Riverwalk Redevelopment Project Archaeological Research and Data Recovery Program, City of San Diego, California

October 2020

Prepared for:

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ASM Project Number 29470

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TABLE OF CONTENTS

Chapter **Page**

LIST OF MAPS

Page

ABSTRACT

ASM Affiliates, Inc. (ASM) was contracted to prepare an Archaeology Research and Data Recovery Program (ARDRP) work plan for SD Riverwalk LLC for submittal to the City of San Diego for the proposed Riverwalk Redevelopment Project (Project). This ARDRP provides a set of research objectives and methodologies for additional archaeological data recovery at the sites SDI-11767, SDI-12126, and SDI-12220, which were previously evaluated, determined significant, and recommended eligible for listing in the California Register of Historical Resources (CRHR) under City of San Diego guidelines and California Environmental Quality Act (CEQA) criteria. A limited data recovery has been conducted previously at the site of SDI-11767 along the Mission Valley West Light Rail Transit (MVWLRT) (trolley) project corridor. The proposed Project will involve remedial grading of much of the Project footprint, and thus additional portions of SDI-11767 not previously subjected to data recovery will require mitigation through data recovery. SDI-12126 and SDI-12220 have not previously undergone data recovery. The proposed Project will significantly impact those sites as well and thus data recovery is necessary to mitigate the impacts. Archaeological and Native American monitoring is proposed in conjunction with the data recovery plan.

1. INTRODUCTION

ASM Affiliates, Inc. (ASM) has been contracted by SD Riverwalk LLC to prepare an Archaeological Research and Data Recovery Program (ARDRP) for the proposed Riverwalk Redevelopment Project (Project) in the neighborhood of Mission Valley in the city of San Diego, California. The proposed project footprint is intersected by a total of 11 previously recorded sites. Three of the sites, SDI-11767, SDI-12220, and SDI-12126, have been evaluated and determined to be significant cultural resources. One site, SDI-4675, has not yet been evaluated, but only a small portion of the site intersects the Project area and will not be impacted, as it will remain in its current open space condition. There is a potential for future Riverwalk Street "J," to impact the site, but an evaluation of that site will not be conducted as a part of the Riverwalk Project as it falls under an Irrevocable Offers of Dedication (IOD). The remaining sites have been evaluated and were identified as not significant cultural resources under City of San Diego guidelines and CEQA criteria. However, monitoring of these sites during construction grading was recommended due to their proximity to known significant sites and the potential for encountering unanticipated buried significant archaeological deposits. A Class III cultural resources inventory was conducted for the project by Spindrift Archaeological Consulting (Garcia-Herbst 2017). ASM prepared an addendum to that report that included additional information on the sites and updates to the management recommendations.

This ARDRP provides an archaeological research design and details the archaeological methods that are to be employed for archaeological monitoring for the Project and data recovery of known significant resources within the proposed project boundaries. The work will be conducted in compliance with the National Historic Preservation Act (NHPA), the CEQA, and the City's Historical Resources Guidelines and Requirements for mitigation of impacts to significant historical resources. The results of the archaeological monitoring and data recovery will be documented in a subsequent technical report, prepared in accordance with City guidelines.

PROJECT DESCRIPTION

The Riverwalk project proposes an amendment to the existing Levi-Cushman Specific Plan to replace the 195-acre Riverwalk property with the Riverwalk Specific Plan and redevelop the existing golf course as a walkable, transit-centric, and modern live-work-play mixed-use neighborhood that features an expansive River Park along the San Diego River. The mix and quantity of land uses would change from what is approved in the existing Levi-Cushman Specific Plan to include 4,300 multi-family residential dwelling units; 152,000 square feet of commercial retail space; 1,000,000 square feet of office and non-retail commercial; approximately 95 acres of park, open space, and trails; adaptive reuse of the existing golf clubhouse into a community amenity; and a new Green Line Trolley stop within the development. Improvements to surrounding public infrastructure and roadways would be implemented as part of the Riverwalk project, including improvements to the Fashion Valley Road crossing of the San Diego River as a 10- to 15-year storm event crossing. The project would also include a habitat restoration effort on-site to create and/or enhance 25.16 acres of native habitats along the San Diego River, within and adjacent to the MHPA, and setting aside area for establishing a future wetland habitat mitigation bank.

The project would establish IODs for two Community Plan Circulation Element roadways envisioned in the Mission Valley Community Plan Update: future Riverwalk Street "J," which would cross the San Diego River in a north-south direction; and future Riverwalk Street "U," which would travel approximately east-west along the southern project site boundary and connect to future Street "J." Street "J" would be an elevated roadway crossing the river valley. Per the City's Planning Department, these roads are regional facilities with uncertain funding, design, and construction timing. While these improvements would not be constructed as part of the project, the project would grant the City IODs for the required rights-of-way to construct these roads in the future.

This ARDRP was prepared to provide a research design and mitigation measures for known archaeological sites within the proposed project's area of potential effect (APE).

PROJECT PERSONNEL

Implementation of the ARDRP will be the responsibility of the Project Manager (PM), who will oversee compliance that meets all regulatory requirements for cultural resources. Under the direction of the PM, the Principal Investigator (PI) will oversee and coordinate all monitoring and will conduct the data recovery and enforce the measures and protocols provided in the ARDRP.

The following personnel may conduct the archaeological investigation and prepare the final technical report. However, given that the proposed project will be phased over the next 15 years, the envisioned archaeological staff is subject to change:

Mark S. Becker, Ph.D., RPA, the Project Manager, meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61) for historic resources, will coordinate with the City of San Diego, and will be responsible for quality assurance and quality control (QA/QC).

James Daniels, M.A., RPA, the Principal Investigator, meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61) for historic resources and will serve as both Field Director and technical lead for the project.

Jamul Indian Village will provide Native American monitors for the Project and will be present for the duration of data recovery fieldwork and monitoring.

2. CULTURAL BACKGROUND

PREHISTORIC ARCHAEOLOGY

Archaeological investigations in coastal southern California have documented a diverse range of human adaptations extending from the late Pleistocene up to the time of European contact (e.g., Erlandson and Colten 1991; Erlandson and Glassow 1997; Erlandson and Jones 2002; Jones and Klar 2007; Moratto 1984). To describe and discuss this diversity, local investigators have proposed a variety of different chronologies and conceptual categories (periods, horizons, stages, phases, traditions, cultures, peoples, industries, complexes, and patterns), often with confusingly overlapping or vague terminology.

The prehistory of San Diego County is most frequently divided chronologically into three or four major periods. An Early Man stage, perhaps dating back tens of thousands of years, has been proposed. More generally accepted divisions include a Terminal Pleistocene/Early Holocene period (ca. 12,000-6000 B.C.) (Paleo-Indian stage; Clovis and San Dieguito patterns), a Middle/Late Holocene period (ca. 6000 B.C.-A.D. 800) (Archaic stage; La Jolla, Millingstone, or Encinitas pattern), and a Late Prehistoric period (ca. A.D. 800-1769) (Archaic stage; Yuman, Cuyamaca, Patayan, or Hakataya pattern).

Hypothetical Early Man (pre-ca. 12,000 B.C.)

The antiquity of human occupation in the New World has been the subject of considerable interest and debate for more than a century. At present, the most widely accepted model is that humans first entered portions of the western hemisphere lying to the south of Alaska between about 15,000 and 12,000 B.C., either along the Pacific coastline or through an ice-free corridor between the retreating Cordilleran and Laurentide segments of the continental glacier in Canada, or along both routes. While there is no generally accepted evidence of human occupation in coastal southern California prior to about 11,000 B.C., ages estimated at 48,000 years and even earlier sometimes have been reported (e.g., Bada et al. 1974; Carter 1980). However, despite intense interest and the long history of research, no widely accepted evidence of human occupation of North America dating prior to about 12,000 B.C. has emerged.

Local claims for Early Man discoveries have generally been based either on the apparent crudeness of the lithic assemblages that were encountered or on the finds' apparent Pleistocene geological contexts (Carter 1957, 1980; Minshall 1976, 1989; Reeves et al. 1986). The amino acid racemization technique was used in the 1970s and early 1980s to assign Pleistocene ages to several coastal San Diego sites (Bada et al. 1974), but the technique's findings have been discredited by more recent accelerator mass spectrometry (AMS) radiocarbon dating (Taylor et al. 1985).

Terminal Pleistocene/Early Holocene Period (ca. 12,000-6000 B.C.)

The earliest chronologically distinctive archaeological pattern recognized in most of North America is the Clovis pattern. Dated to around 11,500 B.C., Clovis assemblages are distinguished by fluted projectile points and other large bifaces, as well as extinct large mammal remains. At least three isolated fluted points have been reported within San Diego County, but their occurrence is very sparse, and their dating and contexts are uncertain (Davis and Shutler 1969; Kline and Kline 2007; Rondeau et al. 2007).

The most widely recognized archaeological pattern within this period is termed San Dieguito and has been dated from at least as early as 8500 B.C. to perhaps around 6000 B.C. (Rogers 1966; Warren 1966; Warren et al. 2008). Proposed characteristics to distinguish San Dieguito flaked lithic assemblages include large projectile points (Lake Mojave, Silver Lake, and other, less diagnostic forms), bifaces, crescents, scraper planes, scrapers, hammers, and choppers. The San Dieguito technology involved well-controlled percussion flaking and some pressure flaking.

Malcolm Rogers (1966) suggested that three successive phases of the San Dieguito pattern (San Dieguito I, II, and III) could be distinguished in southern California, based on evolving aspects of lithic technology. However, subsequent investigators have generally not been able to confirm such changes, and the phases are not now generally accepted.

A key issue has concerned ground stone, which was originally suggested as having been absent from San Dieguito components but has subsequently been recognized as occurring infrequently within them. It was initially suggested that San Dieguito components, like other Paleo-Indian manifestations, represented the products of highly mobile groups that were organized as small bands and focused on the hunting of large game. However, in the absence of supporting faunal evidence, this interpretation has increasingly been called into question, and it has been suggested that the San Dieguito pattern represented a more generalized, Archaic-stage lifeway, rather than a true Paleo-Indian adaptation.

A vigorous debate has continued for several decades concerning the relationship between the San Dieguito pattern and the La Jolla pattern that succeeded it and that may have also been contemporaneous with or even antecedent to it (e.g., Gallegos 1987a; Warren et al. 2008). The initial view was that San Dieguito and La Jolla represented the products of distinct ethnic groups and/or cultural traditions (e.g., Rogers 1945; Warren 1967, 1968). However, as early Holocene radiocarbon dates have been obtained for site components with apparent La Jolla characteristics (shell middens, milling tools, and simple cobble-based flaked lithic technology), an alternative interpretation has gained some favor: that the San Dieguito pattern represented a functional pose related in particular to the production of bifaces, and that it represents activities by same people who were responsible for the La Jolla pattern (e.g., Bull 1987; Hanna 1983).

Middle/Late Holocene Period (ca. 6000 B.C.-A.D. 800)

Archaeological evidence from this period in the coastal San Diego region has been characterized as belonging to the Archaic stage, Millingstone horizon, Encinitas tradition, or La Jolla pattern (Moratto 1984; Rogers 1945; Wallace 1955; Warren 1968; Warren et al. 2008). Adaptations during this period apparently emphasized gathering, in particular the harvesting of shellfish and hard plant seeds, rather than hunting. Distinctive characteristics of the La Jolla pattern include extensive shell middens, portable ground stone metates and manos, crudely flaked cobble tools, occasional large expanding-stemmed projectile points (Pinto and Elko forms) and flexed human burials.

Investigators have called attention to the apparent stability and conservatism of the La Jolla pattern throughout this long period, as contrasted with less conservative patterns observed elsewhere in coastal southern California (Hale 2009; Sutton 2010; Sutton and Gardner 2010; Warren 1968). However, distinct chronological phases within the pattern have also been suggested, based on changes in the flaked lithic and ground stone technologies, the shellfish species targeted, and burial practices (Harding 1951; Moriarty 1966; Rogers 1945; Shumway et al. 1961; Sutton and Gardner 2010; Warren 1964; Warren et al. 2008). The decline of this adaptation has sometimes been linked to the siltation of coastal lagoons along the central San Diego County coastline (e.g. Gallegos 1987b; Warren 1964).

Late Prehistoric Period (ca. A.D. 800-1769)

A Late Prehistoric period in coastal San Diego County has been distinguished, primarily on the basis of three major innovations: the use of small projectile points (Desert Side-notched, Cottonwood triangular, and Dos Cabezas forms), associated with the adoption of the bow and arrow in place of the atlatl as a primary hunting tool and weapon; brownware pottery, presumably supplementing the continued use of basketry and other containers; and the practice of human cremation in place of inhumation. Uncertainty remains concerning the exact timing of these innovations, and whether they appeared simultaneously or sequentially (e.g., Griset 1996; Laylander 2011; Yohe 1992).

Labels applied to the archaeological manifestations of this period include Yuman, Cuyamaca, Patayan, and Hakataya (Rogers 1945; True 1970; Schroeder 1978; Waters 1982). These remains have generally been associated with the ethnohistorically known Kumeyaay (Diegueño, Tipai, Ipai) and have been seen as perhaps marking the initial local appearance of that group in a migration from the lower Colorado River region. Traits characterizing the Late Prehistoric period include a shift toward greater use of inland rather than coastal settlement locations, greater reliance on acorns as an abundant but labor-expensive food resource, a greater emphasis on hunting of both large and small game (particularly deer and rabbits), a greater amount of interregional exchange (seen notably in more use of obsidian), more elaboration of nonutilitarian culture (manifested in more frequent use of shell beads, decorated pottery and, in areas farther inland, the distinctive Rancho Bernardo and La Rumorosa rock art styles), and possibly denser regional populations (Christenson 1990; McDonald and Eighmey 2008). Whether settlement became more or less sedentary during this period, as compared with the preceding period, is uncertain.

Ethnographic Evidence

In ethnohistoric times, central and southern San Diego County was occupied by speakers of a Yuman language or languages, variously referred to as Kumeyaay, Diegueño, Tipai, and Ipai. Kumeyaay territory extended from south of Agua Hedionda Lagoon, Escondido, and Lake Henshaw to some distance south of Ensenada in northern Baja California, and east nearly as far as the lower Colorado River. Linguistic evidence (e.g., Golla 2007; Laylander 2010) suggests that the Yuman-Cochimí families of languages may have been affiliated with a widespread Hokan phylum, represented by scattered languages and families around the periphery of California and extending south into Mexico, and probably dating back at least as far as the early Holocene. Subsequent separations within the Yuman-Cochimí group may represent territorial expansions or migrations: the separation of Yuman and central Baja California's Cochimí (ca. 2000 B.C.?); the differentiation of Core Yuman from Kiliwa (ca. 1000 B.C.?); of Core Yuman into Delta-California, River, and Pai branches (ca. A.D. 1?); of Delta-California Yuman into Diegueño and Cocopa (ca. A.D. 500?); and of Diegueño into Kumeyaay proper, Ipai, Tipai, and Ku'ahl languages or dialects (ca. post-A.D. 1000?). The boundary between Ipai and Kumeyaay proper (or Tipai) languages or dialects on the San Diego coast has generally been put just south of the San Diego River (Luomala 1978).

