	11	50-60	Flaked Stone	Debitage		Quartz				Complete	1	0.14	2
200	STP	11	50-60	Flaked Stone	Debitage		Metavolcanic				Fragment	1	0.10	2
201	STP	11	50-60	Flaked Stone	Debitage		Volcanic				Fragment	4	5.90	2
202	STP	11	40-50	FAR	FAR		FAR						18.50	X
203	STP	11	50-60	FAR	FAR		FAR						72.90	X
204	STP	12	50-60	Flaked Stone	Debitage		Volcanic				Complete	1	40.20	2
205	STP	12	50-60	Flaked Stone	Debitage		Quartzite				Complete	1	58.70	2
206	STP	12	60-70	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	2.20	1
207	STP	13	10-20	Flaked Stone	Debitage		Volcanic				Fragment	1	3.20	2
208	STP	13	20-30	Flaked Stone	Debitage		Volcanic				Fragment	2	1.60	2
209	STP	13	20-30	Flaked Stone	Debitage		Quartzite				Complete	1	9.50	2
210	STP	13	30-40	Flaked Stone	Debitage		Volcanic				Complete	2	7.30	2
211	STP	13	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	2	1.30	1
212	STP	13	40-50	Flaked Stone	Debitage		Volcanic				Complete	1	37.70	2
213	STP	13	40-50	Flaked Stone	Debitage		Quartzite				Complete	1	0.30	2
214	STP	13	50-60	Flaked Stone	Debitage		Quartzite				Complete	2	14.10	2
215	STP	13	50-60	Flaked Stone	Debitage		Volcanic				Fragment	6	29.90	2
216	STP	13	60-70	Flaked Stone	Debitage		Volcanic				Fragment	2	4.00	2
217	STP	13	70-80	Ground Stone	Pestle		Volcanic	108.50	34.10	27.20	Complete	1	180.40	2
218	STP	13	70-80	Ground Stone	Ground Stone		Granite	59.30	51.90	41.60	Fragment	1	184.70	1
219	STP	13	70-80	Ground Stone	Ground Stone		Granite	76.10	75.80	58.80	Fragment	1	520.10	1
220	STP	13	70-80	flaked Stone	Debitage		Quartzite				Complete	6	73.80	2
221	STP	13	70-80	Flaked Stone	Debitage		Volcanic				Complete	1	45.70	2
222	STP	13	50-60	FAR	FAR		FAR						222.70	X
223	STP	13	70-80	FAR	FAR		FAR						215.70	X
224	STP	14	50-60	Flaked Stone	Debitage		Quartzite				Fragment	3	75.10	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
225	STP	14	70-80	Flaked Stone	Debitage		Quartzite				Complete	1	6.90	2
226	STP	14	70-80	Ground Stone	Mano		Granite	134.20	111.50	75.60	Complete	1	1,653.00	2
227	TU	1	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		959.60	1
228	TU	1	0-10	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		39.30	1
229	TU	1	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		928.50	1
230	TU	1	10-20	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		38.50	1
231	TU	1	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		868.00	1
232	TU	1	20-30	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		32.30	1
233	TU	1	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		889.80	1
234	TU	1	30-40	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		48.50	1
235	TU	1	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		417.80	1
236	TU	1	40-50	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		21.00	1
237	TU	2	0-10	Fauna	Bone	Unmodified	Mammal				Fragment		0.17	1
238	TU	2	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.90	1
301	TU	1	30-40	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.89	2
302	TU	1	30-40	Flaked Stone	Debitage		Quartzite				Fragment	12	165.10	2
303	TU	1	30-40	Flaked Stone	Debitage		Volcanic				Fragment	69	400.00	2
304	TU	1	30-40	FAR	FAR		FAR						3,788.20	X
305	TU	1	40-50	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	5	0.70	1
306	TU	1	40-50	Flaked Stone	Angular Hammer		Quartzite	73.40	52.40	50.90	Complete	1	230.10	1
308	TU	1	40-50	Ground Stone	Mano		Granite	81.60	39.50	35.50	Fragment	1	122.00	2
309	TU	1	40-50	Flaked Stone	Debitage		Quartzite				Complete	4	79.40	2
310	TU	1	40-50	Flaked Stone	Debitage		Volcanic				Fragment	18	96.80	2
311	TU	1	40-50	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.13	2
312	TU	1	40-50	FAR	FAR		FAR						1,346.80	X
313	TU	2	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	0.60	1
314	TU	2	0-10	Flaked Stone	Debitage		Quartzite				Complete	1	0.20	2
315	TU	2	0-10	Flaked Stone	Debitage		Volcanic				Complete	3	2.10	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
316	TU	2	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	1	3.80	1
317	TU	2	10-20	Flaked Stone	Debitage		Granite				Fragment	1	24.00	2
318	TU	2	10-20	Flaked Stone	Debitage		Quartzite				Fragment	3	5.40	2
319	TU	2	10-20	Flaked Stone	Debitage		Volcanic				Complete	4	2.00	2
320	TU	2	10-20	FAR	FAR		FAR						89.00	X
321	TU	2	20-30	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	2	2.70	1
322	TU	2	20-30	Flaked Stone	Debitage		Quartzite				Complete	2	6.40	2
323	TU	2	20-30	Flaked Stone	Debitage		Volcanic				Complete	4	3.20	2
324	TU	2	20-30	Flaked Stone	Debitage		Metavolcanic				Complete	1		2
325	TU	2	30-40	Flaked Stone	Biface		Quartz	15.90	9.30	5.10	Complete	1	0.81	1
326	TU	2	30-40	Flaked Stone	Debitage		Quartzite				Fragment	4	24.30	2
328	TU	2	30-40	FAR	FAR		FAR						248.90	X
329	TU	2	40-50	Flaked Stone	Projectile Point	tonwood Triagu	Chert	32.60	20.20	3.90	Complete	1	1.59	1
330	TU	2	40-50	Ground Stone	Mano		Granite	99.30	53.20	49.50	Fragment	1	349.40	2
331	TU	2	40-50	Ground Stone	Mano		Granite	60.40	54.00	18.50	Fragment	1	57.30	2
332	TU	2	40-50	Flaked Stone	Debitage		Metavolcanic				Fragment	2	0.20	2
333	TU	2	40-50	Flaked Stone	Debitage		Volcanic				Complete	6	7.30	2
334	TU	2	40-50	Flaked Stone	Debitage		Quartzite				Complete	2	17.80	2
335	TU	2	40-50	FAR	FAR		FAR						315.60	X
336	TU	2	50-60	Flaked Stone	Debitage		Quartzite				Complete	3	40.00	2
337	TU	2	50-60	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.05	2
338	TU	2	50-60	Flaked Stone	Debitage		Volcanic				Fragment	8	17.80	2
339	TU	2	50-60	FAR	FAR		FAR						500.60	X
340	STP	15	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.30	1
307	TU	1	40-50	Ground Stone	Mano		Granite	87.70	51.30	39.60	Fragment	1	160.00	2
327	TU	2	30-40	Flaked Stone	Debitage		Volcanic				Fragment	11	32.60	2
341	STP	15	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		14.00	1
342	STP	15	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		25.60	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
343	STP	15	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.20	1
344	STP	15	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.40	1
345	STP	15	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.40	1
346	STP	15	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.05	1
347	STP	15	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.10	1
348	STP	15	30-40	Fauna	Bone	Unmodified	Mammal				Fragment		0.20	1
349	STP	15	10-20	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	3.00	1
350	STP	15	40-50	FAR	FAR		FAR						112.30	X
351	STP	15	20-30	Flaked Stone	Debitage		Quartzite				Complete	1	1.50	2
352	STP	15	30-40	Flaked Stone	Debitage		Quartzite				Fragment	1	1.20	2
353	STP	15	30-40	Flaked Stone	Debitage		Volcanic				Fragment	1	0.90	2
354	STP	15	30-40	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.40	2
355	STP	15	40-50	Flaked Stone	Debitage		Quartzite				Complete	1	0.20	2
356	STP	15	40-50	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.60	2
357	STP	16	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.09	1
358	STP	16	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.80	1
359	STP	16	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.10	1
360	STP	16	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.40	1
361	STP	16	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		36.40	1
362	STP	16	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		34.80	1
363	STP	16	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		21.40	1
364	STP	16	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		13.30	1
365	STP	16	30-40	Fauna	Bone	Unmodified	Mammal				Fragment		0.20	1
366	STP	16	40-50	Fauna	Bone	Unmodified	Fish				Fragment		0.90	1
367	STP	16	30-40	FAR	FAR		FAR						1,299.20	X
368	STP	16	10-20	Flaked Stone	Debitage		Volcanic				Fragment	3	9.10	2
369	STP	16	30-40	Flaked Stone	Debitage		Quartzite				Fragment	5	92.50	2
370	STP	16	30-40	Flaked Stone	Debitage		Volcanic				Fragment	2	64.90	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
371	STP	17	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		7.00	1
372	STP	17	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.00	1
373	STP	17	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		7.70	1
374	STP	17	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		7.70	1
375	STP	17	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.70	1
376	STP	17	40-50	Fauna	Bone	Unmodified	Mammal				Fragment		0.70	1
377	STP	17	20-30	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	3.50	1
378	STP	17	40-50	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	0.90	1
379	STP	17	40-50	Flaked Stone	Flake Tool		Quartzite	48.40	42.60	19.90	Complete	1	43.80	
380	STP	17	20-30	Flaked Stone	Debitage		Quartzite				Complete	2	6.60	2
381	STP	17	50-60	Flaked Stone	Debitage		Quartzite				Complete	1	3.20	2
382	STP	17	60-70	Flaked Stone	Debitage		Volcanic				Complete	1	1.60	2
383	STP	18	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.80	1
384	STP	18	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.80	1
385	STP	18	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		9.80	1
386	STP	18	20-30	Fauna	Bone	Unmodified	Fish				Fragment		2.30	1
387	STP	18	50-60	Fauna	Bone	Unmodified	Avian, Mammal				Fragment		0.40	1
388	STP	18	10-20	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	0.30	1
389	STP	18	10-20	Flaked Stone	Projectile Point		Quartz	13.10	13.20	4.00	Complete	1	0.60	1
390	STP	18	20-30	FAR	FAR		FAR						94.10	X
391	STP	18	20-30	Flaked Stone	Debitage		Volcanic				Fragment	1	0.50	2
392	STP	18	40-50	Flaked Stone	Debitage		Volcanic				Complete	1	0.20	2
393	STP	18	50-60	Flaked Stone	Debitage		Quartzite				Complete	2	0.70	2
394	STP	19	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.80	1
395	STP	19	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		12.30	1
396	STP	19	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		33.60	1
397	STP	19	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		11.80	1
398	STP	19	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		13.50	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
399	STP	19	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		8.80	1
400	STP	19	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		9.00	1
401	STP	19	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.00	1
402	STP	19	0-10	Fauna	Bone	Unmodified	Avian				Fragment		0.20	1
403	STP	19	10-20	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		1.30	1
404	STP	19	20-30	Fauna	Bone	Unmodified	Fish				Fragment		1.80	1
405	STP	19	30-40	Fauna	Bone	Unmodified	Avian, Fish				Fragment		2.20	1
406	STP	19	40-50	Fauna	Bone	Unmodified	Fish				Fragment		0.20	1
407	STP	19	50-60	Fauna	Bone	Unmodified	Avian, Mammal				Fragment		1.00	1
408	STP	19	60-70	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		3.40	1
409	STP	19	70-80	Fauna	Bone	Unmodified	Avian				Fragment		0.30	1
410	STP	19	10-20	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	1.00	1
411	STP	19	20-30	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	1.60	1
412	STP	19	40-50	FAR	FAR		FAR						296.20	X
413	STP	19	50-60	FAR	FAR		FAR						1,766.70	X
414	STP	19	10-20	Flaked Stone	Debitage		Obsidian				Complete	1	0.20	2
415	STP	19	10-20	Flaked Stone	Debitage		Quartzite				Complete	1	1.70	2
416	STP	19	10-20	Flaked Stone	Debitage		Volcanic				Complete	2	18.70	2
417	STP	19	20-30	Flaked Stone	Debitage		Quartzite				Complete	7	47.00	2
418	STP	19	20-30	Flaked Stone	Debitage		Volcanic				Complete	4	86.50	2
419	STP	19	30-40	Flaked Stone	Debitage		Quartzite				Complete	3	44.50	2
420	STP	19	30-40	Flaked Stone	Debitage		Volcanic				Complete	7	5.20	2
421	STP	19	30-40	Flaked Stone	Debitage		Metavolcanic				Complete	1	1.80	2
422	STP	19	40-50	Flaked Stone	Debitage		Quartz				Fragment	2	1.40	2
423	STP	19	40-50	Flaked Stone	Debitage		Quartzite				Fragment	3	21.30	2
424	STP	19	40-50	Flaked Stone	Debitage		Volcanic				Complete	2	22.80	2
425	STP	19	50-60	Flaked Stone	Debitage		Quartzite				Fragment	2	1.80	2
426	STP	19	50-60	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.20	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
427	STP	19	60-70	Flaked Stone	Debitage		Volcanic				Fragment	4	3.90	2
428	STP	19	60-70	Flaked Stone	Debitage		Quartzite				Fragment		0.07	2
429	STP	20	10-20	FAR	FAR		FAR						92.00	X
430	STP	20	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.90	1
431	STP	20	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		8.60	1
432	STP	20	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.70	1
433	STP	20	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.00	1
434	STP	20	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.40	1
435	STP	20	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.00	1
436	STP	20	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.80	1
437	STP	20	20-30	Ground Stone	Ground Stone		Volcanic	103.30	65.80	55.50	Fragment	1	469.10	1
438	STP	20	20-30	Fauna	Bone	Unmodified	Mammal				Fragment		0.50	1
439	STP	20	50-60	Fauna	Bone	Unmodified	Fish				Fragment		0.40	1
440	STP	20	10-20	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	2	7.10	1
441	STP	20	50-60	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	1.80	1
442	STP	20	10-20	Flaked Stone	Debitage		Volcanic				Fragment	3	3.30	2
443	STP	20	20-30	Flaked Stone	Debitage		Volcanic				Complete	1	18.30	2
444	STP	20	20-30	Flaked Stone	Debitage		Quartz				Fragment	1	0.90	2
445	STP	20	50-60	Flaked Stone	Debitage		Quartzite				Complete	1	20.40	2
446	STP	20	60-70	Flaked Stone	Debitage		Volcanic				Complete	1	0.20	2
447	STP	21	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		50.10	1
448	STP	21	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		35.50	1
449	STP	21	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		6.30	1
450	STP	21	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		3.10	1
451	STP	21	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		7.00	1
452	STP	21	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		14.60	1
453	STP	21	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.90	1
454	STP	21	0-10	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		2.70	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
455	STP	21	10-20	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		0.10	1
456	STP	21	50-60	Fauna	Bone	Unmodified	Fish				Fragment		0.10	1
457	STP	21	60-70	Fauna	Bone	Unmodified	Fish				Fragment		0.80	1
458	STP	21	0-10	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	3	4.90	1
459	STP	21	40-50	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	2.80	1
460	STP	21	50-60	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	0.80	1
461	STP	21	0-10	Flaked Stone	Debitage		Quartzite				Complete	1	15.50	2
462	STP	21	0-10	Flaked Stone	Debitage		Volcanic				Complete	1	72.50	2
463	STP	21	10-20	Flaked Stone	Debitage		Quartzite				Complete	2	12.80	2
464	STP	21	50-60	Flaked Stone	Debitage		Chert?				Fragment	1	0.30	2
465	STP	22	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		54.50	1
466	STP	22	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		36.00	1
467	STP	22	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		23.40	1
468	STP	22	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		30.90	1
469	STP	22	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.80	1
470	STP	22	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.30	1
471	STP	22	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.30	1
472	STP	22	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.60	1
473	STP	22	0-10	Fauna	Bone	Unmodified	Fish				Fragment		0.30	1
474	STP	22	10-20	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		1.90	1
475	STP	22	20-30	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		1.30	1
476	STP	22	30-40	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		0.40	1
477	STP	22	40-50	Fauna	Bone	Unmodified	Fish				Fragment		0.08	1
478	STP	22	50-60	Fauna	Bone	Unmodified	Fish				Fragment		0.40	1
479	STP	22	60-70	Fauna	Bone	Unmodified	Mammal				Fragment		1.00	1
480	STP	22	70-80	Fauna	Bone	Unmodified	Mammal				Fragment		0.60	1
483	STP	22	20-30	FAR	FAR		FAR						188.80	X
484	STP	22	30-40	FAR	FAR		FAR						172.60	X

