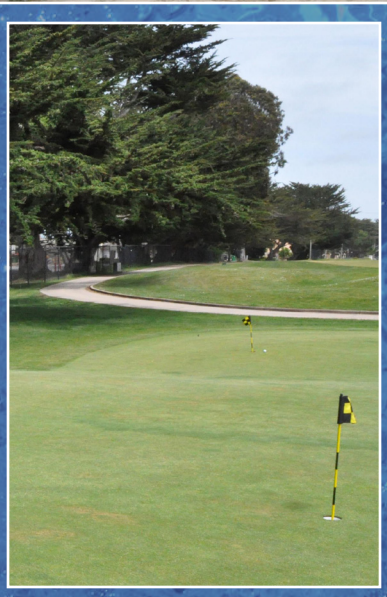
Pacific Grove Local Water Project



Draft Environmental Impact Report

Volume 2 - Appendices

September 16, 2014

Brezack & Associates Planning

APPENDIX D

Cultural, Archaeological & Historic Resource Surveys

APPENDIX D-1

Preliminary Archaeological Resources Assessment

BREZACK & ASSOCIATES PLANNING

ARCHAEOLOGICAL ASSESSMENT
FOR THE
SATELLITE RECYCLED WATER TREATMENT PLANT
AT THE
FORMER POINT PINOS WASTEWATER TREATMENT PLANT

PACIFIC GROVE, CALIFORNIA

AUGUST 2013

ALBION ENVIRONMENTAL, INC.

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EXECUTIVE SUMMARY

In July 2013, Mr. James Brezack of Brezack & Associates Planning contracted with Albion Environmental, Inc. (Albion), to conduct an archaeological assessment of the proposed Satellite Recycled Water Treatment Plant (SRWTP) at the former Point Pinos Wastewater Treatment Plant (PPWWTP) in Pacific Grove. Albion's investigation included a background records search at the California Historical Resources Information System Northwest Information Center (NWIC) at Sonoma State University, and a field investigation entailing pedestrian survey and limited shovel testing of the subject parcel. The assessment was designed to adequately identify archaeological resources that may be impacted by the planned project under current CEQA guidelines (Article 5: Section 15064.5). A separate preliminary assessment of built environment resources was conducted by Archives and Architecture, LLC and is provided in Appendix A of this report.

A search of records at the NWIC indicated that the project area has been previously surveyed for cultural recourses. Fourteen sites, including 12 prehistoric and two historic age sites were identified with in a 0.25-mi radius. Two of the prehistoric sites are mapped in close proximity to the project location. CA-MNT-127 (located immediately north of the project boundary) is a rich occupation midden containing abundant shell and bone. CA-MNT-128 is a shell midden located 100 meters to the south. Historic site CA-MNT-676 is located 100 meters to the southwest; the site is reported to have produced at least six "Indian" and one "white" skeleton as well as hundreds of musket balls. Archaeological survey in 1977 (Breschini and Edwards 1977) did not relocate purported site constituents. Historic site CA-MNT-674 is the Point Pinos Lighthouse, located about 220 meters to the south. The structure was built in 1885 and is listed on the National Register of Historic Places (#7700312).

Albion's field investigation confirmed the presence of prehistoric cultural materials likely associated with a previously recorded site CA-MNT-127. Details on the nature, extent, depth, and integrity of the deposit are unknown. The site is located in an area of planned development and will therefore require consideration during the CEQA review process. Additional archaeological work is likely to include resource and impact analysis (Phase II archaeological evaluation), and possibly mitigation planning.

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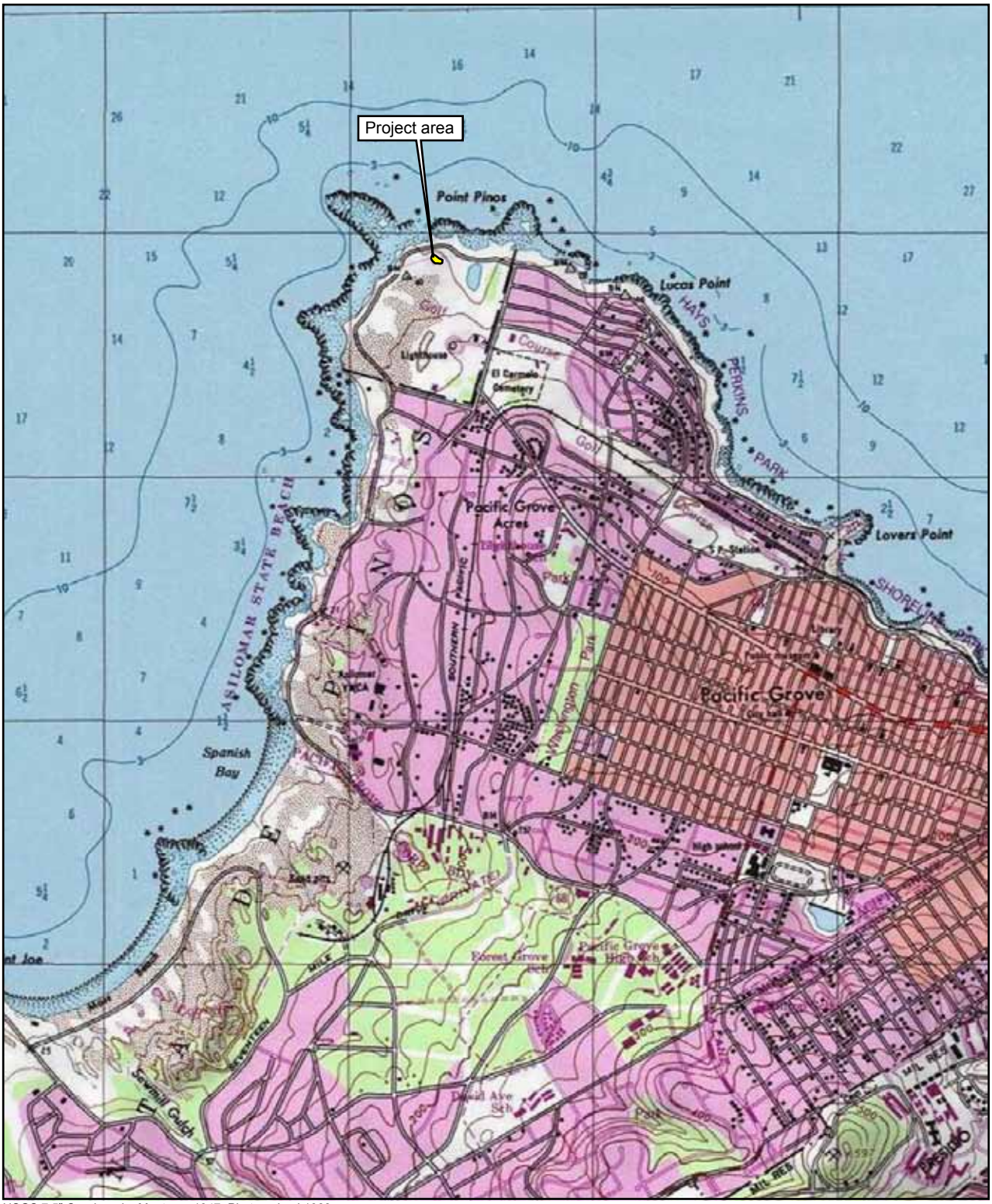
INTRODUCTION

This report documents the results of an archaeological assessment for the proposed Satellite Recycled Water Treatment Plant (SRWTP) at the former Point Pinos Waste Water Treatment Plant (PPWWTP) in Pacific Grove (Figure 1). Current plans call for construction of a new recycled water pump station and a MBR treatment and disinfection station, situated adjacent to the existing (non-functioning) sludge digester, clarifier, and administration buildings. The existing structures were built in the early 1950s.

The completed evaluation comprised three tasks including: 1) a review of records from the NWIC; 2) a surface survey of the parcel; and 3) limited subsurface excavation. A separate preliminary assessment of built environment resources was conducted by Archives and Architecture, LLC and is provided in Appendix A of this report.The investigation was designed to address identification of archaeological resources under current California Environmental Quality Act (CEQA) guidelines under Section Article 5: Section 15064.5).

The records search was conducted by Albion archaeologist Jennifer Farquhar in July 2012 (NWIC File No.: 13-0098). The subsequent pedestrian survey and subsurface testing was conducted on July 30, 2013 by Albion staff archaeologist John Ellison, under the supervision of Jennifer M. Farquhar. Ms. Farquhar holds a M.A. in Anthropology, and has worked in California archaeology for over 20 years, the past eight years in a supervisory capacity.



USGS 7.5" Quadrangle: Monterey 1947, Photorevised 1983

0 250 500 750 1,000
Meters

0 1,000 2,000 3,000 4,000
Feet

N

Albion Environmental, Inc.

Figure 1. Site location.

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PROJECT LOCATION AND DESCRIPTION

The study area is located just west of Asilomar State Beach in the town of Pacific Grove (Figure 1). The project site is situated on a terrace, just west of the intersection of Asilomar Avenue and Ocean View Boulevard.

The project proposes to provide treatment of Pacific Grove wastewater at a new local SRWTP at the former PPWWTP and deliver recycled water to irrigation sites in the city. To minimize environmental impacts such as odors, noise, vibration, and aesthetic impacts, the SRWTP will be enclosed in structures with adequate ventilation, air scrubbers, and architectural designs compatible with surrounding structures. The SRWTP will make use of the existing structures storage at the former PPWWTP for diurnal and operational storage if feasible. A footprint of approximately 18,000 square feet is needed for the treatment facilities. During the winter, when there is little or no irrigation demand, the SRWTP will continue to operate at a reduced rate to maintain biomass performance.

The area has previously been disturbed by the construction of the Point Pinos WWTP.

SOURCES CONSULTED

In order to determine if cultural resources are recorded within or near the project area, the following sources were conducted as part of the NWIC records search:

- Office of Historic Preservation Properties Directory for Pacific Grove reveals no historic properties located within a 0.25-mile radius.

- California Inventory of Historic Resources for Pacific Grove reveals no historic resources located within a 0.25-mile radius.

A search of records at the Northwest Information Center (NWIC) at Sonoma State University indicated that the project area has been previously surveyed for cultural recourses (Breschini and Edwards 1977). Fourteen sites, including 12 prehistoric and 2 historic age sites were identified within a 0.25-mi radius. Two of the prehistoric sites are mapped in close proximity to the project location. CA-MNT-127 (located immediately north of the project boundary) is a rich occupation midden containing abundant shell and bone. CA-MNT-128 is a shell midden located 100 meters to the south.

In addition, two historic era sites are in close proximity to the project location. Site CA-MNT-676 is a historic site located 100 meters to the southwest; the site is reported to have produced at least six “Indian” and one “white” skeleton as well as hundreds of musket balls. Archaeological survey in 1977 (Breschini and Edwards 1977) did not relocate purported site constituents. Site CA-MNT-674 is the Point Pinos Lighthouse, located about 220 meters to the south. The structure was built in 1885 and is listed on National Register of Historic Places (#7700312).

BACKGROUND

Environment

The project site is located 20 feet above sea level and is situated on the upper beach terrace immediately adjacent the shoreline at Asilomar State Beach.

The area is situated on a Mesozoic-aged granitic substrate that is part of the Salinian Block (Harden 1998:270). This is apparent by outcroppings of granitodiorite and the granite-derived beach sand (Gordon 1996:9). Granite is an intrusive igneous rock that formed while magma slowly cooled underneath the earth's surface. More recently formed Miocene sedimentary rocks are present nearby, demonstrating the "accreted terraine" of the California coast where different types of stone are brought together through tectonic subduction between the Pacific and North American plates (Harden 1998:253; National Oceanic and Atmospheric Administration [NOAA] 1992:II-10). Further, the presence of several faults in the vicinity attests to the presence of tectonic activity (Jennings 1977).

The soils in the area are characterized as Baywood sand, consisting of deep, somewhat excessively drained soils that formed in old sand dunes near the coast (https://soilseries.sc.egov.usda.gov). Presently the climate of the Monterey Bay and the outer coast area in which Asilomar State Beach is located is relatively temperate. On average, Pacific Grove receives 50.8 cm (20 in) of rain a year, most of this falling between November and March (www.weather.com). The low in January and the high in July range from 6.3˚C (43.3˚ F) to 19.9˚C (67.8˚ F), though seasonal variability in temperature is not great (Gordon 1996:15; www.climate.fizber.com). Winter storms cause wave action which transports sand offshore, leaving shoreline cliff edges susceptible to erosion. In the summer, less ocean turbidity carries sand back to the shoreline (Schoenherr 1992:630).

Prehistoric and Ethnographic Context

Central Coast Prehistory

Although the history of archaeological investigation in California spans more than a century, certain areas of the state were largely passed over by researchers until fairly recently. Indeed, it has only been in the last few decades that California's central coast (including Santa Cruz, Monterey, and San Luis Obispo Counties) has witnessed intensive archaeological investigation. This came about primarily as a result in the 1970s of cultural resources management (CRM), which was instituted to enact a series of historic preservation laws and mandates, beginning with the National Historic Preservation Act (NHPA) of 1966. Prior to that, only a handful of archaeological investigations were completed in the region (e.g. Beardsley 1946; Reinman 1961; Clemmer 1962; Pohorecky 1964; Leonard et al. 1968). As Jones et al. (1996:34) have pointed out, the majority of these were generally descriptive in nature and, unfortunately, are of little relevance to contemporary research agendas. Much of the research in the 1970s was undertaken to comply with legally mandated environmental laws and statutes and, as a result, the work was often sporadic and geared toward resource conservation and management rather than problem-oriented research. With the advent of the 1980s, researchers began to practice more problem-oriented research in the region and, perhaps most importantly, to undertake archaeological projects that contributed significantly to understanding local prehistory. This interest continued into the next decade with several long-term research projects (e.g. Cartier 1993a, 1993b; Hylkema 1991; Hildebrandt and Mikkelsen 1993; Jones 1993; Jones et al. 1996; Milliken et al. 1999) that addressed various aspects of central coast prehistory, ranging from its earliest antiquity to the effects of environmental impacts on the area's prehistoric inhabitants.

Partly as a result of early neglect, central coast prehistory was, for many years, interpreted largely through reference to adjoining areas, such as the Santa Barbara Channel and the San Francisco Bay area. The cultural chronology developed by David Banks Rogers (1929), for instance, was routinely applied to prehistoric cultures in the San Luis Obispo region (Carter 1941). Fredrickson's (1973) five-part chronology, likewise, was often used as the basis with which to interpret the prehistoric sequences in Santa Cruz and Monterey counties (Hylkema 1991). However, in recent years, many contemporary archaeologists working along the central coast have adopted the chronological sequence proposed by Jones et al. (1996). This sequence recognizes six major prehistoric periods of cultural adaptation extending beyond the last 10,000 years of human occupancy. The proposed temporal periods emphasize changes in human adaptation over time and focus largely on the shifting significance of coastal vs. terrestrial habitats and the associated artifact assemblages. Jones et al. (2007) present a more recent application of this framework along with a regional overview.

The initial period in this sequence, termed the Paleoindian, originates in the late Pleistocene and continues until approximately 10,000 B.P. This is followed by the Millingstone Period (10,000-5,500 B.P.), and is recognized by increasingly abundant milling equipment (manos and metates) in the archaeological record when populations apparently followed a generalized subsistence pattern that placed an importance on coastal resources, namely shellfish. The ensuing Early Period (5,500-2,600 B.P.) was a time of new subsistence emphases that include a greater reliance on hunting and the initial exploitation of acorns. The Middle Period (2,600-1,000 B.P.) was marked by the intensification of subsistence practices, especially a greater reliance on marine and littoral foods where fish played an important role in the diet. During the Middle/Late Transition (1,000-750 B.P.), populations in central California experienced deteriorating environmental conditions, and apparently underwent major adaptive shifts in both subsistence and settlement. Finally, the Late Period (750 B.P.-Historic) marks the initial appearance of numerous projectile points, including small side-notched (Desert side-notched), triangular (Cottonwood), and leaf-shaped points, representing the introduction of the bow and arrow. There is an apparent shift in settlements to interior settings while the immediate coastal environments appear to have been used for more short term gathering and processing activities.

Indications of prehistoric inhabitation of the central California coast dating to the terminal Pleistocene/early Holocene is limited, with the strongest evidence supporting this argument coming from two fluted points recovered from peri-coastal contexts in San Luis Obispo County (Bertrando 2004; Gibson 1996; Mills et al. 2005). One fluted point fragment near Santa Margarita was recovered in association with two flake knives, a scraper, two cores and sixty-seven pieces of debitage (Gibson 1996). It was fabricated from pale yellow Franciscan chert. The other specimen was found near Nipomo by local rock collectors and is fabricated from Monterey chert (Mills et al. 2005). Later investigation of the area in which it was found failed to identify other archaeological remains, although the location is notable by the local presence of fossilized Pleistocene fauna (Bertrando 2004:101). Unfortunately neither of these finds comes from dated contexts, or with robust assemblages, leaving their antiquity and greater cultural context relatively ambiguous.

Few other components dating to this period have been investigated, and many questions regarding topics such as settlement, subsistence, stone industries, and social organization, remain unanswered. The dearth of sites dating to this antiquity may, in part, be related to progressively rising sea levels that accompanied the end of the Pleistocene and the early Holocene. It is well documented that in the immediate post-Pleistocene period, world sea levels began to rise with the melting of continental ice sheets. At this time, many previously exposed landscapes in California were inundated by rising waters and underwent complex landscape transformation in the vicinities of river mouths (Masters and Aiello 2007). By 10,000 B.P., for example, sea water began to penetrate San Francisco Bay, which previously had comprised a series of broad inland floodplains. Elsewhere in California, based on sediment cores and local landform configurations, marine transgression aided in the creation of

bays, lagoons, and estuaries. Between ca. 10,000 and 8,000 B.P., the Elkhorn Valley was inundated by saltwater and transformed into a high energy tidal channel (Jones et al. 1996:6). At 8,000 years ago, sea level was about 15 m below its present level at Elkhorn Slough (Masters and Aiello 2007:49). Bickle (1978:8) estimates that sea level rise has submerged 20,000 km^2 of land along the California coast. Sea level transgression slowed after about 7,000 years ago, prompting fluvial sedimentation and tectonic uplift. Consequently, coastal sites earlier than 7,000 B.P. may have been inundated by rising waters.

In general, researchers normally divide this early time span into two divisions: the Paleoindian (pre-10,000 B.P) and the Millingstone (10,000–5,500 B.P.). A coastal focused alternative to the large game focused Paleoindian model, the Paleo-Coastal Tradition, was first proposed by Davis et al. (1969) and later expanded upon by Moratto (1984). Although few sites or site components dating from this time period have been investigated and its presence is largely conjectural, some researchers have posited that Paleo-Coastal peoples established residences along estuaries and bay shores. Associated toolkits are suggested to be scrapers, scraper-planes, bifaces, and lack milling equipment (Jones et al. 2002:215). One of the few inland sites in the region that may date to this time period is the Scotts Valley site (CA-SCR-177) (Cartier 1989, 1993b) where radiocarbon assays from the site suggest that the earliest cultural stratum dates to at least 9,000 years. For the same site, G.L. Fenenga (1993:245-254) proposes two pre-8,000 B.C. phases, marked by flake tools, small leaf-shaped and medium lanceolate projectile points and/or knives, hammer stones, and ochre. Jones (1993:19), however, suggests that there are numerous issues compromising interpretations of the site's stratigraphic integrity and dating. In fact, Jones et al. (1996:39) note that "the extent to which these assemblages are constituted to some unknown degree by materials mixed from more recent contexts is indicated by the occurrence of obsidian among strata assigned to these phases since none of the obsidian hydration results equate with a time depth greater than 7000 B.C." As a result, the Paleo-Coastal Tradition is not readily described in the Monterey Bay area.

Farther south, in San Luis Obispo County, Moratto (1984:107–108) includes the lower levels of the Diablo Canyon sites (CA-SLO-2 and CA-SLO-585), which produced dates of ca. 9,320 B.P. (calibrated 10,552 B.P) and 8,410 B.P. (calibrated 8,976 B.P.), respectively, as part of the Paleo-Coastal Tradition. Greenwood (1972), however, indicates that the associated artifacts are typical of Millingstone Period assemblages rather than belonging to an earlier hypothesized Paleoindian occupation. Based on this evidence, she advances the idea that Millingstone Period adaptations may have had a greater time depth than previously conceived.

> The lowest levels at Diablo Canyon verify a Milling Stone base in San Luis Obispo county….However, the dates are earlier than any currently accepted for the Bay, Valley, and Delta manifestations (Greenwood 1972:92).

Broadening the scale of this argument, recent evidence from the Northern Channel Islands has resurrected this idea of a Paleo-Coastal people and led to a reevaluation of early Holocene California coastal adaptations (cf. Erlandson et al. 2007; Rick et al. 2001). This new conception is distinct from the earlier "Paleo-Coastal Tradition" in that it includes the use of ocean going vessels and fishhooks to represent a highly developed maritime focused adaptation that is posited to be potentially related to a second migration of people to North America (Erlandson et al. 2007).

Paleoindian occupations aside, it is apparent that the extended antiquity of the Millingstone Period is supported by the more recent findings at Cross Creek (CA-SLO-1797), a shell midden site with a typical Millingstone assemblage dating to ca. 8350-7700 B.C. (Fitzgerald 2000; Jones et al. 2002), while contexts containing "Paleo-Coastal Tradition" assemblages have remained elusive. Coastal sites attributed to the Millingstone Period (10,000-5,500 B.P.) are best characterized by high density shell

middens—composed primarily of mussel (*Mytilus* spp.)—located adjacent to extant estuaries or near areas where paleo-estuaries once existed as a result of early Holocene sea level rise.

As the name for this period implies, site assemblages generally contain abundant milling stones and hand stones (Meighan 1978; Erlandson 1991, 1994; Fitzgerald and Jones 1999), although this is not always the case (D. Jones et al. 2004; Jones et al. 1996, 2004). A good example of this expression may be drawn from CA-SLO-1797:

> The dominance of the grinding equipment, the presence of hammer stones (used for the manufacture and maintenance of the ground stone), the total absence of mortars and pestles, the 6:1 ratio of milling tools to projectile points and bifaces, and the very low density of debitage recovered per cubic meter soil excavated (ca. 20.0 m^2) are all traits diagnostic of the Millingstone Horizon (Fitzgerald 2000:116).