While Kumeyaay cultural patterns, as recorded subsequent to European contact, cannot necessarily be equated with Late Prehistoric patterns, at a minimum they provide indispensable clues to cultural elements that would be difficult or impossible to extract unaided from the archaeological record alone. A few important ethnohistoric accounts are available from Hispanic-period explorers and travelers, Spanish administrators, and Franciscan missionaries (Fages 1937; Geiger and Meighan 1976; Laylander 2000). Many accounts by ethnographers, primarily recorded during the early twentieth century, are available (Almstedt 1982; Drucker 1937, 1941; Gifford 1918, 1931; Hicks 1963; Hohenthal 2001; Kroeber 1925; Laylander 2004; Luomala 1978; Shipek 1982, 1991; Spier 1923; Waterman 1910).

The Kumeyaay inhabited a diverse environment that included littoral, valley, foothill, mountain, and desert resource zones. Because of the early incorporation of coastal Kumeyaay into the mission system, most of the available ethnographic information relates to inland groups that lived in the Peninsular Range or the Colorado Desert. There may have been considerable variability among the Kumeyaay in settlement and subsistence strategies and in social organization (Laylander 1991, 1997; Luomala 1978; Spier 1923; but cf. Shipek 1982). Acorns were a key resource, but a wide range of other mineral, plant, and animal resources were exploited, including coastal fish and shellfish (Hedges 1986; Shipek 1991; Wilken 2012). Pre-contact practices of land management and agriculture west of the Colorado Desert have been suggested but not confirmed (Shipek 1993; cf. Laylander 1995). Some degree of residential mobility seems to have been practiced, although its extent and nature (e.g., within patterns of community fission and fusion) may have varied considerably among different communities and settings. The fundamental Kumeyaay social unit above the family was the *šimuł* (patrilineage) and the residential community or band, to the extent that those two units were not identical. Leaders performed ceremonial, advisory, and diplomatic functions, rather than judicial, redistributive, or military ones. There seems to have been no national level of political unity and perhaps little sense of commonality within the language group (but cf. Shipek 1982).

Kumeyaay material culture was effective, but it was not highly elaborated. Structures included houses with excavated floors, ramadas, sweathouses, ceremonial enclosures, and acorn granaries. Hunting equipment included bows and arrows, curved throwing sticks, nets, and snares, as well as nets and hooks of bone and shell for fishing. Processing and storage equipment included a variety of flaked stone tools, milling implements, ceramic vessels, and baskets.

Nonutilitarian culture was not neglected. A range of community ceremonies were performed, with particular emphases placed on making individuals' coming of age and on death and mourning. Oral literature included, in particular, an elaborate creation myth that was shared with other Yuman groups as well as with Takic speakers (Luiseño, Cupeño, Cahuilla, and Serrano) to the north (Kroeber 1925; Laylander 2001; Waterman 1909).

History

European exploration of the San Diego area began in 1542 with the arrival of a maritime expedition under Juan Rodriguez Cabrillo, followed by a similar reconnaissance in 1602 by Sebastián Vizcaíno (Pourade 1960). It is possible that additional brief, unrecorded contacts with the crews of the Manila galleons may have occurred during the following century and a half, and that other influences, such as an awareness of alien technologies or the introduction of diseases, may have reached the region overland from earlier outposts of the Spanish empire in Baja California or Sonora.

The historic period proper did not begin until 1769, when multiple seaborne and overland expeditions under the leadership of the soldier Gaspar de Portolá and the Franciscan missionary Junípero Serra reached the region from Baja California and passed northward along the coastal plain to seek Monterey. In that year, a royal presidio and the Misión San Diego de Alcalá were founded, and the incorporation of local Kumeyaay into the mission system was begun. Shortly after the mission had been moved a short distance to the east from the presidio, a Kumeyaay uprising in 1775 resulted in the burning of the mission and the killing of one of its Franciscan missionaries (Carrico 1997). However, the uprising was soon suppressed.

As Spanish attention was consumed by the Napoleonic wars in Europe, California and its government and missions were increasingly left to their own devices. In 1821, Mexico consummated its independence from Spain, and the region became more open to outside visitors and influences (Pourade 1961). The loyalty to Mexico of the European Franciscans was considered to be in doubt, and private secular interests clamored for a greater share of the region's resources. The missions were secularized by act of the Mexican Congress in 1833. Native Americans released from the San Diego mission returned to their native villages, moved east to areas lying beyond Mexican control, or sought work on ranchos or in the town of San Diego. Numerous large land grants were issued to private owners during the Mexican period, including Otay, La Nación, La Misión de San Diego de Alcalá, Los Peñasquitos, San Dieguito, and Las Encinitas in coastal San Diego County (Pourade 1963).

The conquest and annexation of California by the United States in the Mexican-American War between 1846 and 1848 ushered in many more changes (Pourade 1963, 1964, 1965, 1967, 1977; Pryde 2004). Faced with debts and difficulties in confirming land grants, many Californio families lost their lands to outsiders. Cultural patterns that were brought by immigrants from the eastern U.S. gradually supplanted old Californio customs.

The region experienced cycles of economic and demographic booms and busts, with notable periods of growth in the mid-1880s, during World Wars I and II, and on more sustained basis throughout the postwar decades. Aspects of development included the creation of transportation networks based on port facilities, railroads, highways, and airports; more elaborate systems of water supply and flood control; grazing livestock and growing a changing array of crops; supporting military facilities; limited amounts of manufacturing; and accommodating visitors and retirees. After false starts, San Diego converted itself to a substantial city, and then into a metropolis, with exceptionally wide civic boundaries encompassing such suburbs as Ocean Beach, Pacific Beach, Clairemont, and La Jolla. Other cities were incorporated in the coastal region, including National City (1887), Coronado (1891), Chula Vista (1911), Imperial Beach (1956), Del Mar (1959), Solana Beach (1986), and Encinitas (1986) (Pryde 2004).

Previous Archaeological Investigations

There have been several previous archaeological studies conducted within the proposed Project area, and as mentioned in the introduction, a total of 11 sites have been identified as intersecting the Project boundaries. Sites SDI-11767 and SDI-12220 were evaluated and recommended eligible for listing in the National Register of Historic Places (NRHP) and significant under CEQA and City of San Diego guidelines (Kyle and Gallegos 1995a; Pigniolo 1994; Pigniolo and Huey 1991). A data recovery program was later conducted at SDI-11767 to mitigate impacts to the site in association with the Mission Valley West Light Rail Transit (MVWLRT) Project (Cooley and Mitchell 1996). Site SDI-12126 was tested and determined significant under City of San Diego guidelines and CEQA criteria (Kyle and Gallegos 1995a, 1995b). Sites SDI-11722/H and SDI-11766/H (Pigniolo and Huey 1991); SDI-12127 (Pigniolo 1994); and sites SDI-12128, SDI-12129, SDI-12132, and SDI-12862 (Kyle and Gallegos 1995a) were all tested and identified as not significant cultural resources under City of San Diego guidelines and CEQA criteria.

Based on available site records, SDI-4675 was originally recorded in 1976 by James Moriarty and consisted of prehistoric lithic tools. According to Paul and Greta Ezell (1977) in their historical research to determine the location of ethnohistoric Village of Cosoy, they identified the site as the Charles R. Brown site. The site was recorded along Hotel Circle north of I-8, but the exact site location data is incomplete and the GIS data from the SCIC is incorrect. The site has not been formally evaluated, but only a small portion of the site intersects the Project area and will not likely be impacted as it is in a proposed open space area. Additionally, the purported location of this site is mostly within already developed areas with the southern portion of the site intersecting I-8 and the eastern and western portion of the site are within built environments. The only portion of the site that appears to not be developed is the northeastern corner of the site within the Riverwalk Project area.

As mentioned in the project description, the proposed Riverwalk Project includes IODs that would allow for the future construction of public streets ‘J’ and ‘U’ through the project site. Funding and timing for these roadways are unknown at this time. The future public street ‘J’ would connect Riverwalk Drive in the north and Hotel Circle North in the south of the Project area, which will likely intersect site SDI-4675. Should it be determined that construction of public street ‘J’ will result in ground disturbance of the purported location of SDI-4675, an evaluation of SDI-4675 should be conducted to determine if any portion of the site remains intact, and whether it is significant pursuant to CEQA, City of San Diego regulations, and, if applicable, NHPA.

Four of the previously recorded sites, SDI-11767, SDI-12220, SDI-12128, SDI-11766/H are suggested to represent a single large habitation site (Kyle and Gallegos 1995a). However, the exact limits of these sites were not accurately documented in the available GIS data from the South Coastal Information Center (SCIC), in part due to missing confidential maps from the Kyle and Gallegos (1995a, 1995b) evaluation reports. However, topographic maps from the evaluation work conducted by Ogden Environmental and Gallegos and Associates in the mid-90s available in the archaeological data recovery report on the Mission

Valley West LRT Project provide information on the extent of subsurface cultural deposits associated with these sites, the excavations conducted by both Gallegos and Ogden, and portions of the site and loci boundaries as redefined by Gallegos (Cooley and Mitchell 1996). ASM used the maps in the Ogden report (Cooley and Mitchell 1996, Figures 4-1 and 5-1) to digitize the locations of previous excavations conducted at SDI-11767 and SDI-12220 by both Gallegos and Ogden and the boundaries, as defined by Gallegos, for SDI-11767 Loci 1 and 2 (Map 2.1).

On February 13, 2020, a copy of the confidential appendices for the seven-site evaluation by Kyle and Gallegos (1995a) was located at the San Diego Archaeological Center in Escondido, California. This appendix included the information on the extent of sites SDI-11767, SDI-12220, SDI-12128, SDI-11766/H just as it was reported in the Cooley and Mitchell (1996) report. It also included the defined boundary of SDI-12126 based on the evaluation work conducted by Gallegos & Associates for the Stardust Golf Course Realignment. The boundary as defined is approximately 22,117 m^2, but only an area of approximately 8,816 m^2 is within the Riverwalk Project area. An extension of the SDI-12126 was also identified in 1996 during monitoring of the North Mission Valley Interceptor Sewer Replacement by RECON (Gilmer and Cheever 1997a). However, this portion of the site is outside of the Project APE. The maps available in the confidential appendices were georeferenced and used to create a revised GIS boundary for SDI-12126 (Map 2.2). The confidential report maps were also used to generate a point shapefile for the approximate locations of Gallegos & Associates excavation units. This information will be important for the proposed data recovery.

The Addendum to the Class III Inventory prepared by ASM (Daniels 2018) provides detailed information on the previous studies conducted within the proposed Project boundaries, the results of those studies, and the sites on which they report. The research design and methodologies presented in this ARDRP will be aimed at answering significant regional questions about the prehistory of Mission Valley building on the previous studies and correcting some of the chronological issues associated with the previous studies.

CONFIDENTIAL FIGURE REMOVED

Map 2.1 Locations of previously excavated units and shovel test pits by Ogden and Gallegos and Associates at SDI-11767 and SDI-12220.
Site boundaries on file with the SCIC are in pink. The revised site boundary of SDI-11767 by Kyle and Gallegos (1995a) is the hashed blue line. Locus 1 as defined by Kyle and Gallegos (1995a) is in green, and Locus 2 (also SDI-12220) as defined by Kyle and Gallegos (1995a) is in blue. Data are derived from the reprint of Kyle and Gallegos (1995a) Figure 3-2 in Cooley and Mitchell's (1996) Figure 5-1.

CONFIDENTIAL FIGURE REMOVED

Map 2.2 Locations of previously excavated units and shovel test pits by Gallegos and Associates at SDI-12126. Site boundaries on file with the SCIC are in pink. The revised site boundary of SDI-12126 by Kyle and Gallegos (1995a, 1995b) is the light blue area. The extension of SDI-12126 identified by RICON during the North Mission Valley Interceptor Sewer Replacement (Gilmer and Cheever 1997a) is shown in hatched blue.

3. RESEARCH DESIGN

The objective of the data recovery program is to obtain additional information regarding the prehistoric occupation of the sites evaluated as significant within the proposed Riverwalk Project area, SDI-11767, SDI-12220, and SDI-12126, to contribute to the understanding of the prehistory of the region within the San Diego River Valley or Mission Valley as it is commonly called. The aim of this data recovery program is to address a series of important research questions relevant to the significant sites and specifically to those portions of the sites within the APE that would be subjected to direct impacts by the proposed Project. Current research is typically structured in a way that links anthropologically oriented research issues to the archaeological record. The following discussion embraces this practice and identifies potential questions and appropriate archaeological evidence within a series of broad research themes.

SITE FORMATION PROCESSES

The research potential of an archaeological site is largely dependent on the integrity of cultural deposits. The original characteristics and integrity of a site may be greatly altered by a variety of postdepositional processes (Gross and Robbins-Wade 2008; Schiffer 1987; Waters 1992). Analysis of deposits, preserved surfaces, and features with integrity is of particular importance in identifying vertical and horizontal spatial patterning in the evidence of prehistoric behavior. Formation processes, including alluvial deposition, erosion, bioturbation, and modern disturbance, can considerably affect the integrity of archaeological deposits. Key social factors in site formation include whether occupation was seasonal, annual, or merely transitory, relating to ceremonial activities or travel for resource procurement. The nature of resource processing taking place on site and discard patterns also affect site formation. The proposed data recovery program will need to address and interpret the processes that formed the sites. Particular attention will be paid to the character of postdepositional processes and the extent to which they have affected the integrity of the archaeological deposits.

During the previous excavations at SDI-11767, SDI-12220, and SDI-12126, intact cultural deposits up to 210 cm in depth were identified, with the majority of artifacts being recovered between 50 and 100 cm below surface. At site SDI-12126, geotechnical borings were conducted to a depth of 30 feet (900 cm); bulk sediment material from two of the boreholes closest to the boundaries of SDI-12126 were wet screened for cultural material, and small amounts of shell were noted as deep as 27 feet (800 cm) (Kyle and Gallegos 1995a:3-1). Whether the shell was a present as a result of human activity was indeterminate, as no other artifacts were identified with the deeper deposits of shell. Clay was encountered at a depth of 30 feet, and Kyle and Gallegos (1995a:3-1) suggest that this may represent the surface of the landform around 10,000 years ago at the beginning of the Holocene and the rise in sea level. However, this suggestion may be wrongly informed as the start of the Holocene occurred 11,650 years ago and sea level rise began around 14,000 years ago. It is not clear why Kyle and Gallegos believe the clay to be associated with either event.

Postdepositional processes including modern disturbances associated with agriculture and landscaping have impacted the archaeological deposits as identified in stratigraphic observations during the previous studies within the project area. Kyle and Gallegos (1995a, 1995b) and Cooley and Mitchell (1996) both indicate evidence of bioturbation and stratigraphic mixing as evidenced by historic period artifacts and modern debris mixed with prehistoric deposits in several unit excavations.

At Middle/Late Holocene sites along the southern California coast, Pierce (1992) contended that bioturbation by rodents has over time resulted in the downward motion and sometimes the upward movement of artifacts through deposits, creating cobble clusters and apparent “milling floors.” The effect of this process in Late Prehistoric village sites has not been documented. Careful analysis of the vertical structure of midden deposits and the distribution of large and small artifacts within it could shed light on the degree of bioturbation and the cumulative impacts of the process on site structure.