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
487	STP	22	60-70	Flaked Stone	Debitage		Quartzite				Complete	3	28.60	2
488	STP	22	60-70	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.20	2
489	STP	22	10-20	Flaked Stone	Debitage		Volcanic				Complete	3	3.70	2
490	STP	22	10-20	Flaked Stone	Debitage		Quartz				Complete	1	0.90	2
491	STP	22	10-20	Flaked Stone	Debitage		Quartzite				Complete	3	137.80	2
492	STP	22	20-30	Flaked Stone	Debitage		Quartzite				Complete	2	11.70	2
493	STP	22	20-30	Flaked Stone	Debitage		Volcanic				Complete	2	13.70	2
494	STP	22	30-40	Flaked Stone	Debitage		Volcanic				Fragment	1	0.07	2
495	STP	22	30-40	Flaked Stone	Debitage		Quartzite				Complete	2	20.40	2
496	STP	22	50-60	Flaked Stone	Debitage		Quartzite				Fragment	1	23.90	2
497	STP	22	50-60	Flaked Stone	Debitage		Volcanic				Fragment	1	0.08	2
498	STP	22	50-60	Flaked Stone	Angular Hammer		Quartzite	87.50	57.70	54.40	Complete	1	447.10	1
499	STP	23	0-10	Fauna	Shell	Unmodified	Undifferentiated				Fragment		4.10	1
500	STP	23	10-20	Fauna	Shell	Unmodified	Undifferentiated				Fragment		2.50	1
501	STP	23	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		9.70	1
502	STP	23	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		69.10	1
503	STP	23	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		46.40	1
504	STP	23	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		76.80	1
505	STP	23	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		78.30	1
481	STP	22	0-10	FAR	FAR		FAR						436.70	X
482	STP	22	10-20	FAR	FAR		FAR						561.00	X
506	STP	23	70-80	Fauna	Shell	Unmodified	Undifferentiated				Fragment		47.50	1
507	STP	23	80-90	Fauna	Shell	Unmodified	Undifferentiated				Fragment		46.70	1
508	STP	23	10-20	Fauna	Bone	Unmodified	Mammal				Fragment		0.10	1
509	STP	23	20-30	Fauna	Bone	Unmodified	Avian, Mammal				Fragment		1.50	1
510	STP	23	30-40	Fauna	Bone	Unmodified	Avian, Mammal				Fragment		0.50	1
511	STP	23	40-50	Fauna	Bone	Unmodified	Mammal				Fragment		0.90	1
512	STP	23	50-60	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		4.90	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
513	STP	23	60-70	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		2.20	1
514	STP	23	70-80	Fauna	Bone	Unmodified	Fish				Fragment		0.10	1
515	STP	23	80-90	Fauna	Bone	Unmodified	Fish, Mammal				Fragment		3.40	1
516	STP	23	40-50	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	3.20	1
517	STP	23	50-60	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	4.50	1
518	STP	23	80-90	Ceramic	Pottery	Vessel	Tiizon Brown Ware				Fragment	1	5.70	1
519	STP	23	20-30	FAR	FAR		FAR						165.30	X
520	STP	23	30-40	FAR	FAR		FAR						216.10	X
521	STP	23	40-50	FAR	FAR		FAR						91.80	X
522	STP	23	50-60	FAR	FAR		FAR						387.10	X
524	STP	23	70-80	FAR	FAR		FAR						68.10	X
525	STP	23	10-20	Flaked Stone	Debitage		Volcanic				Fragment	1	0.70	2
526	STP	23	20-30	Flaked Stone	Debitage		Quartzite				Fragment	4	101.50	2
527	STP	23	30-40	Flaked Stone	Debitage		Quartzite				Complete	2	96.40	2
528	STP	23	30-40	Flaked Stone	Debitage		Volcanic				Complete	4	3.00	2
529	STP	23	40-50	Flaked Stone	Debitage		Volcanic				Complete	2	36.30	2
530	STP	23	40-50	Flaked Stone	Debitage		Quartzite				Complete	2	1.40	2
531	STP	23	40-50	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.07	2
532	STP	23	50-60	Flaked Stone	Debitage		Quartzite				Complete	2	27.30	2
533	STP	23	50-60	Flaked Stone	Debitage		Volcanic				Complete	6	38.90	2
534	STP	23	50-60	Flaked Stone	Debitage		Metavolcanic				Complete	1	0.90	2
535	STP	23	60-70	Flaked Stone	Debitage		Volcanic				Complete	3	40.40	2
536	STP	23	60-70	Flaked Stone	Debitage		Quartzite				Complete	1	1.30	2
537	STP	23	70-80	Flaked Stone	Debitage		Volcanic				Complete	3	90.10	2
538	STP	23	70-80	Flaked Stone	Debitage		Quartzite				Complete	1	4.60	2
539	STP	23	80-90	Flaked Stone	Debitage		Volcanic				Complete	1	5.50	2
540	STP	23	80-90	Flaked Stone	Debitage		Quartz				Fragment	1	1.20	2
485	STP	22	0-10	Flaked Stone	Debitage		Quartzite				Fragment	2	5.90	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
486	STP	22	0-10	Flaked Stone	Debitage		Volcanic				Fragment	3	3.10	2
523	STP	23	60-70	FAR	FAR		FAR						119.70	X
239	TU	2	20-30	Fauna	Shell	Unmodified	Undifferentiated				Fragment		0.50	1
240	TU	2	30-40	Fauna	Shell	Unmodified	Undifferentiated				Fragment		35.60	1
241	TU	2	30-40	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		1.40	1
242	TU	2	40-50	Fauna	Shell	Unmodified	Undifferentiated				Fragment		49.20	1
243	TU	2	40-50	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		0.60	1
244	TU	2	50-60	Fauna	Shell	Unmodified	Undifferentiated				Fragment		1.00	1
245	TU	2	50-60	Fauna	Bone	Unmodified	Avian, Fish, Mamma				Fragment		0.50	1
246	TU	2	60-70	Fauna	Shell	Unmodified	Undifferentiated				Fragment		5.40	1
247	TU	1	0-10	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	20	50.50	1
248	TU	1	0-10	Flaked Stone	Projectile Point	sert Side-Notch	Quartz	20.20	8.50	2.70	Fragment	1	0.44	1
249	TU	1	0-10	Paraphrenalia	Bead		Olivella	6.10	3.10	3.60	Complete	1	0.09	1
250	TU	1	0-10	Paraphrenalia	Bead		Olivella	8.80	4.40	4.70	Complete	1	4.70	1
251	TU	1	0-10	Ground Stone	Ground Stone		Granite	38.80	24.80	11.50	Fragment	1	13.00	1
252	TU	1	0-10	Ground Stone	Ground Stone		Volcanic	76.80	44.40	9.00	Fragment	1	37.60	1
253	TU	1	0-10	Ground Stone	Mano		Granite	63.70	37.30	17.40	Fragment	1	47.40	2
254	TU	1	0-10	Ground Stone	Ground Stone		Granite	48.50	56.20	23.80	Fragment	1	33.90	1
255	TU	1	0-10	Ground Stone	Mano		Volcanic	47.30	45.10	45.30	Fragment	1	171.90	2
256	TU	1	0-10	Ground Stone	Mano		Granite	95.10	51.00	45.80	Fragment	1	217.30	2
257	TU	1	0-10	Ground Stone	Mano		Granite	98.50	56.90	46.60	Fragment	1	331.90	2
258	TU	1	0-10	Flaked Stone	Debitage		Obsidian				Complete	3	0.86	2
259	TU	1	0-10	Flaked Stone	Debitage		Quartz				Fragment	6	2.80	2
260	TU	1	0-10	Flaked Stone	Debitage		Metavolcanic				Complete	4	56.00	2
261	TU	1	0-10	Flaked Stone	Debitage		Quartzite				Complete	16	119.20	2
262	TU	1	0-10	Flaked Stone	Debitage		Volcanic				Complete	61	428.70	2
263	TU	1	0-10	FAR	FAR		FAR						1,818.10	X
264	TU	1	10-20	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	18	37.00	1

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
265	TU	1	10-20	Paraphrenalia	Pendant Preform		Quartzite	43.10	24.90	6.80	Complete	1	10.60	1
266	TU	1	10-20	Flaked Stone	Projectile Point	tonwood Triagu	Volcanic	35.50	16.60	5.10	Complete	1	2.39	1
267	TU	1	10-20	Paraphrenalia	Bead		Olivella	5.00	3.10	3.20	Complete	1	0.04	1
268	TU	1	10-20	Paraphrenalia	Bead		Obsidian	13.60	8.60	7.50	Fragment	1	0.68	1
269	TU	1	10-20	Paraphrenalia	Bead		?	4.40	4.20	1.20	Complete	1	0.03	1
270	TU	1	10-20	Ground Stone	Ground Stone		Granite	42.50	40.40	21.00	Fragment	1	28.50	1
271	TU	1	10-20	Ground Stone	Ground Stone		Granite	60.00	44.70	21.10	Fragment	1	78.70	1
272	TU	1	10-20	Ground Stone	Mano		Granite	78.20	47.40	29.80	Fragment	1	122.90	2
273	TU	1	10-20	Ground Stone	Mano		Volcanic	58.60	59.20	38.30	Fragment	1	178.90	2
274	TU	1	10-20	Ground Stone	Mano		Granite	96.40	66.70	48.60	Fragment	1	358.70	2
275	TU	1	10-20	Ground Stone	Mano		Volcanic	87.70	50.00	27.10	Fragment	1	139.90	2
276	TU	1	10-20	Ground Stone	Mano		Granite	52.30	37.70	35.60	Fragment	1	95.90	2
277	TU	1	10-20	Ground Stone	Mano		Granite	75.10	63.70	27.10	Fragment	1	161.80	2
278	TU	1	10-20	Flaked Stone	Debitage		Quartzite				Fragment	34	151.10	2
279	TU	1	10-20	Flaked Stone	Debitage		Metavolcanic				Fragment	4	3.80	2
280	TU	1	10-20	Flaked Stone	Debitage		Volcanic				Fragment	86	220.60	2
281	TU	1	10-20	FAR	FAR		FAR						1,537.60	X
282	TU	1	20-30	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	15	13.50	1
283	TU	1	20-30	Paraphrenalia	Bead		Olivella	11.30	7.80	0.20	Fragment	1	0.41	1
284	TU	1	20-30	Flaked Stone	Flake Tool		Volcanic	71.40	52.30	20.70	Complete	1	91.30	2
285	TU	1	20-30	Ground Stone	Mano		Granite	75.80	54.60	23.80	Fragment	1	98.90	2
286	TU	1	20-30	Ground Stone	Metate		Sandstone	28.00	70.30	75.80	Fragment	1	988.80	2
287	TU	1	20-30	Flaked Stone	Debitage		Obsidian				Fragment	3	1.20	2
288	TU	1	20-30	Flaked Stone	Debitage		Quartz				Complete	3	2.30	2
289	TU	1	20-30	Flaked Stone	Debitage		Granite				Complete	1	1.60	2
290	TU	1	20-30	Flaked Stone	Debitage		Quartzite				Fragment	14	176.10	2
291	TU	1	20-30	Flaked Stone	Debitage		Volcanic				Fragment	49	333.10	2
292	TU	1	20-30	Flaked Stone	Debitage		Metavolcanic				Fragment	3	2.30	2

Cat No	Unit Ty	Unit No	Depth	Artifact Class	Object Type	Object Subtype	Material Type	L (mm)	W (mm)	Th (mm)	Condition	Qty	Wgt (g)	Box #
293	TU	1	20-30	FAR	FAR		FAR						3,585.90	X
294	TU	1	30-40	Ceramic	Pottery	Vessel	Tizon Brown Ware				Fragment	8	12.40	1
295	TU	1	30-40	Paraphrenalia	Bead		Olivella	13.20	7.40	0.40	Complete	1	0.60	1
296	TU	1	30-40	Ground Stone	Mano		Granite	112.60	59.80	54.60	Fragment	1	375.30	2
297	TU	1	30-40	Flaked Stone	Adze		Volcanic	56.90	45.20	28.40	Complete	1	62.20	1
298	TU	1	30-40	Flaked Stone	Angular Hammer		Volcanic	160.30	130.50	62.80	Complete	1	965.90	1
299	TU	1	30-40	Flaked Stone	Debitage		Obsidian				Complete	2	0.40	2
300	TU	1	30-40	Flaked Stone	Debitage		Quartz				Fragment	3	3.30	2
Total												**934**		

APPENDIX G

Confidential Maps

(Deleted for Public Review; Bound Separately)

DRAINAGE STUDY

For

El Mirador RESIDENCE
PTS #___854820_____
DWG. _____

APN: 346-440-10
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

Prepared For

Casa El Mirador, LLC
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

PREPARED BY:

PASCO LARET SUITER & ASSOCIATES, INC.
535 N. HIGHWAY 101, SUITE A
SOLANA BEACH, CA 92075
(858)259-8212

DATE: 1-15-18
REVISED: JUNE 2018

6-26-18

BRIAN M. ARDOLINO RCE 71651 DATE

PLSA 2718
January 2018

TABLE OF CONTENTS

SECTION

A. INTRODUCTION

The purpose of this report is to analyze the storm water runoff produced from the 100 year storm event of the pre-developed and post-developed condition of the site located at 1834 Spindrift Drive, La Jolla, California.

This drainage study adheres to City of San Diego's Storm Water Standards, dated January 2016, which conforms to the Regional Water Quality Control Board under the Federal Clean Water Act (CWA) section 401 or 404.

Pre-development Conditions

The existing condition of the project site is residential developed land. There is an existing building with concrete/brick patios at the rear of the property. The front of the property (east side) slopes eastward towards Spindrift Drive. The rear of the property (west side) slopes westward towards the pacific ocean in the rear. The property has an existing total gross area of 24,829 sf or 0.57 acre. The drainage area being analyzed is 12,378 sf or 0.28 ac. The total impervious area for the existing condition is estimated to be 6,162 sf. Using the Rational Method the runoff coefficient for the existing site condition is 0.55 (see attached table A-1). The total peak flowrate for the 100 year 6 hour storm event has been calculated to be 0.68 cfs for the existing site condition (see attached calculations).