In addition to milling equipment, Millingstone Period sites are typified by eccentric crescents, long-stemmed projectile points, and cobble/core tools. In general, there is a low incidence of projectile points and other flaked stone. Shell beads from this time period are characterized as thick rectangular (L-series) *Olivella* beads (Glassow 1996). Erlandson (1991, 1994) has suggested that Millingstone Period groups were semi-sedentary, their diets emphasizing shellfish and small seeds. The hunting of large terrestrial game and marine mammals as well as the exploitation of fishes was apparently of minor importance. Other researchers, however, have argued that both coastal and interior habitats were exploited by early Holocene populations targeting small fauna, and a variety of grass seeds, nuts, and other inland plant taxa as well as shellfish (McGuire and Hildebrandt 1994; Jones and Richman 1995; Mikkelsen et al. 1998; Milliken et al. 1999). Jones (2003:218) argues for a more mobile settlement pattern during this time that included the exploitation of marine mammals. A recent study presents paleodietary data derived from stable isotope analysis on human remains excavated from CA-SCR-60/130 at Harkins Slough near the Monterey Bay (Newsome et al. 2004). A Millingstone Period (ca. 7000 B.P) dated population (n=5) presents data suggesting an emphasis on marine resources that includes marine fish, mammals, and shellfish, with considerably less use of terrestrial resources. Terrestrial resources are generally thought to be plant seeds and small mammals.

In Monterey County, other significant sites dating to the Millingstone Period have been investigated (e.g. CA-MNT-229, and CA-MNT-234). CA-MNT-229, also known as the "Vierra Site," is situated at the mouth of the Elkhorn Slough. Radiocarbon-dated to ca. 6200 and 4,000 B.C., the earliest levels of the site are marked by an eccentric crescent, long-stemmed points, and cobble/core tools of chert and quartzite (Jones and Jones 1992). CA-MNT-234, located near Moss Landing, also contains an early component with dates ranging from 8,000 to 6,500 B.P. The site is notable for its high frequency of milling equipment, abundant, diversified estuary shellfish, and terrestrial mammal bone dominated by small game (Milliken et al. 1999).

The next few thousand years (between 5,500 and 2,600 B.P.) are referred to as the Early Period throughout southern and central California. Most notable about prehistoric adaptations at this time are innovations in subsistence technology, especially the initial appearance of mortars and pestles (perhaps signaling acorn use) and an increase in the frequency of large side-notched and contracting-stem projectile points along with flaked stone debris. Shell beads common during this time period include thick rectangular (L-series), end-ground (B-series), and split (C-series) *Olivella* beads. The appearance of eastern California obsidian (mainly Casa Diablo) in Early Period assemblages also implies that long-distance trade and exchange relations developed during this period (Jones 1995). Jones (1995) and Jones and Waugh (1997) posit a decrease in residential mobility, which they attribute to the advent of mortar and pestle use and a clearer delineation of gender roles that accompanied a trend toward greater population circumscription. Jones and Waugh (1997) also

contend that Early Period sites, in contrast to Millingstone Period sites, are found in more diverse settings, including interior, estuary, and outer coast contexts.

In terms of subsistence, mammals and fish increased in importance relative to shellfish. These resources, coupled with the addition of acorns, signified a broadening of the diet breadth. At CA-SCR-60/130, stable isotope analysis on two individuals supports the increased importance of terrestrial resources relative to marine ones (Newsome et al. 2004). They attribute this to limitations of the marine resource base, however, this does not account for the presence of productive fisheries at Elkhorn Slough and the Pajaro River (Jones et al. 2007:143). Glassow (1996:134) has pointed out that this expansion of the diet breadth was accompanied by a significant increase in labor devoted to food processing. Before acorns can be made palatable, the toxic tannic acid must be leached out of the meal, a process not required by hard seeds. Glassow (1996:134) stated, "it is likely, therefore, that people would consume acorns no more than necessary, as insurance against normal fluctuations in food resource productivity from one year to the next." While the introduction of acorns has implications for labor organization and settlement, the peripheral role played by the resource base at this time in prehistory may relate to more of a process of "extensification" (*sensu* Beaton 1991) where new foods are introduced to the diet, rather than "intensification" where greater amounts of labor are focused on the processing of a particular resource, as is more characteristic of later prehistoric times. Acorn macrofossils are recovered in lesser amounts in these early assemblages than in later ones.

The change that occurred from the Millingstone to the Early Period has traditionally been interpreted as an adaptive shift accompanying the arrival of Rogers's (1929) "Hunting Culture." In his original conception, Rogers described Hunting Culture people as a separate ethnic population more reliant upon use of the acorn and on both terrestrial and marine mammals. These Hunting peoples, he hypothesized, entered the central coast and gradually displaced the earlier populations of Millingstone-adapted peoples. This premise, however, has more recently been discounted largely in favor of the idea that observed differences in artifact assemblages are probably more indicative of seasonal or functional variability in site occupations (Glassow 1997; Erlandson 1997). Jones, moreover, views the transition from Millingstone to Hunting technologies largely as the result of population circumscription and economic intensification, an *in situ* development that reflected the shift from an earlier, mobile, more selective adaptive strategy to one emphasizing limited mobility and decreased subsistence efficiency.

Evidence for Early Period occupation along the central California coast is abundant. Jones et al. (1996:40) suggests that the Saunders Site, CA-MNT-391, may provide the best representation of Early Period habitation in the Monterey Bay. This is a large coastal midden site located on the northern end of the Monterey Peninsula, and has been radiocarbon-dated to approximately 3,000 B.C. The assemblage contains numerous L-series, C-series, and B-series *Olivella* beads as well as *Haliotis* square beads. Projectile points include contracting stemmed, Rossi Square-stemmed, and side-notched varietals. Near Fisherman's Wharf, in the city of Monterey, is CA-MNT-108, an Early Period village site with a dense shell midden. Breschini and Haversat (1992a) contend that the site was occupied approximately 4,800 B.P. and that it represents a large residential locale. Based on an analysis of fish otoliths, the authors argue that the site was most likely occupied during the summer months, from perhaps early May through early October.

Farther north, in Santa Cruz County, is CA-SCR-239, another important Early Period site. Located in the Santa Cruz Mountains near the city of Scotts Valley, this site was investigated by Cartier (1993a). He obtained three radiocarbon dates from charcoal samples and was able to date the deposit—a thin midden—between ca. 3,700 and 3,300 B.C. CA-SCR-38/123, the "Wilder Ranch Site," which is located just north of the city of Santa Cruz, also represents an Early Period occupation. Excavated by D. Jones and Hildebrandt (1994), the site consists of dark midden soils with a high density of

shellfish, mortars and pestles, and flaked stone debris. Radiocarbon dates from samples of mussel shell (*Mytilus californianus*) recovered from the subsurface stratum indicate site occupation dating to 3,995 B.P. Consistent with this date are several diagnostic projectile point forms: Año Nuevo Long-stemmed (1,000-4,000 B.P.), large Side-notched (2,800-5,000 B.P., corner/Side-notched (2,000-4,000 B.P.), and Rossi Square-stemmed (2,000-4,000 B.P). Several *Olivella* B-series shell beads were also obtained during the excavation. The nearby site of CA-SCR-10 contains an artifact assemblage very similar to that of CA-SCR-38/123, including large corner/Side-notched points and a contracting stemmed point similar in form to the Año Nuevo series.

Cultural changes marking the transition from the Early to Middle Period (2,600-1,000 B.P.) were much less pronounced than during the Millingstone/Early Period transition. Instead, many of the adaptive traits initiated during the Early Period continued and grew in relative importance. The use of mortars and pestles increased, as did reliance on small schooling fishes (e.g. anchovies, herring, smelt). The use of shellfish, however, appears to have steadily declined. Middle Period populations also began to focus more on the exploitation of smaller, more elusive game; sea otters and rabbits, for instance, were more important than they had been previously. Glassow (1996) and Lambert (1993) place a slightly stronger emphasis on the importance of increasingly maritime adaptations during this time, arguing that fishing and sea mammal hunting were important subsistence pursuits. Artifact assemblages are typified by large-stemmed points, mortars, pestles, handstones, and milling slabs. Shell beads include *Olivella* saucer (G-series) and saddle (F-series) types. Perhaps the most significant change in the artifact assemblage was the introduction of the circular shell fishhook. This artifact class is recovered more commonly on rocky coasts than in protected slough habitats where schooling fishes were likely captured through other means such as baskets, nets, or other trapping methods (Jones et al. 1996:193; Strudwick 1986). Circular shell fishhooks no doubt facilitated an increase in the exploitation of fishes, but, at the same time, may have resulted in a decrease in dietary efficiency (Jones 2003:226; Glassow 1990:89), a pattern that continues throughout the Holocene. Trans-Sierran trade, especially in obsidian, appears to increase during the Middle Period. Casa Diablo obsidian, a source whose origin is east of the Sierra Nevada Mountains was the chief import in the vicinity Monterey Bay, whereas Coso obsidian is more common to the south (Jones et al. 1996:197, 199). Jones (2003:226) also notes a high frequency of sea otter (*Enhydra lutris*) bones at Middle Period sites, which he interprets as evidence of exchange in otter pelts.

It was also during the Middle Period that a few researchers (Breschini 1983; Moratto 1984; Whistler 1977, 1980) have suggested a major shift in population occurred in the Bay Area. This shift is usually viewed within an ethnolinguistic framework, whereby an indigenous Hokan-speaking population merged with or was displaced by a later Penutian-speaking population. Specifically, Breschini (1983) and Breschini and Haversat (1980) contend that ca. 2,500 B.P. a distinct ethnic population speaking a Penutian language expanded into the Monterey Bay area. These new peoples were the precursors of the ethnohistoric Ohlone, or Costanoans. Their settlement-subsistence pattern was characterized by low mobility, logistical organization, and a more specialized subsistence regime based primarily on the exploitation of the acorn. Breschini (1983) dubbed this the “Monterey Pattern,” and stated that it was akin to a “collector” pattern (*sensu* Binford 1980). The prior language group, which Breschini argued had characterized the area since approximately 4,000 years B.P., was organized more around a “forager” pattern. Breschini called this the “Sur Pattern” and argued that it was typified by high mobility and a generalized adaptive pattern geared toward the exploitation of a wide range of resources and environments.

Using this linguistic model as a guide, Dietz and Jackson (1981) excavated 19 sites near the City of Monterey. They concluded that the Monterey Peninsula was first occupied approximately 4,000 years ago. They also claimed to confirm the existence of the two distinct archaeological patterns hypothesized by Breschini. The first occupants, they claimed, were organized around a forager

pattern, which "included seasonal residential moves among a series of resource patches" (Dietz and Jackson 1981:700-701). Resources were gathered on an "encounter" basis within a limited foraging radius and storage was not practiced. Later populations, occupying the area between 2,000 and 1,500 B.P., were logistically organized and practiced food storage (primarily acorns).

However, several researchers have cast this linguistic scenario in considerable doubt. Patch and Jones (1984) concluded from their excavations at Elkhorn Slough that, although two distinct archaeological assemblages were indeed evident, a process of *in situ* intensification rather than an immigration of new people into the area more parsimoniously accounted for the observed changes. Several other archaeological investigations carried out along the central coast (e.g. Hildebrandt 1983; Hildebrandt and Mikkelsen 1993; Dietz, Hildebrandt and Jones 1988) failed to demonstrate the kinds of shifts predicted by the linguistic model. Bouey and Basgall (1991:18) summed up the controversy by concluding:

> If there is one major problem with this model, it relates to the too literal application of the forager-collector dichotomy. In failing to consider the adaptive variability that might be encompassed within either of these strategies, it ignores the possibility that both poses might well be part of a single subsistence-settlement one season, and collector-like traits during another. In view of the productive and diverse environments characteristic of the central California coast, it would be more useful to search for relative variability in logistic organization than force archaeological materials into a rigid dichotomy between extreme foragers and extreme collectors.

While much ink has been spilled over the matter of differences between the Sur and Monterey patterns, the fact that these are based largely on the presence of "shell middens" or "middens with shell", along with radiocarbon dates does not provide much utility in the understanding of past lifeways, nor is it related to any empirically quantifiable evidence that can be used to distinguish between the two (D. Jones 1992). Presently, archaeologists prefer to study artifact assemblages to identify differences in past lifeways, rather than differences in midden characteristics (Jones et al. 2007:138).

Evidence of Middle Period occupation in central California is best represented by the Little Pico Creek Phase II component of CA-SLO-175. This component contains numerous contracting-stemmed projectile points, mortars and pestles, and fishing equipment, including grooved and notched net weights and shell fishhooks. A component of the Vierra Site, CA-MNT-229, and CA-MNT-282, located in southern Monterey County near Cape San Martin, also represent Middle Period occupations. In Santa Cruz County, the Middle Period is best represented by CA-SCR-9, which is located in the Santa Cruz Mountains. Hylkema (1991:141-183) identified a single-component deposit that yielded Año Nuevo Long-stemmed, Rossi Square-stemmed, Contracting-stemmed, side-notched, and concave base projectile points, *Olivella* saucer (G2) beads, mortars and pestles, milling stones and handstones. CA-SCR-7 also contains a Middle Period component that was dated using obsidian hydration to between 1,000 and 2,800 years B.P. (D. Jones and Hildebrandt 1990:69).

The Middle/Late Transition (1,000-750 B.P.) is a short period of time when there appears to have been a time of rapid change in settlement organization. It is represented along the central California coast by Contracting-stemmed and double Side-notched projectile points. Small leaf-shaped points also occur alongside these larger points, though their numbers are few (Jones 2003:221). Several types of *Olivella* shell beads, including split punched (D-series), are also found. Hopper mortars make their first appearance in the archaeological record and are found in tandem with bowl mortars and pestles, as well as handstones and milling slabs. Subsistence regimes during this time demonstrate substantial differences from the previous period. Marine resources, such as fish and marine mammals,

appear to have been largely dropped from native diets. Instead, populations emphasized terrestrial resources, especially small mammals and acorns. This stands in marked contrast to developments along the Santa Barbara Channel where prehistoric populations underwent increasingly progressive maritime adaptations, and fishing was a major subsistence pursuit.

As originally perceived, these changes were largely considered to have resulted from an overexploitation of coastal resources accompanying the increased demographic pressures that were initiated during the Middle Period. However, more recent evidence suggests that other factors, especially environmental degradation, played a more significant role. Coinciding with the Middle/Late Transition (1,000-750 B.P.), California and parts of western North America underwent a dramatic warming trend, known as the "Medieval Climatic Anomaly" (Graumlich 1993; Stine 1990, 1994; Jones et al. 1999). Researchers have identified three major environmental trends during this period: (1) changing sea temperatures (Arnold 1992; Kennett 1998; Kennett and Kennett 2000; Pisias 1978); (2) warmer summer temperatures (Graumlich 1993); and (3) decreased precipitation (Stine 1990, 1994). According to Jones (1995:223), this latter trend had especially serious consequences for prehistoric coastal populations.

Serious drought after A.D. 1000 (950 B.P.) caused such rapid, severe deterioration of the resource base that major subsistence problems developed, causing widespread settlement shifts and resource competition. Unlike the environmental changes of the early and Mid-Holocene, technological innovations could not mitigate the environmental problems, because they developed rapidly and were severe.

In a recent paper, Jones and Ferneau (2002) posit the argument that central coast populations during this time underwent a process of "deintensification." Population growth declined, diet breadth contracted, and interregional exchange systems collapsed. In Monterey County, for example, numerous coastal sites were abandoned and populations relocated to more interior settings (Jones 1995:215). Populations also apparently declined, perhaps as a result of resources stress, and systems of trade and exchange collapsed. Obsidian, for instance, virtually disappears from the archaeological record.

In general, archaeological sites dating to the Middle/Late Transition are poorly represented along the central California coast. In Monterey County, for example, Jones has noted that only a handful of sites in the Big Sur locality (e.g. CA-MNT-1233, CA-MNT-281, and CA-MNT-1754) date to this interval. In San Luis Obispo County, likewise, the sample of archaeological sites is relatively small. Ephemeral deposits are found at the Little Pico Creek site (CA-SLO-175), the Talley Farms site (CA-SLO-1796), and at CA-SLO-165. One exception, however, is CA-SLO-239, a large residential site originally located on the shores of Morro Bay at the current location of a PG&E power plant. The site was originally excavated by Clemmer (1962) who encountered a large sweat lodge, multiple hearth features, several burials, and a rich midden deposit containing stone and bone tools reflecting a wide range of residential activities.

Late Period (750 B.P.-Historic) populations on the central coast apparently rebounded from the environmental stresses that characterized the previous period. However, unlike native groups farther south – such as the Chumash and the Gabrieleño – the inhabitants of the central coast did not undergo increasingly maritime adaptations. Their subsistence practices continued to demonstrate a terrestrial focus. Jones (1995:221), for example, indicates that the consumption of fish and other marine resources was less intensive and the extraction of mussels perhaps more selective than during the previous interval. From his analysis of several sites in Big Sur, Jones (1995:206) suggests that Late Period populations focused their subsistence activities on black-tailed deer (*Odocoileus hemionus*). This view has recently been challenged by the findings from CA-MNT-1942 (Wolgemuth et al.

2002), where fish, including several species of clupeidae (such as anchovies and herrings), constitute significant portions of the overall faunal assemblage.

Nevertheless, it appears that Late Period habitation on the central coast shifted to inland localities (Jones and Ferneau 2002:230), and many coastal sites occupied during the Middle Period were no longer used in the Late Period, or see less intensive use (Jones et al. 1996:196; Milliken et al. 1999:153). Late period midden sites on the interior are often associated with bedrock mortars (Jones et al. 2007:140), and on the coast are more often shellfish processing sites (Jones et al. 1996:41). Population circumscription is suggested by a drop off in the diversity of obsidian sources and its use as a raw material. In fact, a decrease in the presence of Franciscan chert relative to the more locally available Monterey chert has been identified in Late Period contexts, suggesting more restricted mobility (Hylkema 1991; Jones et al. 2007:143). Additionally, sites at interior localities, such as in the Gilroy area (Hildebrandt and Mikkelson 1993) show a significant decrease in coastal resources with a concomitant increase in locally available ones (Jones et al. 1996:41).

Jones (1995, 2003) suggests that central coast sites dating to this time period, excluding habitation sites along productive estuaries, probably represent specialized forays made from large interior settlements. During this time, populations did not undergo transformational changes in social and political organization that led to greater complexity. Instead, human populations in these areas maintained a tribelet system of socio-political organization (Jones 1995:223). Artifact assemblages from this time are marked by contracting-stem, leaf-shaped, and small, triangular-shaped and side-notched projectile points, mortars and pestles, and a variety of late prehistoric bead types, including *Olivella* lipped (E-series) and callus (K-series). Clam shell disk beads and talc schist disk beads are also common during this time. Bifacial bead drills and detritus from *Olivella* bead manufacture are also common at well sampled late period sites, suggesting bead manufacture was common and widespread, though not intensive (Jones et al. 2007:140).

Few Late Period components in San Luis Obispo County have been identified (D. Jones et al. 2002:13; Basgall 2003:15). One of the few well-studied Late Period components is found at CA-SLO-214, and was first identified by Hoover and Sawyer (1977). Located south of Morro Bay, CA-SLO-214 yielded numerous small projectile points (such as small, side-notched and Cottonwood triangular types), and a small collection of ground stone implements (such as handstones, pestles, and milling stones). Several bead types were also recovered during the excavations and included E1, E2, H3, K3, and K1 *Olivella* beads, *Mytilus* disk beads, steatite beads, and clam disk beads. Late Period sites in Monterey County are much more numerous than those in San Luis Obispo County. As reported by Jones (1993), CA-MNT-1223 produced an assemblage of side-notched and Cottonwood triangular points, a mortar hopper, and Class E *Olivella* beads.

In Monterey County, the Late Period is represented by several sites including CA-MNT-1765, the "Moro Cojo" site. This site is located on the western shore of the upper reaches of Moro Cojo Slough, approximately 720 meters southeast of the intersection of Castroville Boulevard and Meridian Road. Based on radiocarbon-dating, Fitzgerald et al. (1995:35) concluded that the site was occupied sometime between A.D. 1450 and 1800, and that it likely functioned as "a combination collection station and field camp." Two other Late Period sites, argued to represent residential activities are found at Rancho San Carlos (CA-MNT-1485/H, CA-MNT-1486/H) in the upper Carmel Valley (Breschini and Haversat 1992b; Jones et al. 1996:41). While these sites have evidence of occupation from late Middle Period times up to Protohistoric ones, the Late Period assemblage includes Desert Side-notched projectile points, various types of *Olivella* beads, *Haliotis* disks, mortars, pestles, handstones, earspools, and a charmstone. Together, these three sites support greater residential use of the interior in Late Period times.

In Santa Cruz County the discontinuity between Middle and Late site locations is not as readily apparent as in Monterey County (Hylkema 1991). Late Period sites include CA-SCR-117, a relatively dense shell midden located one mile north of the town of Davenport. Dating of the site was accomplished with two radiocarbon assays that yielded dates of ca. A.D. 1680 and A.D. 1505. It is likely, however, that the site is probably 100 to 150 years older at its base, setting the occupation of the site approximately from the 15th to the 18th centuries (Fitzgerald and Ruby 1997). The subsistence data indicate that a wide variety of resources were exploited by the site's prehistoric inhabitants. These included a host of shellfish dominated by rocky shore species (primarily *Mytilus californianus*) and a smaller proportion of species that inhabit calmer waters. Fish also played a significant role in the diet as evidenced by the remains of several species, including cabezon (*Scorpaenichthys marmoratus*), lingcod (*Ophiodon elongatus*), steelhead rainbow trout (*Salmo gairdnerii*), rockfish (*Sebastes* sp.), and barracuda (*Sphyraena argentea*). Mammals from both terrestrial and marine contexts are represented in the faunal assemblage as well, though Fitzgerald and Ruby (1997:49) contend that proportionally deer seem to have been the most important source of animal protein.

Drawing upon the archaeology of the greater region may help to identify larger patterns of past lifeways, but it is also important to focus on more localized archaeological efforts to draw conclusions about how specific areas were used. To this end, one may turn to two other sites located along the Asilomar State Beach shoreline have undergone minimal subsurface evaluation (Breschini and Haversat 1994; Schwaderer 2005b). The first, CA-MNT-137, is located approximately 0.4 km north of CA-MNT-143. Two 25 x 25 cm test units were excavated to 10 cm below the surface (Schwaderer 2005b). The first unit, located at the base of the dune contained 15 faunal bone, one chert flake, and fire affected rock. The second unit contained only three bone fragments and some charcoal. At 10 cm, the extent of the cultural deposit appeared to have been reached. One 25 x 25 x 10 cm column sample was removed from the first unit.

The second site, CA-MNT-134, had a 40 x 50 cm column sample removed in 50 cm levels to 150 cm beneath the dune's surface (Breschini and Haversat 1994). Artifacts recovered were restricted to a battered cobble, an abalone shell disc, and what appears to be a whale bone pry bar. The small amount of lithic material is restricted to Monterey Chert. *Haliotis*, *Mytilus*, and *Tegula* were the predominant shellfish recovered. Three radiocarbon dated were recovered from *Haliotis* shell, one from each level, and they ranged between 480±60 and 1140±70 B.P., suggesting that on a gross scale the site retains its vertical stratigraphy.