Research questions relating to site formation processes included the following:

- *What were the natural and cultural processes that led to site formation? Within the project's APE, it is expected that both primary cultural deposits resulting from prehistoric site occupation and secondary deposits resulting from alluvial deposition or other postdepositional disturbances will be encountered.*
- *Are distinct stratified deposits present? Site abandonment and natural processes such as alluvial deposition may have resulted in distinct strata that would aid in temporal control.*
- *To what extent have postdepositional processes compromised the integrity of the deposits? Bioturbation and modern agricultural and landscaping disturbance are expected in the cultural deposits, but the degree to which this has resulted in mixing of strata needed to be further assessed.*
- *Are there intact features and activity areas present? Can horizontal or vertical spatial patterning be discerned?*

In order to address issues relating to natural and cultural processes that led to site formation and postdepositional disturbance, the field archaeologists will record soil composition, color, the presence of cultural materials, soil structure, and the character of contacts between strata. Additionally, spatial analysis of artifactual remains may also help distinguish horizontal patterning between and within archaeological sites.

CHRONOLOGY AND DATING

Chronological issues are of basic importance in most archaeological research strategies, and they provide the foundation for addressing many other research issues, including cultural processes (Binford 1968; Thomas 1979). The precision and accuracy of dating estimates are especially critical since they provide the chronological framework without which many other research topics cannot be addressed. Strong chronological control facilitates the rigorous pursuit of other research issues. Consequently, considerable attention is paid to addressing this issue. Although a basic chronological framework for southern California coastal and inland prehistory already exists, there are substantial gaps in the chronology and many issues with how sites are dated. For instance, increased care must be taken in the selection of datable material. Carbonized seeds will help to avoid old wood effects. All of the previous dates obtained for sites in the proposed project area have been from shell samples. However, the fluctuations through time in the local ^{14}C activity of seawater and determining the effects of these shifts on radiocarbon age estimates is difficult and may results in calibrated date ranges that are not accurate. Dating of carbonized seeds from intact archaeological deposits will provide some much-needed verification for previously reported dates from these sites. Additionally, the dates that have actually been reported in the body of the previous reports have varied between the use of conventional dates, the date adjusted for local reservoir correction, and the intercept of the radiocarbon age with the calibration curve. Very rarely were the actual 1 or 2 sigma calibrated date ranges presented. Efforts to assess these issues across San Diego County for previously dated sites has been addressed by Scharlotta (2015).

A total of five radiocarbon samples recovered from previous archaeological investigations at SDI-11767 have yielded a conventional date range of between 2690 and 2070 BP and a calibrated date range of between cal 360 BC and cal AD 650 (Cooley and Mitchell 1996: BETA-86018, -86019, and -86423; Pigniolo 1994: BETA-69942, and unknown sample number from Pigniolo 1991). These dates place the occupation of the site during a period of supposed transition in the broader region of San Diego County (Meighan 1954; True 1958, 1966, 1970) and at the terminus of the La Jolla Complex as defined by Rogers (1939, 1945).

Just one radiocarbon date is associated with SDI-12220. Pigniolo (1994: BETA 69943) reported a conventional date of 2140 ±60 BP and a 2-sigma calibrated date range of cal AD 340 to 650.

Three radiocarbon dates have been reported for SDI-12126 by Kyle and Gallegos (1995a, 1995b: BETA-79555, -79556, -79557). The conventional dates reported are between 1420 and 1290 BP with a 2-sigma calibrated date range of between cal AD 1055 to 1450. These dates place the occupation of this site at the cusp of the transition to the Late Prehistoric/Kumeyaay Period as discussed by Gallegos (2002) and Reddy (2000). During the tunneling beneath the site for the NMVIS II alignment, a pocket of shell was encountered. A sample of the shell was submitted for radiocarbon dating, and the analysis returned a conventional date of 2510 ±70 B.P and a 2-sigma calibrated date range of cal BC 130 to cal AD 250 (Gilmer and Cheever 1997a: BETA-89539). However, because the exact context of the shell sample is not known, it's difficult to say whether the sample is associated with subsurface archaeological deposits. But, perhaps there is a deeper component of the site that was not identified during the evaluation by Kyle and Gallegos (1995a) that is coeval with the occupation of SDI-11767.

Data recovery within the project APE has the potential to address research questions relating to chronology of several periods for which we have very little information within the San Diego River Valley. There is currently no consensus on the date of the inception of the Late Prehistoric period, nor on the processes by which Late Prehistoric cultural traits reached coastal southern California. Malcolm Rogers's (1945) three chronological divisions—Yuman I (A.D. 900-1050), Yuman II (A.D. 1050-1500), and Yuman III (A.D. 1500-contact)—were developed for the Colorado River valley and were based on regional ceramic types and on the dating of Lake Cahuilla, and they may not apply to coast regions. However, Roger's chronology is no longer widely accepted for the Colorado Desert region. Wallace (1955) dated the beginning of the Late Prehistoric period at ca. A.D. 1000, with a lengthy "intermediate" period preceding it. At the Spindrift site (SDI-39), Moriarty identified components that spanned both the Archaic and Late Prehistoric periods, apparently without a break (Moriarty 1966). Based on his findings, Moriarty postulated the existence of a Preceramic Yuman culture, characterized by an increase in exotic lithic materials and a range of pressure-flaked tools, beginning around 3000 B.P., and the introduction of cremation ca. 2500 B.P. Moriarty's findings have been hotly disputed by Warren and others. Based on the previous excavations at sites SDI-11767, SDI-12126, and SDI-12220, additional data recovery has the potential to address the issue of the inception of the Late Prehistoric period traits, including the introduction of the bow and arrow, ceramics, and cremation. These sites, especially SDI-11767, may also have the potential to refine the chronology of the Late Milling Stone Horizon and La Jolla Complex and the transition to the Yuman Complex.

Based on previous research in the region, several specific research questions could potentially be addressed at these sites. These research questions are concerned with the period of occupation of the sites, long-term continuity in occupation, and the nature of change between cultural periods.

- *Is there additional evidence of a Late Prehistoric period component?*
- *Can the chronological placement of the sites be determined? Is there an older component at SDI-12126, as suggested by the radiocarbon sample from the Gilmer and Cheever (1997a) study during the NMVIR II project?*
- *What kinds of chronometric data can the site provide? How well do they correlate in terms of the age estimates they provide?*
- *Are there data indicating the presence of multiple occupation episodes at the site?*
- *Do marker artifacts appear to fit with temporal patterns recognized in the surrounding region? Are there any unique diagnostic items present?*
- *Can chronometric data from the site help to refine dating schemes in the local region?*

The key data requirement needed to address these issues is the presence of materials for absolute and relative dating. These materials include radiocarbon samples for absolute dating (preferably charcoal, including very small samples for accelerator dating; but marine shell is more commonly available), the recovery of obsidian from identified sources for use in hydration analysis, and the seriation of temporally diagnostic artifacts such as beads, ceramics, and projectile points. Ideally, samples should be recovered from strong contextual associations with well-defined artifact assemblages.

SETTLEMENT ORGANIZATION AND SITE FUNCTION

Prehistoric hunter-gatherers in San Diego probably practiced a variety of mobility and settlement/subsistence strategies. The early periods of occupation in southern California area appear to have been characterized by a foraging settlement strategy (Erlandson and Colten 1991; Moratto 1984; Warren 1964). During the Late Prehistoric period, residential bases may have been sedentary villages, extensively occupied seasonal settlements, or repeatedly occupied locations (Byrd and Serr 1993; Hale and Becker 2006). Other sites were related to these larger residential bases, including field camps, locations, stations, and caches (Binford 1980). With adequate storable resources, such as acorns, the Late Prehistoric period may have witnessed a logistical-collector strategy utilizing inland oak groves during the fall and winter months and focusing on coastal resources during other periods of the year.

Both coastal sedentary residential bases (Hafner 1971; Howard 1977) and seasonal occupation of coastal and inland sites (Byrd 1996; Byrd et al. 1995; Chace 1969) have been asserted. For example, Howard (1977) argued for year-round settlement at sites at Newport Bay, based on shellfish seasonality data. Byrd (1996) asserted that some coastal sites along the north San Diego coast represent base camps that were occupied for multiple seasons focused on the summer, with little or no occupation during the winter, although this was disputed by others (Rosenthal et al. 2001).

A question on seasonality (i.e., what time of year was site occupied) is posed. This question reflects certain hypotheses about La Jollan sedentism in relation to more mobile Late Period patterns of resource exploitation. Although Late Period villages appear to have been part of a semi-sedentary bimodal system, the concentration of coastal resource and an emphasis on these resources has suggested increased sedentism during this period.

Our understanding of the subsistence system of the La Jolla complex is poorly documented. And while several hypothetical subsistence patterns are possible, presently, two viewpoints prevail. One hypothesis suggests the La Jollans were an incipient maritime culture living close to the ocean year-round, with little change in diet. The other view states that the La Jollans had coastal and inland campsites and would occupy these camps on a seasonal basis.

Site location may have been constrained by several key variables (Christenson 1990). For example, these factors may have included distance to fresh water, distance to the ocean, distance to zones of high biotic variability, and landform. Ethnohistorical sources document the existence of large Native residential bases in sheltered valleys adjacent to major drainages including Chiap and ‘Utay in the Otay River valley, Cosoy and Nipaquay in the San Diego River valley, La Rinconado de Jamo in San Clemente Canyon, and Ystagua and Peñasquitos in Carroll and Los Peñasquitos Canyons (Carrico 1977). Gallegos (1995b:3-26) has suggested that the sites of SDI-11767 and SDI-12126 may be remnants of the ethnographically documented prehistoric village of Cosoy.

Based on previous research in the general area, a number of questions have the potential to be addressed:

- *What role did sites SDI-11767, SDI-12220, and SDI-12126 play in the larger settlement system? Were the sites seasonally occupied habitation sites or were they more sedentary settlements, and did this change over time?*
- *Were the sites specialized or generalized in terms of subsistence and technology-related activities?*
- *What are the implications of these results for long-term patterns in local settlement organization?*

With respect to regional issues related to culture change and adaptation, research might contribute information to several other questions:

- *Did changes in settlement organization occur from the late Archaic occupation into the Late Prehistoric period?*
- *What can the archaeological deposits at these sites tell us about mobility patterns based on evidence regarding site function and spatially patterning?*
- *How did the sites fit into the larger regional settlement-subsistence system that included occupation of the coast or other inland sites?*

The major data sets needed to address these issues include aspects of site structure such as the range and character of features, technology, and the resources exploited. A primary focus will be to determine the level of residential or logistical mobility practiced by the sites' occupants. The ability to discern the range of activities at the sites, and hence their place within an annual system, is directly related to the interpretation of the technological record, particularly the lithic assemblage. The seasonal availability of exploited resources also has the potential to provide further insights into settlement organization. Analyses of bioarchaeological data, in concert with the lithic technological analysis, may be used to address the issue of settlement organization in relationship to the emphasis on, availability of, and predictability of particular resources. Bioarchaeological analysis may include analysis of human remains and their associated context. Data recovered can then be compared to data recovered from previous testing and data recovery programs at other prehistoric sites in the region.

SUBSISTENCE ORIENTATION

The issues related to subsistence orientation are interwoven with the previous discussion of settlement organization, and this section complements the issues discussed previously. Given the range, or potential range of time represented by the site CA-SDI-11,767 and the proximity of other similarly dated sites, an examination of questions relating to subsistence and technological change during this transition period would be significant. Change or lack of change can be examined in relation to expected cultural historical changes. These changes can also be compared to earlier and later sites such as CA-SDI-48 (Gallegos and Kyle 1988), site CA-SDI-9,243 (Corum and White 1986; Carrico et al. 1994; McDonald et al. 1994) and the Late Period Village of Rinconada (Winterrowd and Cardenas 1987), as well as to relatively contemporary sites such as CA-SDI-10,945 (Pigniolo et al. 1991). These subsistence and technology patterns can be examined in relation to the exploitation of a particular environmental niche, such as open coast, rocky shore, San Diego Bay, Mission Bay/estuary, and marine versus terrestrial resources as well as the types of lithic resources exploited. These patterns can then be compared to the overall pattern of local (San Diego County) coastal occupation. Site CA-SDI-11,767 constitutes an occupation by La Jollan peoples who may have derived from abandoned/depopulated silted-in northern coastal estuary/lagoons and moved south to exploit marine resources still extant around San Diego Bay during the latter pan of the Early Period. Suggestive of this hypothesis in the area are (1) an apparent increase (expansion) in occupation at CA-SDI-48 (i.e. Levels II, III and IV), and including the creation, during this time period, of Locus A at CA-SDI-48, beginning circa 3,500 B. P. (Gallegos and Kyle 1988: Figure 11.5), (2) the fact that the occupation of CA-SDI-10,945 and CA-SDI-11,767 apparently began during this time period, and (3) dietary indications such as the changes in shellfish species procurement, observed at CA-SDI-48 (Gallegos and Kyle 1988:9.1-9.45). This latter circumstance is suggestive of pressures on local marine resources caused by greater predation from an increased human population. Each of these occurrences could be interpreted as indicative of an increase in the overall population of the Point Loma/San Diego Bay/Mission Bay/estuary locale constituting a significant settlement change during the last stage of the La Jollan complex.

Site CA-SDI-11,767 contains a La Jolla complex occupation, as well as a possible Late Period preceramic site and/or a ceramic component. If these periods are present at the site, then changes in subsistence should be indicated in the archaeological assemblage. It has often been hypothesized that the La Jollan culture subsisted, to a substantial degree, on easily gathered marine resources such as shellfish (mainly mollusks), sea birds, marine mammals, and fish. This would suggest a heavy reliance on the intertidal zone supplemented with some resources found in immediately adjacent environments.

An older assemblage from CA-SDI-11,767 should be similar to the La Jolla complex components of site CA-SDI-9,243, the Brown Site (CA-SDI-4,675), the Ballast Point Site (CA-SDI-48), and site CA-SDI-10,945, while a Late Period assemblage should more closely resemble the Late Period component(s) of the Brown Site (CA-SDI-4,675) and site CA-SDI-9,243. Dietary indications such as the changes in shellfish species procurement, fish, and terrestrial mammal procurement should be present within the assemblage from the site. Results of previous testing as part of the current study suggests the site manifests little change, similar to site CA-SDI-10,945, but with the exploitation of different marine habitats (estuarine versus bay/rocky shore). If settlement change, such as an increase in population, could be demonstrated at CA-SDI-11,767, then the site could contribute valuable settlement and subsistence/dietary information for this particular period of La Jollan development in the San Diego area. This question assumed occupation by one major group (i.e., La Jolla complex) throughout the site occupation. Also, given the radiocarbon dates for this site, and the artifactual remains, different cultural groups, while possible, has not be demonstrated at the site. Late Period activity in the San Diego County region, if present, would be characterized by a more even mix of hunting and gathering.

Delfina Cuero's autobiography suggests that Kumeyaay exploited a range of marine resources available to them, including fish, shellfish, seaweed, sea mammals, sea turtles, and freshwater fish. Small game, including rabbits, hares, wood rats, and a variety of squirrels were the principal animal foods, as well as larger game such as mule deer. They also traveled inland to gather acorns and agave (Shipek 1991). Milling implements occur at numerous sites in the general region and within the Project sites. Both macroscopic vegetal remains (primarily seeds) and microscopic plant residues, as well as faunal remains, may be present.