Post-development Conditions

The proposed grading for this project will be for the construction of a single family residence with an attached garage. The driveway will run along the northeast corner of the site. Also, a pool will be removed and replaced at the rear of the property. The total proposed impervious area within the drainage basin, including roofs and hardscape, has been estimated to be 6,557 sf. Using the Rational Method the runoff coefficient for the proposed site condition is 0.55 (see attached table A-1). The peak flowrate for the 100 year 6 hour storm event has been calculated to be 0.74 cfs for the proposed condition (see attached calculations).

Runoff from the site has been designed to drain in east to west direction, towards the Pacific Ocean similar to that of the existing condition. The site has been designed to minimize impervious area, compaction of soil, and disperse stormwater to landscape areas prior to being collected in conveyance system.

The moment the stormwater is discharged offsite it is conveyed through 600' of city curb and gutter and enters into an 18" RCP through a curb inlet at the intersection of Roseland Dr. and Spindrift Dr. (per City of SD drawing numbers 1381-D/9943-D); ultimately discharging into the Pacific Ocean. The system mimics existing condition and appears to be in good working order to carry the sites proposed stormwater loads. The proposed project follows the source control measures listed in the City of San Diego stormwater manual, chapter4 and appendix and does not propose dredging or fill material in U.S. waters and conforms to CWA per section 401/404.

B. CONCLUSION

Based on the calculations in this report, the proposed development will result in an increase in peak flow rate of 0.06 cfs. The proposed project meets the minimum stormwater treatment requirements as defined by the City of San Diego Storm Water Standards. It is the opinion of Pasco Laret Suiter & Associates that the proposed improvements associated with this project will not result in any additional drainage impacts to the adjacent downstream properties. Furthermore, it will not impact the directly adjacent neighboring properties as the site runoff will remain within the project's boundaries.

Please call if you have any questions.

Sincerely,

Brian M. Ardolino, PE
RCE 71651

METHODOLOGY

Introduction

The following methodology was performed per the City of San Diego Drainage Design Manual.

The hydrologic model used to perform the hydrologic analysis presented in this report utilizes the Ration Method (RM) equation, Q=CIA. The RM formula estimates the peak rate of runoff based on the variables of area, runoff coefficient, and rainfall intensity. Per Section A.1.2 of the City of San Diego Drainage Design Manual the rainfall intensity (I) is interpolated per figure A.1 – Intensity-Duration-Frequency Design Chart per 100 year storm event,

Where:

I = Intensity (in/hr)

D = duration (minutes – use Tc), using Figure A-4 graph – see appendix

Using the Time of Concentration (Tc), which is the time required for a given element of water that originates at the most remote point of the basin being analyzed to reach the point at which the runoff from the basin is being analyzed. The RM equation determines the storm water runoff rate (Q) for a given basin in terms of flow (typically in cubic feet per second (cfs) but sometimes as gallons per minute (gpm)). Per Section A.1.1 of the City of San Diego Drainage Design Manual the RM equation is as follows:

$$Q = CIA$$

Where:

Q= flow (in cfs)

C = runoff coefficient, ratio of rainfall that produces storm water runoff (runoff vs. infiltration/evaporation/absorption/etc)

I = average rainfall intensity for a duration equal to the Tc for the area, in inches per hour.

A = drainage area contributing to the basin in acres.

The RM equation assumes that the storm event being analyzed delivers precipitation to the entire basin uniformly, and therefore the peak discharge rate will occur when a raindrop that falls at the most remote portion of the basin arrives at the point of analysis. The RM also assumes that the fraction of rainfall that becomes runoff or the runoff coefficient C is not affected by the storm intensity, I, or the precipitation zone number.

The table A.1.2 "Runoff Coefficient for Rational Method" was used to determine the "C" value.

The runoff coefficient is dependent only upon land use and soil type and the City of San Diego has developed a table of Runoff Coefficients for Urban Areas to be applied to basin located within the City of San Diego. The table, included at the end of this section, categorizes the land use, the associated development, and the percentage of impervious area.

D. HYDROLOGY CALCULATIONS PRE DEVELOPMENT

Rational Method Parameters

Per Section A.1.2. of the City of San Diego Drainage Design Manual, Table A-1
C= 0.55, for Single Family

Basin Area = 12,378 sf = 0.28 ac
Impervious = 6,162 sf → 50%

Per Section A.1.4 of the City of San Diego Drainage Design Manual

Per Section A.1.3 of the City of San Diego Drainage Design Manual
I= Intensity in/hr, I=4.4 in/hr
Duration (D)= Time of Concentration, Tc

Duration (D)= Time of Concentration, Tc, Per Section A.1.4
$T = [1.8(1.1-C)(L)^{0.5}]/S^{1/3}$,
$T = [1.8(1.1-0.55)(135')^{0.5}]/(5.6)^{1/3}$
T < 5.0 min, therefore 5 min

Q=Peak Runoff, Q=C*I*A (cfs)
Q_{100}=0.55 * 4.4 in/hr * 0.28 acres
Q_{100}=0.68 cfs

E. HYDROLOGY CALCULATIONS POST DEVELOPMENT

Rational Method Parameters

Per Section A.1.2. of the City of San Diego Drainage Design Manual, Table A-1
Runoff Coefficient C=0.55

Basin Area = 12,882 sf = 0.30 ac
Impervious = 6,557 sf → 51%

Per Section A.1.3 of the City of San Diego Drainage Design Manual
I= Intensity in/hr, I= 4.4 in/hr
Duration (D)= Time of Concentration, Tc

Duration (D)= Time of Concentration, Tc, Per Section A.1.4.
$T = [1.8(1.1-C)(L)^{0.5}]/S^{1/3}$,
$T = [1.8(1.1-0.55)(199')^{0.5}]/(5.1)^{1/3}$
T < 5 min

Q=Peak Runoff, Q=C*I*A (cfs)
Q_{100}= 0.55 * 4.4 in/hr * 0.30 acres
Q_{100}= 0.74 cfs

F. APPENDIX

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C)
	Soil Type [1]
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than ½ acre)	0.45
Commercial [2]	
80% Impervious	0.85
Industrial [2]	
90% Impervious	0.95

Note:
[1] Type D soil to be used for all areas.
[2] Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%
Tabulated imperviousness = 80%
Revised C = (50/80) x 0.85 = 0.53

The values in Table A–1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the T_C for a selected storm frequency. Once a particular storm frequency has been selected for design and a T_C calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).

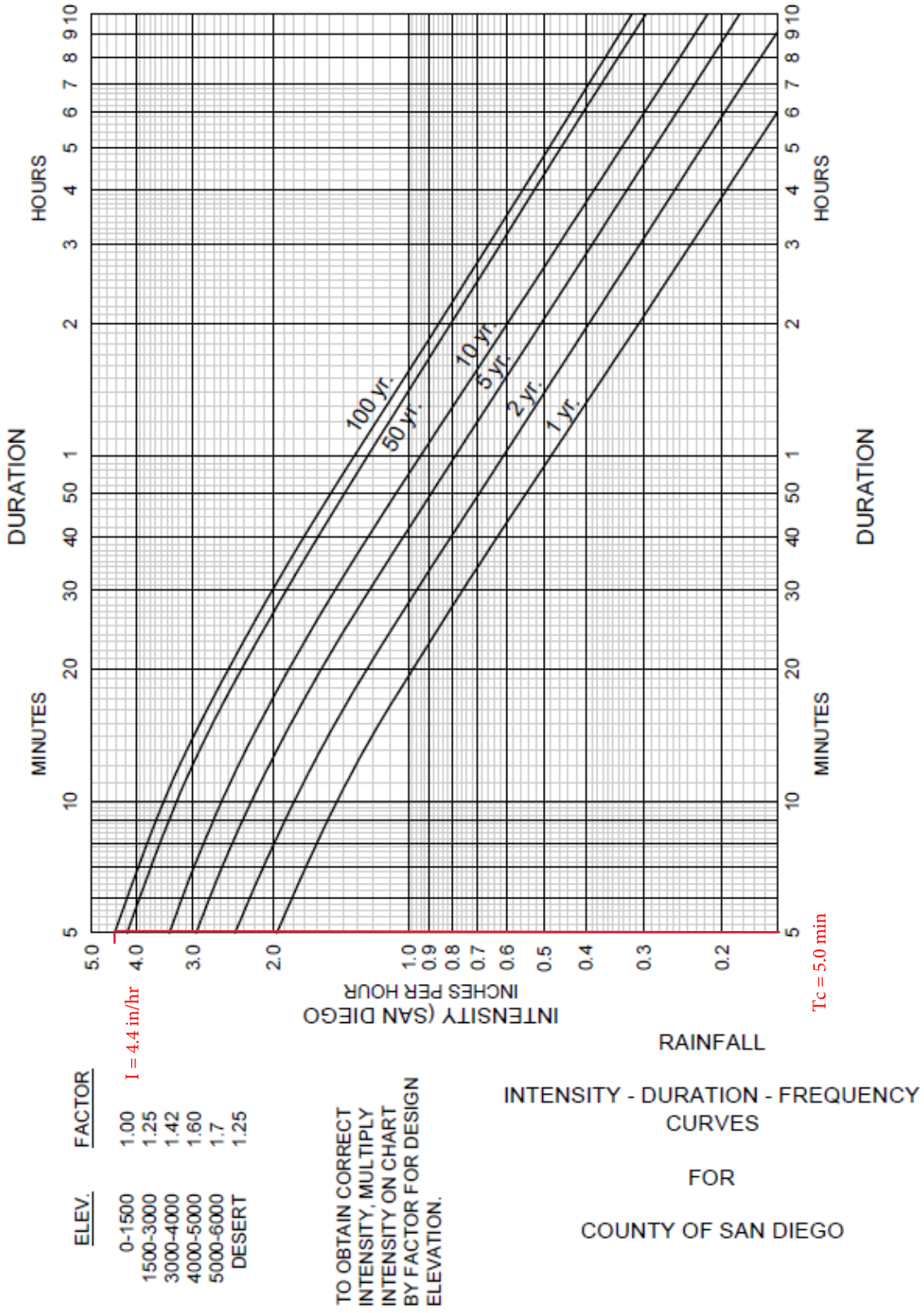


Figure A-1. Intensity-Duration-Frequency Design Chart

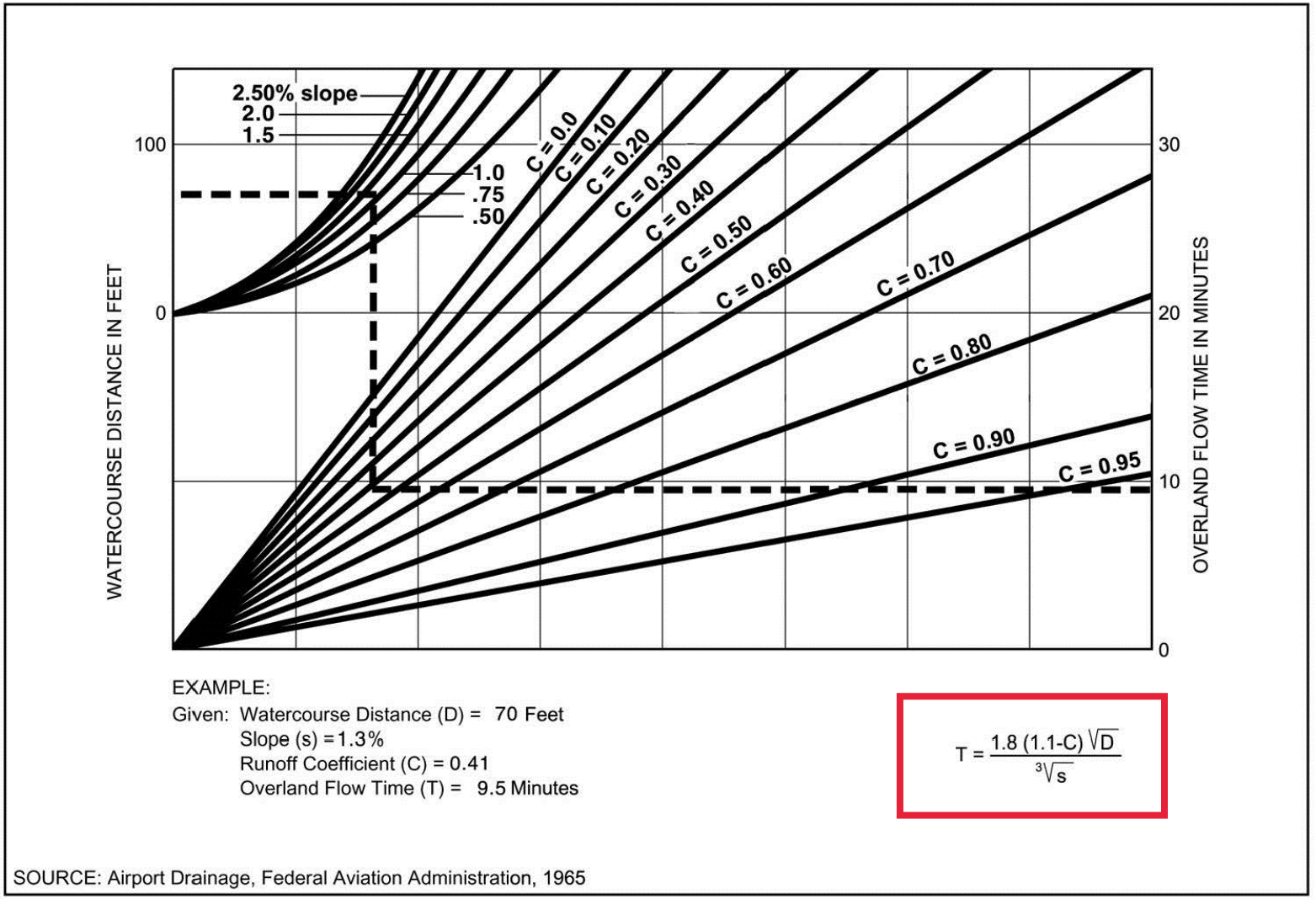
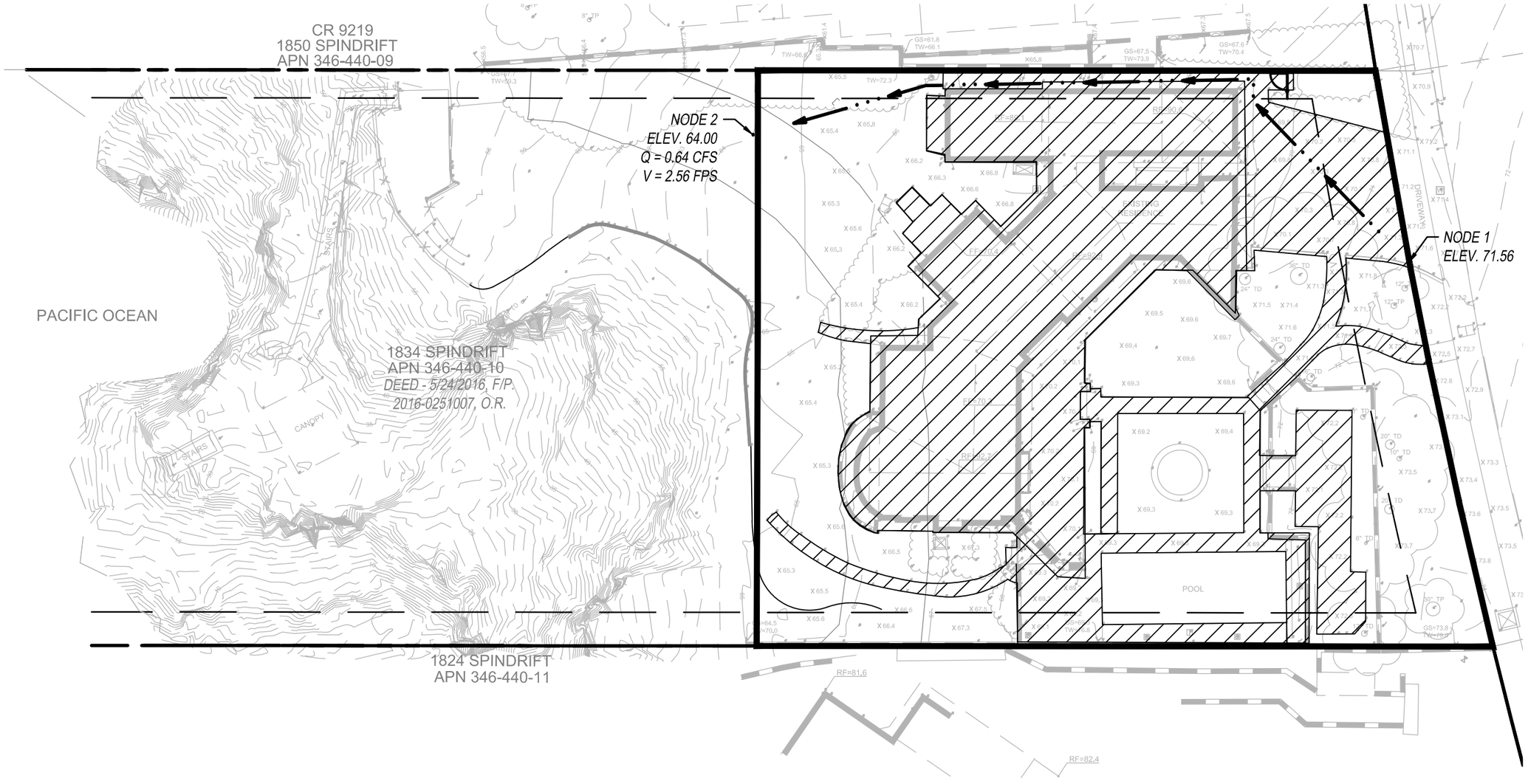