Though the samples are small, the paucity of artifacts recovered from two sites tested suggests that the rocky coast of Asilomar State Beach is an area that has seen short term use for specific subsistence tasks for little over the past millennia. This is a question that may be tested through the current efforts at CA-MNT-143.

Ethnographic Background

Native American populations living on the Monterey Peninsula at the time of European contact are attributed to the Ohlone. The Ohlone occupied lands from the Monterey peninsula inland to San Juan Bautista, and north to Santa Cruz, the Santa Clara Valley, the Delta, San Francisco Peninsula and the East Bay (Levy 1978). Organized as tribelets, the Ohlone were noted to have lived in approximately 50 autonomous villages (Kroeber 1925). During the course of the year it is likely that families came and went from a particular village depending on the season and important resources available, though winter was a time when families often coalesced and made use of food stores as well as to partake in ceremonial activities (Broadbent 1972; Margolin 1978). From the time of European contact and missionization, the Ohlone populations experienced a rapid decline from the 1770s to the mid-1800s (Cook 1943). Though the population suffered much from disease and discrimination, important

information regarding language, folkways and material culture has been preserved among the few survivors. Likewise other pieces of information have been able to piece together a generalized picture of pre-contact Ohlone culture (Kroeber 1925, Broadbent 1972; Levy 1978; Bean 1994; Milliken 1995).

As the Ohlone inhabited varied coastal and interior environments, their subsistence practices varied depending on where they were. They were hunter-gatherers who supported themselves through the hunting and harvesting of plants and animal. They were noted to rely on acorn as a staple food, though other seeds, berries and roots, as well as kelp were regularly partaken of. Important terrestrial animals included deer, pronghorn and tule elk, though small game including squirrel, woodrats, and mice were also taken (Baumhoff 1963:17; Levy 1978:491).

Shellmounds common to the Bay Area attest to the importance of shellfish to the Ohlone diet. Mussels, abalone, clam and oyster were among important shellfish species eaten. These, in addition to sea lions, seals and sea otters were important coastal resources, along with fish and waterfowl in both coastal and inland contexts (Baumhoff 1963; Levy 1978).

While the Ohlone reportedly inhabited the coastal area where CA-MNT-143 is located, further south in the Carmel River Valley were the Esselen, their neighbors to the south. Little is known of the Esselen, likely due to their territory being largely comprised of thickly wooded mountainous habitats in the Carmel Valley down to Point Lopez (Hester 1978). It is likely that the two groups interacted, and that socio-political boundaries may have shifted at different points in prehistory.

Historic Context

Spanish-Mexican Period

The Carmel Mission

The Carmel River was named *El Rio de Carmelo* by the order of the friars who "discovered" it during Vizcaíno's expedition in 1603. European occupation of Carmel begins with the establishment of the *Misión San Carlos Borroméo de Carmelo*. The Mission, founded by Padre Junípero Serra in 1770, was the 2nd Franciscan mission in *Alta California*. Originally located at the Presidio of Monterey and called *Misión San Carlos Borroméo de Monterey,* it was moved to the Carmel River area a year later and renamed. The Mission church is the final resting place of Padre Serra (Clark 1991).

The Rumsen group of Ohlone inhabited the area at the time of colonization. There were five principal villages known to the missionaries: *Ichxenta*, located somewhere south of the mouth of the Carmel River, *Achasta* located at the current Carmel Mission site, *Tucutnut* located on the Carmel River about three miles from the ocean, *Soccorronda* near the Carmel Valley Village, and *Echilat* on the San Francisquito Flat (Breschini and Haversat 1992b). *Tucutnut* is mentioned in the early records of the Carmel Mission as being near the margins of the Carmel River. Milliken (1990) suggests the site is probably located were Potrero Creek meets the Carmel River and claims the large archaeological site near the Quail Lodge Golf Course is the site of *Tucutnut* (Clark 1991).

After secularization during the formation of the Mexican Republic in 1822, the Roman Catholic Church petitioned for return of Church lands. Nine acres were granted in 1855 and included many structures, cemeteries, vineyards, orchards, and grazing lands. The present Mission church, located on the southwest corner of Lasuen Drive and Rio Road, was built between 1793 and 1797, destroyed in the mid-1800s, restored in 1884 and again in 1920. In 1960, Pope John XXIII elevated the Carmel Mission to the rank of Minor Basilica which implies special historical and religious importance taking precedence over all other churches except cathedrals.

American Period

Pacific Grove

The subject parcel is located on the south side of Ocean View Boulevard, west of its intersection with Asilomar Ave. in the City of Pacific Grove (Figure 1). Pacific Grove is a historically significant area once known as the Methodist Christian Seaside Retreat, established in 1875 by David Jacks (City of Pacific Grove General Plan). The seaside retreat marked the birth of Pacific Grove, one of the few towns in California to be established for primarily religious purposes. Early settlement included small lots in which seasonal visitors pitched tents. Over the next several decades a permanent population began to grow within the area as well as permanent dwellings. Under pressure of overcrowding and lack of utilities Pacific Grove incorporated in 1889.

The proposed project is located at the site of the former Point Pinos Wastewater Treatment Plant (WWTP). The Point Pinos WWTP was formally opened in January of 1953, although architectural plans date back to January 1952, and references in California Bureau of Sanitary Engineering Papers located at the University of California, Riverside, state that Pacific Grove was seeking permission to construct a new municipal sewage system as early as 1947. The Point Pinos WWTP when in operation had a capacity of 2 million gallons per day (mgd). Treated wastewater was discharged through an outfall to the Pacific Ocean. The Point Pinos WWTP was decommissioned in 1980.

FIELD WORK

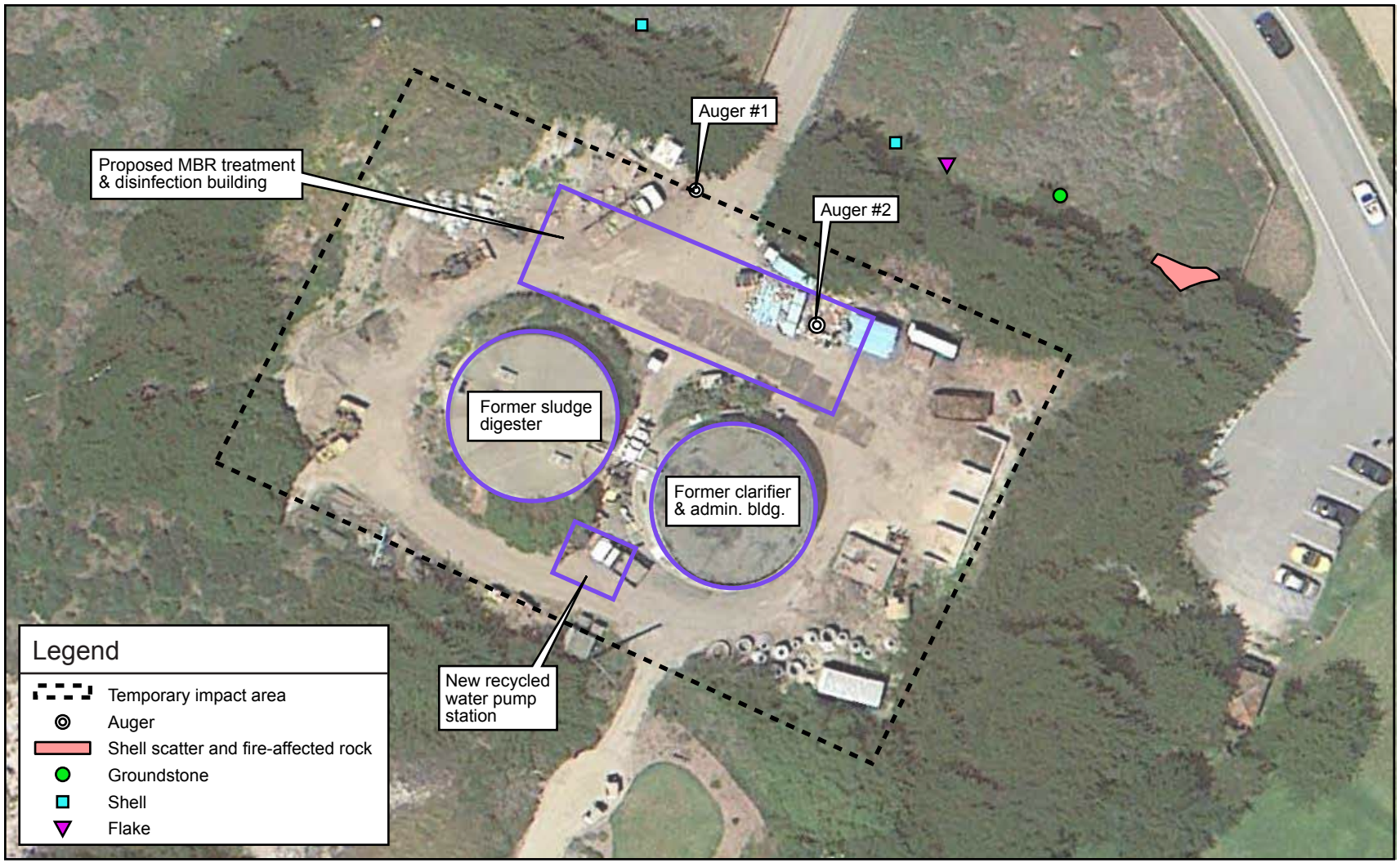
On July 30, 2013, Albion staff archaeologist John Ellison conducted surface and subsurface archaeological investigations at the subject parcel. The inspection included a delineated Temporary Impact Area as well as a 30 meter buffer around said boundary (Figure 2). Soil visibility was fair to poor due to pavement cover and imported fill. Native soil was observed in a few locations, characterized as a dark brown sand. The surface inspection revealed a sparse scatter of prehistoric artifacts and ecofacts including one ground stone tool, a chert flake, fire affected rock, and marine shell. Materials were located about 20 meters from the north boundary of the Temporary Impact Area (Figure 2).

Following surface inspection, two shovel tests were excavated to check for subsurface cultural deposits (Figure 2). The shovel tests measured approximately 30 cm in diameter; Auger 1 was terminated at about 10 cm, where rock was encountered. Auger 2 was excavated to a depth of 80 cm below current grade. Soils were removed in four 20 cm increments. Excavated soils were screened through $^{1}/_{8}$-inch mesh. The shovel tests were distributed in the northeastern section of the parcel, closest to the nearby recorded archaeological site, CA-MNT-127.

Shovel Test Probe #2 was placed approximately south east of the north entrance to the parcel. Soils in the 0-20 cm level consisted of very dark brown (10YR 2/2) loosely-compacted sand. Ten pieces (2.2g) of fragmented abalone shell and one piece of metal were found in this level. Soils in the second level, 20–40 cm, were similar in color and texture, and produced 1.5g of marine shell. Soils from 40–60 cm were consistent with the previous layer, and produced 6.0 grams of marine shell and two pieces of unidentified mammal bone. No cultural materials were found from 60–80 cm; at 78 cm, soils were lighter in color, identified as dark yellowish brown sand.

The surface reconnaissance and limited subsurface investigation confirmed the presence of a prehistoric archaeological site within the proposed area of development. The types of materials observed, including dietary remains and stone tools/manufacturing debris is consistent with other nearby sites, and are probably associated with nearby CA-MNT-127. Overall integrity of the deposit is unknown. Previous construction and maintenance of the facility has likely damaged the site, however, it is possible that intact portions of the site still exist on the property.

File name: Figure 2.ai, J2013-013, Stella D'Oro, 01August2013



Google Earth aerial, accessed August 1, 2013

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Albion Environmental, Inc.

Figure 2. Project area and location of shovel tests.

STUDY FINDINGS AND CONCLUSIONS

Albion's investigation confirmed the presence of prehistoric cultural materials likely associated with previously recorded site CA-MNT-127. Surface artifacts include one ground stone tool, a single chert flake, fire altered rock, and marine shell. Dietary remains (marine shell and mammal bone) were observed to a depth of 60cm below current grade. Details on the nature, extent, depth, and integrity of the deposit are unknown; however, the assemblage is consistent with other prehistoric occupation sites in the vicinity.

The archaeological site is located in an area of planned development and will therefore require consideration during the CEQA review process. Additional archaeological work is likely to include resource and impact analysis (Phase II archaeological evaluation), and possibly mitigation planning and execution.

Evaluation will minimally entail assessment of the resource for significance under CEQA, and if needed, will include an assessment of project impacts and recommendations for mitigation measures. Significance assessments should focus on deposit content, extent, and integrity, and therefore should incorporate an appropriate level of sub-surface investigation. In other words, evaluations should not be based solely on examination of surface materials. As part of the Phase II evaluation, any necessary supplemental DPR resources recordation forms should be completed (i.e., Archaeological Record; Building, Structure, Object Record; Linear Feature Record; Milling Station Record; Artifact Record).

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APPENDIX A

PRELIMINARY HISTORIC REVIEW LETTER (ARCHIVES AND ARCHITECTURE, LLC)

ARCHIVES & ARCHITECTURE, LLC

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C/o Jennifer M. Farquhar, M.A., Principal
Albion Environmental, INc.
1414 Soquel Ave., Suite 205
Santa Cruz, CA 95062

Re: former Point Pinos Wastewater Treatment Plant – Pacific Grove

Dear James and Jennifer:

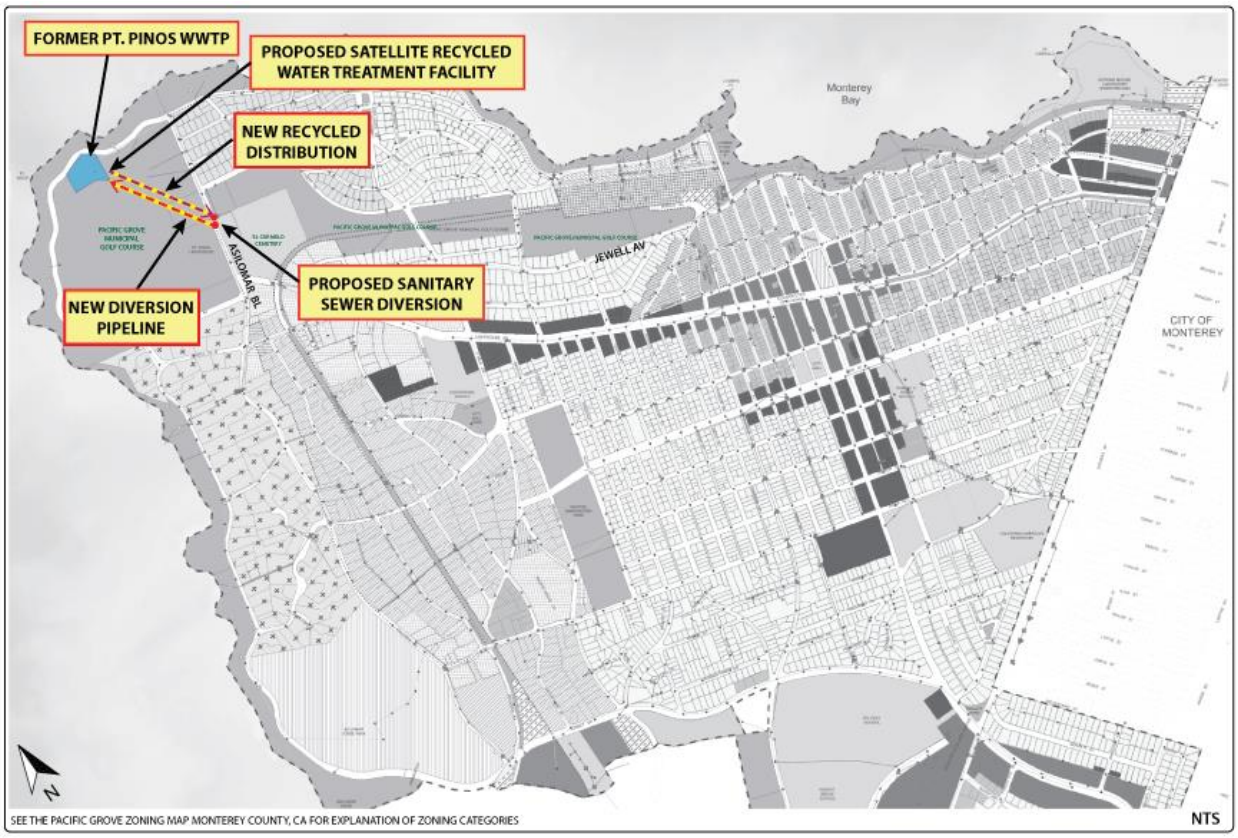
Per your request, we have conducted a preliminary review for potential historic resources (*fatal flaw analysis*) of Pacific Grove's former Point Pinos Wastewater Treatment Plant. Following is a summary of our investigation and findings:

Project Summary: Provide treatment of Pacific Grove wastewater at a new local Satellite Recycled Water Treatment Plant (SRWTP) at the former Point Pinos Wastewater Treatment Plant (WWTP) and deliver recycled water to irrigation sites in the city. To minimize environmental impacts such as odors, noise, vibration, and aesthetic impacts, the SRWTP will be enclosed in structures with adequate ventilation, air scrubbers, and architectural designs compatible with surrounding structures. The SRWTP will make use of the existing structures storage at the former Point Pinos WWTP for diurnal and operational storage if feasible. A footprint of approximately 18,000 square feet is needed for the treatment facilities. During the winter, when there is little or no irrigation demand, the SRWTP will continue to operate at a reduced rate to maintain biomass performance.

Background: Prior to connection to Monterey Regional Water Pollution Control Agency's (MRWPCA) Regional Treatment Plant, wastewater from Pacific Grove was treated at the Point Pinos Wastewater Treatment Plant. The Point Pinos WWTP was formally opened in January of 1953, although architectural plans date back to January 1952, and references in California Bureau of Sanitary Engineering Papers located at the University of California, Riverside, state that Pacific Grove was seeking permission to construct a new municipal sewage system as early as 1947.

The Point Pinos WWTP when in operation had a capacity of 2 million gallons per day (mgd). Treated wastewater was discharged through an outfall to the Pacific Ocean. The Point Pinos WWTP was decommissioned in 1980.

The former Point Pinos WWTP is surrounded by mature vegetation and trees and is screened from visibility from the Golf Links, Oceanview Boulevard, and the Pacific Ocean and Monterey Bay.



Project Details: Source water quality to the SRWTP is expected to be that of typical municipal wastewater. The wastewater to be recycled will be diverted from the collection system, owned by the City. Wastewater that will be diverted from the sewer to the proposed new satellite reclamation plant at Point Pinos will be from residences in the City of Pacific Grove. The reclaimed water that will be produced at Point Pinos will become a new water supply to California American Water (Cal-Am).

The former sewage diversion in Asilomar Drive will be reconstructed with a new controllable diversion valve. The diversion is located at Manhole 802 on Asilomar Drive between Lighthouse Avenue and Del Monte Boulevard. The diversion location is approximately 1,160 feet from the Point Pinos WWTP. Diversion of sanitary sewer flows from Manhole 802 to the Point Pinos WWTP will be accomplished by connecting the existing manhole to a new manhole adjacent to the golf links. A new 8-inch diversion pipeline will be constructed in the alignment of the former wastewater diversion pipeline to the Point Pinos WWTP. The new diversion pipeline will be constructed with pipe bursting technology. Valves will be installed to connect manholes to allow wet weather flows to remain in the Pacific Grove sewer system, while dry weather sanitary flows will be diverted to the SRWTP.

Historic Resources:

In our preliminary review of potential historic resources associated with and that may be potentially affected by the project, we found that the former Point Pinos Wasterwater Treatment Plant may have some historic significance that warrants further investigation.

In the mid-1940s, outbreaks of water-borne diseases, degradation of fishing and recreational waters, coupled with war-time industrial development and population growth prompted a new appraisal of water pollution control in California. Attempts to address and solve new pollution concerns were largely unsuccessful due to the overlap of governmental agencies. Pacific Grove, not immune to the rapid growth brought about by World War II, had unsuccessfully attempted to obtain permission to build a new treatment plant in 1947. By 1949, the California Assembly Committee on Water Pollution recommended sweeping changes in California's approach to water pollution control and water quality, and following their recommendations, the California Legislature enacted the Dickey Water Pollution Act that took effect October 1, 1949. Engineering for the Point Pinos WWTP was underway shortly after the enactment of this legislation, and may be associated in either a primary or secondary way with the significant change in patterns in pollution and water quality management at the state level.

The designer of the Point Pinos WWTP was Sanitary Engineer, Harry N. Jenks. Harry Jenks opened an engineering office in Palo Alto, where he worked from 1933 until his death in 1964. His most significant contribution was the Biofiltration Process, which became an industry standard. Eventually, Harry and his son, John who joined the firm in 1948, designed 23 of the treatment plants in the San Francisco Bay Area as well as numerous plants throughout California. During his lifetime, Jenks patented a number of new processes to treat water and wastewater, including ten new ten new treatment processes. He appears to be a significant personage in California history.

Additional research into the development of this particular treatment plant will clarify its significance within this aspect of regional public works engineering, and will place it in the larger context of Harry N. Jenks' career. Information pertaining to this subject is presently archived with California Bureau of Sanitary Engineering Papers, MS 80/3, Water Resources Collections and Archives at the University of California, Riverside.

Documentation of the Point Pinos WWTP site using California DPR523 series forms, with technical facility description, photographs, historic context, and determination of potential significance using California Register of Historical Resources significance criteria will provide information that can be used by the lead agency for this project to determine if the project involves an historic property that may qualify for the Register, and if so, if the project may affect those resources in an adverse way.

Sincerely,

Franklin Maggi, Architectural Historian

APPENDIX D-2

Phase I Archaeological Survey Report

ARCHAEOLOGICAL CONSULTING

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PHASE 1 ARCHAEOLOGICAL SURVEY FOR THE CITY OF PACIFIC GROVE LOCAL WATER PROJECT, PACIFIC GROVE, MONTEREY COUNTY, CALIFORNIA

by

Mary Doane, B.A., and Gary S. Breschini, Ph.D., RPA

June 10, 2014

Prepared for

Brezack & Associates Planning

SUMMARY: PROJECT 4966
RESULTS: SEE TEXT
ACRES: <2
LINEAR: ±6,270 FEET
SITES: CA-MNT-125, CA-MNT-127, CA-MNT-128, NEAR CA-MNT-831
UTMG: SEWER PLANT 5.9537/40.5489; SEWER LINES, NE 5.9567/40.5488, SE 5.9560/40.5460, AND NW 5.9540/40.5489; RECYCLED WATER LINE SE 5.9585/40.5445 TO NW 5.9542/40.5488 AND MAINTENANCE FACILITY 5.9642/40.5389; POTABLE WATER LINE SE 5.9577/40.5445 TO NW 5.9555/40.5445
MAP: USGS 7.5 MINUTE MONTEREY QUADRANGLE

Findings:		**Yes**	**No**	**N/A**	**See text**
Evidence of:	Sacred/Religious site				X
	Native American Remains		X		
	Anything of Archaeological Significance				X
	Findings of Historical Significance		X		

INTRODUCTION

In May 2014 Archaeological Consulting was authorized by James Brezack of Brezack & Associates Planning to prepare a Phase 1 Archaeological Survey Report for the City of Pacific Grove Local Water Project, Monterey County, California.