Among the questions that are to be addressed are:

- *What vegetal and faunal remains are present?*
- *How specialized was the subsistence strategy (i.e., were any species foci of exploitation)?*
- *Can seasonal and/or diachronic changes be discerned in the subsistence emphasis?*
- *If diachronic change is detected, can this be related to technological changes such as the introduction of ceramics, arrow points, and the mortar and pestle?*

To address these issues, a number of data sets and analytical procedures are needed. Faunal and floral remains will be analyzed from both dry screened and floated sediments from column samples excavated from the walls of select units.

Subsistence orientation and settlement patterns are interwoven and dependent on the availability of resources, together creating a system of decisions regarding settlement locations, desired faunal and vegetal resources, seasonal movements, food processing techniques, and storage habits. Settlement strategies of the

Kumeyaay have been described as seasonally bipolar but dependent upon where the lineage home area was located. In reality, though, most settlement strategies were much more complex, and can be described as systems of "fission and fusion." The degree to which such a system can be inferred in the earlier prehistoric periods remains to be seen, especially because the Archaic period is defined by serially occupied seasonal habitation sites.

Answers to such questions typically involve collection of data during excavation and by flotation of column samples. However, evidence from the surface can also be used to address such research questions. Recent work with ground stone implements on Camp Pendleton focused on the extraction of food residues from bedrock mortar and basined metate surfaces as well as portable millingstones which have been recorded previously at SDI-11767 (Becker et al. 2013). Becker and his associates successfully recovered plant and animal residue from ground stones, generating strong implications for settlement and subsistence. The same may be possible for tools recovered during excavations at the three significant sites within the project boundaries.

4. THE APPROACH TO MONITORING AND DATA RECOVERY: FIELD AND LABORATORY METHODS

This chapter discusses the field and laboratory methods that will be employed during archaeological monitoring for the project and for the data recovery of site SDI-11767, SDI-12220, and SDI-12126. While only three of the 11 sites within the Project APE have been identified as significant, the potential for additional significant subsurface deposits within the project area is high, and archaeological and Native American monitoring is necessary in case such resources are encountered during remedial grading of the Project APE. Additionally, human remains have been recovered during previous investigations at SDI-11767, suggesting the possibility for additional prehistoric inhumations or cremations.

Monitoring is also necessary as the exact boundaries of the significant sites are not well delineated and the current GIS data on the site boundaries do not match the text of the previous reports on the significant sites. The fact that the sites were capped and filled also necessitates archaeological monitoring so that care is taken to remove the fill capping the significant resources prior to the start of the data recovery program.

The goals of the data recovery program are to mitigate potential impacts to the significant sites by recovering enough data that can be used to address pertinent research questions about the prehistory of the area and to obtain a better understanding of the function of the sites and how they fit into the regional context.

FIELD METHODS

Removal of Site CapsRegional Environmental Consultants (RECON) conducted archaeological monitoring during the redesign and reconstruction of the Stardust Golf Course Project between November 27, 1996, and July 11, 1997. During monitoring, they witnessed the removal of vegetation, removal of trees, and capping of sites SDI-11767 and SDI-12126 with protective sheeting and 12 in. (30 cm) of fill. Gilmer and Cheever (1997b:25) noted that SDI-12220 was covered with riprap and fill prior to the start of the Stardust Golf Course reconstruction.

Other non-significant resources were also capped, including SDI-12127 and SDI-12128. Sites SDI-12128, SDI-11766/H, and SDI-12220 reportedly were subsumed within SDI-11767 by Kyle and Gallegos (1995a), but the precise locations of the sites' boundaries were not available in the SCIC GIS database because the confidential maps for the evaluations conducted by Gallegos and Associates were not on file with the SCIC (Kyle and Gallegos 1995a, 1995b). However, the Ogden limited data recovery report of SDI-11767 shows the limits of the excavations by both Ogden and Gallegos at SDI-11767 and SDI-12220 (Cooley and Mitchell 1996) (see Map 2.1). These boundaries have now been provided to the SCIC.

While Gilmer and Cheever (1997b) suggest that SDI-11767 and 12126 were covered with just 12 in. (30 cm) of fill, a 2018 cut/fill map for the Stardust Golf Course Realignment Project provided by the geotechnical engineers, William A. Steen & Associates, for that project indicates that there may be upwards of 4 ft. (120 cm) or more of fill covering portions of these sites (Daniels 2018: Confidential Figure 3 and Table 1). The fill cap and any additional fill associated with the golf course realignment placed atop the sites requiring data recovery will need to be removed prior to the commencement of the data recovery.

The cut/fill map of the Golf Course Realignment Project provided by William A. Steen & Associates provides approximations of depth of fill every 60 ft. (18.29 m). Interpolations of depth of fill can be generated in ArcGIS using these points to provide estimates of fill depths between the points. With this data, a few hand augers placed within the previously defined boundaries of each site should be able to reveal the actual depth of either the gravel or geotech fabric used to cap the sites. This will also help to test the accuracy of the fill depth estimates calculated in ArcGIS.

Additionally, once the bottom of the cap is reached in one area of a given site using the hand auger, ground penetrating radar (GPR) may also be employed to help identify the depths of fill. The interface between the fill and the natural soil should be visible in radargrams of GPR transects across the surface of the golf course. Once the depth of that transition is determined in one location with the hand auger, then the depth of fill in any other location traversed with the GPR can also be calculated. Since some of the fill depths on the cut/fill map are 9 feet or more, the 200 MHz antenna should be used, as its frequency can penetrate depths up to 9 meters.

The combined data of the interpolated cut/fill map, the hand augers, and the GPR data will provide a relatively accurate estimate of the depth of fill across each of the sites to undergo data recovery. This data may be provided on maps prepared for machine operators prior to the removal of the caps for each site. Additionally, the archaeological monitors will have digital versions of these maps loaded on tablets with ESRI's *Collector* application and connected to Trimble R1 GPS receivers with submeter accuracy to help guide machinery operators with an estimated depth of fill in any given location.

While compaction associated with operating heavy machinery atop the site to remove the fill cap is of concern, the sediments, stratigraphy, and nature of the site as documented in previous cultural resource studies suggest that the near-surface stratum is already somewhat disturbed. As mentioned in the research design, Kyle and Gallegos (1995a, 1995b) and Cooley and Mitchell (1996) both documented bioturbation and stratigraphic mixing as evidenced by historic-period artifacts and modern debris mixed with prehistoric deposits in several unit excavations. The use of skid steer loaders and compact wheel loaders should be light enough to minimize compaction, especially to intact deposits below the upper stratum disturbed by previous agricultural practices. With the knowledge of the depths of fill identified, the loaders may then be used to incrementally scrape fill from the previously reported site boundaries until the geofabric or fill gravel covering the site surfaces is reached.

Monitoring

Given that the significant archaeological deposits within the limits of the Project APE are, in some areas, beneath several feet of fill, archaeological and Native American monitoring will be required prior to the data recovery efforts to remove the cap and fill atop the significant portions of sites SDI-11767, SDI-12220, and SDI-12126. Monitors will ensure that removal of the fill and cap do not disturb any buried cultural deposits beneath. Additionally, full-time archaeological and Native American monitoring is recommended during all soil-disturbing and grading/excavation/trenching activities that could result in impacts to known or previously unidentified archaeological resources. Additionally, the number of archaeological and Native American monitors on site at any given time may need to be increased if work is taking place at multiple locations across the project site. For example, should the data recovery be conducted while grading in other portions of the Project area is also taking place, a Native American monitor will be required at the site of the data recovery alongside the archaeological data recovery team, and additional Native American and archaeological monitors will also be needed at each location of grading operations. The determination of the number of monitors will be at the discretion of the archaeological principal investigator and the Native American monitoring coordinator for the Tribal organization conducting the monitoring.

The following section is drawn from the Mitigation Measures section 5.5-2 of the Draft Program Environmental Impact Report (PEIR) and provides the general protocols for archaeological and Native American monitoring for City of San Diego projects:

I. Prior to Permit Issuance or Bid Opening/Bid Award

A. Entitlements Plan Check
   1. Prior to permit issuance or Bid Opening/Bid Award, whichever is applicable, the Assistant Deputy Director (ADD) Environmental designee shall verify that the requirements for Archaeological Monitoring 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 ADD
   1. Prior to Bid Award, the applicant shall submit a letter of verification to Mitigation Monitoring Coordination (MMC) identifying the Principal Investigator (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 (HRG 2001). If applicable, individuals involved in the archaeological monitoring program must have completed the 40-hour HAZWOPER training with certification documentation.
   2. MMC will provide a letter to the applicant confirming the qualifications of the PI and all persons involved in the archaeological monitoring of the project meet the qualifications established in the HRG.
   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 South Coastal Information Center, 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 ¼ mile radius.

B. PI Shall Attend Precon Meetings
   1. Prior to beginning any work that requires monitoring; the Applicant shall arrange a Precon Meeting that shall include the PI, Native American consultant/monitor (where Native American resources may be impacted), Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC. The qualified Archaeologist and Native American Monitor shall attend any grading/excavation related Precon Meetings to make comments and/or suggestions concerning the Archaeological Monitoring program with the Construction Manager and/or Grading Contractor.
      a. If the PI is unable to attend the Precon Meeting, the Applicant shall schedule a focused Precon Meeting with MMC, the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring.
   2. Acknowledgement of Responsibility for Curation (CIP or Other Public Projects) The applicant shall submit a letter to MMC acknowledging their responsibility for the cost of curation associated with all phases of the archaeological monitoring program.
   3. 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 on 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 on the results of a site-specific records search as well as information regarding the age of existing pipelines, laterals and associated appurtenances and/or any known soil conditions (native or formation).

c. MMC shall notify the PI that the AME has been approved.

4. 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 on relevant information such as review of final construction documents which indicate conditions such as age of existing pipe to be replaced, depth of excavation and/or site graded to bedrock, etc., which may reduce or increase the potential for resources to be present.

5. Approval of AME and Construction Schedule

After approval of the AME by MMC, the PI shall submit to MMC written authorization of the AME and Construction Schedule from the CM.

III. During Construction

A. Monitor 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 which could result in impacts to archaeological resources as identified on the AME. **The Construction Manager is responsible for notifying the RE, 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 on 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 Section 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 when native soils are encountered 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 CSVR’s shall be faxed or emailed by the CM to the RE 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 photos 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. A determination of significance will be made within 72 hours of the discovery.

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 Archaeological Data Recovery Program (ADRP) and obtain written approval of the program from MMC, CM and RE. ADRP and any mitigation must be approved by MMC, RE and/or CM before ground disturbing activities in the area of discovery will be allowed to resume. **Note: If a unique archaeological site is also an historical resource as defined in CEQA Section 15064.5, 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.**
      (1). Note: For pipeline trenching and other linear projects in the public Right-of-Way, the PI shall implement the Discovery Process for Pipeline Trenching projects identified below under "D."
   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 that no further work is required.
      (1). Note: For Pipeline Trenching and other linear projects in the public Right-of-Way, if the deposit is limited in size, both in length and depth; the information value is limited and is not associated with any other resource; and there are no unique features/artifacts associated with the deposit, the discovery should be considered not significant.
      (2). Note, for Pipeline Trenching and other linear projects in the public Right-of-Way, if significance cannot be determined, the Final Monitoring Report and Site Record (DPR Form 523A/B) shall identify the discovery as Potentially Significant.

D. Discovery Process for Significant Resources - Pipeline Trenching and other Linear Projects in the Public Right-of-Way. The following procedure constitutes adequate mitigation of a significant discovery encountered during pipeline trenching activities or for other linear project types within the Public Right-of-Way including but not limited to excavation for jacking pits, receiving pits, laterals, and manholes to reduce impacts to below a level of significance:

1. Procedures for documentation, curation and reporting
   a. One hundred percent of the artifacts within the trench alignment and width shall be documented in-situ, to include photographic records, plan view of the

trench and profiles of side walls, recovered, photographed after cleaning and analyzed and curated. The remainder of the deposit within the limits of excavation (trench walls) shall be left intact.

b. The PI shall prepare a Draft Monitoring Report and submit to MMC via the RE as indicated in Section VI-A.

c. The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms-DPR 523 A/B) the resource(s) encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines. The DPR forms shall be submitted to the South Coastal Information Center for either a Primary Record or SDI Number and included in the Final Monitoring Report.

d. The Final Monitoring Report shall include a recommendation for monitoring of any future work in the vicinity of the resource.

IV. Discovery of Human Remains during Monitoring

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; and the following procedures as set forth in CEQA Section 15064.5(e), the California Public Resources Code (Sec. 5097.98) and State Health and Safety Code (Sec. 7050.5) shall be undertaken:

A. Notification

1. 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 Development Services Department 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 provenience of the remains.
2. The Medical Examiner, in consultation with the PI, will determine the need for a field examination to determine the provenience.
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 Native American Heritage Commission (NAHC) within 24 hours. By law, **ONLY** the Medical Examiner can make this call.
2. NAHC will immediately identify the person or persons determined to be the Most Likely Descendent (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 Public Resources and Health & Safety Codes.
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 granted access to the site, OR;
    b. 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, the landowner shall reinter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance, THEN
    c. 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; or
    (3) Record a document with the County. The document shall be titled "Notice of Reinternment of Native American Remains" and shall include a legal description of the property, the name of the property owner, and the owner's acknowledged signature, in addition to any other information required by PRC 5097.98. The document shall be indexed as a notice under the name of the owner.
    d. Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and items associated and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Section 5.c., above.

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, 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 precon 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 8AM of the next business day.
    b. Discoveries

        All discoveries shall be processed and documented using the existing procedures detailed in Sections III - During Construction, and IV –

Discovery of Human Remains. 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 Section III - During Construction and IV-Discovery of Human Remains shall be followed.

d. The PI shall immediately contact the RE and MMC, or by 8AM of the next business day 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 Construction Manager 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. Submittal of Draft Monitoring Report[1]

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 describes the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program (with appropriate graphics) to MMC via the RE 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 as a result of 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 Archaeological Data Recovery Program or Pipeline Trenching Discovery Process shall be included in the Draft Monitoring Report.
    b. Recording Sites with State of California Department of Parks and Recreation. The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms-DPR 523 A/B) any significant or potentially significant resources encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines, and submittal of such forms to the South Coastal Information Center with the Final Monitoring Report.
2. MMC shall return the Draft Monitoring Report to the PI via the RE for revision or, for preparation of the Final Report.
3. The PI shall submit revised Draft Monitoring Report to MMC via the RE 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 catalogued

[1] For the Riverwalk Project, the results of the data recovery at the three significant sites will be prepared and presented in the same report as the results of the archaeological and Native American monitoring conducted for the entire Project APE.

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.

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. 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 no further disturbance occurs in accordance with Section IV – Discovery of Human Remains, Subsection C.
3. The PI shall submit the Accession Agreement and catalogue record(s) to the RE or BI, as appropriate for donor signature with a copy submitted to MMC.
4. The RE or BI, as appropriate shall obtain signature on the Accession Agreement and shall return to PI with copy submitted to MMC.
5. The PI shall include the Acceptance Verification from the curation institution in the Final Monitoring Report submitted to the RE or BI and MMC.