Figure A-4. Rational Formula – Overland Time of Flow Nomograph

Note: Use formula for watercourse distances in excess of 100 feet.



LEGEND

IMPERVIOUS AREA

BASIN BOUNDARY

FLOWLINE

PRE-DEVELOPMENT HYDROLOGY MAP

EL MIRADOR RESIDENCE

1834 SPINDRIFT DRIVE

SCALE: 1" = 20'

DATE: OCTOBER 30, 2017

SHEET 1 OF 1

PASCO LARET SUITER & ASSOCIATES

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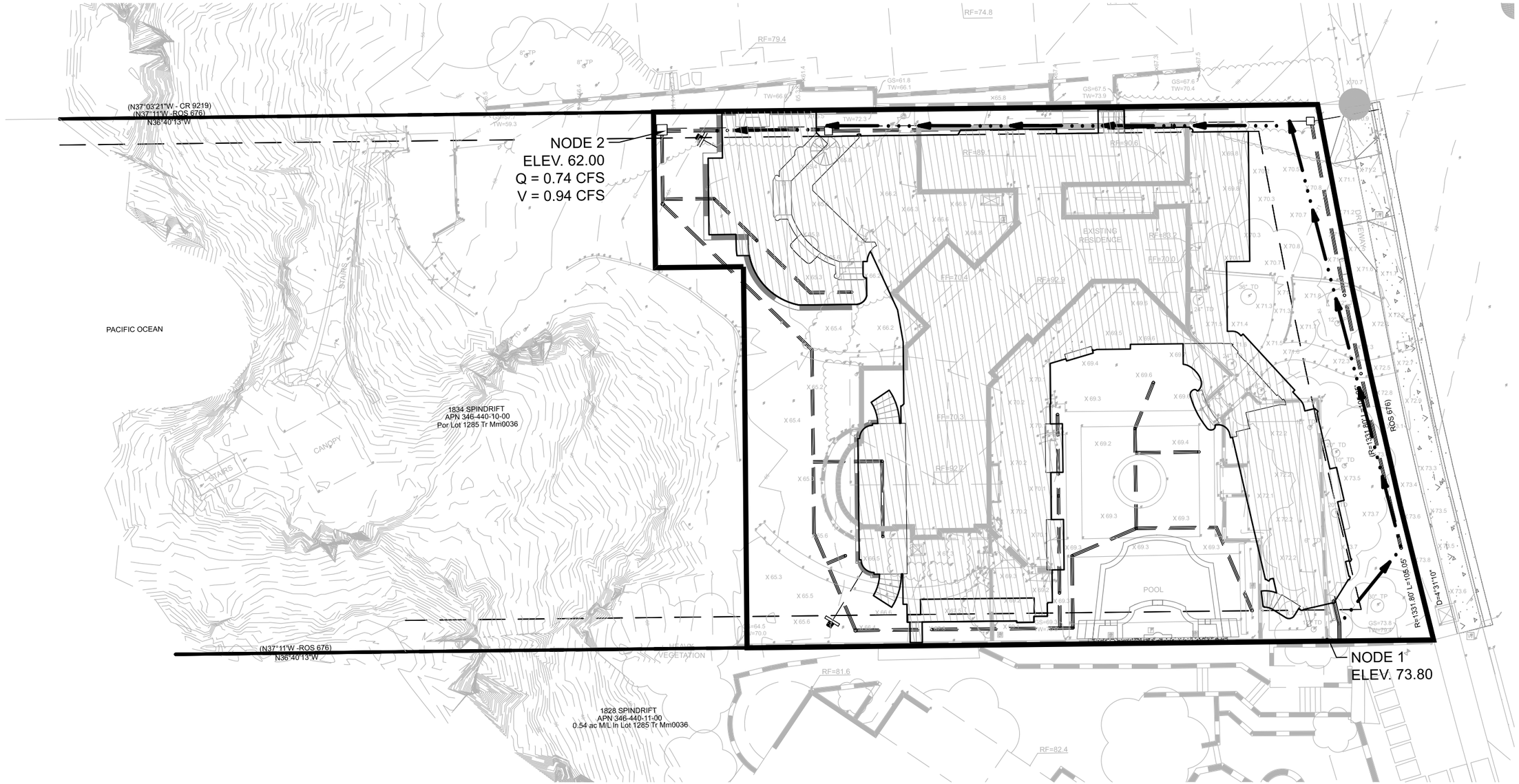

LEGEND

IMPERVIOUS AREA

BASIN BOUNDARY

FLOWLINE

POST–DEVELOPMENT HYDROLOGY MAP

EL MIRADOR RESIDENCE

1834 SPINDRIFT DRIVE

SCALE: 1" = 20'

DATE: OCTOBER 30, 2017

REV: APRIL 19, 2018

SHEET 1 OF 1

PASCO LARET SUITER & ASSOCIATES

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Source Control BMP Checklist for Standard Projects	Form I-4A

All development projects must implement source control BMPs. Refer to Chapter 4 and Appendix E of the BMP Design Manual for information to implement BMPs shown in this checklist.
Note: All selected BMPs must be shown on the construction plans.

Source Control Requirement	Applied[1]?		
4.2.1 Prevention of Illicit Discharges into the MS4	☑ Yes	☐ No	☐ N/A
4.2.2 Storm Drain Stenciling or Signage	☐ Yes	☐ No	☑ N/A
4.2.3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
4.2.4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
4.2.5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☑ Yes	☐ No	☐ N/A
4.2.6 BMPs based on Potential Sources of Runoff Pollutants			
On-site storm drain inlets	☑ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☑ Yes	☐ No	☐ N/A
Interior parking garages	☐ Yes	☐ No	☑ N/A
Need for future indoor & structural pest control	☐ Yes	☐ No	☑ N/A
Landscape/Outdoor Pesticide Use	☑ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☑ Yes	☐ No	☐ N/A
Food service	☐ Yes	☐ No	☑ N/A
Refuse areas	☐ Yes	☐ No	☑ N/A
Industrial processes	☐ Yes	☐ No	☑ N/A
Outdoor storage of equipment or materials	☐ Yes	☐ No	☑ N/A
Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☑ N/A
Fuel Dispensing Areas	☐ Yes	☐ No	☑ N/A
Loading Docks	☐ Yes	☐ No	☑ N/A
Fire Sprinkler Test Water	☑ Yes	☐ No	☐ N/A
Miscellaneous Drain or Wash Water	☐ Yes	☐ No	☑ N/A
Plazas, sidewalks, and parking lots	☐ Yes	☐ No	☑ N/A
SC-6A: Large Trash Generating Facilities	☐ Yes	☐ No	☑ N/A
SC-6B: Animal Facilities	☐ Yes	☐ No	☑ N/A
SC-6C: Plant Nurseries and Garden Centers	☐ Yes	☐ No	☑ N/A
SC-6D: Automotive Facilities	☐ Yes	☐ No	☑ N/A

Discussion / justification for **all** "No" answers shown above:

The location of the storm water inlets (located in pervious areas) allows for stormwater to infiltrate the ground and therefore treated in planted areas before inletting into the storm-drain system.

Site Design BMP Checklist for Standard Projects	Form I-5A

All development projects must implement site design BMPs. Refer to Chapter 4 and Appendix E of the BMP Design Manual for information to implement BMPs shown in this checklist.
Note: All selected BMPs must be shown on the construction plans.

Site Design Requirement	Applied[(1)]?		
4.3.1 Maintain Natural Drainage Pathways and Hydrologic Features	☑ Yes	☐ No	☐ N/A
4.3.2 Conserve Natural Areas, Soils, and Vegetation	☑ Yes	☐ No	☐ N/A
4.3.3 Minimize Impervious Area	☑ Yes	☐ No	☐ N/A
4.3.4 Minimize Soil Compaction	☑ Yes	☐ No	☐ N/A
4.3.5 Impervious Area Dispersion	☑ Yes	☐ No	☐ N/A
4.3.6 Runoff Collection	☑ Yes	☐ No	☐ N/A
4.3.7 Landscaping with Native or Drought Tolerant Species	☑ Yes	☐ No	☐ N/A
4.3.8 Harvest and Use Precipitation	☐ Yes	☐ No	☑ N/A

Discussion / justification for **all** "No" answers shown above:

Per worksheet B.2-1: DCV and worksheet B.3-1: Harvest and feasibility screening, Site design requirement 4.3.8 is not applicable to the project.

[(1)] Answer for each source control and site design category shall be pursuant to the following:

- "Yes" means the project will implement the BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Worksheet B.2-1: DCV

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.50	inches
2	Area tributary to BMP (s)	A=	0.30	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.60	unitless
4	Trees Credit Volume Note: In the SWQMP list the number of trees, size of each tree, amount of soil volume installed for each tree, contributing area to each tree and the inlet opening dimension for each tree.	TCV=	0	cubic-feet
5	Rain barrels Credit Volume Note: In the SWQMP list the number of rain barrels, size of each rain barrel and the use of the captured storm water runoff.	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	327	cubic-feet

Worksheet B.3-1: Harvest and Use Feasibility Screening

Harvest and Use Feasibility Screening	Worksksheet B.3-1

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?
   - ☑ Toilet and urinal flushing
   - ☑ Landscape irrigation
   - ☐ Other:_____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.
[Provide a summary of calculations here]

TOILET AND URINAL DEMAND = 9.3 gallons per resident (TABLE B.3-1 City of SD Storm water stnd Appendices)
4 Residents x 9.3 gallons = 37 gallons
LANDSCAPE DEMAND = 1470 gallons per irrigated acre (TABLE B.3-3 City of SD Storm water stnd Appendices)
Landscape = 0.30 ac; 1470 x 0.30 = 441 gallons
TOTAL DEMAND = 37 gal + 441 gal = 478 gallons = 64 cf

3. Calculate the DCV using worksheet B-2.1.
[Provide a results here]

DCV = 327 cubic-ft,
see attached wksht, B.2-1: DCV

3a. Is the 36-hour demand greater than or equal to the DCV?	3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?	3c. Is the 36-hour demand less than 0.25DCV?
Yes / No ⇨ ⇩	Yes / No ⇨ ⇩	Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Note: 36-hour demand calculations are for feasibility analysis only, once the feasibility analysis is complete the applicant may be allowed to use a different drawdown time provided they meet the 80 percent of average annual (long term) runoff volume performance standard.

WATER QUALITY STUDY
STANDARD PROJECT

For:

EL MIRADOR RESIDENCE

APN: 346-440-10-00
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

Prepared For:

CASA EL MIRADOR, LLC
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

Date:
January 15, 2018
Updated:
June 2018

Prepared By:
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Brian M. Ardolino, RCE 71651 — DATE 6.26.18

PLSA 2718
JUNE 2018

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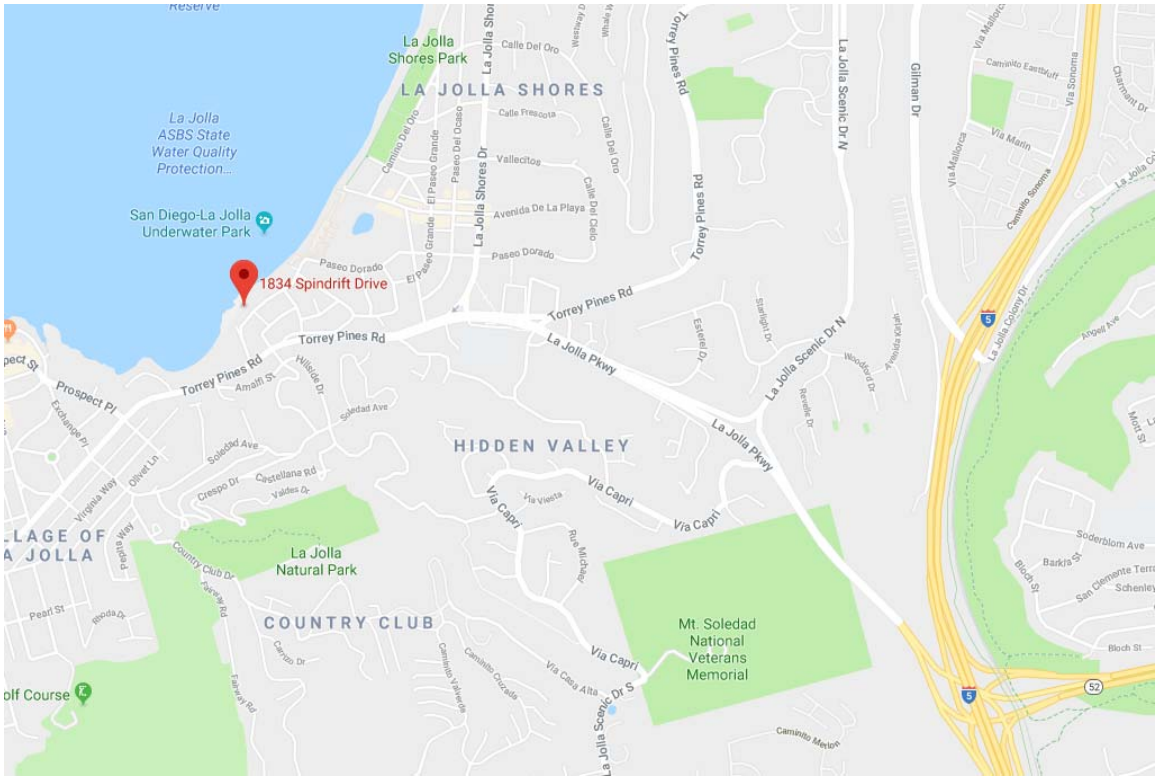
WATER QUALITY STUDY



Vicinity Map

Not to Scale

1. INTRODUCTION

The purpose of this report is to address the potential water quality impacts that could result from the proposed home and site construction at the above identified property.