As part of our methodology in the preparation of this report, we have conducted: 1) a background search of the records at the Northwest Information Center of the California Historical Resources Information System, located at Sonoma State University; and 2) a Sacred Lands file search with the Native American Heritage Commission and consultations with locally affiliated Native Americans; 3) a field survey of the project APE. The following report contains the results of these investigations as well as our conclusions and recommendations.

PROJECT LOCATION AND DESCRIPTION

The project APE includes the retired Point Pinos Waste Water Treatment Facility, sewer lines eastward along Oceanview Boulevard and southeastward across the Municipal Golf Links to Asilomar Avenue, recycled water lines across the Golf Links to the northeast corner of Carmelo Cemetery, and a potable water line eastward through Carmelo Cemetery in Pacific Grove, Monterey County, California (see Maps 1 through 5). The Universal Transverse Mercator Grid (UTMG) coordinates for the approximate limits of the project area are as follows: sewer plant 5.9535/40.5487; sewer lines to the plant, ne end 5.9567/40.5487 se end 5.9560/40.5460, nw ends 5.9560/40.5460; recycled water line se 5.9585/40.5445 to nw 5.9542/40.5488 and near the maintenance facility 5.9642/40.5389; potable water line se 5.9577/40.5445 to nw 5.9555/40.5445, all on the USGS 7.5 minute Monterey Quadrangle (1947; photo-revised 1983).

The project proposes a new recycled water supply project that will replace existing potable water supplies that are constrained by recent decisions affecting the Carmel River. Components of the plan include 1) source water diversion and conveyance to the Satellite Recycled Water Treatment Plant (SRWTP), 2) the SRWTP headworks, membrane bioreactor treatment, waste disposal pump station and pipeline, 3) recycled water storage and conveyance, tanks, pump station, pipeline and appurtenant facilities, and 4) a potable water line through El Carmelo Cemetery.

At the time of the archaeological survey, many parts of the project APE were under turf, fill and pavement. Soil in and/or adjacent to the project APE afforded generally fair surface visibility. Soil was visible in areas under the Cypress trees and fence at the sewer facility and near the maintenance facility, intermittently along the sides of Ocean View Boulevard, in patches in the alignments across the golf course and by the clubhouse, and along the road through El Carmelo Cemetery. Overall, soil visibility supplemented by the results of previous studies was adequate for the purposes of this reconnaissance.

PROJECT METHODOLOGY

The methodology used in the preparation of this report included three primary steps, as follows:

Background Research

The background research for this project included an examination of the archaeological site records, maps, and project files of the Northwest Information Center of the California Historical Resources Information System, located at Sonoma State University. In addition, our extensive files and maps were examined for supplemental information, such as mention of historic or prehistoric resources in the general area.

These literature searches are undertaken to determine the locations of recorded archaeological resources in and near the project area and the scope and findings of previous archaeological projects in the area.

The regional Information Centers, established by the California Office of Historic Preservation, are the local repository for all archaeological reports prepared under cultural resource management regulations. A background literature search is required by state guidelines and current professional standards. Following completion of a project, a copy of the report must be deposited with the appropriate Information Center.

Native American Consultation

A Sacred Lands File search was initiated with the Native American Heritage Commission. Following their search, the commission recommended consultation with locally affiliated Native Americans and provided a list of individuals from several bands to contact for that consultation. Initial contact with the listed consultants was made by mail and/or email, followed by telephone calls or additional email if a timely response was not received.

Field Reconnaissance

The field reconnaissance, completed by Mary Doane, Patrick Cave and Gina Kay on June 3, 2014, consisted of a "general surface reconnaissance" of all areas of visible soil in and/or adjacent to the project APE that could reasonably be expected to contain visible cultural resources and that could be viewed without major vegetation, fill or pavement removal or excavation. Trowel probes were made under the cypress duff at the SRWTP and near Crespi Pond. Pedestrian transects were walked along the lengths of the various pipeline alignments.

RESULTS OF THE RECONNAISSANCE

Background Research

The background search of the files at the Northwest Information Center and the review of our own records found four recorded cultural resources within or immediately adjacent to the project APE, including the southeastern edge of CA-MNT-127 at the SRWTP, CA-MNT-128 south of Crespi Pond in the Pacific Grove Golf Links Back Nine, CA-MNT-125 on Asilomar Avenue and at the Golf Clubhouse and El Carmelo Cemetery, and CA-MNT-831 near the golf maintenance facility. There are twenty-five other recorded archaeological resources located within one kilometer of the project APE (see Attachment 1: CHRIS documentation).

Several previous reconnaissance studies have included portions of the APE (ACRS 1977; Edwards and Breschini 1977; Peak and Associates 1978; Runnings and Haversat 1994; Breschini and Haversat 2005; Farquahar 2013).

CA-MNT-127, originally surveyed by Fisher in 1935, was recorded by Pilling in 1949 on Point Pinos, extending southward to the SRWTP. Subsequently another site to the east, CA-MNT-397, was included within the boundary of CA-MNT-127. Both sites are now included in the later designation P-27-260. A single radiocarbon date obtained during a recent monitoring of a fence line project within the site produced a Measured Radiocarbon Age of 920±60 BP (Doane 2002). 2 Sigma calibration produces an intercept date of AD 1295, well into the Late Period of Prehistoric Occupation of the Monterey Peninsula.

CA-MNT-128 (P-27-261) was originally recorded as a 150'x300' deposit in the dunes of the Lighthouse Reservation northwest of the Lighthouse. During a subsequent survey the deposit was found to extend approximately 100x200 meters in area and up to 143 cm in depth. The site has been subject to considerable disturbance during the development of the Pacific Grove Golf Links.

CA-MNT-125 (P-27-259) was originally recorded by Pilling on the east side of Asilomar Boulevard (then Ocean View Boulevard). Located east of the Lighthouse at the northwestern corner of Carmelo Cemetery, it was recorded as an occupation site that contained bedrock mortar holes in adjacent rocks. Archaeological testing of the northern portion of the site for the golf course clubhouse reconstruction found evidence of a small occupation site containing shellfish and other faunal remains (Breschini and Haversat 2006). Radiocarbon dating of four shell samples, including an *Olivella* bead (Type E2a), two *Mytilus* (mussel) shells and one *Haliotis* (abalone) shell produced Late Period dates ranging from AD 1440 to AD 1630.

Site CA-MNT-831 (P-27-898) was originally recorded on the western end of the Monarch Pines Mobile Home Park in the old railroad right of way (Morris 1978). Morris stated that the midden was possibly imported because of its location. Subsequent projects within the Monarch Pines property found that a deep and rich subsurface deposit was found on the eastern half of their property (Doane 1999). Monitoring of subsurface trenching in the western part of the property discovered no subsurface cultural materials adjacent to the golf course maintenance facility.

The project area lies within the currently recognized ethnographic territory of the Costanoan (often called Ohlone) linguistic group. Discussions of this group and their territorial boundaries can be found in Breschini, Haversat, and Hampson (1983), Kroeber (1925), Levy (1978), Margolin (1978), and other sources. In brief, the group followed a general hunting and gathering subsistence pattern with partial dependence on the natural acorn crop. Habitation is considered to have been semi-sedentary and occupation sites can be expected most often at the confluence of streams, other areas of similar topography along streams, or in the vicinity of springs. These original sources of water may no longer be present or adequate. Also, resource gathering and processing areas and associated temporary campsites are frequently found on the coast and in other locations containing resources utilized by the group. Factors that may influence the locations of these

sites include the presence of suitable exposures of rock for bedrock mortars or other milling activities, ecotones, the presence of specific resources (oak groves, marshes, quarries, game trails, trade routes, etc.), proximity to water, and the availability of shelter. Temporary camps or other activity areas can also be found along ridges or other travel corridors.

Native American Consultation

The Native American Heritage Commission Sacred Lands File search found no recorded Sacred Sites in the project area (see Attachment 2: Native American Consultation). Katy Sanchez of the NAHC had advised the City of Pacific Grove that they recommended archaeological and Native American monitoring of all graound disturbing activity in a letter dated April 10, 2014. Correspondence and consultation with several of the Native Americans recommended by the commission elicited concerns about the project in the vicinity of recorded archaeological sites but no new information specific to the sites themselves. Louise Miranda-Ramirez of the Ohlone/Costanoan-Esselen Nation (OCEN) has concerns about the potential for the discovery of human remains during project excavations based on a site record noted in a previous report (Edwards and Breschini 1977). However that site, CA-MNT-676, is not within the current project APE. Mrs. Miranda-Ramirez also requested that a Native American monitor from OCEN be present during all excavations within their aboriginal territory. Michelle Zimmer and Irene Zwierlein of Amah/Mutsun Tribal Band had three recommendations for the project as follows: 1) cultural sensitivity training for work crews, 2) archaeological monitoring during project excavations and 3) Native American monitoring of project excavations. Tony Cerda of the Coastanoan Rumsen Carmel tribe requested to be kept informed of any positive findings of cultural sensitivity in the Monterey area. Follow up voice mails and emails were left with several others on the contacts list, but responses have not yet been received. Any information received after submittal of the draft report will be included in the final report.

Field Research

SRWTP: Except for a few fragments of *Mytilus* (mussel) and *Haliotis* (abalone) shell along the northern perimeter fence, none of the materials frequently associated with prehistoric cultural resources in this area (dark midden soil, eroded marine shell fragments, flaked or ground stone, bone fragments, fire-affected rock, etc.) were observed on the surface of the sewer treatment facility. The shell fragments may indicate the inland boundary of site CA-MNT-127. Much of the native soil in the sewer facility has been disturbed previously, both during construction of the sewer facility and the subsequent use of the grounds as a spoils storage yard for many years.

Ocean View sewer alignment: Sparse mixed marine shell fragments in a context of imported base rock were noted sporadically along edge of the pavement in the eastern part of the CA-MNT-127 site, the original recorded location of CA-MNT-394.

Golf course sewer and recycled water alignments, SRWTP to Asilomar Avenue: A fragment of *Haliotis* (abalone) shell was seen near the south end of Crespi Pond. Visibility was extremely limited through the golf course because of fairway turf. No evidence of site CA-MNT-128 was visible on the surface.

Recycled water line, clubhouse parking lot and eastward: soil is not currently visible due to existing pavement in the parking lot. However, the parking lot area was examined during the recent clubhouse project (Breschini and Haversat 2004 and 2005). No resources were noted in that area when soil was accessible and visible. Although visibility was fair along the recycled waterline alignment east of the parking lot, no evidence of cultural resources was noted there.

Recycled water alignment, golf course maintenance facility: No evidence of cultural resources was found in the project APE. The maintenance facility area has been previously surveyed with negative results (Doane and Haversat 1999).

Potable water line in El Carmelo Cemetery: Sparse fragments of *Haliotis* shell were noted at the entrance to the cemetery from Asilomar Avenue. These may indicate the southern boundary of site CA-MNT-125. The original site record notes that it is located at the northwestern corner of the cemetery and gives a dimension of 20 yards in diameter.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the background research, the Native American consultation and the field survey findings, we have concluded that portions of the project APE, which lie along the recorded southern boundaries of archaeological sites CA-MNT-125 and CA-MNT-127 and near the recorded northern boundary of site CA-MNT-128, contain sparse surface evidence of those cultural resources in largely disturbed contexts. Previous radiocarbon dating has placed two of these sites, CA-MNT-125 and CA-MNT-127, within the Late Period of Prehistoric Occupation. Site CA-MNT-128 has been subject to no testing or data recovery mitigation previously. The remainder of the APE does not contain surface evidence of significant historic resources. Excavations within those portions of the APE will have no effect on significant historic/cultural resources.

The current paved environment precludes further examination of the APE under Ocean View Boulevard and the portions of the sewer treatment facility that will be subject to direct project impacts. Previous sewer trenching, sewer facility development, road grading and golf course development has caused significant previous disturbance in portions of the project APE nearest to the identified archaeological sites. Nevertheless, remnants of undisturbed archaeological soil associated with the archaeological sites may remain in and/or near the project APE.

It may be possible to perform an extended Phase 1 survey for the presence/absence of site CA-MNT-128 within the sewer and recycled water alignment APE in the golf course between Asilomar Avenue and the SRWTP.

Based on our findings, we make the following recommendations for the Pacific Grove Local Water Project, as follows:

1. An extended Phase 1 survey to determine the presence/absence of site CA-MNT-128 should be undertaken, if feasible. This subsurface survey most likely would involve augering the length of the sewer and recycled water alignment APE through the golf course between Asilomar Avenue and the SRWTP.

2. A qualified archaeological monitor should be present during all project excavations in the SRWPT, for the Ocean View Boulevard sanitary sewer line, for the sewer line and recycled water pipes between the SRWTP and Asilomar Avenue, and in El Carmelo Cemetery. The monitor should document and recover any potentially significant cultural materials that may be found in the excavated soil. Excavated soil may be screened to assist in such data recovery.

3. If, at any time, previously undisturbed midden containing potentially significant cultural materials or features is encountered, work shall be halted until the monitor and/or the principal archaeologist have evaluated the discovery. If the find is determined to be significant, an appropriate data recovery mitigation should be developed, with the concurrence of the Lead Agency, and implemented.

Because of the possibility of unidentified (e.g., buried) cultural resources being found during any construction, we recommend that the following standard language, or the equivalent, be included in any permits issued for the project area:

- If archaeological resources or human remains are unexpectedly discovered during construction, work shall be halted on the project parcel until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated, with the approval of the lead agency, and implemented.

REFERENCES

ACRS

1977 *Report of Archaeological Reconnaissance for the Proposed Stage 1 Pacific Grove-Monterey Consolidation Project of the Regional Sewerage System.* Report on file with the Northwest Information Center, Sonoma State University.

Breschini, G. S. and M. Doane

2004 *Preliminary Archaeological Test Results and Archaeological Mitigation Plan for the New Clubhouse Project, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Breschini, G. S. and T. Haversat

2004 *Report on Archaeological Investigations for Portions of CA-MNT-125, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

2005 *Final Report on Archaeological Investigations for Portions of CA-MNT-125, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Breschini, G. S., T. Haversat, and R. P. Hampson

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Doane, M. and T. Haversat

1999 *Preliminary Archaeological Reconnaissance for the Pacific Grove Golf Course Maintenance Facility Addition Project, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Edwards, R. and G. S. Breschini

1977 *An Archaeological Inventory and Evaluation of the U.S. Lighthouse Reservation, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Farquhar, J. M.

2013 *Archaeological Assessment for the Satellite Recycled Water Treatment Plant at the former Point Pinos Waste Water Treatment Plant, Pacific Grove, California.* Report on file with the Northwest Information Center, Sonoma State University.

Howard, D. M.
1978 **Early Man of the Monterey Peninsula.** Antiquities Research Publications, Carmel.

Kroeber, A. L.
1925 Handbook of the Indians of California. **Bureau of American Ethnology Bulletin** 78.

Levy, R.
1978 Costanoan. Pp. 485-495 in **Handbook of North American Indians, Vol. 8, California.** Smithsonian Institution, Washington, D.C.

Margolin, M.
1978 **The Ohlone Way.** Heyday Books, Berkeley.

Peak, A. S. and Associates
1978 *Cultural Resource Assessment of the Golf Course Irrigation Project, Pacific Grove-Del Monte Forest, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Runnings, A. and T. Haversat
1994 *Preliminary Cultural Resources Reconnaissance of a Portion of the Monarch Pines Mobile Home Park, Pacific Grove, Monterey County, California.* Report on file with the Northwest Information Center, Sonoma State University.

Attachment 1

CHRIS Documentation

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

DATE: May 19, 2014 NWIC File No.: 13-1733

TO: Mary Doane

FROM: Charles Mikulik

Re: Pt. Pinos, Pacific Grove; Red Wolf Rd.., Carmel; Royal Way, Gilroy

Monterey and Soberanes Point 7.5' Quads

AC 4966	
Resources In	P-27-000259, P-27-000260, P-27-000261, P-27-000898
Resources within .6-mile radius	P-27-000091, P-27-000092, P-27-000093, P-27-000094, P-27-000095, P-27-000753, P-27-000255, P-27-001591, P-27-000246, P-27-000488, P-27-002623, P-27-002565, P-27-000494, P-27-000493, P-27-000492, P-27-2666, P-27-002154, P-27-000370, P-27-002408, P-27-002407, P-27-000754, P-27-000396, P-27-000489, P-27-000137, P-27-000752
Reports In	S-003356, S-003397, S-003400, S-005427, S-016276
OHP HPD	Pacific Grove and vicinity listing provided.
OHP ADOE	Monterey County provided.
California Inventory	Monterey County listing provided.

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-27-000259	CA-MNT-000125	Resource Name - Fisher #25, AC 2736-1; Other - ES-2, ES-3	Site	Prehistoric	AP02 (Lithic scatter); AP04 (Bedrock milling feature); AP15 (Habitation debris); AP16 (Other)	1949 (Pilling); 1978 (T.F.Weber); 2001 (Mary Doane, Patrick Cave); 2001 (Mary Doane, Patrick Cave)	S-003400, S-005427, S-026881, S-027263, S-027273, S-028560, S-031798
P-27-000260	CA-MNT-000127	Resource Name - Fisher #27; Other - 28; Other - 29; Other - 31		Prehistoric	AP11 (Hearths/pits); AP15 (Habitation debris); AP16 (Other)	1949 (Pilling); 1974 (Breschini, Brown)	S-003356, S-003397, S-003400, S-027869, S-043783
P-27-000261	CA-MNT-000128	Resource Name - Lighthouse 4	Site	Prehistoric	AP15 (Habitation debris); AP16 (Other)	1947 (PILLING)	S-003397, S-003400, S-005427
P-27-000898	CA-MNT-000831	Other - DM-1	Site	Prehistoric	AP15 (Habitation debris); AP16 (Other)	1978 (Morris); 1994 (Mary Doane, Archaeological Consulting)	S-005452, S-016276, S-017022, S-018807, S-019977, S-021495, S-023311, S-026279, S-026879, S-027040, S-027258, S-030355, S-030789, S-031110, S-032939, S-033184, S-033656, S-037353, S-043783

RESOURCE MAP #1

Point Pinos
AC 4966

Northwest Information Center
File #13-1733 20 May 2014 C. Mikulik
May depict confidential cultural resource locations.
Do not distribute.

Feet
0 530 1,060 1,590 2,120
0 100 200 300 400 500
Meters

N

Point Pinos Project Location

Records Search Radius

RESOURCE MAP #2

Point Pinos
AC 4966

Northwest Information Center
File #13-1733 20 May 2014 C. Mikulik
May depict confidential cultural resource locations.
Do not distribute.

Feet
0 530 1,060 1,590 2,120
0 100 200 300 400 500
Meters

N

Point Pinos Project Location

Records Search Radius

RESOURCE MAP #3

Point Pinos
AC 4966

Northwest Information Center
File #13-1733 20 May 2014 C. Mikulik
May depict confidential cultural resource locations.
Do not distribute.

Feet
0 530 1,060 1,590 2,120
0 100 200 300 400 500
Meters

N

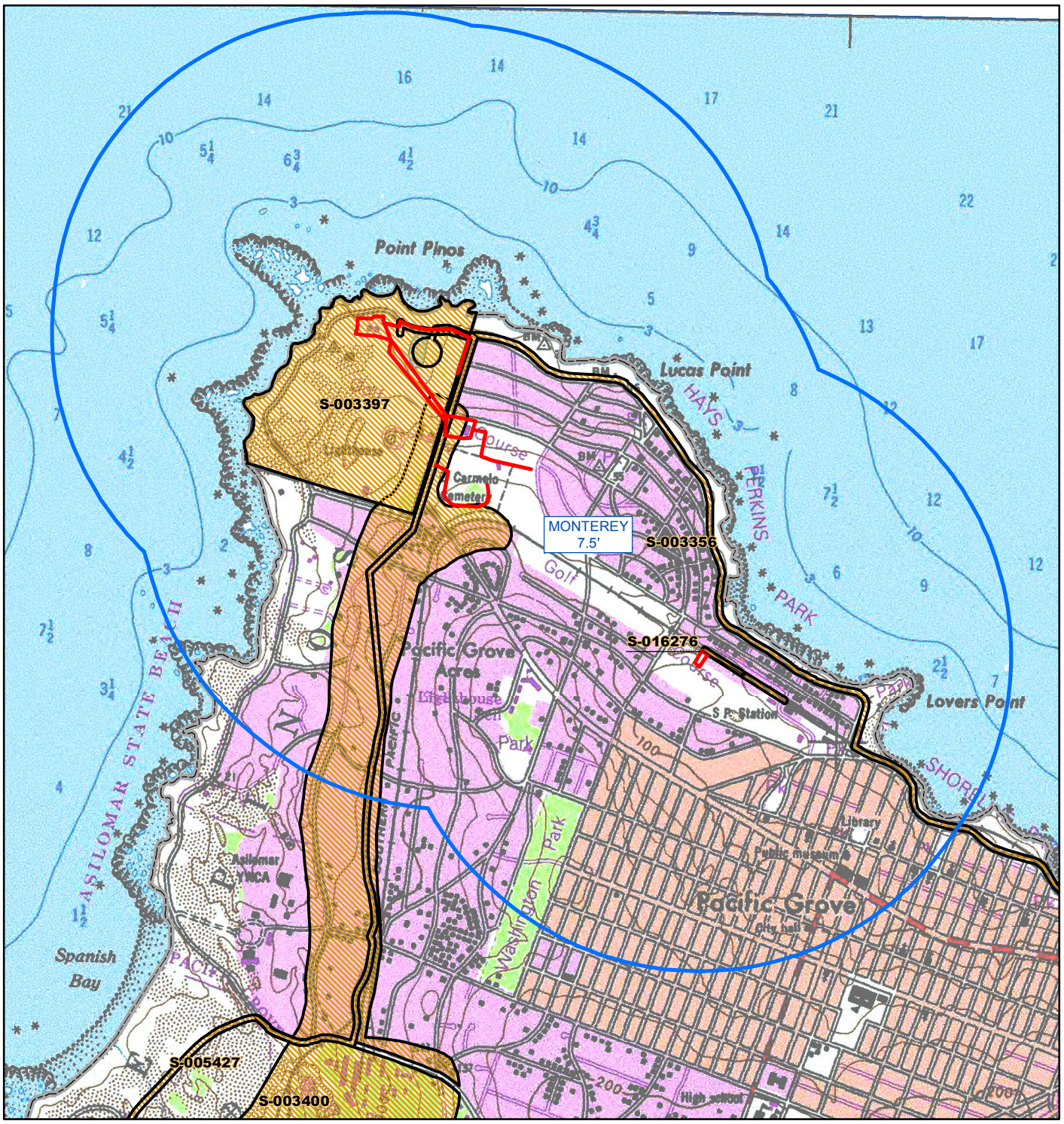
Point Pinos Project Location

Records Search Radius

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-003356		1977	Archaeological Consulting and Research Services, Inc.	Report of Archaeological Reconnaissance for the Proposed Stage 1 Pacific Grove-Monterey Consolidation Project of the Regional Sewerage System	Archaeological Consulting and Research Services, Inc.	27-000236, 27-000238, 27-000239, 27-000240, 27-000242, 27-000243, 27-000245, 27-000246, 27-000248, 27-000252, 27-000253, 27-000254, 27-000255, 27-000260, 27-000262, 27-000480, 27-000484, 27-000485, 27-000491, 27-001832, 27-001904
S-003397		1977	Gary S. Breschini and Rob Edwards	An Archaeological Inventory and Evaluation of the U.S. Lighthouse Reservation, Pacific Grove, Monterey County, California	Archaeological Consulting	27-000257, 27-000260, 27-000261, 27-000263, 27-000265, 27-000266, 27-000370, 27-000491, 27-000752, 27-000753, 27-000754
S-003400		1977	Stephen A. Dietz	Records search to determine any archaeological resources within Wastewater Reuse Alternative No. 11 A (letter report)	Archaeological Consulting and Research Services, Inc.	27-000091, 27-000092, 27-000093, 27-000094, 27-000095, 27-000096, 27-000097, 27-000098, 27-000099, 27-000136, 27-000151, 27-000152, 27-000153, 27-000154, 27-000167, 27-000236, 27-000237, 27-000238, 27-000239, 27-000240, 27-000242, 27-000243, 27-000245, 27
S-005427		1978	Ann S. Peak and Associates	Cultural Resource Assessment of the Golf Course Irrigation Project, Pacific Grove - Del Monte Forest, Monterey County, California.	Ann S. Peak & Associates	27-000259, 27-000261, 27-000269, 27-000273, 27-000808, 27-000809, 27-000810
S-016276		1994	Anna Runnings and Trudy Haversat	Preliminary Cultural Resources Reconnaissance of a Portion of the Monarch Pines Mobile Home Park, Pacific Grove, Monterey County, California	Archaeological Consulting	27-000898

Point Pinos Report Map
AC 4966



Northwest Information Center
File #13-1733 20 May 2014 C. Mikulik
May depict confidential cultural resource locations.
Do not distribute.