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 of the approved report.
2. The RE shall, in no case, issue the Notice of Completion until receiving a copy of the approved Final Monitoring Report from MMC which includes the Acceptance Verification from the curation institution.

Excavation Methods

Once the cap and fill are removed from sites SDI-11767, SDI-12220, and SDI-12126 data recovery excavations will commence in the areas of significance. Grading of other portions of the project area may continue while data recovery is being conducted so long as an archaeological and Native American monitor are present. Qualified archaeological and Native American monitors will be provided to cover both grading monitoring and archaeological data recovery simultaneously. The excavation methods are designed to generate an adequate sample of cultural material, effectively realizing the data potential of the sites identified as SDI-11767, SDI-12126, and SDI-12220. The previous evaluations of these sites and the data recovery along the segment of the Mission Valley West Light Rail Transit (MVWLRT) project corridor that intersected portions of SDI-11767 have provided valuable information on the prehistoric occupation of the Mission Valley region, but additional data from these sites regarding the Archaic to Late Prehistoric transition and possibly the period immediately prior to Spanish contact are achievable from additional excavations with current excavation methodologies and laboratory analyses.

One of the goals is to determine whether there are material correlates of prehistoric human activities other than those noted during the previous investigations. Excavations strategies are designed to better understand the chronology of occupation of the sites, the kinds of subsistence strategies employed by the prehistoric occupants of the sites, whether these strategies may have changed over the course of occupation of the sites, and what such changes may indicate about changes in the surrounding environment and adaptive patterns of prehistoric inhabitants of the region.

The placement of excavation units will be based on the results of the evaluations and data recovery conducted by Ogden (Cooley and Mitchell 1996; Pigniolo 1994; Pigniolo and Huey 1991) and the evaluations conducted by Gallegos and Associates (Kyle and Gallegos 1995a, 1995b). Additionally, in order to minimize the guesswork of excavation unit placement GPR will be used to target subsurface anomalies in the vicinity of known intact concentrations of archaeological deposits and as indicated by previous investigation reports.

Data recovery excavations at the site of SDI-12126 will likely be the first to be conducted given tentative phasing of development. Based on the information available on the previous work conducted at the site by Gallegos & Associates (Kyle and Gallegos 1995a, 1995b) and RECON (Gilmer and Cheever 1997a, 1997b), the portion of the site intersecting the Riverwalk Project APE is approximately 12,450 m^2 in size. The results of the previous excavations indicate there are two areas within the portion of the site that intersect the APE with a fairly dense concentration of subsurface archaeological material. Map 4.1 highlights the areas of dense archaeological deposits using graduated symbols.

Two 30-x-30-m GPR survey grids will be established and surveyed with a GSSI-SIR-3000 with 400 MHz antenna to identify subsurface anomalies that may be associated with archaeological features. The 400 MHz antenna provides a greater level of detail for sediments within the first meter and a half of deposits than does the 200 MHz antenna that will be used to better calculate the depths of fill atop each before the cap is removed. The 200 MHz GPR antenna surveys will provide targets for the placement of archaeological excavation units. The goal of using GPR data to guide the placement of excavations units is to improve the chances of uncovering potentially significant archaeological features, should they be present, through controlled excavation rather than unexpectedly encountering them during archaeological monitoring of heavy machine grading. The anomalies detected in the GPR data will be analyzed and a sample of them will be selected for excavation based on their geometric appearance, their estimated depth, and any geophysical characteristics that may suggest they are associated with subsurface archaeological features.

The boundary for SDI-12126 drawn by Gallegos & Associates was based on the distribution of archaeological material recovered from their shovel test pits (STPs) and test unit excavations. However, there are some gaps between their excavation locations. Thus, a series of 13 STPs spaced approximately 20 meters apart will be placed in those areas not previously tested within the site boundaries. These are shown on Map 4.1 as yellow rectangles. Should these STPs indicate the presence of additional dense archaeological deposits, a third GPR grid will be established around STPs with high artifact densities in order to identify additional anomalies to target with unit excavations.

After the completion of the STP excavations and GPR surveys, target anomalies will be selected and 1-x-1-m control units (CUs) will be placed over selected GPR anomalies or near STPs with high artifact yields. CUs may then be expanded if potentially significant archaeological features are encountered. A total of 20 m^2 of SDI-12126 site area will be excavated in addition to the area sampled with the excavation of the STPs. The locations of the CU excavations are not shown on Map 4.1 since their placement will be based on the results of the STP excavations and GPR surveys.

Data recovery excavations at the site of SDI-12220, also identified as Locus 2 of SDI-11767 by Kyle and Gallegos (1995a), will also be guided by the results of the previous excavations in the area. Map 4.2 shows the locations of the previously excavated STPs and excavation units with the relative density of artifacts and cultural shell recovered from them using graduated symbols. A 100-x-50-m GPR survey grid will be established across the site. Just as at SDI-12126, the data from the GPR survey will used to determine the placement of excavation units. A total of 10 1-x-1-m CUs or a total of 10 m^2 of site area will be sampled.

At Locus 1 of SDI-11767, data recovery excavations will be concentrated in the areas of highest density not yet developed. One 100-x-50-m GPR survey grid and one 30-x-60-m GPR survey grid will be positioned over locations of previously excavated STPs with relatively high densities of cultural material just north of the railroad tracks. Map 4.3 shows the proposed locations of the GPR survey grids. The results of the GPR survey will be used to target anomalies that may be associated with subsurface archaeological features.

The boundary drawn for Locus 1 of SDI-11767 is quite large and was based on a few widely spaced positive STPs and units. To better define the limits and spatial distribution of the archaeological deposit associated with Locus 1, a series of up to 75 STPs will also be excavated to fill in the gaps between the previous excavations by Gallegos and Associates (Kyle and Gallegos 1995a) and Ogden (Pigniolo 1994; Pigniolo and Huey 1991). The results from the STPs excavations will help to determine if there are additional areas with a high density of cultural material. The proposed locations of the STPs are shown as yellow rectangles in Map 4.3. Those within the proposed GPR grids may be moved to different locations depending on the locations of anomalies in the GPR data. Additionally, should STPs outside of the proposed GPR grids reveal additional areas of high artifact density, additional GPR grids may be surveyed prior to the excavation of CUs to better guide their placement.

Similar to the strategy at SDI-12126, after the completion of the STP excavations and GPR surveys of SDI-11767 Locus 1, target anomalies will be selected and 1-x-1-m control units (CUs) will be placed over selected GPR anomalies or near STPs with high artifact yields. CUs may then be expanded if potentially significant archaeological features are encountered. A total of 30 m^2 of SDI-11767 site area will be excavated in addition to the area sampled with the excavation of the STPs. The locations of the CU excavations are not shown on Map 4.3 since their placement will be based on the results of the STP excavations and GPR surveys.

The strategies outlined above are designed to improve recovery of potentially significant archaeological features through a more efficient and targeted approach that utilizes remote sensing, in this case GPR, to target subsurface anomalies thus decreasing the need for superfluous and costly excavation. The effectiveness of this methodology has proven effective on previous archaeological evaluations and data recoveries in San Diego county (see Becker, Daniels, et al. 2013; Becker, Quach, et al. 2013; Daniels, Quach and Becker 2013; Daniels, Quach, Scharlotta, et al. 2013; Daniels and Becker 2010). Changes to the sampling strategy above may be required depending on the results of the removal of the cap and fill from each of the sites and the results from the STP and a GPR surveys. Should modifications to the strategies of site sampling outlined above need to be changed, a memo to the City and Mitigation Monitoring Coordinator will be drafted detailing the proposed change and requesting approval.

Excavations units will vary in size from 1 x 0.5 m to 2 x 2 m, depending on the goals of the excavation. Smaller units will be employed first in order to identify the presence of intact subsurface archaeological deposits and may then be expended, based on the stratigraphy and archaeological material encountered. Excavation units will be identified by their UTM coordinates. The southwest corner of each unit will serve as the datum, and its location will be recorded with a Trimble GPS unit with 10-cm horizontal accuracy. All units will be oriented to true north when possible. If a different orientation is used, it will be noted in the fieldnotes for that unit. All excavation units will be excavated in 10-cm levels. Unit records will be compiled for each level, including provenience, sediment description and disturbance, artifact constituents, and the excavator’s observations. All deposits will be screened through 1/8-in.-mesh sifter screens. Units will be excavated to sterile subsoil. Units will be expanded when features are encountered that required more complete delineation or sampling to meet the objectives of the data recovery program. Unit expansions will be excavated in the same manner as the original adjoining units but will be recorded separately.

Sediment column samples will be extracted from the side walls of selected units from each of the three sites for archaeobotanical flotation and micro-debitage and faunal recovery. Excavation units with well stratified sediment profiles, intact cultural deposits, or midden deposits will be selected for column sample extraction. The column samples will measure 40 x 40 cm and will be extracted in 10-cm levels, for a volume of 16 liters per level. The sediments will be bagged and subsequently floated in the ASM laboratory in Carlsbad using either manual bucket flotation washover technique or a mechanical water separator system, both of which are described in Pearsall (2016). Both the heavy and light fraction material extracted from the sediment samples after flotation will be dried and then sorted using steel mesh sieves of gradually decreasing mesh sizes to make sorting of the material easier. The light fraction will be sorted to pick out samples of archaeobotanical remains including charred seeds, wood, and any other plant material that may be associated with the prehistoric occupation of the sites. The archaeobotanical remains from the floated material will be sent to PaleoResearch Institute, a laboratory that specializes in paleoethnobotany, for identification and speciation. If present, charred seed remains will be selected for radiocarbon dating. Faunal remains, micro-debitage, shell, and any other small artifacts will also be sorted and separated from the heavy fraction.

If intact archaeological features are encountered during excavations, such as hearths, earth ovens, trash pits, or other features whose sediment matrix may contain processed plant or animal remains, a sample of sediment matrix from the feature will also be collected for flotation. The volume of sediment collected will be recorded. A control sample of sediment from outside the feature may also be collected for comparative purposes.

Cultural materials, including prehistoric lithic tools, flaked lithic debitage, ceramics, animal bone, and marine shell from the dry-sieved material in the field, will be collected, bagged, and labeled. Historic-period and modern cultural items will also be collected. Charcoal, if encountered, will be collected in situ, and depth and location will be recorded from the unit datum. Fire affected rock will be counted and weighed in the field but not collected.

CONFIDENTIAL FIGURE REMOVED

Map 4.1. Previous excavations at SDI-12126 with the amount of cultural shell (g) and number of artifacts represented by graduated symbols with proposed STP and GPR grid locations.

CONFIDENTIAL FIGURE REMOVED

Map 4.2. Proposed GPR grid over previous excavations at SDI-12220 (SDI-11767 Locus 2) with artifact and shell (g) yields represented by graduated symbols.

CONFIDENTIAL FIGURE REMOVED

Map 4.3. Previous excavations at SDI-11767 Locus 1 with the cultural shell (g) and number of artifacts from each STP and unit represented by graduated symbols. STPs and GPR grids for proposed data recovery investigation are also depicted.

Discovery of Human Remains During Data Recovery

The Archaeological Data Recovery Plan (ADRP) provisions for the discovery of human remains shall be invoked in accordance with the California Public Resources Code 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. The protocols outlined here summarize those outlined in the **Discovery of Human Remains during Monitoring** section. California state law assigns special importance to human remains under sections 15064.5(d) and (e) of the CEQA Guidelines, with procedures for treatment detailed under California Public Resources Code (PRC) Section 5097.98. Implementation of the following protocol during archaeological monitoring and data recovery would address unintentional disturbance of human remains should they be encountered, in accordance with PRC 5097.98.

1. There shall be no further excavation or disturbance in that portion of the site or any nearby area reasonably suspected to overlie adjacent human remains until the San Diego County Medical Examiner is contacted and the discovery location will be mapped by the monitoring archaeologist and protected and secured from further disturbance whenever possible.
2. The monitoring archaeologist will notify the Principal Investigator, the City Mitigation Monitoring Coordinator, and will contact the San Diego County Medical Examiner. The Medical Examiner will make a determination as to the origins of the human remains.
3. If the remains are recognized as or suspected to be Native American by the Medical Examiner or an authorized representative, the Medical Examiner will contact the California Native American Heritage Commission (NAHC) within 24 hours of the discovery.
4. The NAHC designates and contacts the Most Likely Descendant (MLD).
5. The MLD will make a recommendation for treatment of the remains and associated burial items within 48 hours of notification. Possible options for treatment may include:
    a. Preservation in place and avoidance.
    b. Reburial of the remains on the property in an area to remain undisturbed by the landowner
    c. Transport of the remains off-site.
6. The landowner shall discuss with the Most Likely Descendant all reasonable options regarding the descendant's preferences for the treatment of human remains and any associated grave goods, as provided in PRC Section 5097.98.

If the MLD does not make a recommendation within 48 hours of notification, or if the recommendations are not acceptable to the landowner following extended discussions and mediation between the City of San Diego and the MLD, the landowner will reinter the remains and burial items with appropriate dignity on the property in a location not subject to further subsurface disturbance. The location of reinternment will be protected by recording the location with the NAHC and the South Coastal Information Center.

LABORATORY AND ANALYTICAL METHODS

Laboratory work will include standard processing and cataloging of the materials recovered in the field and special studies to address the program's research issues.

Standard Processing, Cataloging, and Analysis

Initial lab procedures will include cleaning (as appropriate), sorting, and cataloging of all items. Each item will be individually examined and cataloged according to class, subclass, and material; counted (except for bulk invertebrate and vertebrate remains); and weighed on a digital scale. All coded data will be entered into a Microsoft Access database. Data manipulation of a coded master catalog will be performed using Microsoft Excel.

The cultural material will be sorted during cataloging into the following potential categories: 11 classes of prehistoric artifacts, three classes of ecofacts (vertebrates, invertebrates, and archaeobotanical remains), ethnohistoric items, historic and modern items, and sediment samples. The prehistoric artifact classes include debitage, cores, utilized flakes, retouched flakes, bifaces, percussing tools, ground stone, ceramics, bone artifacts, shell artifacts, and miscellaneous items.

All lithic artifacts will be sorted by material type and cortical variation (primary, secondary, and interior) during cataloging. When possible, cores will be separated by platform variability into subclasses, including multidirectional, unidirectional, and bifacial types. The classification of flaked stone tools will be determined by typology and production technology. Simple flake tools (i.e., utilized flakes without retouch) will be identified based on the presence of macroscopic use-wear traces. Retouched tools include scrapers, gravers, notched pieces, and other edge-modified flakes. Bifaces include projectile points, drills, and non-patterned bifaces. Length, width, and thickness measurements will be taken for all tools and cores using a sliding caliper.

Percussing tools, including hammers and abraders, will be classified based on their morphology and the type of macroscopic use-wear they exhibit.

Ground stone artifacts will be classified by type, including metates and manos. Length, width, and thickness measurements will be taken on complete ground stone items.

Organic artifact classes (ecofacts) will likely consist primarily of vertebrate and invertebrate specimens and macrobotanical remains. Historic and modern items will be cataloged and identified as specifically as necessary.