Source Control Best Management Practices (BMPs) will be utilized to provide a long-term solution to water quality in accordance with City of San Diego Storm Water Standards. This Standard Project Storm Water Quality Study is intended to identify and propose mitigation for pollutants of concern originating from the project site.

1.1 Project Description

The proposed project will be the construction of a two-story single family residence with an attached garage, and a basement below. It will include a landscape paver driveway, proposed pool, spa, cabana, landscape paver walkways, and hardscape patios. The landscape areas will closely match natural vegetation with native species incorporated throughout, and provide fire resistant ornamental landscaping with city approved species that require little to no irrigation.

The total area disturbed by the project scope is +/-12,378 sf square feet (+/-0.28 acres).

The project proposes to installation of various sizes of PVC drain pipe and area drains in landscape planters throughout the site, and a sump pump and force main that will route site drainage to a proposed sidewalk underdrain and ultimately to Spindrift Drive.

1.2 Pollutants and Conditions of Concern

The project is located in the Mission Beach- Frontal Pacific Ocean Watershed Management Area. More specifically it is located in the Scripps Hydrologic Area (906.3). Runoff from the proposed project site flows northwest to a 3'x3' Brooks Box where it is then pumped via force main up to discharge to Sprindrift Drive and subsequently to the municipal stormwater system and the ultimate receiving water, the Pacific Ocean. This run-off does not discharge directly into any natural water body. The project site is located within or within 200 feet of a Water Quality Sensitive Area as defined by the current City of San Diego Storm Water Standards Manual. The impaired water bodies downstream of the project and their impairments are summarized below:

Impaired Water Body	**Impairment**
Pacific Ocean Shoreline	Indicator bacteria, nutrients, trace metals and toxics

Anticipated post-construction pollutants are illustrated in the table below (highlighted row applicable to this project):

General Pollutant Categories									
Priority Project Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Housing Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development	P(1)	P(1)	X	P(2)	X	P(5)	X	P(3)	P(5)
Industrial Development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	P(1)
Steep Hillside Developments	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X	X	P(1)
Retail Gas Outlets			X	X	X	X	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

Nutrients – Nutrients are nutritive substances that foster growth, especially compounds that contain nitrogen, phosphorous and potassium. Their proliferation is typically caused by the transport of fertilizers, green waste, detergents from car washing, dumping of janitorial wastewater or failing septic/sewer systems from the watershed. Water containing excessive nutrients can alter the aquatic habitat and create a harmful environment for humans and aquatic life.

Bacteria and viruses – Bacteria and viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water containing excessive bacteria and viruses can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

2. REQUIRED PERMANENT BMP'S FOR STANDARD DEVELOPMENT PROJECTS

2.1 Source Control BMP's

SC-1: Prevent illicit discharges into the MS4
An illicit discharge is any discharge to the MS4 that is not composed entirely of stormwater except discharges pursuant to a National Pollutant Discharge Elimination System permit and discharges resulting from firefighting activities. Projects must effectively eliminate discharges of non-storm water into the MS4. This may involve a suite of housekeeping BMPs which could include effective irrigation, dispersion of non-storm water discharges into landscaping for infiltration, and controlling wash water from vehicle washing.

DISCUSSION:
The proposed irrigation and landscape design is done by a registered professional and will be submitted to the City of San Diego to comply with Municipal Code. It shall include flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. Any vehicle maintenance conducted by the home owner will follow good housekeeping practices such as not allowing contaminated water to run into the public street. This is accomplished by the utilization of a temporary flow diverter to a landscaped area. All non-storm water is directed towards landscaped areas and permeable pavements for infiltration purposes.

SC-2: Identify the storm drain system using stenciling or signage
Storm drain signs and stencils are visible source controls typically placed adjacent to the inlets. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Stenciling shall be provided for all storm water conveyance system inlets and catch basins within the project area. Inlet stenciling may include concrete stamping, concrete painting, placards, or other methods approved by the local municipality. In addition to storm drain stenciling, projects are encouraged to post signs and prohibitive language (with graphical icons) which prohibit illegal dumping at trailheads, parks, building entrances and public access points along channels and creeks within the project area. Language associated with the stamping (e.g., "No Dumping-Drains to Ocean") must be satisfactory to the City Engineer. Stamping may also be required in Spanish.

DISCUSSION:
There is no existing storm drain system. The proposed project storm drain system will be on private property and not accessible by the general public. It will consist of small landscape inlets and 4" brass grates in the patio. The 4" PVC pipes onsite will discharge to a Brooks Box Catch Basin where they will then be pumped via force main up to Spindrift Drive, through a sidewalk underdrain. It will be the responsibility of the home owner to prevent pollutants from entering the storm drain system.

SC-3: Protect outdoor material storage areas from rainfall, run-on, runoff, and wind dispersal

Materials with the potential to pollute storm water runoff shall be stored in a manner that prevents contact with rainfall and storm water runoff. Contaminated runoff shall be managed for treatment incorporate the following structural or pollutant control BMPs for outdoor material storage areas, as applicable and feasible:
Materials with the potential to contaminate storm water shall be:

• Placed in an enclosure such as, but not limited to, a cabinet, or similar structure, or under a roof or awning that
prevents contact with rainfall runoff or spillage to the storm water conveyance system; or
• Protected by secondary containment structures such as berms, dikes, or curbs.
• The storage areas shall be paved and sufficiently impervious to contain leaks and spills, where necessary. (continued below)
• The storage area shall be sloped towards a sump or another equivalent measure that is effective to contain spills.
• Runoff from downspouts/roofs shall be directed away from storage areas.
• The storage area shall have a roof or awning that extends beyond the storage area to minimize collection of storm water within the secondary containment area. A manufactured storage shed may be used for small containers.

DISCUSSION:

This project is the construction of a single family home. There are no outdoor material storage areas included in the design.

SC-4: Protect materials stored in outdoor work areas from rainfall, run-on, runoff, and wind dispersal

Outdoor work areas have an elevated potential for pollutant loading and spills. All development projects shall include the following structural or pollutant control BMPs for any outdoor work areas with potential for pollutant generation, as applicable and feasible:

• Create an impermeable surface such as concrete or asphalt, or a prefabricated metal drip pan, depending on the size needed to protect the materials.
• Cover the area with a roof or other acceptable cover.
• Berm the perimeter of the area to prevent water from adjacent areas from flowing on to the surface of the work area.
• Directly connect runoff to sanitary sewer or other specialized containment system(s), as needed and where feasible. This allows the more highly concentrated pollutants from these areas to receive special treatment that removes particular constituents. Approval for this connection must be obtained from the appropriate sanitary sewer agency.
• Locate the work area away from storm drains or catch basins.

DISCUSSION:

This project is the construction of a single family home. There are no materials stored in outdoor work area included in the design.

SC-5: Protect trash storage areas from rainfall, run-on, runoff, and wind dispersal
Storm water runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. All development projects shall include the following structural or pollutant control BMPs, as applicable:
• Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This can include berming or grading the waste handling area to prevent run-on of storm water.
• Ensure trash container areas are screened or walled to prevent offsite transport of trash.
• Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
• Locate storm drains away from immediate vicinity of the trash storage area and vice versa.
• Post signs on all dumpsters informing users that hazardous material are not to be disposed.

DISCUSSION:
This is a single family home; the trash storage area will be limited to the City approved trash containers that will be stored outside of the garage and under the roof/awning according to architecture.

SC-6: Use any additional BMPs determined to be necessary by the Copermittee to minimize pollutant generation at each project site
Appendix E.1 provides guidance on permanent controls and operational BMPs that are applicable at a project site based on potential sources of runoff pollutants at the project site. The project shall implement all applicable and feasible source control BMPs listed in Appendix E.1. In addition to the source control BMPs in Appendix E.1, additional source control requirements apply for the following project types within the City jurisdiction. Guidance for implementing these additional source control requirements are presented in Appendix E.
• **SC-6A: Large Trash Generating Facilities:** Includes but are not limited to restaurants, supermarkets, “big box” retail stores serving food, and pet stores. Refer to Appendix E.20
• **SC-6B: Animal Facilities:** Includes but are not limited to animal shelters, dog daycare centers, veterinary clinics, groomers, pet care stores, and breeding, boarding, and training facilities. Refer to Appendix E.21
• **SC-6C: Plant Nurseries and Garden Centers:** Includes but are not limited to commercial facilities that grow, distribute, sell, or store plants and plant material. Refer to Appendix E.22
• **SC-6D: Automotive-related Uses**: include but are not limited to facilities that perform maintenance or repair of vehicles, vehicle washing facilities, and retail gasoline outlets. Refer to Appendix E.23

DISCUSSION:
This is a single family home, this is not a large trash generation facility, animal facility, plant nursery or for automotive related uses.

Site Design (SD) BMP Requirements:

How to comply: Projects shall comply with this requirement by using all of the site design BMPs listed in this section that are applicable and practicable to their project type and site conditions. Applicability of a given site design BMP shall be determined based on project type, soil conditions, presence of natural features (e.g. streams), and presence of site features (e.g. parking areas). Explanation shall be provided by the applicant when a certain site design BMP is considered to be not applicable or not practicable/feasible. Site plans shall show site design BMPs and provide adequate details necessary for effective implementation of site design BMPs. The "Site Design BMP Checklist for All Development Projects" located in Appendix I-5 shall be used to document compliance with site design BMP requirements.

SD-1: Maintain natural drainage pathways and hydrologic features
Maintain or restore natural storage reservoirs and drainage corridors (including topographic depressions, areas of permeable soils, natural swales, and ephemeral and intermittent streams) Buffer zones for natural water bodies (where buffer zones are technically infeasible, require project applicant to include other buffers such as trees, access restrictions, etc.)

During the site assessment, natural drainages must be identified along with their connection to creeks and/or streams, if any. Natural drainages offer a benefit to storm water management as the soils and habitat already function as a natural filtering/infiltrating swale. When determining the development footprint of the site, altering natural drainages should be avoided. By providing a development envelope set back from natural drainages, the drainage can retain some water quality benefits to the watershed. In some situations, site constraints, regulations, economics, or other factors may not allow avoidance of drainages and sensitive areas. Projects proposing to dredge or fill materials in Waters of the U.S. must obtain Clean Water Act Section 401 Water Quality Certification. Projects proposing to dredge or fill waters of the State must obtain waste discharge requirements. Both the 401 Certification and the Waste Discharge Requirements are administered by the San Diego Water Board. The project applicant shall consult the local jurisdiction for other specific requirements.

Projects can incorporate SD-1 into a project by implementing the following planning and design phase techniques as applicable and practicable:

• Evaluate surface drainage and topography in considering selection of Site Design BMPs that will be most beneficial for a given project site. Where feasible, maintain topographic depressions for infiltration.

• Optimize the site layout and reduce the need for grading. Where possible, conform the site layout along natural landforms, avoid grading and disturbance of vegetation and soils, and replicate the site’s natural drainage patterns. Integrating existing drainage patterns into the site plan will help maintain the site’s predevelopment hydrologic function.

• Preserve existing drainage paths and depressions, where feasible and applicable, to help

• Structural BMPs cannot be located in buffer zones if a State and/or Federal resource agency (e.g. SDRWQCB,

California Department of Fish and Wildlife; U.S. Army Corps of Engineers, etc.) prohibits maintenance or activity in the area.

DISCUSSION:
This project is the construction of a single family home on a previously developed home site. The existing surface drainage and topography are maintained (western portion towards Pacific Ocean and eastern portion towards Spindrift Drive). The design of the new house conforms to the existing contours and limits the amount of grading (to avoid encroachment onto the Bluff Edge).

SD-2: Conserve natural areas, soils and vegetation
• Conserve natural areas within the project footprint including existing trees, other vegetation, and soils
To enhance a site's ability to support source control and reduce runoff, the conservation and restoration of natural areas must be considered in the site design process. By conserving or restoring the natural drainage features, natural processes are able to intercept storm water, thereby reducing the amount of runoff. The upper soil layers of a natural area contain organic material, soil biota, vegetation, and a configuration favorable for storing and slowly conveying storm water and establishing or restoring vegetation to stabilize the site after construction. The canopy of existing native trees and shrubs also provide a water conservation benefit by intercepting rain water before it hits the ground. By minimizing disturbances in these areas, natural processes are able to intercept storm water, providing a water quality benefit. By keeping the development concentrated to the least environmentally sensitive areas of the site and set back from natural areas, storm water runoff is reduced, water quality can be improved, environmental impacts can be decreased, and many of the site's most attractive native landscape features can be retained. In some situations, site constraints, regulations, economics, and/or other factors may not allow avoidance of all sensitive areas on a project site. Project applicant shall consult the local municipality for jurisdictional specific requirements for mitigation of removal of sensitive areas.

Projects can incorporate SD-2 by implementing the following planning and design phase techniques as applicable and practicable:

• Identify areas most suitable for development and areas that should be left undisturbed. Additionally, reduced disturbance can be accomplished by increasing building density and increasing height, if possible.
• Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
• Avoid areas with thick, undisturbed vegetation. Soils in these areas have a much higher capacity to store and infiltrate runoff than disturbed soils, and reestablishment of a mature vegetative community can take decades. Vegetative cover can also provide additional volume storage of rainfall by retaining water on the surfaces of leaves, branches, and trunks of trees during and after storm events.

• Preserve trees, especially native trees and shrubs, and identify locations for planting additional native or drought tolerant trees and large shrubs.
• In areas of disturbance, topsoil should be removed before construction and replaced after the project is completed. When handled carefully, such an approach limits the disturbance to native soils and reduces the need for additional (purchased) topsoil during later phases.
• Avoid sensitive areas, such as wetlands, biological open space areas, biological mitigation sites, streams, floodplains, or particular vegetation communities, such as coastal sage scrub and intact forest. Also, avoid areas that are habitat for sensitive plants and animals, particularly those, State or federally listed as endangered, threatened or rare. Development in these areas is often restricted by federal, state and local laws.

DISCUSSION:
This project is the construction of a single family home on a previously developed home site. Proposed work is maximized inside existing building footprint (and on existing impervious area) and natural vegetation is to be maintained as much as possible within the disturbed area. Remaining land to be kept in undisturbed natural state with addition of native planters to collect nuisance storm-water.

SD-3: Minimize impervious area
• Construct streets, sidewalks or parking lots aisles to the minimum widths necessary, provided public safety is not compromised
• Minimize the impervious footprint of the project
One of the principal causes of environmental impacts by development is the creation of impervious surfaces. Imperviousness links urban land development to degradation of aquatic ecosystems in two ways:

• First, the combination of paved surfaces and piped runoff efficiently collects urban pollutants and transports them, in suspended or dissolved form, to surface waters. These pollutants may originate as airborne dust, be washed from the atmosphere during rains, or may be generated by automobiles and outdoor work activities.