Feet 0 530 1,060 1,590 2,120
Meters 0 100 200 300 400 500

N

Point Pinos Project Location
Records Search Radius
Reports (polygons)

APPENDIX D-3

Native American Consultation

Attachment 2

Native American Consultation

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

June 9, 2014

AC 4966

James Brezack
Brezack & Associates Planning
3000 Citrus Circle, Suite 210
Walnut Creek, CA 94598

Re: Pacific Grove Local Water Project

Dear Mr. Brezack:

At your request we initiated a record search of the sacred lands file with the Native American Heritage Commission (NAHC) on May 15, 2014. Attached please find a copy of the response, dated May 20, 2014 from Katy Sanchez of the NAHC. As you will see there was no specific site information found in their files regarding the project area, which lies within traditional Ohlone territory. She recommended that we make additional contacts with other Native American sources of information regarding the potential for cultural resources in the project area. Because these Native American peoples are not a federally recognized tribe, there is no single person or group who represents all of them. A sample copy of the letters regarding the project that were sent on May 23 to the Native American contacts on the NAHC list is attached.

I have received several responses to date. Michelle Zimmer of the Amah Mutsun Tribal Band of Mission San Juan Bautista recommends that all work crews receive cultural sensitivity training, and that trained Native American and archaeological monitors be on site while digging is occurring. Louise Miranda-Ramirez sent a letter strenuously objecting to all excavations in known cultural lands, even when they are previously disturbed. She stressed that she desires respect for the buried remains of her ancestors, i.e. no disturbance.

Val Lopez of the Amah Mutsun Tribal Band said that the project area was not in his territory. Ed Ketchum of the Amah Mutsun Tribal Band recommended that we contact the Esselen Nation for information on the area.

I have discussed this project area at length with Tony Cerda of the Costanoan Rumsen Carmel Tribe. He voiced no objections to the proposed project, as long as due caution was observed and proper procedures were followed. He requested that he receive information on any findings during the project.

Pauline Martinez-Arias of the Ohlone/Coastanoan-Esselen Nation also had no additional specific site information and was interested in any findings.

I left a call back request on June 9, 2014 with Ramona Garibay, representative of the Trina Marine Ruano Family, Christianne Arias of the Ohlone/Coastanoan-Esselen Nation and Ann Marie Sayers of the Indian Canyon Mutsun Band of Costanoan. I was unable to leave voice mail with Jakki Kehl.

Although the Native Americans offered no new information specific to the recorded sites in the project area, they want to know of any significant discoveries during the project. Many emphasized the significance of the coastline and other water resources to their people.

Because of their concern for the preservation of the cultural resources which comprise their heritage, the listed Native Americans should be informed of the of the discovery of any previously unknown cultural resources which may occur during the course of this project. A continuing sensitivity to their concerns and the inclusion of interested Native Americans in this project will be greatly appreciated by them.

If I should receive further information or requests for consultation from other Native Americans, I will provide a supplement to this summary letter for the final project report.

Please feel free to call if you have any further questions or need additional information in this matter.

Yours truly,

Mary Doane

Mary Doane

Cc. Native American Heritage Commission

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913
May 15, 2014

AC 4966

Debbie Pilas Treadway
State Of California
Native American Heritage Commission
Via email: nahc@pacbell.net

Re: Sacred Lands File search request

Dear Debbie:

We have just started a Phase I Archaeological Survey for the proposed Local Water Project in Pacific Grove, Monterey County. We do not yet have the results of the CHRIS search for recorded archaeological sites in the project area, but we are aware of several in the near vicinity.

We are contacting your office for information on possible Native American Sacred sites or concerns in the project area. Would you please search your Inventory of Sacred Lands to determine whether the project area contains any such resources in Township 16S/Range 1W (see attached map from the USGS 7.5 Minute Monterey Quad).

We are prepared to contact local Native Americans for their comments on the proposed project area if you will provide us with the names and addresses on your current list for this part of Monterey County.

If you have any questions about this request, please do not hesitate to contact our office.

Yours truly,

Mary Doane

Mary Doane

Attachment

AC4966 MONTEREY QUAD

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

May 20, 2014

Mary Doane
Archaeological Consulting
P.O. Box 3377
Salinas, CA 93912

Sent by Fax: (831) 422-4913
Number of Pages: 3

Re: Local Water Project in Pacific Grove, Monterey County.

Dear Ms. Doane,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contact List
Monterey County
May 20, 2014

Jakki Kehl
720 North 2nd Street
Patterson , CA 95363
(209) 892-1060 - mailbox full

Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.com
650-400-4806 cell

650-332-1526 - Fax

Ohlone/Costanoan

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
240 E, 1st Street
Pomona , CA 91766
rumsen@aol.com
(909) 524-8041 Cell
909-629-6081

Ohlone/Costanoan

Ohlone/Coastanoan-Esselen Nation
Christianne Arias, Vice Chairperson
PO Box 552
Soledad , CA 93960
831-235-4590

Esselen
Ohlone/Costanoan

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
PO Box 1301
Monterey , CA 93942
ramirez.louise@yahoo.com
408-629-5189
408-205-7579 - cell

Esselen
Ohlone/Costanoan

Amah MutsunTribal Band
Edward Ketchum
35867 Yosemite Ave
Davis , CA 95616
aerieways@aol.com

Ohlone/Costanoan
Northern Valley Yokuts

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City , CA 94587
510-972-0645-home

soaprootmo@comcast.net

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Ohlone/Coastanoan-Esselen Nation
Pauline Martinez-Arias, Tribal Council woman
1116 Merlot Way
Gonzales , CA 93926
maklici0-us@gmail
831-596-9897

Esselen
Ohlone/Costanoan

Amah MutsunTribal Band
Valentin Lopez, Chairperson
PO Box 5272
Galt , CA 95632
vlopez@amahmutsun.org
916-743-5833

Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister , CA 95024
ams@indiancanyon.org
831-637-4238

Ohlone/Costanoan

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Local Water Project in Pacific Grove, Monterey County.

Native American Contact List
Monterey County
May 20, 2014

Amah MutsunTribal Band of Mission San Juan Bautista
Michelle Zimmer
789 Canada Road Ohlone/Costanoan
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 - Home

650-332-1526 - Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Local Water Project in Pacific Grove, Monterey County.

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
Sample **SALINAS, CA 93912**
(831) 422-4912
Fax (831) 422-4913

May 23, 2014

AC 4966

Tony Cerda
Coastanoan Rumsen Carmel Tribe
240 E. 1st Street
Pomona, CA 91766

Re: Pacific Grove Local Water Project

Dear Tony:

We are in the process of completing a Phase I Archaeological Survey for the proposed Pacific Grove Local Water Project in Pacific Grove, Monterey County, California (see Map attached). The current project involves improvements at the old sewer treatment facility at Pt. Pinos, sewer line and water line upgrades and a new recycled water line.

The Northwest Information Center has provided information on several sites in and near Pt. Pinos. Sites CA-MNT-125, -127 & -128 are closest to the project impact areas.

We are contacting you for additional information on any Native American sites that may be in or near the project area and potentially subject to project impacts.

If you have any information or concerns about this project or questions about this request, please do not hesitate to contact our office.

Yours truly,

Mary Doane

Mary Doane

Attachment

AC4966 MONTEREY QUAD

Ohlone/Costanoan-Esselen Nation

Previously acknowledged as
The San Carlos Band of
Mission Indians
The Monterey Band
And also known as
O.C.E.N. or Esselen Nation
P.O. Box 1301
Monterey, CA 93942

www.ohlonecostanoanesselennation.org.

May 27, 2014

Mary Doane
Archaeological Consulting
P.O. Box 3377
Salinas, CA 93912

Re: CA-MNT-125, CA-MNT-127, CA-MNT-128, Executive Summary in July 2013, Brezack & Associates CA-MNT-674, CA-MNT- 676

Saleki Atsa,

Ohlone/Costanoan-Esselen Nation objects to all excavation in known cultural lands, even when they are described as previously disturbed, and of no significant archaeological value. Report by Brezack and Associates identify, "a rich occupation of midden containing abundant shell and bone," "site is reported to have produced at least six Indians." Archaeological survey in 1977 (Breschini and Edwards) did not relocate purported site constituents.

Aware that despite our objection, disturbance continues, therefore we request that a Native American Monitor of Ohlone/Costanoan-Esselen Nation, approved by the OCEN Tribal Council be used within our aboriginal territory. The OCEN Tribal leadership requests to be contacted with: 1) surveys, 2) subsurface testing, 3) presence/absence testing, 4) mitigation and recovery programs, 5) reburial of any of our ancestral remains, and 6) placement of all cultural items. Please be advised that it is our first priority that our ancestor's remains be protected and undisturbed. We desire that all cultural and sacred items be left with our ancestors on site or where they are discovered. We ask for the respect that is afforded all of our current day deceased, by no other word these burial sites are cemeteries, respect for our ancestors as you would expect respect for your deceased family members in today's cemeteries. **Our definition of respect is no disturbance.**

We are aware that Archaeological Consulting, though requesting our input chooses to work with **individuals** not representing Ohlone/Costanoan-Esselen Nation though we are the legal tribal government representative for over 600 enrolled members of Esselen, Carmeleno, Monterey Band, Rumsen, Chalon, San Carlos Mission and/or Costanoan Mission Indian descent.

I can be contact at (408) 629-5189. Nimasianexelpasaleki

Sincerely,

Louise J. Miranda Ramirez, Chairperson
Ohlone/Costanoan-Esselen Nation
(408) 629-5189

Cc: OCEN Tribal Council
Northwest Information Center
Native American Heritage Commission

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

May 23, 2014

AC 4966

Louise Miranda-Ramirez
Onlone/Coastanoan-Esselen Nation
P.O. Box 1301
Monterey, CA 93942

Re: Pacific Grove Local Water Project

Dear Louise:

We are in the process of completing a Phase I Archaeological Survey for the proposed Pacific Grove Local Water Project in Pacific Grove, Monterey County, California (see Map attached). The current project involves improvements at the old sewer treatment facility at Pt. Pinos, sewer line and water line upgrades and a new recycled water line.

The Northwest Information Center has provided information on several sites in and near Pt. Pinos. Sites CA-MNT-125, -127 & -128 are closest to the project impact areas.

We are contacting you for additional information on any Native American sites that may be in or near the project area and potentially subject to project impacts.

If you have any information or concerns about this project or questions about this request, please do not hesitate to contact our office.

Yours truly,

Mary Doane

Mary Doane

Attachment

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=cpCizTIi c=1 sm=1 tr=0
a=EilHKTVedgW2Mugw/G81ug==:117 a=1XWaLZrsAAAA:8 a=QoHJ8kPOAAAA:8
a=4URs1lKhGBQA:10 a=nDghuxUhq_wA:10 a=pGLkceISAAAA:8 a=t51HkmqKAAAA:8
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a=57cMcM724E_LSKrMTCwA:9 a=j3a7PvgDecSz78dm:21 a=tXsnliwV7b4A:10
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed;
d=gmail.com; s=20120113;
h=mime-version:in-reply-to:references:date:message-id:subject:from:to
:content-type;
bh=c+GxYn9MBAUVMLl1QHSR6fipH9j4DxuD3HhErxYDOQE=;
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OOcQ==
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27 May 2014 11:07:24 -0700 (PDT)
Date: Tue, 27 May 2014 11:07:24 -0700
Subject: Re: Consultation request, Pacific Grove project
From: Amah Mutsun <amahmutsuntribal@gmail.com>
To: Mary Doane <flame@razzolink.com>
X-BtMT: Tue, 27 May 2014 14:08:03 -0400 (EDT)

Our recommendations are:
Have all crews Cultural Sensitivity Trained.
Have a California Trained Archaeological Monitor on site while digging.
Have a Qualified Trained Native American Monitor on site while digging.
Feel free to contact us if you need our assistance.


Thank you

On Fri, May 23, 2014 at 1:50 PM, Mary Doane <flame@razzolink.com> wrote:

> Hello Irene and Michelle,
>
> Attached are letters regarding a recycled water project in Pacific Grove. Please let me know any information or concerns you may have about the project area.
>
> Thanks,
> Mary

--

Michelle Zimmer

Enrollment and Communications Officer of the

Amah Mutsun Tribal Band of Mission San Juan Bautista

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=U/erU4bu c=1 sm=1 tr=0
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a=4URs1lKhGBQA:10 a=3u-1L5pIEcoA:10 a=xBj3O1J4_wgA:10 a=Wh9qfPhpRUIA:10
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To: flame@razzolink.com
Subject: Re: Consultation request, Pacific Grove project
X-MB-Message-Source: WebUI
From: Aerieways <aerieways@aol.com>
X-MB-Message-Type: User
X-Originating-IP: [71.197.105.164]
Date: Fri, 30 May 2014 00:12:39 -0400 (EDT)
x-aol-global-disposition: G
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=mx.aol.com;
s=20121107; t=1401423160;
bh=wBPWN4eUdBYLcEs8sOhbjx7GPdU2tdKfJtMGCR4S15o=;
h=From:To:Subject:Message-Id:Date:MIME-Version:Content-Type;
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x-aol-sid: 3039ac1a32af538805373e14
X-BtMT: Fri, 30 May 2014 00:13:19 -0400 (EDT)

I suggest you speak with the Esselen Nation..

Ed

-----Original Message-----
From: Mary Doane <flame@razzolink.com>
To: aerieways <aerieways@aol.com>
Sent: Fri, May 23, 2014 1:52 pm
Subject: Consultation request, Pacific Grove project

Hello Ed,

Attached is another letter regarding a recycled water project in Pacific Grove. Please let me know any information or concerns you may have about the project area.

Thanks,
Mary

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

April 10, 2014

Daniel Gho
Public Works Superintendent
City of Pacific Grove
Public Works Department
2100 Sunset Drive
Pacific Grove, CA 93950

RE: Pacific Grove Local Water Project (PGLWP), Monterey County.

Dear Mr. Gho:

The Native American Heritage Commission (NAHC) has been contacted by the culturally affiliated Ohlone/Costanoan-Esselen Nation regarding the above referenced project and the impact on known and recorded archaeological and cultural sites, specifically, CA-MNT-127, in Monterey county.

The NAHC created by the California Legislature in 1976 is the state's "Trustee Agency" for the protection and preservation of Native American cultural resources, sacred sites on public lands and Native American burial sites. The NAHC facilitates consultation between California tribal governments, Indian organizations and Tribal Elders with local, state and federal agencies in fulfillment of its legislative mandate. This activity is carried out on a daily basis through the environmental review and related processes required by the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), the National Historic Preservation Act Section 106 and other federal and state tribal consultation provisions.

CEQA mitigation measures for preserving archaeological resources include preservation in place, our preferred method, as well as planning construction to avoid the site, incorporating the site within open space or conservation easements as well as capping the sire with a layer o sterile soil. Data recovery through excavation is the last resort. Once a Native American cultural site or archaeological site is subjected to data recovery, it is destroyed.

This project has the potential to impact many archaeological sites as the area is considered highly sensitive, especially for Native Americans. Further disturbance could damage as yet unrecorded subsurface resources and result in significant impacts, not to mention the finding of Native American human remains.

We do suggest that an archaeological survey be prepared and that a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources be present during all ground disturbing activity.

The Monterey area was home to many thousands of Native Americans and still is home to many culturally and spiritually active tribal entities. We respectfully request consultation and avoidance as viable alternatives to destruction of Native American cultural resources.

If you have any questions, please call me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

cc: Cynthia Gomez, California Tribal Advisor
Louise Miranda-Ramirez, Ohlone/Costanoan-Esselen Nation
Mary Doane, Archaeological Consutling

APPENDIX E

Air Quality Modeling Assumptions and Model Output

Appendix E-1

CalEEMod Emissions Calculations Data Assumptions

Satellite Recycled Water Treatment Plant (SRWTP)

Construction and Operational Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project
CalEEMod Emissions Calculations Data Assumptions
Satellite Recycled Water Treatment Plant (SRWTP)

General Project Data

Project Site Area - 2.23 acre (124,644 sq. ft.)
Number of employees at site: 3
Assume Trip rate of 8 trips/day for weekdays, and 6 trips/day for weekends (3 employees to/from work 7-days/week, plus approximately 2 trips per week for Material vendors and approximately 3 trips to week for visitors and other administrative purposes.)

CalEEMod Project Characteristics

Assumptions:
Project Site Location: Monterey County
Forecast Climate Zone: 4 (From Appendix F: Zip code 93950 - Pacific Grove - Monterey County)
Land Use Setting: Urban
Operational Year: 2016
Utility Company: Pacific Gas & Electric Company

Land Use

Satellite Recycled Water Treatment Plant (SRWTP)
- Total Disturbed Area = 350-ft X 210-ft = 73,500 sq-ft = 1.7-acres.
  Other Non-Asphalt Surfaces = 73,500 sq-ft - 4,750 sq-ft - 2,160 sq-ft = 66,590 sq-ft
- SRWTP would be skid-mounted system installed on concrete pad.
  Unrefrigerated Warehouse-No Rail = 36 ft x 60 ft = 2,160 sq-ft
- Control Building (Clarifier) and Digester Rehab for office and treated water storage.
  General Light Industry = 55-ft diameter = 2,375 sq-ft x 2 = 4,750 sq-ft

Construction Phases:

Estimates assume construction begins in June-2015. Except where noted the phase duration and equipment are default assumptions generated by CalEEMod for a construction site of this size.

Demolition - Two weeks / 10-days (6/1/2015 to 6/12/2015) - 5-days per week (CalEEMod default = 20 days)
Phase expected to conservatively require only 10-days due to relatively minor nature of the demolition activities.
Relocate existing stockpiled materials and related structures. Removal of corroded exterior surfaces and roofing systems in preparation for retrofit of the existing tanks. Assume 25-tons materials hauled off site.

Equipment
- 1 Concrete / Industrial Saw - 81-Horsepower (0.73 load factor) - 8 hours/day
- 0 Rubber Tire Dozer - 255-Horsepower (0.4 load factor) - 8.0 hours/day
  (CalEEMod default = 1 unit. Not needed for scope)
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 8.0 hours/day (CalEEMod default = 3 units)

Site Preparation - Two days (6/12/2015 to 6/15/2015) - 5-days per week (CalEEMod default = 2 days)
Default CalEEMod construction phase, involves clearing vegetation (grubbing and tree/stump removal) and stones prior to grading.
Assume no material imported or exported.

Equipment
- 1 Grader - 174-Horsepower (0.41 load factor) - 8.0 hours/day
- 1 Rubber Tire Dozer - 255-Horsepower (0.4 load factor) - 7.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 8.0 hours/day

Grading - Four days (6/16/2015 to 6/19/2015) - 5-days per week (CalEEMod default = 4 days)
Default CalEEMod construction phase, involves the cut and fill of land to ensure the proper base and slope for the construction foundation. Assume 2,000 cu-yd graded materials hauled off site.

Equipment
- 1 Grader - 174-Horsepower (0.41 load factor) - 6.0 hours/day
- 1 Rubber Tire Dozer - 255-Horsepower (0.4 load factor) - 6.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 7.0 hours/day

Building Construction - Eight weeks / 40-days (6/22/2014 to 8/14/2014) - 5-days per week - (CalEEMod default = 200 days)
The building construction phase is anticipated to be significantly shorter that CalEEMod defaults, as it entails the refurbishment and retrofit of existing buildings, rather that new construction.
Retrofit activities will include:
- Replacement of corroded exterior surfaces;
- Replacement of roofing systems;

- Repainting of exposed piping and reinforcing steel;
- Cleaning and repair of exterior concreted surfaces;
- Repair of spot corrosion on interior concrete surfaces;
- Cleaning and re-coating of interior steel appurtenances;
- Installation of OSHA required handrails, ladders, and gates;
- Rehabilitation of former WWTP administration offices for use by SRWTP personnel.
- Installation of SRWTP equipment and piping.

Equipment
- 1 Crane - 226-Horsepower (0.29 load factor) - 6.0 hours/day
- 1 Forklift - 89-Horsepower (0.2 load factor) - 6.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 6.0 hours/day
- 1 Generator Sets - 84-Horsepower (0.74 load factor) - 8.0 hours/day
- 3 Welders - 46-Horsepower (0.45 load factor) - 8.0 hours/day

Paving - Two week / 10-days (6/22/2014 to 7/3/2014) - 5-days per week - (CalEEMod default = 10 days)
Paving phase includes preparation of concrete slabs for SRWTP equipment.
Paving of facility access roads will be decomposed granite, similar to current site conditions.