After preliminary cataloging of the material is completed, more detailed attribute analysis of flaked lithics and ground stone will be performed. Stone artifacts (both flaked and ground) will be individually analyzed for selected morphological and technological attributes, as well as material and condition, in an attempt to gain insight into the period of occupation and the range of activities undertaken. All artifacts, ecofacts, and samples will be subject to appropriate conservation in the field and laboratory, including proper packaging and handling.

Flaked Stone Artifact Analysis: Concepts, Methods, and Techniques

The following sections offer details of the analytical approach to flaked stone artifacts that will be applied to the material recovered during the data recovery. The major goals will be to examine lithic artifact typology, technology, and function in order to gain insights into issues such as prehistoric adaptive strategies, site activities, chronology, and subsistence-settlement patterning. More specifically, artifact typology, in particular projectile point typology, allows archaeologists to partially reconstruct when prehistoric sites were occupied and by whom. By examining technology, researchers gain insights into adaptive strategies used by prehistoric people as part of their everyday subsistence strategies. The examination of function allows archaeologists to partially reconstruct the activities performed at prehistoric sites.

General Approach to the Flaked Lithic Analysis

In this discussion of the flaked stone analysis, the artifacts are divided into three basic categories: cores, tools, and debitage. Cores are defined as nuclei or masses of stone (see Cotterell and Kamminga 1987) used to produce flakes for stone tools. Cores generally show negative impressions from multiple flake removals and have edges that are often unsuitable for tool use other than as battering and abrading stones.

Tools are pieces of flaked stone that show intentional modification of an edge (retouched tools) intended for use through contact with another material, or unintentionally modified artifacts that show evidence of having been used for some task (utilized flakes). Artifacts defined as tools were not necessarily used only for one specific task. In some cases, it is possible that an artifact may have served as a core in one part of its use-life and then may become a tool in a later part of its use-life. A large biface, for example, may initially serve as a highly portable source of flakes, but later, with greater refinement, may become a projectile point (Kelly 1988). However, this widely held idea may be overrated, as most bifaces produced flakes that would not have been suitable for tool use; most bifacial thinning flakes have edges that are too brittle to be useful tools, and most bifaces are not large enough to produce highly useful flake tools (also see Bamforth and Becker 2000).

Debitage consists of unworked and unutilized chipped stone artifacts derived from cores or the production of tools, and includes flakes, blades, and debris. Flakes are essentially artifacts that exhibit a dorsal side, a ventral side, a platform, and a bulb of percussion from the impact of removal from a core or biface. The dorsal side is generally marked by scars from previous flake removals and sometimes the presence of cortex. The ventral side is the smooth side from the interior of the core and often exhibits percussion rings on its surface. The platform is a remnant of the original surface struck by a hammer or punch, while the bulb of percussion is a feature associated with the force of impact, adjacent to the platform on the ventral surface. Another type of flake, known as a blade, is frequently present in very low numbers within most North American assemblages. Blades are simply a distinctive type of flake. The minimal definition for a blade is that it is at least twice as long as it is wide. However, the presence of a few blades does not necessarily indicate a blade technology unless they are identified as “classic” blades, which are distinguished by medial ridges that run the length of the artifact and are removed from specially prepared cores. The non-hafted portion of a projectile point is also often referred to as a blade, but this is in reference to a specific part of a projectile point rather than a technology or an artifact type. Bifacial cutting tools are also sometimes referred to as “blades” in the archaeological literature. Finally, there is debris, which can be either flake-like (shatter) or core-like (chunks). Shatter comprises artifacts that exhibit some flake-like traits, such as conchoidal rings and a thin cross-section, are missing evidence for a dorsal vs. ventral side, or platform/bulb, but are distinguishable from broken flakes. Chunks are core-like in size and mass but do not show flaking patterns associated with core reduction. They are generally produced from fractured poor-quality material that breaks into angular fragments during reduction or from the application of too much force to a cobble.

With respect to sampling, 100 percent of all tools and a sample of debitage from all areas of the sites will be analyzed for this project. Debitage will be separated into raw material categories, then divided into four categories (primary flakes, secondary flakes, interior flakes, and debris), counted, weighed, and cataloged.

Definitions and Recording Procedures for Flaked Stone Artifacts

Two attributes will be consistently recorded for all artifact classes: weight and material. Weight will be measured with a scale accurate to 0.1 g. Lithic material type will be identified visually, the types including obsidian, chert, chalcedony, quartz, quartzite, and undifferentiated volcanics (excluding obsidian and cryptocrystalline silica). The following sections review different types of flaked stone artifacts and discuss additional recording attributes.

Core Type Definitions

Four different classes of cores may be distinguished. Unidirectional cores, also known as single-platform cores, have a single platform from which all of the flakes derived from the core were struck. As these cores near exhaustion, they typically become conical in shape. Bidirectional cores have two adjacent opposed platforms and can include bifacial cores. Multidirectional cores have three or more platforms where the relationship between the platforms may be difficult to describe. Tested cobbles are cores that exhibit the removal of only one or two primary flakes, probably for the purpose of assessing the quality of the raw material for tool production.

Cores may be further classified as either complete, incomplete in length, incomplete in width, incomplete in both length and width, or indeterminate. Length, width, and thickness dimensions were recorded. This can be done by finding the maximum length and using this dimension as an axis to orient and record width and thickness along perpendicular axes. Recording core size can help to quantify the extent to which a core was used or exhausted prior to discard. The degree to which a core is reduced has been correlated to the availability of lithic raw material in the vicinity of the site in some instances (Andrefsky 1998; Kuhn 1991). However, this should never be assumed, and it is important to know the locations and distances of raw material sources for this reason.

Bifacial Tools

Bifaces are chipped stone artifacts worked on two adjacent sides of an edge, exhibiting invasive flake scars around the entire or almost the entire margin with the intention of producing functional edges. In addition to knives and projectile points, bifacial tools include drills/perforators, crescents, and non-patterned bifaces. Drills/perforators are relatively long and narrow bifaces with a diamond-shaped or near circular cross-section. Crescents are bifaces with one concave and one convex edge, but their low frequencies in the archaeological record, together with their often-rough outlines, may be an indication that some of these tools are actually other rejected biface forms. As in the case of non-patterned bifaces, a simple explanation for the occurrence of some crescents may be related to early-stage production.

In addition to typology, weight, and material, other attributes may be recorded for each biface: blank type, completeness, size, and production stage. Blank type identifies whether a biface was made on a flake, a cobble/tablet, or an unknown or indeterminate blank. Completeness records the following values: complete, incomplete in length, incomplete in width, incomplete in both length and width, or indeterminate. Linear size was measured with three variables: length, width, and thickness. In the case of incomplete biface fragments that could not be oriented, the longest dimension was designated as the length axis. Production stage refers to the process of manufacturing and refining bifaces, especially those that are eventually intended to become projectile points, where the biface is commonly thought to progress through a series of stages. These stages reflect a continuum extending from initial shaping to discard. Classifications have recognized from nine to five stages (Andrefsky 1998; Callahan 1974, 1979; Whittaker 1994), probably reflecting the variability of production factors, including the type of point being manufactured, the shape of the raw material, the size of the artifact, and flake vs. cobble/tablet origins. For this study, four values related to production stages may be distinguished: early/middle, late, finished, or indeterminate; this is loosely based on a five-stage system, in which stages 1-3 are early, stage 4 is late, and stage 5 is finished (see Whittaker 1994).

Projectile Points

One of the most important subsets of bifaces is the projectile point. A projectile point is generally a diagnostic biface, with hafting attributes at the proximal end and a point at the distal end. Many projectile point types possess a high degree of stylistic distinctiveness associated with patterns culturally indicative of time and space. These different diagnostic features often include variables such as size, shape, flaking patterns, and technology. Projectile point types for this area of coastal southern California include Leaf-shaped, Lake Mojave, Elko, Cottonwood, and Desert Side-notched.

Although projectile points are a subset of bifaces, their stylistic variability and unique place in any lithic analysis require different types of measurements beyond those taken for other bifaces. In addition to recording weight and material, the point's condition, impact fracture, and size data were also recorded. Measurements of projectile points generally followed those outlined by Andrefsky (1986:104, 1998:179).

Condition indicates whether a projectile point is complete, or consists of a distal (tip) fragment, a midsection, a base, or an indeterminate fragment. In some cases, different categories were combined, such as midsection-base or distal-midsection. Impact fracture refers to cases in which there is evidence of use as part of a projectile. Impact fractures are typically produced when the projectile hits an object, resulting in flake scars at the tip oriented parallel to the long axis, or a spiral snap fracture perpendicular to the axis on the distal end. Three measurements were taken for size. Maximum length is the distance from the distal to the proximal end. The maximum width is greatest width perpendicular to this axis. Thickness is simply the maximum dimension between the two faces.

Retouched Flake Tools

Retouched flake tools show intentional retouch to one or more edges. This includes forms that have traditionally been known as scrapers, notches, denticulates, gravers/perforators, and non-patterned flake tools. Scrapers are unifacially retouched flakes, generally with steep invasive retouch on the dorsal side forming a regular or smooth, continuous functional edge. Notches are retouched flakes with a distinctly formed concavity on the tool edge. A denticulated flake contains three or more contiguous notches, where the retouch can be either unifacial, bifacial, alternating, or combinations thereof. Edge angles can be either steep or low. Gravers/perforators are flake tools on which notching and/or other retouching has produced a distinctive spur. Non-patterned flake tools often show uneven edges and noncontiguous retouch that can be unifacial, bifacial (non-invasive), or combinations of both.

In addition to typology, weight, and material, six additional attributes will potentially be recorded for each retouched flake tool: blank type, completeness, size, orientation of retouch, type of modification, and flake type. Blank type identifies whether a flake tool was made on a primary, secondary, or interior flake, or on an indeterminate blank. Completeness records the same variables taken for bifaces: complete, incomplete in length, incomplete in width, incomplete in both length and width, and indeterminate. Linear size was measured by three variables: length, width, and thickness. Orientation of retouch refers to whether the retouch was observed on the distal end, proximal end, lateral edges, or on multiple edges. Type of modification defines how the edge was modified, such as obverse, inverse, inverse-obverse, alternating, and bifacial retouch. Obverse retouch refers to unifacial retouch on the dorsal side of a flake, while inverse retouch is located on the ventral side. Inverse-obverse retouch refers to opposite lateral edges that are flaked on different faces. Bifacial retouch implies a worked edge on two opposing faces, but with non-invasive retouch. Alternating retouch indicates that a single edge was retouched on both faces, but unlike a traditional biface, this retouch alternates on the same lateral edge. Last of all, flakes were categorized as being struck from a core, a biface, or as indeterminate. A more detailed discussion on core/biface flakes can be found above in the debitage section.

Utilized Flakes

Utilized flakes have edges that were altered exclusively through use. Based on previous use-wear studies (see Bamforth 1988; Keeley 1980; Vaughan 1985), edge wear types were classified as scalar, step, denticulated, battered, or abraded edges.

The utilized flake category will be limited to macroscopic edge wear, and a more rigorous study would require the use of a high-magnification microscope (50-500-power) to examine edge wear damage. All edge wear may be identified with a magnifying glass on only unretouched flake edges. While studies have demonstrated the difficulties in the identification of utilized flakes and the need for a rigorous methodology (e.g., Young and Bamforth 1990), the authors possess an extensive collection of experimentally used lithic artifacts for comparison. We also recognize a problem with identifying expedient tools, as most flaked stone tool technology is relatively expedient. For example, compared to the time involved in producing the hafts for points, which could take days, most small bifaces take only 30 minutes to produce (Becker 1999; Keeley 1982). Functionally, large points could easily serve as multipurpose tools (e.g., knives, projectile points, scrapers), and for prehistoric people, especially if on the move, this could take the place of a diverse toolkit. With the addition of cores, prehistoric people would also have access to cutting tools (i.e., flakes) with extremely sharp edges. The view adopted for this study is that bifaces and cores often form complementary sets of tools for general prehistoric tasks, rather than divergent technologies (also see Bamforth and Becker 2000).

Utilized flakes will be recorded in a manner almost identical to retouched flake tools, particularly for completeness, size, weight, material, and flake type. Use-wear type may be identified as scalar, step, denticulated, or abraded edges. The edge damage identification strategy employed in this study conforms to Keeley's (1980:24) descriptions, where the modification is no larger than 2 mm. The term "denticulated edge damage" was used instead of "1/2 moon edge damage" referred to by Keeley (1980). Finally, the term "abraded" was added to the analysis, meaning the edge was artificially rounded, probably from abrasion with a stone.

Percussing tools, including hammers and abraders, are defined based on their morphology and the type of macroscopic use-wear they exhibit. Ground stone artifacts are classified as to type, including hand stones, milling stones, pestles, and mortars or stone bowls. Length, width, and thickness measurements are taken for all items.

Radiocarbon Dating

Samples of macrobotanical remains from excavated features or column samples, specifically carbonized seeds, will be prioritized for radiocarbon dating. Carbonization occurs when a seed is burned and turned to charcoal. Radiocarbon dating carbonized seeds eliminates the issues of the old wood effect associated with dating chunks of charcoal from archaeological deposits. When radiocarbon dating a piece of wood or charcoal, the event dated is the growth of the tree ring. Trees grow by the addition of rings and these rings stop exchanging carbon with the biosphere once they are laid down. The radiocarbon age of a single tree's heartwood and sapwood will not be the same with the innermost heartwood being significantly older than the sapwood. Delayed use and reuse are processes that also contribute to the "old wood" problem. Charcoal or wood could have been seasoned prior to the actual use of the timber that provided the sample that has been radiocarbon dated. Hardwoods that are very resilient against decay could have been reused in other structures in later years. The effects of these depositional processes may not be quantifiable but should not be overlooked because the radiocarbon dating results might turn out to be too old for the context being dated. Seeds generally have short lifespans and thus provide a more realistic absolute date for an archaeological deposit than bulk charcoal samples.

Radiocarbon dating of shell carbonates also pose many problems. Carbonates are quite soluble and chemically interact with the environment so accuracy of the radiocarbon dating results cannot be guaranteed. Results should also account for marine radiocarbon reservoir effects as well as hard water effects. In dating shell from archaeological deposits, a localized reservoir correction is needed.

In order to adequately assess the chronology of the three significant sites, a goal of at least three radiocarbon dates for different strata at each site is set. Carbonized seeds will be prioritized for dating followed by samples of in situ charcoal, animal bone, and then shell.

X-Ray Fluorescence Analysis

Should any obsidian artifacts be recovered during the data recovery, ASM will use a Bruker Tracer III-V portable X-ray fluorescence (pXRF) spectrometer to determine the chemical composition of the obsidian artifacts. The geological sources for the obsidian artifacts recovered during the data recovery can be determined by comparing their chemical composition to the geochemistry of previously sourced material and materials collected directly from obsidian sources. These data are crucial in helping to develop a picture of the movement of material goods to the site and to elucidate prehistoric patterns of trade and cultural interaction.

Vertebrate Faunal Analysis

The vertebrate remains will be separated and sorted into general taxonomic categories, then identified to the most discrete taxonomic level possible. Each bone will be compared to illustrations in published handbooks, photos, and the available skeletal comparative materials at ASM. Detailed taxonomic assignment is primary limited to the genus level, and these assignments are limited to elements with sufficient distinguishing features to all allow identification to the given taxonomic level.