• Second, increased peak flows and runoff durations typically cause erosion of stream banks and beds, transport of fine sediments, and disruption of aquatic habitat. Measures taken to control stream erosion, such as hardening banks with riprap or concrete, may permanently eliminate habitat. Impervious cover can be minimized through identification of the smallest possible land area that can be practically impacted or disturbed during site development. Reducing impervious surfaces retains the permeability of the project site, allowing natural processes to filter and reduce sources of pollution.

Projects can incorporate SD-3 by implementing the following planning and design phase techniques as applicable and practicable:

• Decrease building footprint through (the design of compact and taller structures when allowed by local zoning and design standards and provided public safety is not compromised.
• Construct walkways, trails, patios, overflow parking lots, alleys and other low-traffic areas with permeable surfaces.
• Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and alternative transportation (e.g. pedestrians, bikes) are not compromised.
• Consider the implementation of shared parking lots and driveways where possible.
• Landscaped area in the center of a cul-de-sac can reduce impervious area depending on configuration. Design of a landscaped cul-de-sac must be coordinated with fire department personnel to accommodate turning radii and other operational needs.
• Design smaller parking lots with fewer stalls, smaller stalls, more efficient lanes.
• Design indoor or underground parking.
• Minimize the use of impervious surfaces in the landscape design.

DISCUSSION:
This project is the construction of a single family home on a previously developed home site. The proposed project will minimize the impervious area by 395 square feet or 3% increase, compared to the existing development. The limited impervious area and permeable pavers are used in paths of travel and around the residence to minimize the use of impervious surfaces in the landscape design. Additionally, the overall footprint is kept to a minimum to not impact the rear hillside.

SD-4: Minimize soil compaction
• Minimize soil compaction in landscaped areas

The upper soil layers contain organic material, soil biota, and a configuration favorable for storing and slowly conveying storm water down gradient. By protecting native soils and vegetation in appropriate areas during the clearing and grading phase of development the site can retain some of its existing beneficial hydrologic function. Soil compaction resulting from the movement of heavy construction equipment can reduce soil infiltration rates. It is important to recognize that areas adjacent to and under building foundations, roads and manufactured slopes must be compacted with minimum soil density requirements in compliance with local building and grading ordinances.

Projects can incorporate SD-4 by implementing the following planning and design phase techniques as applicable and practicable:

• Avoid disturbance in planned green space and proposed landscaped areas where feasible. These areas that are planned for retaining their beneficial hydrological function should be protected during the grading/construction phase so that vehicles and construction equipment do not intrude and inadvertently compact the area.
• In areas planned for landscaping where compaction could not be avoided, re-till the soil surface to allow for better infiltration capacity. Soil amendments are recommended and

may be necessary to increase permeability and organic content. Soil stability, density requirements, and other geotechnical considerations associated with soil compaction must be reviewed by a qualified landscape architect or licensed geotechnical, civil or other professional engineer.

DISCUSSION:
The proposed irrigation and landscape design is done by a registered professional and will be submitted to the City of San Diego to comply with Municipal Code. It shall include flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. Soil will be compacted to maximize the infiltration of storm water.

SD-5: Disperse impervious areas
Disconnect impervious surfaces through disturbed pervious areas

Design and construct landscaped or other pervious areas to effectively receive and infiltrate, retain and/or treat runoff from impervious areas prior to discharging to the MS4

Impervious area dispersion (dispersion) refers to the practice of essentially disconnecting impervious areas from directly draining to the storm drain system by routing runoff from impervious areas such as rooftops, walkways, and driveways onto the surface of adjacent pervious areas. The intent is to slow runoff discharges, and reduce volumes while achieving incidental treatment. Volume reduction from dispersion is dependent on the infiltration characteristics of the pervious area and the amount of impervious area draining to the pervious area. Treatment is achieved through filtration, shallow sedimentation, sorption, infiltration, evapotranspiration, biochemical processes and plant uptake.
The effects of imperviousness can be mitigated by disconnecting impervious areas from the drainage system and by encouraging detention and retention of runoff near the point where it is generated. Detention and retention of runoff reduces peak flows and volumes and allows pollutants to settle out or adhere to soils before they can be transported downstream. Disconnection practices may be applied in almost any location, but impervious surfaces must discharge into a suitable receiving area for the practices to be effective. Information gathered during the site assessment will help determine appropriate receiving areas.
Project designs should direct runoff from impervious areas to adjacent landscaping areas that have higher potential for infiltration and surface water storage. This will limit the amount of runoff generated, and therefore the size of the mitigation BMPs downstream. The design, including consideration of slopes and soils, must reflect a reasonable expectation that runoff will soak into the soil and produce no runoff of the DCV. On hillside sites, drainage from upper areas may be collected in conventional catch basins and piped to landscaped areas that have higher potential for infiltration. Or use low retaining walls to create terraces that can accommodate BMPs.

Projects can incorporate SD-5 by implementing the following planning and design phase techniques as applicable and practicable:
• Implement design criteria and considerations listed in impervious area dispersion fact sheet (SD-5) presented in Appendix E.
• Drain rooftops into adjacent landscape areas.
• Drain impervious parking lots, sidewalks, walkways, trails, and patios into adjacent landscape areas.
• Reduce or eliminate curb and gutters from roadway sections, thus allowing roadway runoff to drain to adjacent pervious areas.
• Replace curbs and gutters with roadside vegetated swales and direct runoff from the paved street or parking areas to adjacent LID facilities. Such an approach for alternative design can reduce the overall capital cost of the site development while improving the storm water quantity and quality issues and the site's aesthetics.
• Plan site layout and grading to allow for runoff from impervious surfaces to be directed into distributed permeable areas such as turf, landscaped or permeable recreational areas, medians, parking islands, planter boxes, etc.
• Detain and retain runoff throughout the site. On flatter sites, landscaped areas can be interspersed among the buildings and pavement areas. On hillside sites, drainage from upper areas may be collected in conventional catch basins and conveyed to landscaped areas in lower areas of the site.
• Pervious area that receives run on from impervious surfaces shall have a minimum width of 10 feet and a maximum slope of 5%.

DISCUSSION:
This project is the construction of a single family home on a previously developed home site. The proposed project will minimize the impervious area by 395 square feet or 3% increase, compared to the existing development. Landscape areas and landscape pavers are dispersed between impervious areas to allow runoff drainage towards pervious area before it heads downstream. The site plan is designed to distribute permeable areas to catch run-on from impervious surfaces to break up impervious areas onsite.

SD-6: Collect runoff

• Use small collection strategies located at, or as close to as possible to the sources (i.e. the point where storm water initially meets the ground) to minimize the transport of runoff and pollutants to the MS4 and receiving waters
• Use permeable material for projects with low traffic areas and appropriate soil conditions
Distributed control of storm water runoff from the site can be accomplished by applying small collection techniques (e.g. green roofs), or integrated management practices, on small sub-catchments or on residential lots. Small collection techniques foster opportunities to maintain the natural hydrology provide a much greater range of control practices. Integration of storm water management into landscape design and natural features of the site, reduce site development and long-term maintenance costs, and provide redundancy if one technique fails. On flatter sites, it typically works best to

intersperse landscaped areas and integrate small scale retention practices among the buildings and paving. Permeable pavements contain small voids that allow water to pass through to a gravel base. They come in a variety of forms; they may be a modular paving system (concrete pavers, grass-pave, or gravel-pave) or poured in place pavement (porous concrete, permeable asphalt). Project applicants should identify locations where permeable pavements could be substituted for impervious concrete or asphalt paving. The O&M of the site must ensure that permeable pavements will not be sealed in the future. In areas where infiltration is not appropriate, permeable paving systems can be fitted with an under drain to allow filtration, storage, and evaporation, prior to drainage into the storm drain system.
Projects can incorporate SD-6 by implementing the following planning and design phase techniques as applicable and practicable:
• Implementing distributed small collection techniques to collect and retain runoff
• Installing permeable pavements (see SD-6B in Appendix E)

DISCUSSION:
This project is the construction of a single family home on a previously developed home site. Permeable landscape pavers in the design allow for implementation of small collection techniques. Landscaped areas around the home, patios, and pool allow for the collection and retention of runoff and nuisance water.

SD-7: Landscape with native or drought tolerant species
All development projects are required to select a landscape design and plant palette that minimizes required resources (irrigation, fertilizers and pesticides) and pollutants generated from landscape areas. Native plants require less fertilizers and pesticides because they are already adapted to the rainfall patterns and soils conditions. Plants should be selected to be drought tolerant and not require watering after establishment (2 to 3 years). Watering should only be required during prolonged dry periods after plants are established. Final selection of plant material needs to be made by a landscape architect experienced with LID techniques. Microclimates vary significantly throughout the region and consulting local municipal resources will help to select plant material suitable for a specific geographic location.
Projects can incorporate SD-7 by landscaping with native and drought tolerant species. Recommended plant list is included in Appendix E (Fact Sheet PL).

DISCUSSION:
This project will be landscaped with native and drought tolerant species.

2.2 Buffer Measures

No buffer measures are proposed for the project site. The site is located outside of the 100-year floodplain.

2.3 BMP Maintenance

The onsite landscape BMP areas are to be maintained as necessary by the property owner. The property owner is to preserve existing vegetation and maintain stabilizing and planter vegetation in order to reduce the potential for onsite erosion. Stabilizing vegetation must be installed, irrigated and established prior to October 1. If stabilizing vegetation is not established by October 1, physical stabilization in the form of silt fences, gravel bags, or fiber rolls must be implemented to prevent erosion until stabilizing vegetation is established. Onsite BMP's are not to be modified without permission from the City of San Diego.

MAINTENANCE TASKS

Task	Frequency	Maintenance Notes
Watering	Minimal, soil saturation sensitive irrigation per the landscape and irrigation plans.	Moisture sensing devices must be maintained in good working order. Irrigation settings must be checked periodically to ensure plant health.
Fertilization	2 time / year	
Remove and Replace Dead Plants	2 time / year	
Miscellaneous Upkeep	12 times / year	

APPENDIX A

STORMWATER APPLICABILITY CHECKLIST

City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM
DS-560
OCTOBER 2016

Project Address: 1834 SPINDRIFT DR.

Project Number *(for City Use Only)*:

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)[1] , which is administered by the State Water Resources Control Board.

For all projects complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

☐ Yes; SWPPP required, skip questions 2-4 ☒ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and contact with storm water runoff?

☒ Yes; WPCP required, skip 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

☐ Yes; WPCP required, skip 4 ☒ No; next question

4. Does the project only include the following Permit types listed below?

- Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
- Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
- Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

☐ Yes; no document required

Check one of the boxes below, and continue to PART B:

☐ If you checked "Yes" for question 1, **a SWPPP is REQUIRED. Continue to PART B**

☒ If you checked "No" for question 1, and checked "Yes" for question 2 or 3, **a WPCP is REQUIRED.** If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4 PART B **does not apply and no document is required. Continue to Section 2.**

1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

PART B: Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☒ **ASBS**

a. Projects located in the ASBS watershed.

2. ☐ **High Priority**

a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.

b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.

3. ☐ **Medium Priority**

a. Projects 1 acre or more but not subject to an ASBS or high priority designation.

b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.

4. ☐ **Low Priority**

a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the Storm Water Standards Manual.

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1.	Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water?	☐ Yes ☒ No
2.	Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?	☐ Yes ☒ No
3.	Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair).	☐ Yes ☒ No

Clear Page 2

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If "yes" was checked for any questions in Part D, continue to Part F and check the box labeled "PDP Exempt."

If "no" was checked for all questions in Part D, continue to Part E.

1. **Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:**
   - **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
   - **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
   - **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?**

   ☐ Yes; PDP exempt requirements apply ☒ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City's Storm Water Standards Manual?

   ☐ Yes; PDP exempt requirements apply ☒ No; project not exempt.

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If "yes" is checked for any number in PART E, continue to PART F and check the box labeled "Priority Development Project".

If "no" is checked for every number in PART E, continue to PART F and check the box labeled "Standard Development Project".

1. **New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ Yes ☒ No
2. **Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces**. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ Yes ☒ No
3. **New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface. ☐ Yes ☒ No
4. **New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater. ☐ Yes ☒ No
5. **New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).** ☐ Yes ☒ No
6. **New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site). ☐ Yes ☒ No

Clear Page 3

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ Yes ☒ No

8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☒ No

9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. ☐ Yes ☒ No

10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces of if they sheet flow to surrounding pervious surfaces. ☐ Yes ☒ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1. The project is **NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS**. ☐
2. The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance. ☒
3. The project is **PDP EXEMPT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance. ☐
4. The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control, and structural pollutant control BMP requirements apply. See the Storm Water Standards Manual for guidance on determining if project requires a hydromodification plan management ☐

JASON SANTOS	PROJECT ENGINEER
Name of Owner or Agent *(Please Print)*	Title
Jason Santos	01/15/2018
Signature	Date

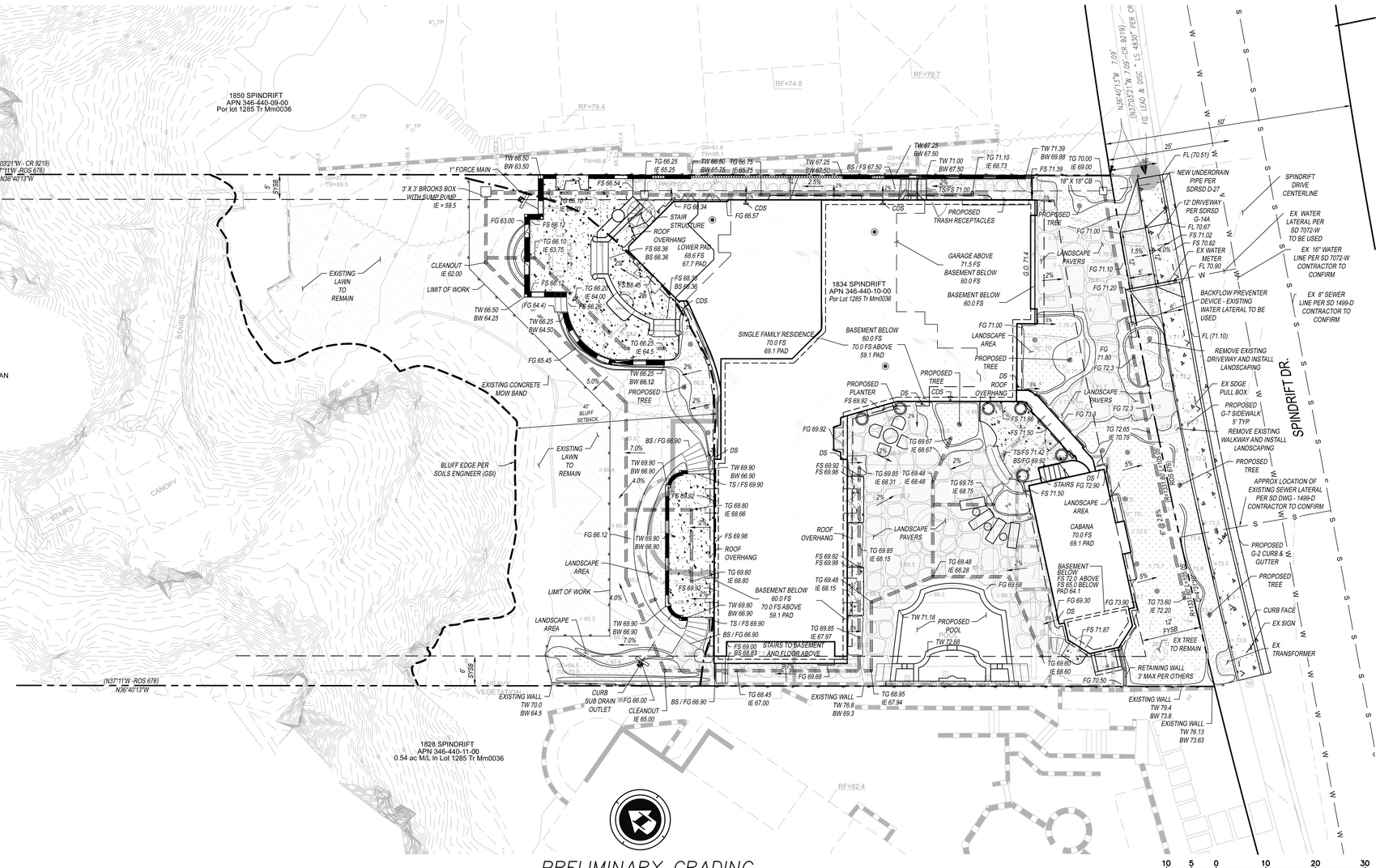
Clear Page 4

Clear Form

APPENDIX B

ENGINEERED CIVIL SITE PLAN

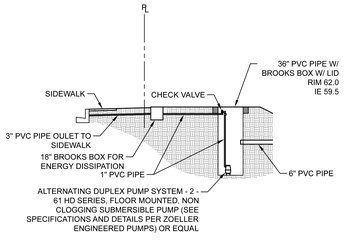
PRELIMINARY GRADING PLAN
1834 SPINDRIFT DR.
LA JOLLA, CA 92037



PRELIMINARY GRADING PLAN

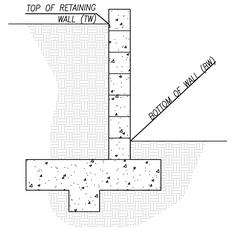
SCALE: 1" = 10'