Equipment
- 1 Cement and Mortar Mixers - 9-Horsepower (0.56 load factor) - 6.0 hours/day
- 1 Paver - 125-Horsepower (0.42 load factor) - 6.0 hours/day
- 1 Paving Equipment - 130-Horsepower (0.36 load factor) - 8.0 hours/day
- 1 Roller - 80-Horsepower (0.38 load factor) - 7.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 8.0 hours/day

Architectural Coating - Two weeks / 10-days (8/17/2014 to 8/28/2014) - 5-days per week (CalEEMod default = 10 days)
Architectural Coating phase includes painting of tanks, office space, piping and equipment as needed.
Assume tanks are 55-ft in diameter and 15-ft high.

Equipment
- 1 Air Compressor - 78-Horsepower (0.480 load factor) - 6.0 hours/day
- Exterior Coatings = [(55ft / 2)^2 x 3.14159 (roof) + 55ft x 3.14159 x 15-ft (walls)] x two tanks = 10,000 sq-ft (CalEEMod default = 36,750 sq-ft)
- Interior Coatings = 30,000 sq-ft (CalEEMod ratio of 3 to 1 Interior to Exterior). (CalEEMod default = 110,250 sq-ft)

Operational Emissions

Operational - Mobile Source Assumptions - 8 trips/day for weekdays, and 6 trips/day for Saturday and Sunday
Assume Weekday trip rate of 3 employees to/from work and one additional trip vendors and visitors.
Assume Weekend trip rate of 3 employees to/from work.
All operational vehicle trips associated with the refurbished tanks / office space land use.

Operational - Energy Use
The SRTWP is expected to use approximately 495 kWh/day.

Electricity Usage Assumptions = 495 kWh/day = 180.7 MWhr/year
Assume CalEEMod defaults for Rehabilitated Tanks and associate office space (42,900 kWh/yr).
Assume Nontitle 24 Electricity Energy Intensity of 83.65 kWh/sq-ft/yr for Unrefrigerated Warehouse-No rail (SRWTP).

Natural Gas Assumptions
There will be no NG used at site. (CalEEMod default = 130,200 kBTU/yr).

Operational - Water and Wastewater Usage
No potable water use associated with SRWTP Skid (Unrefrigerated Warehouse-No rail).
SRTWP potable water use assumed for employee use only. For other uses assume recycled water will be used.
Assume 70 gal/employee/day x 3 employees x 365 days/yr = 80,000 gal/yr (CalEEMod defaults =1,098,437.5 gal/yr)

Operational - Solid Waste
Assume CalEEMod defaults for Rehabilitated Tanks and associate office space (5.89 tons/year).
Assume for SRWTP that approximately 0.5 cubic yards of solids generated per day.
= 110 tons per year (density assumed = 45 lbs/ft3)

Operational - Off-Road Equipment
The SRWTP would include a 300 kW emergency generator to power the SRWTP in the event of a power outage.
Assume 1-hr/week for testing and minor outages.
Equipment - 1 Generator Sets - 400-Horsepower (0.74 load factor) - 1.0 hours/day - 52 days/yr

Vegetation

Land Use Change: Assume 0.67 Initial Acres (29,000 sq-ft) of "Forest-Land", and 0.44 Final Acres (19,300 sq-ft).
Sequestration: If any if trees are removed, the project plan includes compensatory mitigation. Replanting is required.

Appendix E-1

CalEEMod Model Output – Annual (Tons/year)

Satellite Recycled Water Treatment Plant (SRWTP)

Construction and Operational Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project - SRWTP

Monterey County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.75	1000sqft	0.11	4,750.00	0
Unrefrigerated Warehouse-No Rail	2.16	1000sqft	0.05	2,160.00	0
Other Non-Asphalt Surfaces	66.59	1000sqft	1.53	66,590.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Modeling of construction and operating emission for the Satellite Recycled Water Treatment Plant (SRWTP)
Land Use - Clarifier & Digester Rehab - General Light Industry = 4,750 sq-ft
Concrete pad for SRWTP - Unrefrigerated Warehouse-No Rail = 2,160 sq-ft
SRWTP total disturbed area - Other Non-Asphalt Surfaces = 66,590 sq-ft

Construction Phase - Demolition phase shortened due to relatively minor nature of work.
Building phase shorter that CalEEMod defaults, only refurbishment and retrofit of existing tanks.

Off-road Equipment - Demolition activities limited to removal of corroded exterior surfaces and roofing systems in preparation for retrofit of the existing tanks.

Demolition - Removal of corroded exterior surfaces and roofing systems in preparation for retrofit of the existing tanks. Assume 25-tons materials hauled off site.

Grading - Assume 2,000 cu-yd graded materials hauled off site during Grading phase.

Architectural Coating - Exterior Coatings = [(55ft / 2)^2 x 3.14159 (roof) + 55ft x 3.14159 x 15-ft (walls)] x two tanks = 10,000 sq-ft
Interior Coatings = 30,000 sq-ft (CalEEMod ration of 3 to 1 Interior to Exterior).

Vehicle Trips - All vehicle trips associated with the refurbished tanks / office space land use.
Assume Weekday trip rate of 3 employees to/from work and one additional trip vendors and visitors.
Assume Weekend trip rate of 3 employees to/from work.

Area Coating - Exterior Coatings = [(55ft / 2)^2 x 3.14159 (roof) + 55ft x 3.14159 x 15-ft (walls)] x two tanks = 10,000 sq-ft
Interior Coatings = 30,000 sq-ft (CalEEMod ratio of 3 to 1 Interior to Exterior).

Energy Use - Electricity Usage Estimate for SRWTP = 495 kWh/day = 180.7 MWhr/year
Assume Nontitle 24 Electricity Energy Intensity of 83.65 KWHr/sq-ft/yr for Unrefrigerated Warehouse-No rail (SRWTP)
There will be no NG used at site.

Water And Wastewater - No potable water use associated with SRWTP Skid (Unrefrigerated Warehouse-No rail).
SRTWP potable water use assumed for employee use only. For other uses assume recycled water will be used.
Assume 70 gal/employee/day x 3 x 365 days/yr = 80,000 gal/yr

Solid Waste - Assume for SRWTP that approximately 0.5 cubic yards = 110 tons per year (density assumed = 45 lbs/ft3) of solids generated per day.

Operational Off-Road Equipment - Assume the SRWTP would include a 300 kW emergency generator to power the SRWTP in the event of a power outage. Assume 1-hr/week for testing and minor outages.

Table Name	Column Name	Default Value	New Value
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tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	PhaseEndDate	7/17/2015	8/28/2015
tblConstructionPhase	PhaseEndDate	8/28/2015	7/3/2015
tblConstructionPhase	PhaseEndDate	6/16/2015	6/15/2015
tblConstructionPhase	PhaseStartDate	7/4/2015	8/17/2015
tblConstructionPhase	PhaseStartDate	6/20/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	8/15/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	6/13/2015	6/12/2015
tblEnergyUse	LightingElect	2.39	0.00
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tblEnergyUse	NT24NG	6.67	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	52.00
tblOperationalOffRoadEquipment	OperHorsePower	84.00	400.00
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tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	2.03	110.00
tblVehicleTrips	ST_TR	1.32	1.30
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tblVehicleTrips	SU_TR	0.68	1.30
tblVehicleTrips	SU_TR	2.59	0.00
tblVehicleTrips	WD_TR	6.97	1.70
tblVehicleTrips	WD_TR	2.59	0.00
tblWater	IndoorWaterUseRate	1,098,437.50	80,000.00
tblWater	IndoorWaterUseRate	499,500.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.3373	0.7051	0.5864	8.4000e-004	0.0258	0.0436	0.0694	0.0107	0.0417	0.0524	0.0000	73.1073	73.1073	0.0132	0.0000	73.3849
Total	**0.3373**	**0.7051**	**0.5864**	**8.4000e-004**	**0.0258**	**0.0436**	**0.0694**	**0.0107**	**0.0417**	**0.0524**	**0.0000**	**73.1073**	**73.1073**	**0.0132**	**0.0000**	**73.3849**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.3373	0.7051	0.5864	8.4000e-004	0.0258	0.0436	0.0694	0.0107	0.0417	0.0524	0.0000	73.1072	73.1072	0.0132	0.0000	73.3848
Total	**0.3373**	**0.7051**	**0.5864**	**8.4000e-004**	**0.0258**	**0.0436**	**0.0694**	**0.0107**	**0.0417**	**0.0524**	**0.0000**	**73.1072**	**73.1072**	**0.0132**	**0.0000**	**73.3848**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3103	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	65.0410	65.0410	2.9400e-003	6.1000e-004	65.2914
Mobile	6.7500e-003	0.0179	0.0794	1.3000e-004	8.2100e-003	2.1000e-004	8.4200e-003	2.2000e-003	2.0000e-004	2.4000e-003	0.0000	10.1050	10.1050	5.6000e-004	0.0000	10.1168
Offroad	4.0600e-003	0.0489	0.0183	8.0000e-005		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	8.7473	8.7473	3.2000e-004	0.0000	8.7541
Waste						0.0000	0.0000		0.0000	0.0000	23.5246	0.0000	23.5246	1.3903	0.0000	52.7202
Water						0.0000	0.0000		0.0000	0.0000	0.0254	0.1259	0.1513	2.6100e-003	6.0000e-005	0.2256
Total	**0.3211**	**0.0668**	**0.0986**	**2.1000e-004**	**8.2100e-003**	**1.6400e-003**	**9.8500e-003**	**2.2000e-003**	**1.6300e-003**	**3.8300e-003**	**23.5500**	**84.0209**	**107.5709**	**1.3967**	**6.7000e-004**	**137.1100**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3103	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	65.0410	65.0410	2.9400e-003	6.1000e-004	65.2914
Mobile	6.7500e-003	0.0179	0.0794	1.3000e-004	8.2100e-003	2.1000e-004	8.4200e-003	2.2000e-003	2.0000e-004	2.4000e-003	0.0000	10.1050	10.1050	5.6000e-004	0.0000	10.1168
Offroad	4.0600e-003	0.0489	0.0183	8.0000e-005		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	8.7473	8.7473	3.2000e-004	0.0000	8.7541
Waste						0.0000	0.0000		0.0000	0.0000	23.5246	0.0000	23.5246	1.3903	0.0000	52.7202
Water						0.0000	0.0000		0.0000	0.0000	0.0254	0.1259	0.1513	2.6100e-003	6.0000e-005	0.2256
Total	**0.3211**	**0.0668**	**0.0986**	**2.1000e-004**	**8.2100e-003**	**1.6400e-003**	**9.8500e-003**	**2.2000e-003**	**1.6300e-003**	**3.8300e-003**	**23.5500**	**84.0209**	**107.5709**	**1.3967**	**6.7000e-004**	**137.1099**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.26**	**73.25**	**18.53**	**38.10**	**0.00**	**87.20**	**14.52**	**0.00**	**87.73**	**37.34**	**0.00**	**10.41**	**8.13**	**0.02**	**0.00**	**6.38**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-25.5300
Total	**-25.5300**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	Removal of materials. Prep tanks
2	Site Preparation	Site Preparation	6/12/2015	6/15/2015	5	2	Clearing and grubbing
3	Grading	Grading	6/16/2015	6/19/2015	5	4	
4	Building Construction	Building Construction	6/22/2015	8/14/2015	5	40	Tank repair and retrofit
5	Paving	Paving	6/22/2015	7/3/2015	5	10	SRTWP slab. Access road Paving.
6	Architectural Coating	Architectural Coating	8/17/2015	8/28/2015	5	10	Painting tanks

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	2	5.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	31.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1738	4.1738	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**2.7000e-004**	**3.2800e-003**	**3.5500e-003**	**4.0000e-005**	**3.1800e-003**	**3.2200e-003**	**0.0000**	**4.1738**	**4.1738**	**7.3000e-004**	**0.0000**	**4.1891**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	3.2000e-004	3.7000e-004	0.0000	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0681	0.0681	0.0000	0.0000	0.0681
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	2.1000e-004	1.9100e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1980	0.1980	2.0000e-005	0.0000	0.1983
Total	**1.7000e-004**	**5.3000e-004**	**2.2800e-003**	**0.0000**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2661**	**0.2661**	**2.0000e-005**	**0.0000**	**0.2664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1737	4.1737	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**2.7000e-004**	**3.2800e-003**	**3.5500e-003**	**4.0000e-005**	**3.1800e-003**	**3.2200e-003**	**0.0000**	**4.1737**	**4.1737**	**7.3000e-004**	**0.0000**	**4.1891**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	3.2000e-004	3.7000e-004	0.0000	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0681	0.0681	0.0000	0.0000	0.0681
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	2.1000e-004	1.9100e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1980	0.1980	2.0000e-005	0.0000	0.1983
Total	**1.7000e-004**	**5.3000e-004**	**2.2800e-003**	**0.0000**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2661**	**0.2661**	**2.0000e-005**	**0.0000**	**0.2664**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5400e-003	0.0269	0.0170	2.0000e-005		1.4700e-003	1.4700e-003		1.3500e-003	1.3500e-003	0.0000	1.6345	1.6345	4.9000e-004	0.0000	1.6448
Total	**2.5400e-003**	**0.0269**	**0.0170**	**2.0000e-005**	**5.8000e-003**	**1.4700e-003**	**7.2700e-003**	**2.9500e-003**	**1.3500e-003**	**4.3000e-003**	**0.0000**	**1.6345**	**1.6345**	**4.9000e-004**	**0.0000**	**1.6448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	7.0000e-005	6.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0634	0.0634	0.0000	0.0000	0.0635
Total	**4.0000e-005**	**7.0000e-005**	**6.1000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0634**	**0.0634**	**0.0000**	**0.0000**	**0.0635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5400e-003	0.0269	0.0170	2.0000e-005		1.4700e-003	1.4700e-003		1.3500e-003	1.3500e-003	0.0000	1.6345	1.6345	4.9000e-004	0.0000	1.6448
Total	**2.5400e-003**	**0.0269**	**0.0170**	**2.0000e-005**	**5.8000e-003**	**1.4700e-003**	**7.2700e-003**	**2.9500e-003**	**1.3500e-003**	**4.3000e-003**	**0.0000**	**1.6345**	**1.6345**	**4.9000e-004**	**0.0000**	**1.6448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	7.0000e-005	6.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0634	0.0634	0.0000	0.0000	0.0635
Total	**4.0000e-005**	**7.0000e-005**	**6.1000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0634**	**0.0634**	**0.0000**	**0.0000**	**0.0635**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.9800e-003	0.0000	9.9800e-003	5.0700e-003	0.0000	5.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1300e-003	0.0439	0.0282	3.0000e-005		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	2.6849	2.6849	8.0000e-004	0.0000	2.7017
Total	**4.1300e-003**	**0.0439**	**0.0282**	**3.0000e-005**	**9.9800e-003**	**2.3900e-003**	**0.0124**	**5.0700e-003**	**2.2000e-003**	**7.2700e-003**	**0.0000**	**2.6849**	**2.6849**	**8.0000e-004**	**0.0000**	**2.7017**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.9300e-003	0.0401	0.0464	9.0000e-005	2.1100e-003	6.3000e-004	2.7400e-003	5.8000e-004	5.8000e-004	1.1600e-003	0.0000	8.5081	8.5081	7.0000e-005	0.0000	8.5095
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	1.4000e-004	1.2300e-003	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1267	0.1267	1.0000e-005	0.0000	0.1269
Total	**4.0200e-003**	**0.0402**	**0.0476**	**9.0000e-005**	**2.2400e-003**	**6.3000e-004**	**2.8700e-003**	**6.1000e-004**	**5.8000e-004**	**1.2000e-003**	**0.0000**	**8.6348**	**8.6348**	**8.0000e-005**	**0.0000**	**8.6364**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.9800e-003	0.0000	9.9800e-003	5.0700e-003	0.0000	5.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1300e-003	0.0439	0.0282	3.0000e-005		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	2.6849	2.6849	8.0000e-004	0.0000	2.7017
Total	**4.1300e-003**	**0.0439**	**0.0282**	**3.0000e-005**	**9.9800e-003**	**2.3900e-003**	**0.0124**	**5.0700e-003**	**2.2000e-003**	**7.2700e-003**	**0.0000**	**2.6849**	**2.6849**	**8.0000e-004**	**0.0000**	**2.7017**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.9300e-003	0.0401	0.0464	9.0000e-005	2.1100e-003	6.3000e-004	2.7400e-003	5.8000e-004	5.8000e-004	1.1600e-003	0.0000	8.5081	8.5081	7.0000e-005	0.0000	8.5095
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	1.4000e-004	1.2300e-003	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1267	0.1267	1.0000e-005	0.0000	0.1269
Total	**4.0200e-003**	**0.0402**	**0.0476**	**9.0000e-005**	**2.2400e-003**	**6.3000e-004**	**2.8700e-003**	**6.1000e-004**	**5.8000e-004**	**1.2000e-003**	**0.0000**	**8.6348**	**8.6348**	**8.0000e-005**	**0.0000**	**8.6364**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0720	0.4313	0.3001	4.4000e-004		0.0297	0.0297		0.0287	0.0287	0.0000	37.2966	37.2966	8.6000e-003	0.0000	37.4773
Total	**0.0720**	**0.4313**	**0.3001**	**4.4000e-004**		**0.0297**	**0.0297**		**0.0287**	**0.0287**	**0.0000**	**37.2966**	**37.2966**	**8.6000e-003**	**0.0000**	**37.4773**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Vendor	4.2800e-003	0.0282	0.0494	6.0000e-005	1.5400e-003	4.8000e-004	2.0200e-003	4.4000e-004	4.4000e-004	8.8000e-004	0.0000	5.1432	5.1432	5.0000e-005	0.0000	5.1442
Worker	3.4100e-003	5.2700e-003	0.0475	6.0000e-005	4.9300e-003	6.0000e-005	4.9800e-003	1.3100e-003	5.0000e-005	1.3600e-003	0.0000	4.9103	4.9103	3.8000e-004	0.0000	4.9183
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.6900e-003**	**0.0335**	**0.0968**	**1.2000e-004**	**6.4700e-003**	**5.4000e-004**	**7.0000e-003**	**1.7500e-003**	**4.9000e-004**	**2.2400e-003**	**0.0000**	**10.0535**	**10.0535**	**4.3000e-004**	**0.0000**	**10.0626**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0720	0.4313	0.3001	4.4000e-004		0.0297	0.0297		0.0287	0.0287	0.0000	37.2966	37.2966	8.6000e-003	0.0000	37.4772
Total	**0.0720**	**0.4313**	**0.3001**	**4.4000e-004**		**0.0297**	**0.0297**		**0.0287**	**0.0287**	**0.0000**	**37.2966**	**37.2966**	**8.6000e-003**	**0.0000**	**37.4772**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Vendor	4.2800e-003	0.0282	0.0494	6.0000e-005	1.5400e-003	4.8000e-004	2.0200e-003	4.4000e-004	4.4000e-004	8.8000e-004	0.0000	5.1432	5.1432	5.0000e-005	0.0000	5.1442
Worker	3.4100e-003	5.2700e-003	0.0475	6.0000e-005	4.9300e-003	6.0000e-005	4.9800e-003	1.3100e-003	5.0000e-005	1.3600e-003	0.0000	4.9103	4.9103	3.8000e-004	0.0000	4.9183
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.6900e-003**	**0.0335**	**0.0968**	**1.2000e-004**	**6.4700e-003**	**5.4000e-004**	**7.0000e-003**	**1.7500e-003**	**4.9000e-004**	**2.2400e-003**	**0.0000**	**10.0535**	**10.0535**	**4.3000e-004**	**0.0000**	**10.0626**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0200e-003	0.0730	0.0459	7.0000e-005		4.4600e-003	4.4600e-003		4.1100e-003	4.1100e-003	0.0000	6.2708	6.2708	1.8400e-003	0.0000	6.3094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0730**	**0.0459**	**7.0000e-005**		**4.4600e-003**	**4.4600e-003**		**4.1100e-003**	**4.1100e-003**	**0.0000**	**6.2708**	**6.2708**	**1.8400e-003**	**0.0000**	**6.3094**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.5000e-004	4.9800e-003	1.0000e-005	5.2000e-004	1.0000e-005	5.2000e-004	1.4000e-004	1.0000e-005	1.4000e-004	0.0000	0.5148	0.5148	4.0000e-005	0.0000	0.5156
Total	**3.6000e-004**	**5.5000e-004**	**4.9800e-003**	**1.0000e-005**	**5.2000e-004**	**1.0000e-005**	**5.2000e-004**	**1.4000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.5148**	**0.5148**	**4.0000e-005**	**0.0000**	**0.5156**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0200e-003	0.0730	0.0459	7.0000e-005		4.4600e-003	4.4600e-003		4.1100e-003	4.1100e-003	0.0000	6.2708	6.2708	1.8400e-003	0.0000	6.3094
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.0200e-003**	**0.0730**	**0.0459**	**7.0000e-005**		**4.4600e-003**	**4.4600e-003**		**4.1100e-003**	**4.1100e-003**	**0.0000**	**6.2708**	**6.2708**	**1.8400e-003**	**0.0000**	**6.3094**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	5.5000e-004	4.9800e-003	1.0000e-005	5.2000e-004	1.0000e-005	5.2000e-004	1.4000e-004	1.0000e-005	1.4000e-004	0.0000	0.5148	0.5148	4.0000e-005	0.0000	0.5156
Total	**3.6000e-004**	**5.5000e-004**	**4.9800e-003**	**1.0000e-005**	**5.2000e-004**	**1.0000e-005**	**5.2000e-004**	**1.4000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.5148**	**0.5148**	**4.0000e-005**	**0.0000**	**0.5156**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0300e-003	0.0129	9.5100e-003	1.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	1.2766	1.2766	1.7000e-004	0.0000	1.2801
Total	**0.2338**	**0.0129**	**9.5100e-003**	**1.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**1.2766**	**1.2766**	**1.7000e-004**	**0.0000**	**1.2801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.6000e-004	2.3000e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2376	0.2376	2.0000e-005	0.0000	0.2380
Total	**1.7000e-004**	**2.6000e-004**	**2.3000e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2376**	**0.2376**	**2.0000e-005**	**0.0000**	**0.2380**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0300e-003	0.0129	9.5100e-003	1.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	1.2766	1.2766	1.7000e-004	0.0000	1.2801
Total	**0.2338**	**0.0129**	**9.5100e-003**	**1.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**1.2766**	**1.2766**	**1.7000e-004**	**0.0000**	**1.2801**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.6000e-004	2.3000e-003	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2376	0.2376	2.0000e-005	0.0000	0.2380
Total	**1.7000e-004**	**2.6000e-004**	**2.3000e-003**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2376**	**0.2376**	**2.0000e-005**	**0.0000**	**0.2380**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.7500e-003	0.0179	0.0794	1.3000e-004	8.2100e-003	2.1000e-004	8.4200e-003	2.2000e-003	2.0000e-004	2.4000e-003	0.0000	10.1050	10.1050	5.6000e-004	0.0000	10.1168
Unmitigated	6.7500e-003	0.0179	0.0794	1.3000e-004	8.2100e-003	2.1000e-004	8.4200e-003	2.2000e-003	2.0000e-004	2.4000e-003	0.0000	10.1050	10.1050	5.6000e-004	0.0000	10.1168