All bones lacking identifiable features will be sorted into broad categories by class and size. Size categories are defined as: “large” represents deer size or greater, “medium” represents smaller than deer but larger than jackrabbit, and “small” represents jackrabbit or smaller. When an element cannot be sorted into a class or other taxon, it is assumed to be that of the predominate category of unidentified mammal according to size. Data recorded regarding modification of bone specimens include evidence of burning, cut marks, gnaw marks, and indications of tool or artifact manufacture. The bone will be counted and weighed to the nearest 0.01 g using an Ohaus electronic scale.

Macrobotanical recovery and analysis

The type of sampling employed in this project was a combination of column and bulk sampling. Column samples are consistent, arbitrary volumes of soil taken at regular intervals covering the depth of the excavation unit. Column samples are effectively composed of a series of bulk samples each taken with precise provenience, leading to some overlaps in sampling methods reportedly used. The focus of this study is primarily on elucidation of human and plant interaction in terms of subsistence activities, depositional processes, and post-depositional transformations, and therefore bulk sampling was most appropriate.

Recovery

Flotation will be employed on the sediments for control unit column samples to examine the potential for macrobotanical information at this site. For this study 40 cm x 40 cm columns from selected units will be sampled at 10 cm intervals for a minimum of 2 liters of sediment by volume recovered per level. The subsequent soils and sediments will then be floated utilizing either bucket flotation or ASM’s custom flotation system depending on the quantity of material to be floated.

The basis of the flotation system was a custom designed square aluminum tank fitted with custom parts. For the heavy fraction screen, sheets of 1 mm plastic window mesh are used as separate inserts for each sample. The heavy fraction inserts are attached to the flotation machine with the use of clothespins and clamps. A metal box, constructed to catch the light fraction, has an open top and a bottom covered with wire mesh. The light fraction sieve is a polyester mesh with .25 mm openings. These pieces of cloth are attached to the top of the light fraction box with clothespins. The modified flotation rig increases processing efficiency with a square aluminum flotation tank with a built-in heavy fraction screen of 1 mm mesh that allows for the soaking, disaggregation, and the removal of the extraneous sedimentary matrix. A connected hose pumps water into the rig while a steel box side carriage fitted with a 0.25 mm polyester mesh then captures the floated light aggregate overflow from the main tank.

To limit contamination from previous samples and exterior elements, the heavy fraction insert will be washed out thoroughly after every sample, and the water supply will be maintained continuously. For each flotation samples processed, the context will be noted, and volume measured before it is deposited into the heavy fraction insert with the window mesh in the flotation tank. The out flowing light fraction will be caught continuously in the boxes, while the sediment will be agitated gently by hand to help break lumps and heavier sediment. Once the sample was processed, the heavy fraction insert will be lifted and the window mesh, which contained the heavy fraction, removed, labeled, and laid to dry in the sun. The light fraction bags will be tagged and hung on a clothesline to dry. The heavy fraction insert, the measuring bucket, and the walls of the tank will be washed out thoroughly before the next sample is processed. When they are well dried, the light fractions will be emptied out of the polyester mesh and stored in plastic bags for analysis at a later date.

Identification and Analysis

The floated light fraction samples will be weighed and then sieved through a series of graduated mesh sizes (4 mm, 2 mm, 1 mm, 0.5 mm, and 0.25 mm) prior to analysis to more systematically examine any charred and uncharred plant remains occurring at different size fractions. Charcoal pieces larger than 2 mm, 1 mm, 0.5 mm, or 0.25 mm in diameter will be separated from the rest of the light fraction, and the total charcoal will be weighed. A representative subsample of the identified charcoal will then be subdivided along the cross, radial, and tangential planes to expose the diagnostic structural features of the items. The charcoal fragments will then be examined under a binocular microscope at a magnification of 70x and under a Nikon Optiphot 66 microscope at magnifications of 320-800x. The weights of each charcoal type within each representative sample will also be recorded. The material that remains in the 4 mm, 2 mm, 1 mm, 0.5 mm, and 0.25 mm sieves will be scanned under a binocular stereo microscope at a magnification of 10x, with some identifications requiring magnifications of up to 70x. Material that passes through the 0.25 mm screen will not be examined. The heavy fractions will be scanned at a magnification of 2x for the presence of botanic remains. The types and number of plant taxa represented in the assemblage will then be determined.

Residue Analysis

Protein residue analysis of ground stone and flaked stone surfaces will be used to determine the types of resources being processed at the sites in a potential means to address research issues such as dietary intake, tool use, and site function. Samples will be collected from artifact surfaces of select implements in the lab for both plant and animal proteins. The samples would then be sent for analysis to Linda Scott Cummings, Paleo Research Institute, Golden, Colorado.

The collection methods are those prescribed by the analyzing institution: Extraction of protein residues is usually performed with a 0.2 M Tris hydrochloride, 0.5 M sodium chloride, and 0.5 percent Triton X-100 solution (most desirable); although a 5-percent ammonium hydroxide solution (less desirable) also can be used. Approximately 1-2 ml of solution will be applied to a 1- to 2-in. diameter area of the milling surface. Using a sterile toothbrush, the surface where the solution was applied will be vigorously scrubbed. The liquid will be decanted using a pipette and repeated until a small area of the ground surface has been cleaned. The decanted solution will be placed in a clean screw-capped plastic container with a tight seal. This container will be placed in a labeled zip lock/whirl-pak bag. The product will be shipped by overnight express in a dry-ice cold pack.

Curation

All materials recovered by ASM from this Project will be placed in 4-ml bags, along with artifact tags providing catalog number, artifact description, and provenience information. All artifacts will then be placed in archival-quality boxes. At the completion of the project, all materials will be turned over for permanent curation at an approved facility in San Diego County in accordance with City Guidelines, such as the San Diego Archaeological Center or a Kumeyaay tribal curation facility. The City reserves the right to negotiate repatriation, in whole or part, all recovered archaeological materials in place of curation. All DPR forms and updates created by ASM will be submitted to the SCIC at the completion of the project, along with the final report.

REPORTING

All data recovery efforts will be documented in a report prepared to the City's standards as outlined in Appendix D of the City's Historical Resource Guidelines (HRG 2001:55-59). The report will document all consultation, pre-field work, fieldwork methods, data recovery results, and recommendations for monitoring. The report will provide explicit detail on the contents recovered from every excavation unit and the sedimentary context of recovery, and they will illustrate the results on easy-to-use maps in order to facilitate interpretation and planning with consulting Native Americans and the City.

SUMMARY

This data recovery plan describes methods and research outline that will be used to implement and guide the archaeological data recovery of cultural resources within the Riverwalk Project APE. All efforts will be performed in compliance with CEQA and City guidelines, as well as Secretary of the Interior's Standards and Guidelines of Archaeology.

REFERENCES

Almstedt, Ruth

1982 Kumeyaay and Ipay. In *APS/SDG&E Interconnection Native American Cultural Resources*, edited by Clyde Woods, pp. 6-20. Wirth Associates, San Diego.

Andrefsky, William Jr.

1986 A Consideration of Blade and Flake Curvature. *Lithic Technology* 15:49-54.

1998 *Lithics: Macroscopic Approaches to Analysis*. Cambridge University Press.

Bada, Jeffrey, Roy Schroeder, and George Carter

1974 New Evidence for the Antiquity of Man in North America Deduced from Aspartic Acid Racemization. *Science* 184:791-793.

Bamforth, Douglas B.

1988 Investigating Microwear Polishes with Blind Tests: The Institute Results in Context. *Journal of Archaeological Science* 15:11-23.

Bamforth, Douglas B., and Mark S. Becker

2000 Core/Biface Ratios, Mobility, Refitting, and Artifact Use-lives: A Paleoindian Example. *Plains Anthropologist* 45:273-290.

Becker, Mark S.

1999 Reconstructing Prehistoric Hunter-Gatherer Mobility Patterns and the Implications for the Shift to Sedentism: A Perspective from the Near East. Unpublished Ph.D. Dissertation, Department of Anthropology, University of Colorado, Boulder.

Becker, Mark S., James Daniels, and David Iversen

2013 *Hidden Landforms: A Geomorphological and Archaeological Study of the Sierra One Training Area on Marine Corps Base Camp Pendleton, San Diego County, California*. ASM Affiliates, Carlsbad, California.

Becker, Mark S., Tony T. Quach, James T. Daniels, and Ian Scharlotta

2013 Additional *Archaeological Excavations at SDI-9824, Marine Corps Base Camp Pendleton, San Diego County, California*. ASM Affiliates, Carlsbad, California. Prepared for Department of the Navy NAVFAC.

Binford, Lewis R.

1968 Post-Pleistocene Adaptations. In *New Perspectives in Archeology*, edited by S. R. Binford and L. R. Binford, pp. 313-341. Aldine Publishers, Chicago.

1980 Willow Smoke and Dogs' Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:4-20.

Bull, Charles S.

1987 A New Proposal: Some Suggestions for San Diego Prehistory. In *San Dieguito – La Jolla: Chronology and Controversy*, edited by Dennis R. Gallegos, pp. 35-42. San Diego County Archaeological Society Research Paper No. 1.

Byrd, Brian F.
1996 *Coastal Archaeology of Las Flores Creek and Horno Canyon, Camp Pendleton, California*. ASM Affiliates, Encinitas, California. Prepared for U.S. Army Corps of Engineers, Los Angeles District.

Byrd, Brian F., Drew Pallette, Carol Serr, Lisa Klug, Phillip Kern, V. S. Popper, and Jean Hudson
1995 *Archaeological Testing along San Mateo and San Onofre Creeks, Northwestern Camp Pendleton, San Diego Count, California.* Brian F. Mooney Associates, San Diego.

Byrd, Brian F., and Carol Serr
1993 *Multi-Component Archaic and Late Prehistoric Residential Camps along the Sweetwater River, Rancho San Diego*. Brian F. Mooney Associates Technical Series No. 1. San Diego.

Callahan, Errett
1974 *Experimental Archaeology Papers, No. 3*. Department of Sociology and Anthropology, Virginia Commonwealth University, Richmond.
1979 *The Basics of Biface Knapping in the Eastern Fluted Point Tradition: A Manual for Flintknappers and Lithic Analysts*. Archaeology of Eastern North America No. 7, Eastern States Archaeological Federation, Washington, Connecticut.

Carrico, Richard L.
1997 Sociopolitical Aspects of the 1775 Revolt at Mission San Diego de Alcala: An Ethnohistorical Approach. *Journal of San Diego History* 43:143-157.

Carrico, Richard L., Theodore G. Cooley, and Brian K. Glenn
1994 *East Mission Gorge Interceptor Pump Station and Force Main Project Cultural Resources Data Recovery Report for Site CA-SDI-9,243, San Diego County, California (DEP No. 88-0089)*. Ogden Environmental and Energy Services Co., Inc., San Diego. Prepared for PCL Civil Constructors, Inc., La Mesa, California.

Carter, George F.
1957 *Pleistocene Man at San Diego*. Johns Hopkins Press, Baltimore, Maryland.
1980 *Earlier Than You Think: A Personal View of Man in the Americas*. Texas A&M University, College Station.

Chace, Paul G.
1969 Biological Archaeology of Some Coastal Middens, Orange County, California. *Pacific Coast Archaeological Society Quarterly* 5(2):64-77.

Christenson, Lynne Elizabeth
1990 The Late Prehistoric Yuman People of San Diego County, California: Their Settlement and Subsistence System. Unpublished Ph.D. dissertation, University of Arizona, Tempe.

Cooley, Theodore G., and Patricia T. Mitchell
1996 *Limited Data Recovery Investigations at Site CA-SDI-11 ,767, a La Jolla Complex Site Along the Lower San Diego River Valley*. Report prepared by Ogden Environmental and Energy Services Company for the Metropolitan Transit Development Board (MTDB). On file at the South Coastal Information Center, San Diego State University.

Corum, Joyce, and Christopher White
1986 *Extended Phase I and II Archaeological Test Excavations at Site CA-SDi-9243, Santee, California.* 11-SD-52- P. M. 7.3/17.2 11222-047050. Report on file at Caltrans District 11, San Diego, California.

Cotterell, Brian, and Johan Kamminga
1987 The Formation of Stone Flakes. *American Antiquity* 52:675-708.

Daniels, James T., Jr.
2018 Confidential Addendum to the Class III Cultural Resource Inventory for the Riverwalk Project in Mission Valley, City of San Diego, California. Prepared for SD Riverwalk LLC. Prepared by ASM Affiliates, Inc., Carlsbad, CA.

Davis, Emma Lou, and Richard Shutler, Jr.
1969 Recent Discoveries of Fluted Points in California and Nevada. *Nevada State Museum Anthropological Papers* 14:154-169. Carson City.

Daniels, James T., Jr., Tony T. Quach, and Mark S. Becker
2013 *Archaeological Evaluation of SDI-12100 and SDI-19406, MCB Camp Pendleton, San Diego County, California*. ASM Affiliates, Carlsbad, California.

Daniels, James T., Jr., Tony T. Quach, Ian Scharlotta, and Mark S. Becker
2013 *Final A Limited Archaeological Data Recovery at SDI-12100 and SDI-19406, Marine Corps Base Camp Pendleton, San Diego County, California*. ASM Affiliates, Carlsbad, California.

Daniels Jr, James T, and Mark Becker
2010 *Targeting Cultural Deposits Using Geomorphology and Geophysics at a Multicomponent Site in Southern California*. Poster presented at the 75th Annual Society for American Archaeology Conference – St. Louis, Missouri, April 2010

Drucker, Philip
1937 Culture Element Distributions: V, Southern California. *Anthropological Records* 1:1-52. University of California, Berkeley.
1941 Culture Element Distributions: XVII, Yuman-Piman. *Anthropological Records* 6:91-230. University of California, Berkeley.

Erlandson, Jon M., and Roger H. Colten (editors)
1991 *Hunter Gatherers of Early Holocene Coastal California*. Perspectives in California Archaeology No. 1. Institute of Archaeology, University of California, Los Angeles.

Erlandson, Jon M., and Michael Glassow (editors)
1997 *Archaeology of the California Coast during the Middle Holocene*. Perspectives in California Archaeology No. 4. Institute of Archaeology, University of California, Los Angeles.

Erlandson, Jon M., and Terry L. Jones
2002 *Catalysts to Complexity: Late Holocene Societies on the California Coast*. Perspectives in California Archaeology No. 6. Institute of Archaeology, University of California, Los Angeles.

Fages, Pedro
1937 *A Historical, Political, and Natural Description of California (1775)*. Translated by Herbert Ingram Priestly. University of California Press, Berkeley.

Gallegos, Dennis R.
1987a (editor) *San Dieguito – La Jolla: Chronology and Controversy*. San Diego County Archaeological Society Research Paper No. 1.
1987b A Review and Synthesis of Environmental and Cultural Material for the Batiquitos Lagoon Region. In *San Dieguito-La Jolla: Chronology and Controversy*, edited by Dennis R. Gallegos, pp. 23-34. San Diego County Archaeological Society Research Paper No. 1.