GRAPHIC SCALE IN FEET (10 5 0 10 20 30)



SUMP PUMP DETAIL

NOT TO SCALE



TYPICAL WALL ELEVATION LOCATIONS SHOWN ON PLAN

NOT TO SCALE

SITE INFORMATION

OWNER:	CASA EL MIRADOR LLC
ADDRESS:	3580 CARMEL MTN. RD #460
APN:	346-440-10
AREA:	23,700 SF (0.54 AC)

GRADING TABULATIONS (OUTSIDE BLDG. FOOTPRINT)

TOTAL AREA TO BE GRADED:	13,000 SF
AMOUNT OF CUT:	8 CUBIC YARDS
MAXIMUM DEPTH OF CUT OUTSIDE OF THE BUILDING:	2 FEET
AMOUNT OF FILL:	88 CUBIC YARDS
MAXIMUM DEPTH OF FILL OUTSIDE OF THE BUILDING:	3 FEET
AMOUNT OF IMPORT SOIL:	80 CUBIC YARDS

GRADING TABULATIONS (WITHIN BLDG. FOOTPRINT)

REMEDIAL GRADING:	1,456 CUBIC YARDS
MAXIMUM DEPTH OF REMEDIAL GRADING:	5.5-9 FEET PER SOILS ENGINEER
AMOUNT OF CUT:	1,436 CUBIC YARDS
MAXIMUM DEPTH OF CUT WITHIN BUILDING FOOTPRINT:	11.1 FEET (INCLUDES BASEMENT)
AMOUNT OF FILL:	172 CUBIC YARDS
MAXIMUM DEPTH OF FILL WITHIN BUILDING FOOTPRINT:	3 FEET

LEGAL DESCRIPTION

LOT 40, LA JOLLA VISTA, IN THE CITY OF SAN DIEGO, COUNTRY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 1762, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, AUGUST 1, 1923.

TOPOGRAPHY

PASCO LARET SUITER & ASSOCIATES
535 N. COAST HWY 101, SUITE A
SOLANA BEACH, CA 92075
858-259-8212
DATE: JUNE 21, 2017

BENCHMARK

ELEVATIONS SHOWN HEREON ARE BASED ON CITY OF SAN DIEGO VERTICAL CONTROL BOOK, BRASS PLUG IN CURB ON NORTHERLY CORNER OF VIKING WAY AND TORREY PINES ROAD. ELEV. 101.766, NGVD 29 DATUM.

LEGEND

- PROPOSED SITE RETAINING WALL
- PROPOSED SITE SCREEN WALL
- BUILDING RETAINING WALL
- EXISTING RETAINING WALL
- RECESSED LANDSCAPE PLANTER FOR STORMWATER TREATMENT
- AREA DRAIN INLET AND GRATE
- CLEANOUT
- PVC DRAIN PIPE (SIZE AND SLOPE PER PLAN)
- LIMIT OF WORK
- ROOF DOWNSPOUT (CONCRETE SPLASH PAD TO BE INSTALLED UNDER ALL DOWNSPOUTS; RUNOFF TO FLOW TO PROPOSED AREA DRAINS) — DS (DOWNSPOUT), CDS (CONCEALED DOWNSPOUT)

ABBREVIATIONS

BW	BOTTOM OF WALL ELEVATION
BS	BOTTOM OF STAIR ELEVATION
CB	CATCH BASIN
EX	EXISTING
FF	FINISH FLOOR ELEVATION
FG	FINISH GRADE ELEVATION
FS	FINISH SURFACE ELEVATION
IE	INVERT ELEVATION
TG	TOP OF GRATE ELEVATION
TS	TOP OF STAIR ELEVATION
TW	TOP OF WALL ELEVATION
TRW	TOP OF RETAINING WALL ELEVATION
WL	WATER LEVEL ELEVATION

NOTES

1. STORM DRAIN INLET LOCATED AT THE INTERSECTION OF SPINDRIFT DR AND ROSELAND DR, PER SAN DIEGO DRAWING 1381-D AND 9943-D

PREPARED BY:
Name: PASCO LARET SUITER & ASSOC.
525 N. HWY 101, SUITE A
SOLANA BEACH, CA 92075
Phone: (858) 259-8212

Project Address:
1834 SPINDRIFT DR.
LA JOLLA, CA 92037

Project Name:
CASA EL MIRADOR

Sheet Title:
PRELIMINARY GRADING PLAN

Revision 14:	
Revision 13:	
Revision 12:	
Revision 11:	
Revision 10:	
Revision 9:	
Revision 8:	
Revision 7:	
Revision 6:	
Revision 5:	
Revision 4:	
Revision 3:	
Revision 2:	
Revision 1:	APRIL 2018
Original Date:	JANUARY 24, 2018
Sheet:	2 of: 2
DEP#:	

C.2

APPENDIX C

PRELIMINARY HYDROLOGY STUDY

DRAINAGE STUDY

For

El Mirador RESIDENCE
PTS #___854820_____
DWG. _____

APN: 346-440-10
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

Prepared For

Casa El Mirador, LLC
1834 SPINDRIFT DRIVE
LA JOLLA, CALIFORNIA

PREPARED BY:

PASCO LARET SUITER & ASSOCIATES, INC.
535 N. HIGHWAY 101, SUITE A
SOLANA BEACH, CA 92075
(858)259-8212

DATE: 1-15-18
REVISED: JUNE 2018

6-26-18

BRIAN M. ARDOLINO RCE 71651 DATE

PLSA 2718
January 2018

TABLE OF CONTENTS

SECTION

A. INTRODUCTION

The purpose of this report is to analyze the storm water runoff produced from the 100 year storm event of the pre-developed and post-developed condition of the site located at 1834 Spindrift Drive, La Jolla, California.

This drainage study adheres to City of San Diego's Storm Water Standards, dated January 2016, which conforms to the Regional Water Quality Control Board under the Federal Clean Water Act (CWA) section 401 or 404.

Pre-development Conditions

The existing condition of the project site is residential developed land. There is an existing building with concrete/brick patios at the rear of the property. The front of the property (east side) slopes eastward towards Spindrift Drive. The rear of the property (west side) slopes westward towards the pacific ocean in the rear. The property has an existing total gross area of 24,829 sf or 0.57 acre. The drainage area being analyzed is 12,378 sf or 0.28 ac. The total impervious area for the existing condition is estimated to be 6,162 sf. Using the Rational Method the runoff coefficient for the existing site condition is 0.55 (see attached table A-1). The total peak flowrate for the 100 year 6 hour storm event has been calculated to be 0.68 cfs for the existing site condition (see attached calculations).

Post-development Conditions

The proposed grading for this project will be for the construction of a single family residence with an attached garage. The driveway will run along the northeast corner of the site. Also, a pool will be removed and replaced at the rear of the property. The total proposed impervious area within the drainage basin, including roofs and hardscape, has been estimated to be 6,557 sf. Using the Rational Method the runoff coefficient for the proposed site condition is 0.55 (see attached table A-1). The peak flowrate for the 100 year 6 hour storm event has been calculated to be 0.74 cfs for the proposed condition (see attached calculations).

Runoff from the site has been designed to drain in east to west direction, towards the Pacific Ocean similar to that of the existing condition. The site has been designed to minimize impervious area, compaction of soil, and disperse stormwater to landscape areas prior to being collected in conveyance system.

The moment the stormwater is discharged offsite it is conveyed through 600' of city curb and gutter and enters into an 18" RCP through a curb inlet at the intersection of Roseland Dr. and Spindrift Dr. (per City of SD drawing numbers 1381-D/9943-D); ultimately discharging into the Pacific Ocean. The system mimics existing condition and appears to be in good working order to carry the sites proposed stormwater loads. The proposed project follows the source control measures listed in the City of San Diego stormwater manual, chapter4 and appendix and does not propose dredging or fill material in U.S. waters and conforms to CWA per section 401/404.

B. CONCLUSION

Based on the calculations in this report, the proposed development will result in an increase in peak flow rate of 0.06 cfs. The proposed project meets the minimum stormwater treatment requirements as defined by the City of San Diego Storm Water Standards. It is the opinion of Pasco Laret Suiter & Associates that the proposed improvements associated with this project will not result in any additional drainage impacts to the adjacent downstream properties. Furthermore, it will not impact the directly adjacent neighboring properties as the site runoff will remain within the project's boundaries.

Please call if you have any questions.

Sincerely,

Brian M. Ardolino, PE
RCE 71651

METHODOLOGY

Introduction

The following methodology was performed per the City of San Diego Drainage Design Manual.

The hydrologic model used to perform the hydrologic analysis presented in this report utilizes the Ration Method (RM) equation, Q=CIA. The RM formula estimates the peak rate of runoff based on the variables of area, runoff coefficient, and rainfall intensity. Per Section A.1.2 of the City of San Diego Drainage Design Manual the rainfall intensity (I) is interpolated per figure A.1 – Intensity-Duration-Frequency Design Chart per 100 year storm event,

Where:

I = Intensity (in/hr)

D = duration (minutes – use Tc), using Figure A-4 graph – see appendix

Using the Time of Concentration (Tc), which is the time required for a given element of water that originates at the most remote point of the basin being analyzed to reach the point at which the runoff from the basin is being analyzed. The RM equation determines the storm water runoff rate (Q) for a given basin in terms of flow (typically in cubic feet per second (cfs) but sometimes as gallons per minute (gpm)). Per Section A.1.1 of the City of San Diego Drainage Design Manual the RM equation is as follows:

$$Q = CIA$$

Where:

Q= flow (in cfs)

C = runoff coefficient, ratio of rainfall that produces storm water runoff (runoff vs. infiltration/evaporation/absorption/etc)

I = average rainfall intensity for a duration equal to the Tc for the area, in inches per hour.

A = drainage area contributing to the basin in acres.

The RM equation assumes that the storm event being analyzed delivers precipitation to the entire basin uniformly, and therefore the peak discharge rate will occur when a raindrop that falls at the most remote portion of the basin arrives at the point of analysis. The RM also assumes that the fraction of rainfall that becomes runoff or the runoff coefficient C is not affected by the storm intensity, I, or the precipitation zone number.

The table A.1.2 "Runoff Coefficient for Rational Method" was used to determine the "C" value.

The runoff coefficient is dependent only upon land use and soil type and the City of San Diego has developed a table of Runoff Coefficients for Urban Areas to be applied to basin located within the City of San Diego. The table, included at the end of this section, categorizes the land use, the associated development, and the percentage of impervious area.

D. HYDROLOGY CALCULATIONS PRE DEVELOPMENT

Rational Method Parameters

Per Section A.1.2. of the City of San Diego Drainage Design Manual, Table A-1
C= 0.55, for Single Family

Basin Area = 12,378 sf = 0.28 ac
Impervious = 6,162 sf → 50%

Per Section A.1.4 of the City of San Diego Drainage Design Manual

Per Section A.1.3 of the City of San Diego Drainage Design Manual
I= Intensity in/hr, I=4.4 in/hr
Duration (D)= Time of Concentration, Tc

Duration (D)= Time of Concentration, Tc, Per Section A.1.4
$T = [1.8(1.1-C)(L)^{0.5}]/S^{1/3}$,
$T = [1.8(1.1-0.55)(135')^{0.5}]/(5.6)^{1/3}$
T < 5.0 min, therefore 5 min

Q=Peak Runoff, Q=C*I*A (cfs)
Q_{100}=0.55 * 4.4 in/hr * 0.28 acres
Q_{100}=0.68 cfs

E. HYDROLOGY CALCULATIONS POST DEVELOPMENT

Rational Method Parameters

Per Section A.1.2. of the City of San Diego Drainage Design Manual, Table A-1
Runoff Coefficient C=0.55

Basin Area = 12,882 sf = 0.30 ac
Impervious = 6,557 sf → 51%

Per Section A.1.3 of the City of San Diego Drainage Design Manual
I= Intensity in/hr, I= 4.4 in/hr
Duration (D)= Time of Concentration, Tc

Duration (D)= Time of Concentration, Tc, Per Section A.1.4.
$T = [1.8(1.1-C)(L)^{0.5}]/S^{1/3}$,
$T = [1.8(1.1-0.55)(199')^{0.5}]/(5.1)^{1/3}$
T < 5 min

Q=Peak Runoff, Q=C*I*A (cfs)
Q_{100}= 0.55 * 4.4 in/hr * 0.30 acres
Q_{100}= 0.74 cfs

F. APPENDIX

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C)
	Soil Type [1]
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than ½ acre)	0.45
Commercial [2]	
80% Impervious	0.85
Industrial [2]	
90% Impervious	0.95

Note:
[1] Type D soil to be used for all areas.
[2] Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%
Tabulated imperviousness = 80%
Revised C = (50/80) x 0.85 = 0.53

The values in Table A–1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the T_C for a selected storm frequency. Once a particular storm frequency has been selected for design and a T_C calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).