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	8.08	6.18	6.18	21,990	21,990
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	8.08	6.18	6.18	21,990	21,990

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.466828	0.039998	0.201848	0.176598	0.051139	0.007296	0.018789	0.020374	0.004432	0.001946	0.007536	0.000953	0.002263

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	65.0410	65.0410	2.9400e-003	6.1000e-004	65.2914
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	65.0410	65.0410	2.9400e-003	6.1000e-004	65.2914
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	42892.5	12.4779	5.6000e-004	1.2000e-004	12.5260
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	180684	52.5631	2.3800e-003	4.9000e-004	52.7654
Total		**65.0410**	**2.9400e-003**	**6.1000e-004**	**65.2914**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	42892.5	12.4779	5.6000e-004	1.2000e-004	12.5260
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	180684	52.5631	2.3800e-003	4.9000e-004	52.7654
Total		**65.0410**	**2.9400e-003**	**6.1000e-004**	**65.2914**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3103	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003
Unmitigated	0.3103	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2871					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003
Total	**0.3103**	**1.0000e-005**	**9.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8200e-003**	**1.8200e-003**	**1.0000e-005**	**0.0000**	**1.9300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2871					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8200e-003	1.8200e-003	1.0000e-005	0.0000	1.9300e-003
Total	**0.3103**	**1.0000e-005**	**9.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8200e-003**	**1.8200e-003**	**1.0000e-005**	**0.0000**	**1.9300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.1513	2.6100e-003	6.0000e-005	0.2256
Unmitigated	0.1513	2.6100e-003	6.0000e-005	0.2256

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.08 / 0	0.1513	2.6100e-003	6.0000e-005	0.2256
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.1513**	**2.6100e-003**	**6.0000e-005**	**0.2256**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.08 / 0	0.1513	2.6100e-003	6.0000e-005	0.2256
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.1513**	**2.6100e-003**	**6.0000e-005**	**0.2256**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	23.5246	1.3903	0.0000	52.7202
Unmitigated	23.5246	1.3903	0.0000	52.7202

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	5.89	1.1956	0.0707	0.0000	2.6795
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	110	22.3290	1.3196	0.0000	50.0407
Total		**23.5246**	**1.3903**	**0.0000**	**52.7202**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	5.89	1.1956	0.0707	0.0000	2.6795
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	110	22.3290	1.3196	0.0000	50.0407
Total		**23.5246**	**1.3903**	**0.0000**	**52.7202**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Generator Sets	1	1.00	52	400	0.74	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Generator Sets	4.0600e-003	0.0489	0.0183	8.0000e-005		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	8.7473	8.7473	3.2000e-004	0.0000	8.7541
Total	**4.0600e-003**	**0.0489**	**0.0183**	**8.0000e-005**		**1.4300e-003**	**1.4300e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**8.7473**	**8.7473**	**3.2000e-004**	**0.0000**	**8.7541**

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-25.5300	0.0000	0.0000	-25.5300

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Trees	0.67 / 0.44	-25.5300	0.0000	0.0000	-25.5300
Total		**-25.5300**	**0.0000**	**0.0000**	**-25.5300**

Appendix E-1

CalEEMod Model Output – Winter (lbs/day)

Satellite Recycled Water Treatment Plant (SRWTP)

Construction and Operational Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project - SRWTP

Monterey County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.75	1000sqft	0.11	4,750.00	0
Unrefrigerated Warehouse-No Rail	2.16	1000sqft	0.05	2,160.00	0
Other Non-Asphalt Surfaces	66.59	1000sqft	1.53	66,590.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Modeling of construction and operating emission for the Satellite Recycled Water Treatment Plant (SRWTP)

Land Use - Clarifier & Digester Rehab - General Light Industry = 4,750 sq-ft
Concrete pad for SRWTP - Unrefrigerated Warehouse-No Rail = 2,160 sq-ft
SRWTP total disturbed area - Other Non-Asphalt Surfaces = 66,590 sq-ft

Construction Phase - Demolition phase shortened due to relatively minor nature of work.
Building phase shorter that CalEEMod defaults, only refurbishment and retrofit of existing tanks.

Off-road Equipment - Demolition activities limited to removal of corroded exterior surfaces and roofing systems in preparation for retrofit of the existing tanks.

Demolition - Removal of corroded exterior surfaces and roofing systems in preparation for retrofit of the existing tanks. Assume 25-tons materials hauled off site.

Grading - Assume 2,000 cu-yd graded materials hauled off site during Grading phase.

Architectural Coating - Exterior Coatings = [(55ft / 2)^2 x 3.14159 (roof) + 55ft x 3.14159 x 15-ft (walls)] x two tanks = 10,000 sq-ft
Interior Coatings = 30,000 sq-ft (CalEEMod ration of 3 to 1 Interior to Exterior).

Vehicle Trips - All vehicle trips associated with the refurbished tanks / office space land use.
Assume Weekday trip rate of 3 employees to/from work and one additional trip vendors and visitors.
Assume Weekend trip rate of 3 employees to/from work.

Area Coating - Exterior Coatings = [(55ft / 2)^2 x 3.14159 (roof) + 55ft x 3.14159 x 15-ft (walls)] x two tanks = 10,000 sq-ft
Interior Coatings = 30,000 sq-ft (CalEEMod ratio of 3 to 1 Interior to Exterior).

Energy Use - Electricity Usage Estimate for SRWTP = 495 kWh/day = 180.7 MWhr/year
Assume Nontitle 24 Electricity Energy Intensity of 83.65 KWHr/sq-ft/yr for Unrefrigerated Warehouse-No rail (SRWTP)
There will be no NG used at site.

Water And Wastewater - No potable water use associated with SRWTP Skid (Unrefrigerated Warehouse-No rail).
SRTWP potable water use assumed for employee use only. For other uses assume recycled water will be used.
Assume 70 gal/employee/day x 3 x 365 days/yr = 80,000 gal/yr

Solid Waste - Assume for SRWTP that approximately 0.5 cubic yards = 110 tons per year (density assumed = 45 lbs/ft3) of solids generated per day.

Operational Off-Road Equipment - Assume the SRWTP would include a 300 kW emergency generator to power the SRWTP in the event of a power outage. Assume 1-hr/week for testing and minor outages.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	36,750.00	10,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	110,250.00	30,000.00
tblAreaCoating	Area_Nonresidential_Exterior	36750	10000
tblAreaCoating	Area_Nonresidential_Interior	110250	30000
tblConstructionPhase	NumDays	200.00	40.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	PhaseEndDate	7/17/2015	8/28/2015
tblConstructionPhase	PhaseEndDate	8/28/2015	7/3/2015
tblConstructionPhase	PhaseEndDate	6/16/2015	6/15/2015
tblConstructionPhase	PhaseStartDate	7/4/2015	8/17/2015
tblConstructionPhase	PhaseStartDate	6/20/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	8/15/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	6/13/2015	6/12/2015
tblEnergyUse	LightingElect	2.39	0.00
tblEnergyUse	NT24E	1.07	83.65
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	NT24NG	0.07	0.00
tblEnergyUse	T24E	0.39	0.00
tblEnergyUse	T24NG	20.74	0.00
tblEnergyUse	T24NG	3.58	0.00
tblGrading	MaterialExported	0.00	2,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	52.00
tblOperationalOffRoadEquipment	OperHorsePower	84.00	400.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	2.03	110.00
tblVehicleTrips	ST_TR	1.32	1.30
tblVehicleTrips	ST_TR	2.59	0.00
tblVehicleTrips	SU_TR	0.68	1.30
tblVehicleTrips	SU_TR	2.59	0.00
tblVehicleTrips	WD_TR	6.97	1.70
tblVehicleTrips	WD_TR	2.59	0.00
tblWater	IndoorWaterUseRate	1,098,437.50	80,000.00
tblWater	IndoorWaterUseRate	499,500.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	46.7922	42.3713	42.5166	0.0611	6.1443	2.4052	8.0902	2.9912	2.2818	4.9781	0.0000	6,232.0549	6,232.0549	0.9122	0.0000	6,251.2113
Total	**46.7922**	**42.3713**	**42.5166**	**0.0611**	**6.1443**	**2.4052**	**8.0902**	**2.9912**	**2.2818**	**4.9781**	**0.0000**	**6,232.0549**	**6,232.0549**	**0.9122**	**0.0000**	**6,251.2113**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	46.7922	42.3713	42.5166	0.0611	6.1443	2.4052	8.0902	2.9912	2.2818	4.9781	0.0000	6,232.0549	6,232.0549	0.9122	0.0000	6,251.2113
Total	**46.7922**	**42.3713**	**42.5166**	**0.0611**	**6.1443**	**2.4052**	**8.0902**	**2.9912**	**2.2818**	**4.9781**	**0.0000**	**6,232.0549**	**6,232.0549**	**0.9122**	**0.0000**	**6,251.2113**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7006	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0428	0.1106	0.5122	7.5000e-004	0.0500	1.2700e-003	0.0512	0.0134	1.1700e-003	0.0145		65.3694	65.3694	3.6700e-003		65.4465
Offroad	0.1560	1.8807	0.7028	3.2600e-003		0.0548	0.0548		0.0548	0.0548		370.8539	370.8539	0.0137		371.1417
Total	**1.8994**	**1.9914**	**1.2227**	**4.0100e-003**	**0.0500**	**0.0561**	**0.1061**	**0.0134**	**0.0560**	**0.0694**		**436.2394**	**436.2394**	**0.0174**	**0.0000**	**436.6052**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7006	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0428	0.1106	0.5122	7.5000e-004	0.0500	1.2700e-003	0.0512	0.0134	1.1700e-003	0.0145		65.3694	65.3694	3.6700e-003		65.4465
Offroad	0.1560	1.8807	0.7028	3.2600e-003		0.0548	0.0548		0.0548	0.0548		370.8539	370.8539	0.0137		371.1417
Total	**1.8994**	**1.9914**	**1.2227**	**4.0100e-003**	**0.0500**	**0.0561**	**0.1061**	**0.0134**	**0.0560**	**0.0694**		**436.2394**	**436.2394**	**0.0174**	**0.0000**	**436.6052**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.21**	**94.44**	**57.48**	**81.30**	**0.00**	**97.68**	**51.68**	**0.00**	**97.86**	**79.04**	**0.00**	**85.01**	**85.01**	**78.65**	**0.00**	**85.01**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	Removal of materials. Prep tanks
2	Site Preparation	Site Preparation	6/12/2015	6/15/2015	5	2	Clearing and grubbing
3	Grading	Grading	6/16/2015	6/19/2015	5	4	
4	Building Construction	Building Construction	6/22/2015	8/14/2015	5	40	Tank repair and retrofit
5	Paving	Paving	6/22/2015	7/3/2015	5	10	SRTWP slab. Access road Paving.
6	Architectural Coating	Architectural Coating	8/17/2015	8/28/2015	5	10	Painting tanks

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	2	5.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	31.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0545	0.0000	0.0545	8.2600e-003	0.0000	8.2600e-003			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351		920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.0545**	**0.6566**	**0.7111**	**8.2600e-003**	**0.6351**	**0.6434**		**920.1533**	**920.1533**	**0.1614**		**923.5424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.9900e-003	0.0651	0.0889	1.5000e-004	3.4800e-003	1.0100e-003	4.4900e-003	9.5000e-004	9.3000e-004	1.8900e-003		14.9850	14.9850	1.2000e-004		14.9876
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0467	0.4064	5.0000e-004	0.0411	4.6000e-004	0.0415	0.0109	4.2000e-004	0.0113		43.4002	43.4002	3.4200e-003		43.4720
Total	**0.0366**	**0.1118**	**0.4952**	**6.5000e-004**	**0.0446**	**1.4700e-003**	**0.0460**	**0.0118**	**1.3500e-003**	**0.0132**		**58.3852**	**58.3852**	**3.5400e-003**		**58.4595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0545	0.0000	0.0545	8.2600e-003	0.0000	8.2600e-003			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351	0.0000	920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.0545**	**0.6566**	**0.7111**	**8.2600e-003**	**0.6351**	**0.6434**	**0.0000**	**920.1533**	**920.1533**	**0.1614**		**923.5424**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.9900e-003	0.0651	0.0889	1.5000e-004	3.4800e-003	1.0100e-003	4.4900e-003	9.5000e-004	9.3000e-004	1.8900e-003		14.9850	14.9850	1.2000e-004		14.9876
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0467	0.4064	5.0000e-004	0.0411	4.6000e-004	0.0415	0.0109	4.2000e-004	0.0113		43.4002	43.4002	3.4200e-003		43.4720
Total	**0.0366**	**0.1118**	**0.4952**	**6.5000e-004**	**0.0446**	**1.4700e-003**	**0.0460**	**0.0118**	**1.3500e-003**	**0.0132**		**58.3852**	**58.3852**	**3.5400e-003**		**58.4595**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.5362	26.8886	17.0107	0.0171		1.4671	1.4671		1.3497	1.3497		1,801.7440	1,801.7440	0.5379		1,813.0398
Total	**2.5362**	**26.8886**	**17.0107**	**0.0171**	**5.7996**	**1.4671**	**7.2666**	**2.9537**	**1.3497**	**4.3034**		**1,801.7440**	**1,801.7440**	**0.5379**		**1,813.0398**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.0474**	**0.0747**	**0.6502**	**8.1000e-004**	**0.0657**	**7.4000e-004**	**0.0665**	**0.0174**	**6.8000e-004**	**0.0181**		**69.4403**	**69.4403**	**5.4700e-003**		**69.5551**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.5362	26.8886	17.0107	0.0171		1.4671	1.4671		1.3497	1.3497	0.0000	1,801.7440	1,801.7440	0.5379		1,813.0398
Total	**2.5362**	**26.8886**	**17.0107**	**0.0171**	**5.7996**	**1.4671**	**7.2666**	**2.9537**	**1.3497**	**4.3034**	**0.0000**	**1,801.7440**	**1,801.7440**	**0.5379**		**1,813.0398**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.0474**	**0.0747**	**0.6502**	**8.1000e-004**	**0.0657**	**7.4000e-004**	**0.0665**	**0.0174**	**6.8000e-004**	**0.0181**		**69.4403**	**69.4403**	**5.4700e-003**		**69.5551**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9916	0.0000	4.9916	2.5373	0.0000	2.5373			0.0000			0.0000
Off-Road	2.0666	21.9443	14.0902	0.0141		1.1968	1.1968		1.1011	1.1011		1,479.8000	1,479.8000	0.4418		1,489.0774
Total	**2.0666**	**21.9443**	**14.0902**	**0.0141**	**4.9916**	**1.1968**	**6.1884**	**2.5373**	**1.1011**	**3.6384**		**1,479.8000**	**1,479.8000**	**0.4418**		**1,489.0774**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.1849	20.3523	27.7762	0.0463	1.0869	0.3171	1.4040	0.2975	0.2916	0.5891		4,682.8145	4,682.8145	0.0380		4,683.6114
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**2.2323**	**20.4270**	**28.4263**	**0.0471**	**1.1526**	**0.3178**	**1.4705**	**0.3149**	**0.2923**	**0.6073**		**4,752.2549**	**4,752.2549**	**0.0434**		**4,753.1666**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9916	0.0000	4.9916	2.5373	0.0000	2.5373			0.0000			0.0000
Off-Road	2.0666	21.9443	14.0902	0.0141		1.1968	1.1968		1.1011	1.1011	0.0000	1,479.8000	1,479.8000	0.4418		1,489.0774
Total	**2.0666**	**21.9443**	**14.0902**	**0.0141**	**4.9916**	**1.1968**	**6.1884**	**2.5373**	**1.1011**	**3.6384**	**0.0000**	**1,479.8000**	**1,479.8000**	**0.4418**		**1,489.0774**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.1849	20.3523	27.7762	0.0463	1.0869	0.3171	1.4040	0.2975	0.2916	0.5891		4,682.8145	4,682.8145	0.0380		4,683.6114
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**2.2323**	**20.4270**	**28.4263**	**0.0471**	**1.1526**	**0.3178**	**1.4705**	**0.3149**	**0.2923**	**0.6073**		**4,752.2549**	**4,752.2549**	**0.0434**		**4,753.1666**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344		2,055.6247	2,055.6247	0.4741		2,065.5812
Total	**3.6000**	**21.5642**	**15.0041**	**0.0220**		**1.4851**	**1.4851**		**1.4344**	**1.4344**		**2,055.6247**	**2,055.6247**	**0.4741**		**2,065.5812**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	1.4280	3.0493	2.8200e-003	0.0790	0.0241	0.1032	0.0225	0.0222	0.0447		282.1994	282.1994	2.6800e-003		282.2556
Worker	0.1837	0.2894	2.5194	3.1200e-003	0.2547	2.8800e-003	0.2575	0.0676	2.6200e-003	0.0702		269.0813	269.0813	0.0212		269.5261
Total	**0.4283**	**1.7174**	**5.5687**	**5.9400e-003**	**0.3337**	**0.0270**	**0.3607**	**0.0900**	**0.0248**	**0.1148**		**551.2807**	**551.2807**	**0.0239**		**551.7817**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344	0.0000	2,055.6247	2,055.6247	0.4741		2,065.5812
Total	**3.6000**	**21.5642**	**15.0041**	**0.0220**		**1.4851**	**1.4851**		**1.4344**	**1.4344**	**0.0000**	**2,055.6247**	**2,055.6247**	**0.4741**		**2,065.5812**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	1.4280	3.0493	2.8200e-003	0.0790	0.0241	0.1032	0.0225	0.0222	0.0447		282.1994	282.1994	2.6800e-003		282.2556
Worker	0.1837	0.2894	2.5194	3.1200e-003	0.2547	2.8800e-003	0.2575	0.0676	2.6200e-003	0.0702		269.0813	269.0813	0.0212		269.5261
Total	**0.4283**	**1.7174**	**5.5687**	**5.9400e-003**	**0.3337**	**0.0270**	**0.3607**	**0.0900**	**0.0248**	**0.1148**		**551.2807**	**551.2807**	**0.0239**		**551.7817**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4041	14.5959	9.1695	0.0133		0.8919	0.8919		0.8215	0.8215		1,382.4703	1,382.4703	0.4054		1,390.9826
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4041**	**14.5959**	**9.1695**	**0.0133**		**0.8919**	**0.8919**		**0.8215**	**0.8215**		**1,382.4703**	**1,382.4703**	**0.4054**		**1,390.9826**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0770	0.1214	1.0565	1.3100e-003	0.1068	1.2100e-003	0.1080	0.0283	1.1000e-003	0.0294		112.8406	112.8406	8.8800e-003		113.0271
Total	**0.0770**	**0.1214**	**1.0565**	**1.3100e-003**	**0.1068**	**1.2100e-003**	**0.1080**	**0.0283**	**1.1000e-003**	**0.0294**		**112.8406**	**112.8406**	**8.8800e-003**		**113.0271**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4041	14.5959	9.1695	0.0133		0.8919	0.8919		0.8215	0.8215	0.0000	1,382.4703	1,382.4703	0.4054		1,390.9826
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4041**	**14.5959**	**9.1695**	**0.0133**		**0.8919**	**0.8919**		**0.8215**	**0.8215**	**0.0000**	**1,382.4703**	**1,382.4703**	**0.4054**		**1,390.9826**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0770	0.1214	1.0565	1.3100e-003	0.1068	1.2100e-003	0.1080	0.0283	1.1000e-003	0.0294		112.8406	112.8406	8.8800e-003		113.0271
Total	**0.0770**	**0.1214**	**1.0565**	**1.3100e-003**	**0.1068**	**1.2100e-003**	**0.1080**	**0.0283**	**1.1000e-003**	**0.0294**		**112.8406**	**112.8406**	**8.8800e-003**		**113.0271**

3.7 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	46.3500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4066	2.5703	1.9018	2.9700e-003		0.2209	0.2209		0.2209	0.2209		281.4481	281.4481	0.0367		282.2177
Total	**46.7566**	**2.5703**	**1.9018**	**2.9700e-003**		**0.2209**	**0.2209**		**0.2209**	**0.2209**		**281.4481**	**281.4481**	**0.0367**		**282.2177**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0356	0.0560	0.4876	6.0000e-004	0.0493	5.6000e-004	0.0499	0.0131	5.1000e-004	0.0136		52.0803	52.0803	4.1000e-003		52.1664
Total	**0.0356**	**0.0560**	**0.4876**	**6.0000e-004**	**0.0493**	**5.6000e-004**	**0.0499**	**0.0131**	**5.1000e-004**	**0.0136**		**52.0803**	**52.0803**	**4.1000e-003**		**52.1664**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	46.3500					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4066	2.5703	1.9018	2.9700e-003		0.2209	0.2209		0.2209	0.2209	0.0000	281.4481	281.4481	0.0367		282.2177
Total	**46.7566**	**2.5703**	**1.9018**	**2.9700e-003**		**0.2209**	**0.2209**		**0.2209**	**0.2209**	**0.0000**	**281.4481**	**281.4481**	**0.0367**		**282.2177**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0356	0.0560	0.4876	6.0000e-004	0.0493	5.6000e-004	0.0499	0.0131	5.1000e-004	0.0136		52.0803	52.0803	4.1000e-003		52.1664
Total	**0.0356**	**0.0560**	**0.4876**	**6.0000e-004**	**0.0493**	**5.6000e-004**	**0.0499**	**0.0131**	**5.1000e-004**	**0.0136**		**52.0803**	**52.0803**	**4.1000e-003**		**52.1664**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0428	0.1106	0.5122	7.5000e-004	0.0500	1.2700e-003	0.0512	0.0134	1.1700e-003	0.0145		65.3694	65.3694	3.6700e-003		65.4465
Unmitigated	0.0428	0.1106	0.5122	7.5000e-004	0.0500	1.2700e-003	0.0512	0.0134	1.1700e-003	0.0145		65.3694	65.3694	3.6700e-003		65.4465

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	8.08	6.18	6.18	21,990	21,990
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	8.08	6.18	6.18	21,990	21,990

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.466828	0.039998	0.201848	0.176598	0.051139	0.007296	0.018789	0.020374	0.004432	0.001946	0.007536	0.000953	0.002263

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7006	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170
Unmitigated	1.7006	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.5000e-004	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170
Total	**1.7006**	**7.0000e-005**	**7.7000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0161**	**0.0161**	**5.0000e-005**		**0.0170**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.5000e-004	7.0000e-005	7.7000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0161	0.0161	5.0000e-005		0.0170
Total	**1.7006**	**7.0000e-005**	**7.7000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0161**	**0.0161**	**5.0000e-005**		**0.0170**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Generator Sets	1	1.00	52	400	0.74	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Generator Sets	0.1560	1.8807	0.7028	3.2600e-003		0.0548	0.0548		0.0548	0.0548		370.8539	370.8539	0.0137		371.1417
Total	**0.1560**	**1.8807**	**0.7028**	**3.2600e-003**		**0.0548**	**0.0548**		**0.0548**	**0.0548**		**370.8539**	**370.8539**	**0.0137**		**371.1417**

10.0 Vegetation

Appendix E-2

CalEEMod Emissions Calculations Data Assumptions

Pipeline Trenching

Construction Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project
CalEEMod Emissions Calculations Data Assumptions
Trenching Construction

CalEEMod Project Characteristics

Assumptions:
Project Site Location: Monterey County
Forecast Climate Zone: 4 (From Appendix F: Zip code 93950 - Pacific Grove - Monterey County)
Land Use Setting: Urban
Operational Year: 2016
Utility Company: Pacific Gas & Electric Company

Land Use

Wastewater Diversion Facilities
- Sewage diversion structure in Asilomar Avenue
  = 8-ft x 8 ft x 6-ft deep
- Sewage diversion pipeline from Asilomar Avenue to Point Pinos (8-inch)
  = 1370-LF x 4 ft wide x 5-ft deep
- Other Non-Asphalt Surfaces = 8-ft x 8 ft + 1,370-LF x 4 ft wide = 5,544 sq-ft
- Assume 200-ft/day trenching activities = 1,370/200= 7-days

Satellite Recycled Water Treatment Plant (SRWTP)
- Trenching Acreage: 6" Sanitary Sewer Force Main = 1000-ft X 3-ft trench. Depth = 5-ft
  Other Non-Asphalt Surfaces = 1000-ft x 3-ft trench = 3,000 sq-ft

Recycled Water Distribution Facilities
- Recycled Water Distribution Pipeline
  Other Non-Asphalt Surfaces = 2,800-LF x 4 ft wide = 11,200 sq-ft
- 1" Potable Water Connection (Pipeline to be within the cemetery access road. Demolition and Paving phases include a Concrete / Industrial Saw and additional equipment to install.)
  Other Non-Asphalt Surfaces = 1,000-LF x 1 ft wide = 1,000 sq-ft

Construction Phases:

Estimates assume trenching construction begins in June-2015, simultaneous with SRWTP construction.
Assume 200-ft/day trenching activities.