Gallegos, Dennis R., and Carolyn Kyle
1988 *Five Thousand Years of Maritime Subsistence at Ballast Point Prehistoric Site SDI-48 (W-164) San Diego.* WESTEC Services, San Diego. Submitted to U.S. Department of the Navy.

Garcia-Herbst, Arleen
2017 *Cultural Resources Inventory Report for the Riverwalk Project, City of San Diego, County of San Diego, California.* Spindrift Archaeological Consulting, San Diego. Prepared for Hines.

Geiger, Maynard, and Clement W. Meighan
1976 *As the Padres Saw Them: California Indian Life and Customs As Reported by the Franciscan Missionaries, 1813-1815*. Santa Barbara Mission Archive Library, Santa Barbara, California.

Gifford, Edward W.
1918 Clans and Moieties in Southern California. *University of California Publications in American Archaeology and Ethnology* 14:155-219. Berkeley.
1931 *The Kamia of Imperial Valley*. Smithsonian Institution Bureau of American Ethnology Bulletin No. 97. U.S. Government Printing Office, Washington, D.C.

Gilmer, Jo Anne, and Dayle M. Cheever
1997a *Results of Archaeological Monitoring of the North Mission Valley Interceptor Sewer Replacement – Phase II*. RECON, San Diego.
1997b *Results of Cultural Resource Monitoring for the Reconstruction of the Stardust Golf Course Project, Mission Valley, San Diego, California*. RECON, San Diego.

Golla, Victor
2007 California Archaeology and Prehistory after Moratto: Linguistic Prehistory. In *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 71-82. AltaMira Press, Lanham, Maryland.

Griset, Suzanne
1996 Southern California Brown Ware. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Gross, G. Timothy, and Mary Robbins-Wade
2008 Settlement Pattern and Predictive Modeling of Site Locations. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*, pp. 309-343. ASM Affiliates, Carlsbad, California.

Hafner, Duane
1971 The Buck Gully #2 Site (Ora-189). *Pacific Coast Archaeological Society Quarterly* 7(4):1-44.

Hale, Micah Jeremiah

2009 Santa Barbara and San Diego: Contrasting Adaptive Strategies on the Southern California Coast. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Hale, Micah J., and Mark S. Becker

2006 *From the Coast to the Inland: Prehistoric Settlement Systems along the Las Pulgas Corridor, Camp Pendleton, California*. ASM Affiliates, Carlsbad, California. Prepared for Department of the Navy NAVFAC SW.

Hanna, David C.

1983 A Major Challenge to "San Dieguito" and "La Jolla." *Cultural Resource Management Casual Papers* 1(3):76-102. Department of Anthropology, San Diego State University.

Harding, Mabel

1951 La Jollan Culture. *El Museo* 1(1):10-11, 31-38.

Hedges, Ken

1986 *Santa Ysabel Ethnobotany*. San Diego Museum of Man Ethnic Technology Notes No. 20.

Hicks, Frederic Noble

1963 Ecological Aspects of Aboriginal Culture in the Western Yuman Area. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

Historical Resources Guidelines (HRG)

2001 *City of San Diego Historical Resources Guidelines – Appendix A: San Diego History*. Amended April 2001. Available online at: http://www.sandiego.gov/developmentservices/industry/pdf/ldmhistorical.pdf.

Hohenthal, William D., Jr.

2001 *Tipai Ethnographic Notes: A Baja California Indian Community at Mid-Century*. Ballena Press Anthropological Papers No. 48. Novato, California.

Howard, Jerry

1977 Seasonality and Settlement Patterns in the Orange County Coastal Foothills. *Pacific Coast Archaeological Society Quarterly* 13(2):11-21.

Jones, Terry L., and Kathryn A. Klar (editors)

2007 *California Prehistory: Colonization, Culture, and Complexity*. AltaMira Press, Lanham, Maryland.

Keeley, Lawrence H.

1980 *Experimental Determination of Stone Tool Uses*. University of Chicago Press, Chicago.

1982 Hafting and Retooling: Effects on the Archaeological Record. *American Antiquity* 47:798-809.

Kelly, Robert L.

1988 The Three Sides of a Biface. *American Antiquity* 53:717-734.

Kline, George E., and Victoria L. Kline

2007 Fluted Point Recovered from San Diego County Excavation. *Proceedings of the Society for California Archaeology* 20:55-59.

Kroeber, A. L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin No. 78. Washington, D.C.

Kuhn, Steven L.
1991 "Unpacking" Reduction: Lithic Raw Material Economy in the Mousterian of West-Central Italy. *Journal of Anthropological Archaeology* 10:76-106.

Kyle, Carolyn, and Gallegos, Dennis R.
1995a *Archaeological Testing of Seven Sites for the Stardust Golf Course Realignment Project City of San Diego, California.* Gallegos and Associates, Carlsbad, California.
1995b *Archaeological Testing of Prehistoric Site CA-SDI-12126 for the North Mission Valley Interceptor Sewer Phase II City of San Diego, California*. Gallegos and Associates, Carlsbad, California.

Laylander, Don
1991 Organización comunitaria de los yumanos occidentales: Una revisión etnográfica y prospecto arqueológico. *Estudios Fronterizos* 24/25:31-60.
1995 The Question of Prehistoric Agriculture among the Western Yumans. *Estudios Fronerizos* 35/36:187-203.
1997 Inferring Settlement Systems for the Prehistoric Hunter-Gatherers of San Diego County, California. *Journal of California and Great Basin Anthropology* 19:179-196.
2000 *Early Ethnography of the Californias, 1533-1825*. Coyote Press Archives of California Prehistory No. 47. Salinas, California.
2001 The Creation and Flute Lure Myths: Regional Patterns in Southern California Traditions. *Journal of California and Great Basin Anthropology* 23:155-178.
2004 *Listening to the Raven: The Southern California Ethnography of Constance Goddard DuBois*. Coyote Press Archives of California Prehistory No. 51. Salinas, California.
2010 Linguistic Prehistory and the Archaic-Late Transition in the Colorado Desert. *Journal of California and Great Basin Anthropology* 30:141-155.
2011 Diversity of Prehistoric Burials and Cemeteries in the Western Yuman Region. *California Archaeology* 3:159-176.

Luomala, Katherine
1978 Tipai and Ipai. In *California*, edited by Robert F. Heizer, pp. 592-609. Handbook of the North American Indians, Vol. 8, edited by William C. Sturtevant. Smithsonian Institution, Washington, D.C.

McDonald, Meg, and James D. Eighmey
2008 Late Period Prehistory in San Diego. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*, pp. 109-169. ASM Affiliates, Carlsbad, California.

McDonald Meg, Carol Serr, and Daniel Saunders
1994 *Phase III Data Recovery of CA-SDI-9243, a Multicomponent Prehistoric Site in the San Diego River Valley San Diego County, California.* Report prepared by Brian F. Mooney and Associates for Caltrans District 11. On file at Brian F. Mooney and Associates and at Caltrans District 11, San Diego, California.

Meighan, Clement W.
1954 A Late Complex in Southern California Prehistory. *Southwestern Journal of Anthropology* 10:215-227.

Minshall, Herbert L.
1976 *The Broken Stones*. Copley Books, San Diego.
1989 *Buchanan Canyon: Ancient Human Presence in the Americas*. Slawson Communications, San Marcos, California.

Moratto, Michael J.
1984 *California Archaeology*. Academic Press, Orlando, Florida.

Moriarty, James R., III
1966 Cultural Phase Divisions Suggested by Typological Change Coordinated with Stratigraphically Controlled Radiocarbon Dating at San Diego. *Anthropological Journal of Canada* 4:20-30.

Pearsall, Deborah M
2016 *Paleoethnobotany: a handbook of procedures*. Routledge.

Pierce, Christopher
1992 Effects of pocket gopher burrowing on archaeological deposits: A simulation approach. *Geoarchaeology* 7(3):185-208.

Pigniolo, Andrew R.
1994 *Historic Properties Evaluation for the North Mission Valley Interceptor Sewer Phase II Project, City of San Diego*. Ms. on file at SCIC, SDSU.

Pigniolo, Andrew R., and Danielle Huey
1991 *Cultural Resource Testing and Evaluation for the Mission Valley West Light Rail Transit Project, San Diego, California*. Report prepared by ERCE (Ogden) for the Metropolitan Transit Development Board. On file at SCIC, SDSU.

Pourade, Richard F.
1960 *The Explorers*. The History of San Diego Vol. 1. Union-Tribune Publishing, San Diego.
1961 *Time of the Bells*. The History of San Diego Vol. 2. Union-Tribune Publishing, San Diego.
1963 *The Silver Dons*. The History of San Diego Vol. 3. Union-Tribune Publishing, San Diego.
1964 *The Glory Years*. The History of San Diego Vol. 4. Union-Tribune Publishing, San Diego.
1965 *Gold in the Sun*. The History of San Diego Vol. 5. Union-Tribune Publishing, San Diego.
1967 *The Rising Tide*. The History of San Diego Vol. 6. Union-Tribune Publishing, San Diego.
1977 *City of the Dream*. The History of San Diego Vol. 7. Union-Tribune Publishing, San Diego.

Pryde, Philip R.
2004 *San Diego: An Introduction to the Region*. Sunbelt Publications, San Diego.

Reddy, Seetha N.
2000 *Settling the Highlands: Late Holocene Adaptations on Camp Pendleton, San Diego County, Southern California*. Prepared for U.S. Army Corps of Engineers, Los Angeles District.

Reeves, Brian, John M. D. Pohl, and Jason W. Smith
1986 The Mission Ridge Site and the Texas Street Question. In *New Evidence for the Pleistocene Peopling of the Americas*, edited by Alan Lyle Bryan, pp. 65-80. Center for the Study of Early Man, University of Maine, Orono.

Rogers, Malcolm J.
1939 *Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas*. San Diego Museum Papers No. 3.
1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1:167-198.
1966 *Ancient Hunters of the Far West*. Union-Tribune, San Diego.

Rondeau, Michael F., Jim Cassidy, and Terry L. Jones
2007 Colonization Technologies: Fluted Projectile Points and the San Clemente Island Woodworking/Microblade Complex. In *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 63-70. AltaMira Press, Lanham, Maryland.

Rosenthal, Jeffrey S., William R. Hildebrandt, and Jerome H. King
2001 Donax Don't Tell: Reassessing Late Holocene Land Use in Northern San Diego County. *Journal of California and Great Basin Anthropology* 23:179-214.

Scharlotta, Ian
2015 Determining Temporal Boundaries and Land Use Patterns: Hunter-Gatherer Spatiotemporal Patterning in San Diego County. *California Archaeology* 7(2):205-244.

Schiffer, Michael Brian
1987 *Formation Processes of the Archaeological Record*. University of New Mexico, Albuquerque.

Schroeder, Albert H.
1978 Prehistory: Hakataya. In *Southwest*, edited by Alfonso Ortiz, pp. 100-107. Handbook of North American Indians, Vol. 9, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Shipek, Florence
1982 Kumeyaay Socio-Political Structure. *Journal of California and Great Basin Anthropology* 4:296-303.
1991 *Delfina Cuero: Her Autobiography, an Account of Her Last Years, and Her Ethnobotanic Contributions*. Ballena Press, Menlo Park, California.
1993 Kumeyaay Plant Husbandry: Fire Water, and Erosion Management Systems. In *Before the Wilderness: Environmental Management by Native Californians*, edited by Thomas C. Blackburn and Kat Anderson, pp. 378-388. Ballena Press, Menlo Park, California.

Shumway, George, Carl L. Hubbs, and James R. Moriarty
1961 Scripps Estates Site, San Diego, California: A La Jolla Site Dated 5460 to 7370 Years before the Present. *Annals of the New York Academy of Sciences* 93:37-132.

Spier, Leslie
1923 Southern Diegueno Customs. *University of California Publications in American Archaeology and Ethnology* 20:295-358. Berkeley.

Sutton, Mark Q.
2010 The Del Rey Tradition and Its Place in the Prehistory of Southern California. *Pacific Coast Archaeological Society Quarterly* 44(2):1-54.

Sutton, Mark Q., and Jill K. Gardner
2010 Reconceptualizing the Encinitas Tradition of Southern California. *Pacific Coast Archaeological Society Quarterly* 42(4):1-64.

Taylor, R., L. Payen, C. Prior, P. Slota, R. Gillespie, J. Gowlett, R. Hedges, A. Hull, T. Zabel, D. Donahue, and R. Berger
1985 Major Revisions in the Pleistocene Age Assignments for North American Human Skeletons by C14 Accelerator Mass Spectrometry: None Older Than 11,000 C14 Years B.P. *American Antiquity* 50:136-140.

Thomas, David Hurst
1979 *Archaeology*. Holt, Rinehart and Winston, New York.

True, Delbert L.
1958 An Early Complex in San Diego County, California. *American Antiquity* 23:255-263.
1966 Archaeological Differentiation of Shoshonean and Yuman Speaking Groups in Southern California. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.
1970 *Investigation of a Late Prehistoric Complex in Cuyamaca Rancho State Park, San Diego County, California*. Archaeological Survey Monographs No. 1. University of California, Los Angeles.

Vaughan, Patrick
1985 *Use-Wear Analysis of Flaked Stone Tools*. University of Arizona, Tucson.

Wallace, William J.
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 11:214-230.

Warren, Claude N.
1964 Cultural Change and Continuity on the San Diego Coast. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.
1966 (editor) *The San Dieguito Type Site: M. J. Rogers' 1938 Excavation on the San Dieguito River*. San Diego Museum of Man Papers No. 5.
1967 The San Dieguito Complex: Review and Hypothesis. *American Antiquity* 32:168-185.
1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. In *Archaic Prehistory in the Western United States*, edited by Cynthia Irwin-Williams, pp. 1-14. Eastern New Mexico University Contributions in Anthropology No. 1(3). Portales.

Warren, Claude N., Gretchen Siegler, and Frank Dittmer
2008 Paleo-Indian and Early Archaic Periods. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*, pp. 13-107. ASM Affiliates, Carlsbad, California.

Waterman, Thomas T.
1909 Analysis of the Mission Indian Creation Story. *American Anthropologist* 11:41-55.

1910 The Religious Practices of the Diegueño Indians. *University of California Publications in American Archaeology and Ethnology* 8:271-358. Berkeley.

Waters, Michael R.

1982 The Lowland Patayan Ceramic Tradition. In *Hohokam and Patayan: Prehistory of Southwestern Arizona*, edited by Randall H. McGuire and Michael B. Schiffer, pp. 275-297. Academic Press, New York.

1992 *Principles of Geoarchaeology a North American Perspective*. University of Arizona Press.

Wilken, Michael Alan

2012 An Ethnobotany of Baja California's Kumeyaay Indians. Unpublished Master's thesis, Department of Anthropology, San Diego State University.

Whittaker, John C.

1994 *Flintknapping: Making and Understanding Stone Tools*. University of Texas Press, Austin.

Yohe, Robert M., II

1992 A Reevaluation of Western Great Basin Cultural Chronology and Evidence for the Timing of the Introduction of the Bow and Arrow to Eastern California Based on New Excavations at the Rose Spring Site (CA-INY-372). Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Riverside.

Young, Donald, and Douglas B. Bamforth

1990 On the Macroscopic Identification of Used Flakes. *American Antiquity* 55:403-409.