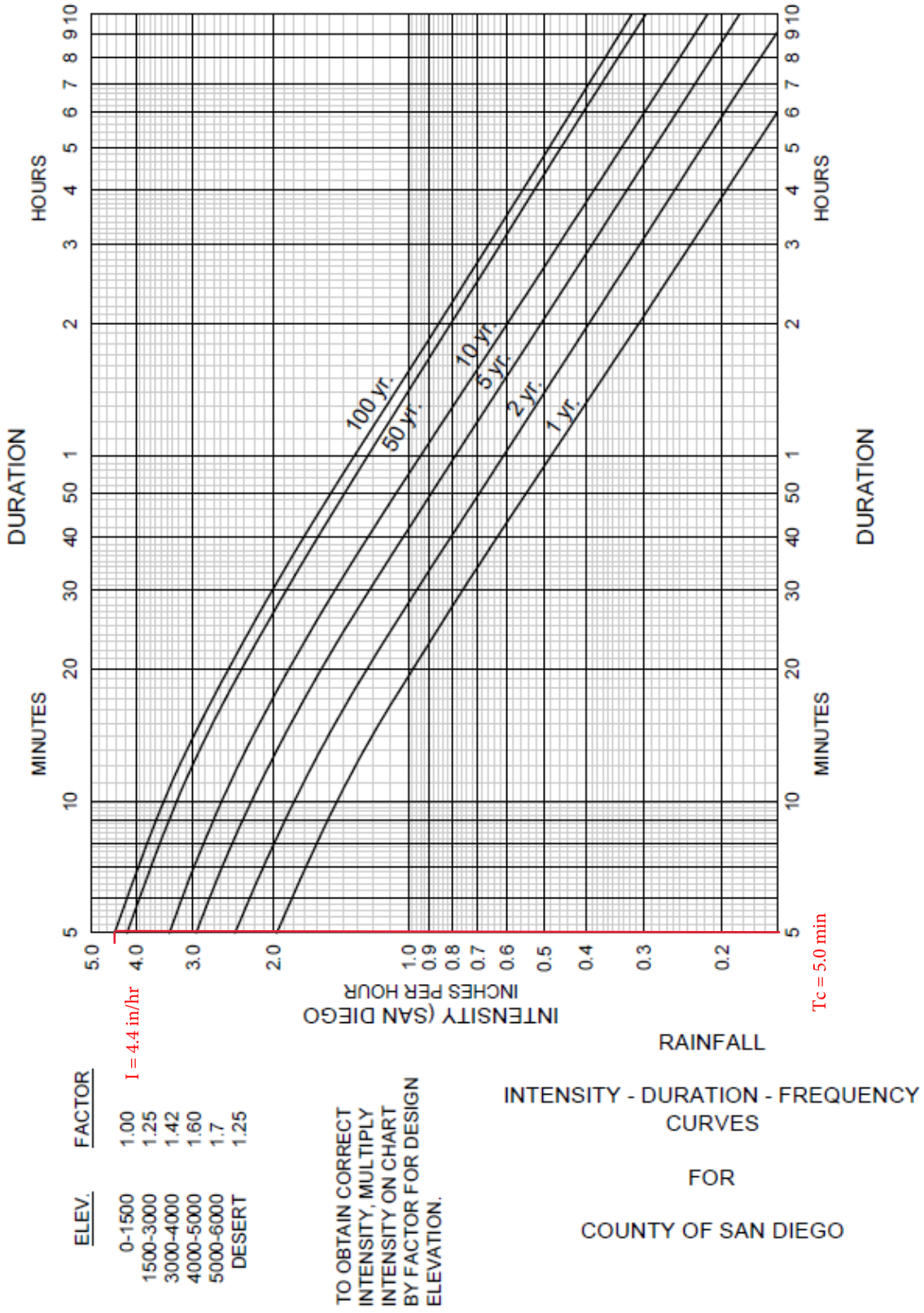


Figure A-1. Intensity-Duration-Frequency Design Chart

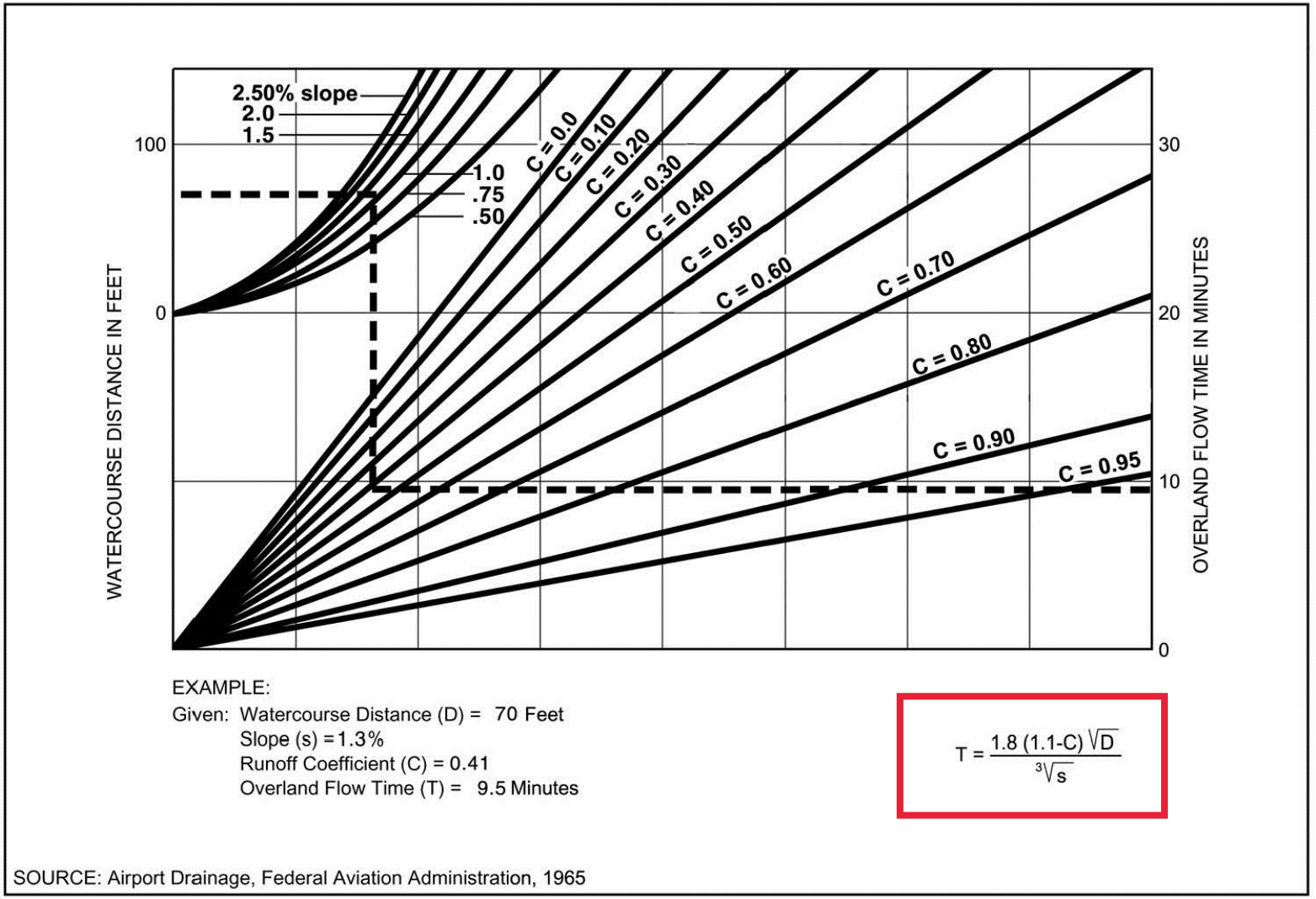
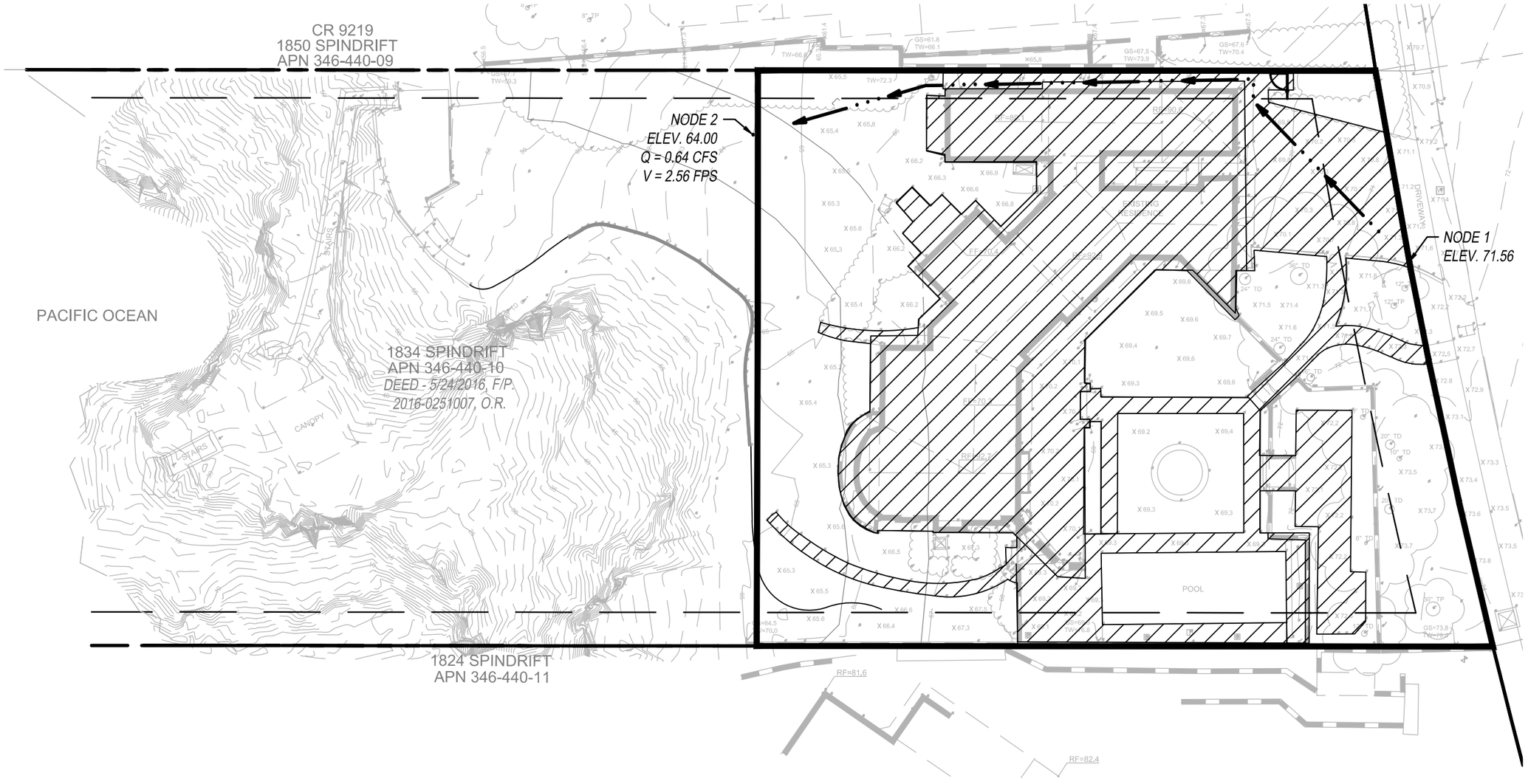


Figure A-4. Rational Formula – Overland Time of Flow Nomograph

Note: Use formula for watercourse distances in excess of 100 feet.



LEGEND

IMPERVIOUS AREA

BASIN BOUNDARY

FLOWLINE

PRE-DEVELOPMENT HYDROLOGY MAP

EL MIRADOR RESIDENCE

1834 SPINDRIFT DRIVE

SCALE: 1" = 20'

DATE: OCTOBER 30, 2017

SHEET 1 OF 1

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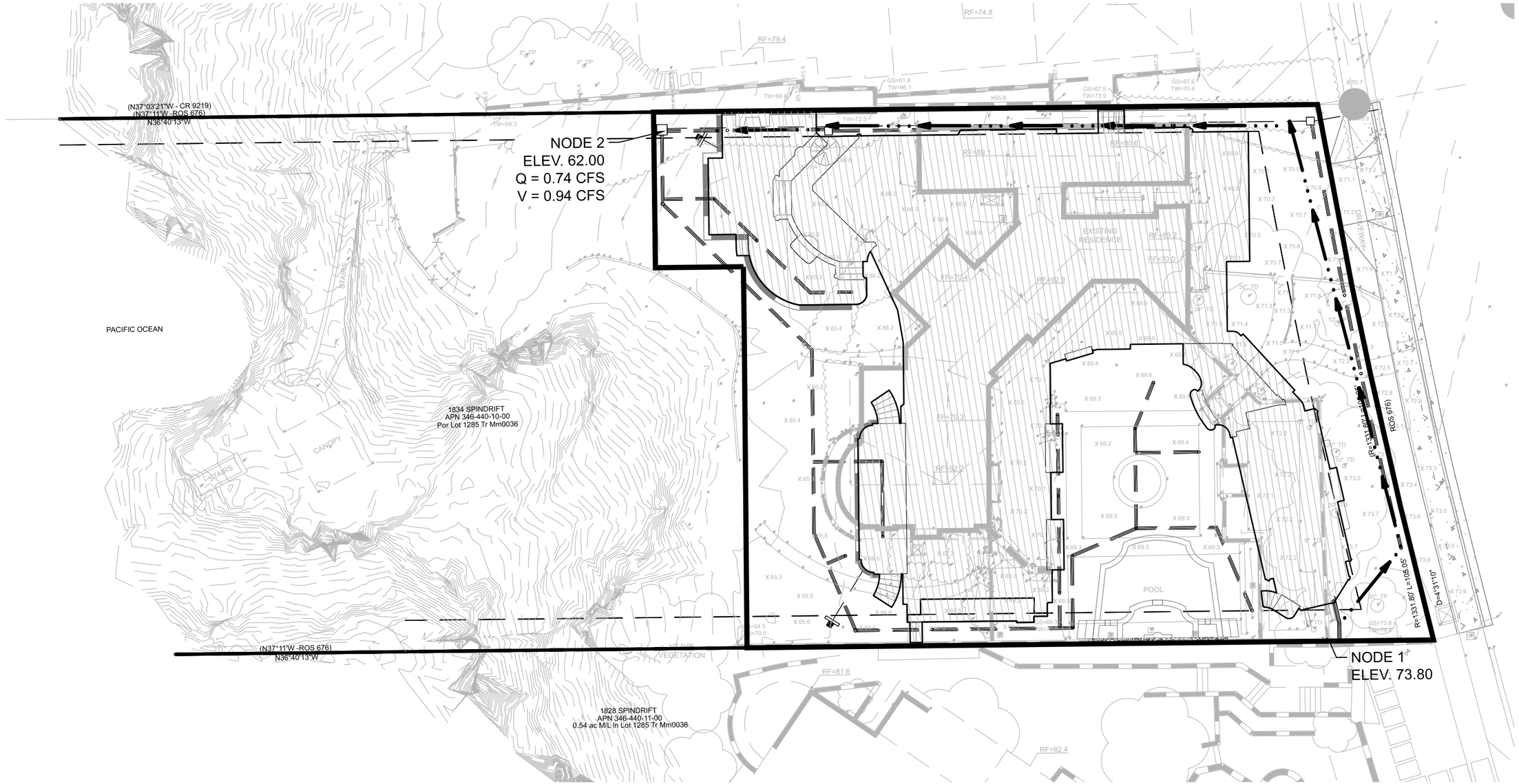

LEGEND

IMPERVIOUS AREA

BASIN BOUNDARY

FLOWLINE

POST–DEVELOPMENT HYDROLOGY MAP

EL MIRADOR RESIDENCE

1834 SPINDRIFT DRIVE

SCALE: 1" = 20'

DATE: OCTOBER 30, 2017

REV: APRIL 19, 2018

SHEET 1 OF 1

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