Trenching - Seven weeks / 35-days (6/1/2015 to 7/17/2015) - 5-days per week.
Assume 200-ft/day trenching activities. Total trenching of Sewage diversion pipeline, 6" Sanitary Sewer Force Main, Recycled Water Distribution Pipeline and 1" Potable Water Connection = (1,370+1,000+2,800+1,000) LF = 6,170 LF. At 200-ft per day, trenching activities will require less than seven weeks.
Assume 200 cu-yd (170-tons) excavated materials to be disposal of offsite associated with the trenching work. Assume mix of 70% crushed asphalt and 30% sand. Density = 0.7 x 0.61 tons/cu-yd + 0.3 x 1.35 tons/cu-yd = 0.83 tons/cu-yd.

Equipment
- 1 Trencher - 80-Horsepower (0.5 load factor) - 8.0 hours/day
- 1 Roller - 80-Horsepower (0.38 load factor) - 8.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 7.0 hours/day

Demolition - Two week / 10 days (6/22/2015 to 7/3/2015) - 5-days per week (CalEEMod default = 20 days)
Demolition phase to occur during construction of sewage diversion structure in Asilomar Avenue and pipelines crossing streets and installation of the 1" Potable Water Connection, requiring use of a Concrete / Industrial Saw.

Equipment
- 1 Concrete / Industrial Saw - 81-Horsepower (0.73 load factor) - 8 hours/day
- 1 Rubber Tire Dozer - 255-Horsepower (0.4 load factor) - 1.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 6.0 hours/day

Paving - One Week / 5-days (7/6/2015 to 7/10/2014) - 5-days per week
Paving phase to occur during construction of sewage diversion structure in Asilomar Avenue and pipelines crossing streets streets and installation of the 1" Potable Water Connection, requiring re-paving after trenching.

Equipment
- 4 Cement and Mortar Mixers - 9-Horsepower (0.56 load factor) - 6.0 hours/day
- 1 Paver - 125-Horsepower (0.42 load factor) - 7.0 hours/day
- 1 Roller - 80-Horsepower (0.38 load factor) - 7.0 hours/day
- 1 Tractors/Loaders/Backhoes - 97-Horsepower (0.37 load factor) - 7.0 hours/day

Operational Emissions

All operational emissions associated with pipelines included with SRWTP.

Vegetation

All disturbed vegetation will be restored to its original state.

Appendix E-2

CalEEMod Model Output – Annual (Tons/year)

Pipeline Trenching

Construction Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project - Trenching

Monterey County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.55	1000sqft	0.13	5,550.00	0
Other Non-Asphalt Surfaces	3.00	1000sqft	0.07	3,000.00	0
Other Non-Asphalt Surfaces	11.20	1000sqft	0.26	11,200.00	0
Other Non-Asphalt Surfaces	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Modeling of construction emission for the Local Water Project Trenching work.

Land Use - Wastewater Diversion Facilities = 5,544 sq-ft
6" Sanitary Sewer Force Main = 3,000 sq-ft
Recycled Water Distribution Pipeline = 11,200 sq-ft
1" Potable Water Connection = 1,000 sq-ft

Construction Phase - Total trenching = 6,170 LF. Assuming 200-ft per day, trenching activities should require less than seven weeks.
Demolition and paving phase to occur only for sewage diversion structure, streets crossing, and within the cemetery.

Off-road Equipment - Demolition phase to occur during construction of sewage diversion structure in Asilomar Avenue, for pipelines crossing streets and the potable water supply line in the cemetery. Not more than one additional tractor/loader/backhoe would be needed.

Off-road Equipment - Paving phase to occur only during construction of sewage diversion structure in Asilomar Avenue and pipelines crossing streets and installation of the 1" Potable Water Connection, requiring re-paving after trenching.

Off-road Equipment - Assume only one trenching crew. Assume no soils will be disposed of offsite.

Demolition - Assume 200 cu-yd (170-tons) excavated materials to be disposal of offsite associated with the trenching work.

Area Coating - No operational emissions.

Land Use Change - All disturbed vegetation will be restored to its original state.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	PhaseEndDate	7/31/2015	7/3/2015
tblConstructionPhase	PhaseStartDate	7/18/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	7/4/2015	7/6/2015
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblProjectCharacteristics	OperationalYear	2014	2016

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0330	0.2879	0.2015	2.7000e-004	3.7800e-003	0.0213	0.0251	8.0000e-004	0.0197	0.0205	0.0000	24.5150	24.5150	6.1800e-003	0.0000	24.6447
Total	**0.0330**	**0.2879**	**0.2015**	**2.7000e-004**	**3.7800e-003**	**0.0213**	**0.0251**	**8.0000e-004**	**0.0197**	**0.0205**	**0.0000**	**24.5150**	**24.5150**	**6.1800e-003**	**0.0000**	**24.6447**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0330	0.2879	0.2015	2.7000e-004	3.7800e-003	0.0213	0.0251	8.0000e-004	0.0197	0.0205	0.0000	24.5150	24.5150	6.1800e-003	0.0000	24.6447
Total	**0.0330**	**0.2879**	**0.2015**	**2.7000e-004**	**3.7800e-003**	**0.0213**	**0.0251**	**8.0000e-004**	**0.0197**	**0.0205**	**0.0000**	**24.5150**	**24.5150**	**6.1800e-003**	**0.0000**	**24.6447**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0811	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0811**	**0.0000**	**2.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.5000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0811	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0811**	**0.0000**	**2.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.5000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	6/1/2015	7/17/2015	5	35	
2	Demolition	Demolition	6/22/2015	7/3/2015	5	10	
3	Paving	Paving	7/6/2015	7/10/2015	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Rollers	1	8.00	80	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Trenchers	1	8.00	80	0.50
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	3	8.00	0.00	17.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0228	0.2075	0.1278	1.6000e-004		0.0160	0.0160		0.0147	0.0147	0.0000	15.3425	15.3425	4.5800e-003	0.0000	15.4387
Total	**0.0228**	**0.2075**	**0.1278**	**1.6000e-004**		**0.0160**	**0.0160**		**0.0147**	**0.0147**	**0.0000**	**15.3425**	**15.3425**	**4.5800e-003**	**0.0000**	**15.4387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	1.1900e-003	0.0107	1.0000e-005	1.1100e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	1.1088	1.1088	9.0000e-005	0.0000	1.1106
Total	**7.7000e-004**	**1.1900e-003**	**0.0107**	**1.0000e-005**	**1.1100e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**1.1088**	**1.1088**	**9.0000e-005**	**0.0000**	**1.1106**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0228	0.2075	0.1278	1.6000e-004		0.0160	0.0160		0.0147	0.0147	0.0000	15.3425	15.3425	4.5800e-003	0.0000	15.4387
Total	**0.0228**	**0.2075**	**0.1278**	**1.6000e-004**		**0.0160**	**0.0160**		**0.0147**	**0.0147**	**0.0000**	**15.3425**	**15.3425**	**4.5800e-003**	**0.0000**	**15.4387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	1.1900e-003	0.0107	1.0000e-005	1.1100e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	1.1088	1.1088	9.0000e-005	0.0000	1.1106
Total	**7.7000e-004**	**1.1900e-003**	**0.0107**	**1.0000e-005**	**1.1100e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**1.1088**	**1.1088**	**9.0000e-005**	**0.0000**	**1.1106**

3.3 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8500e-003	0.0000	1.8500e-003	2.8000e-004	0.0000	2.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7100e-003	0.0468	0.0350	5.0000e-005		3.3700e-003	3.3700e-003		3.2500e-003	3.2500e-003	0.0000	4.3319	4.3319	7.8000e-004	0.0000	4.3483
Total	**5.7100e-003**	**0.0468**	**0.0350**	**5.0000e-005**	**1.8500e-003**	**3.3700e-003**	**5.2200e-003**	**2.8000e-004**	**3.2500e-003**	**3.5300e-003**	**0.0000**	**4.3319**	**4.3319**	**7.8000e-004**	**0.0000**	**4.3483**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	2.7200e-003	3.1500e-003	1.0000e-005	1.4000e-004	4.0000e-005	1.9000e-004	4.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.5786	0.5786	0.0000	0.0000	0.5787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	3.4000e-004	3.0600e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.3168	0.3168	2.0000e-005	0.0000	0.3173
Total	**4.9000e-004**	**3.0600e-003**	**6.2100e-003**	**1.0000e-005**	**4.6000e-004**	**4.0000e-005**	**5.1000e-004**	**1.2000e-004**	**4.0000e-005**	**1.7000e-004**	**0.0000**	**0.8953**	**0.8953**	**2.0000e-005**	**0.0000**	**0.8960**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8500e-003	0.0000	1.8500e-003	2.8000e-004	0.0000	2.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7100e-003	0.0468	0.0350	5.0000e-005		3.3700e-003	3.3700e-003		3.2500e-003	3.2500e-003	0.0000	4.3319	4.3319	7.8000e-004	0.0000	4.3483
Total	**5.7100e-003**	**0.0468**	**0.0350**	**5.0000e-005**	**1.8500e-003**	**3.3700e-003**	**5.2200e-003**	**2.8000e-004**	**3.2500e-003**	**3.5300e-003**	**0.0000**	**4.3319**	**4.3319**	**7.8000e-004**	**0.0000**	**4.3483**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	2.7200e-003	3.1500e-003	1.0000e-005	1.4000e-004	4.0000e-005	1.9000e-004	4.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.5786	0.5786	0.0000	0.0000	0.5787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	3.4000e-004	3.0600e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.3168	0.3168	2.0000e-005	0.0000	0.3173
Total	**4.9000e-004**	**3.0600e-003**	**6.2100e-003**	**1.0000e-005**	**4.6000e-004**	**4.0000e-005**	**5.1000e-004**	**1.2000e-004**	**4.0000e-005**	**1.7000e-004**	**0.0000**	**0.8953**	**0.8953**	**2.0000e-005**	**0.0000**	**0.8960**

3.4 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0200e-003	0.0289	0.0184	3.0000e-005		1.8100e-003	1.8100e-003		1.6800e-003	1.6800e-003	0.0000	2.4801	2.4801	6.7000e-004	0.0000	2.4943
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0200e-003**	**0.0289**	**0.0184**	**3.0000e-005**		**1.8100e-003**	**1.8100e-003**		**1.6800e-003**	**1.6800e-003**	**0.0000**	**2.4801**	**2.4801**	**6.7000e-004**	**0.0000**	**2.4943**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.8000e-004	3.4500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3564	0.3564	3.0000e-005	0.0000	0.3570
Total	**2.5000e-004**	**3.8000e-004**	**3.4500e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3564**	**0.3564**	**3.0000e-005**	**0.0000**	**0.3570**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0200e-003	0.0289	0.0184	3.0000e-005		1.8100e-003	1.8100e-003		1.6800e-003	1.6800e-003	0.0000	2.4801	2.4801	6.7000e-004	0.0000	2.4943
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0200e-003**	**0.0289**	**0.0184**	**3.0000e-005**		**1.8100e-003**	**1.8100e-003**		**1.6800e-003**	**1.6800e-003**	**0.0000**	**2.4801**	**2.4801**	**6.7000e-004**	**0.0000**	**2.4943**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.8000e-004	3.4500e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3564	0.3564	3.0000e-005	0.0000	0.3570
Total	**2.5000e-004**	**3.8000e-004**	**3.4500e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3564**	**0.3564**	**3.0000e-005**	**0.0000**	**0.3570**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.466828	0.039998	0.201848	0.176598	0.051139	0.007296	0.018789	0.020374	0.004432	0.001946	0.007536	0.000953	0.002263

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0811	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004
Unmitigated	0.0811	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004
Total	**0.0811**	**0.0000**	**2.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.5000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.5000e-004
Total	**0.0811**	**0.0000**	**2.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	0.0000	0.0000	0.0000	0.0000
Mitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix E-2

CalEEMod Model Output – Winter (lbs/day)

Pipeline Trenching

Construction Emissions

Criteria Pollutants and Greenhouse Gases

City of Pacific Grove - Local Water Project - Trenching

Monterey County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.55	1000sqft	0.13	5,550.00	0
Other Non-Asphalt Surfaces	3.00	1000sqft	0.07	3,000.00	0
Other Non-Asphalt Surfaces	11.20	1000sqft	0.26	11,200.00	0
Other Non-Asphalt Surfaces	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Modeling of construction emission for the Local Water Project Trenching work.

Land Use - Wastewater Diversion Facilities = 5,544 sq-ft
6" Sanitary Sewer Force Main = 3,000 sq-ft
Recycled Water Distribution Pipeline = 11,200 sq-ft
1" Potable Water Connection = 1,000 sq-ft

Construction Phase - Total trenching = 6,170 LF. Assuming 200-ft per day, trenching activities should require less than seven weeks.
Demolition and paving phase to occur only for sewage diversion structure, streets crossing, and within the cemetery.

Off-road Equipment - Demolition phase to occur during construction of sewage diversion structure in Asilomar Avenue, for pipelines crossing streets and the potable water supply line in the cemetery. Not more than one additional tractor/loader/backhoe would be needed.

Off-road Equipment - Paving phase to occur only during construction of sewage diversion structure in Asilomar Avenue and pipelines crossing streets and installation of the 1" Potable Water Connection, requiring re-paving after trenching.

Off-road Equipment - Assume only one trenching crew. Assume no soils will be disposed of offsite.

Demolition - Assume 200 cu-yd (170-tons) excavated materials to be disposal of offsite associated with the trenching work.

Area Coating - No operational emissions.

Land Use Change - All disturbed vegetation will be restored to its original state.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	PhaseEndDate	7/31/2015	7/3/2015
tblConstructionPhase	PhaseStartDate	7/18/2015	6/22/2015
tblConstructionPhase	PhaseStartDate	7/4/2015	7/6/2015
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblProjectCharacteristics	OperationalYear	2014	2016

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.6665	23.6445	16.7714	0.0229	0.5317	1.6425	2.1305	0.0991	1.5147	1.6011	0.0000	2,285.6360	2,285.6360	0.6032	0.0000	2,298.3040
Total	**2.6665**	**23.6445**	**16.7714**	**0.0229**	**0.5317**	**1.6425**	**2.1305**	**0.0991**	**1.5147**	**1.6011**	**0.0000**	**2,285.6360**	**2,285.6360**	**0.6032**	**0.0000**	**2,298.3040**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.6665	23.6445	16.7714	0.0229	0.5317	1.6425	2.1305	0.0991	1.5147	1.6011	0.0000	2,285.6360	2,285.6360	0.6032	0.0000	2,298.3040
Total	**2.6665**	**23.6445**	**16.7714**	**0.0229**	**0.5317**	**1.6425**	**2.1305**	**0.0991**	**1.5147**	**1.6011**	**0.0000**	**2,285.6360**	**2,285.6360**	**0.6032**	**0.0000**	**2,298.3040**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4443	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4443**	**2.0000e-005**	**2.1700e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.5400e-003**	**4.5400e-003**	**1.0000e-005**	**0.0000**	**4.8100e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4443	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4443**	**2.0000e-005**	**2.1700e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.5400e-003**	**4.5400e-003**	**1.0000e-005**	**0.0000**	**4.8100e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	6/1/2015	7/17/2015	5	35	
2	Demolition	Demolition	6/22/2015	7/3/2015	5	10	
3	Paving	Paving	7/6/2015	7/10/2015	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Rollers	1	8.00	80	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Trenchers	1	8.00	80	0.50
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	3	8.00	0.00	17.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3032	11.8591	7.2999	9.1900e-003		0.9154	0.9154		0.8422	0.8422		966.4116	966.4116	0.2885		972.4704
Total	**1.3032**	**11.8591**	**7.2999**	**9.1900e-003**		**0.9154**	**0.9154**		**0.8422**	**0.8422**		**966.4116**	**966.4116**	**0.2885**		**972.4704**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.0474**	**0.0747**	**0.6502**	**8.1000e-004**	**0.0657**	**7.4000e-004**	**0.0665**	**0.0174**	**6.8000e-004**	**0.0181**		**69.4403**	**69.4403**	**5.4700e-003**		**69.5551**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3032	11.8591	7.2999	9.1900e-003		0.9154	0.9154		0.8422	0.8422	0.0000	966.4116	966.4116	0.2885		972.4704
Total	**1.3032**	**11.8591**	**7.2999**	**9.1900e-003**		**0.9154**	**0.9154**		**0.8422**	**0.8422**	**0.0000**	**966.4116**	**966.4116**	**0.2885**		**972.4704**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.0474**	**0.0747**	**0.6502**	**8.1000e-004**	**0.0657**	**7.4000e-004**	**0.0665**	**0.0174**	**6.8000e-004**	**0.0181**		**69.4403**	**69.4403**	**5.4700e-003**		**69.5551**

3.3 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3707	0.0000	0.3707	0.0561	0.0000	0.0561			0.0000			0.0000
Off-Road	1.1417	9.3668	6.9946	9.7100e-003		0.6733	0.6733		0.6505	0.6505		955.0228	955.0228	0.1718		958.6305
Total	**1.1417**	**9.3668**	**6.9946**	**9.7100e-003**	**0.3707**	**0.6733**	**1.0440**	**0.0561**	**0.6505**	**0.7066**		**955.0228**	**955.0228**	**0.1718**		**958.6305**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0594	0.5536	0.7555	1.2600e-003	0.0296	8.6200e-003	0.0382	8.0900e-003	7.9300e-003	0.0160		127.3726	127.3726	1.0300e-003		127.3942
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.1068**	**0.6283**	**1.4057**	**2.0700e-003**	**0.0953**	**9.3600e-003**	**0.1047**	**0.0255**	**8.6100e-003**	**0.0341**		**196.8129**	**196.8129**	**6.5000e-003**		**196.9494**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3707	0.0000	0.3707	0.0561	0.0000	0.0561			0.0000			0.0000
Off-Road	1.1417	9.3668	6.9946	9.7100e-003		0.6733	0.6733		0.6505	0.6505	0.0000	955.0228	955.0228	0.1718		958.6305
Total	**1.1417**	**9.3668**	**6.9946**	**9.7100e-003**	**0.3707**	**0.6733**	**1.0440**	**0.0561**	**0.6505**	**0.7066**	**0.0000**	**955.0228**	**955.0228**	**0.1718**		**958.6305**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0594	0.5536	0.7555	1.2600e-003	0.0296	8.6200e-003	0.0382	8.0900e-003	7.9300e-003	0.0160		127.3726	127.3726	1.0300e-003		127.3942
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0747	0.6502	8.1000e-004	0.0657	7.4000e-004	0.0665	0.0174	6.8000e-004	0.0181		69.4403	69.4403	5.4700e-003		69.5551
Total	**0.1068**	**0.6283**	**1.4057**	**2.0700e-003**	**0.0953**	**9.3600e-003**	**0.1047**	**0.0255**	**8.6100e-003**	**0.0341**		**196.8129**	**196.8129**	**6.5000e-003**		**196.9494**

3.4 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2092	11.5427	7.3586	0.0111		0.7247	0.7247		0.6703	0.6703		1,093.5433	1,093.5433	0.2970		1,099.7794
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2092**	**11.5427**	**7.3586**	**0.0111**		**0.7247**	**0.7247**		**0.6703**	**0.6703**		**1,093.5433**	**1,093.5433**	**0.2970**		**1,099.7794**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1067	0.1681	1.4629	1.8100e-003	0.1479	1.6700e-003	0.1495	0.0392	1.5200e-003	0.0407		156.2408	156.2408	0.0123		156.4991
Total	**0.1067**	**0.1681**	**1.4629**	**1.8100e-003**	**0.1479**	**1.6700e-003**	**0.1495**	**0.0392**	**1.5200e-003**	**0.0407**		**156.2408**	**156.2408**	**0.0123**		**156.4991**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2092	11.5427	7.3586	0.0111		0.7247	0.7247		0.6703	0.6703	0.0000	1,093.5433	1,093.5433	0.2970		1,099.7794
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2092**	**11.5427**	**7.3586**	**0.0111**		**0.7247**	**0.7247**		**0.6703**	**0.6703**	**0.0000**	**1,093.5433**	**1,093.5433**	**0.2970**		**1,099.7794**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1067	0.1681	1.4629	1.8100e-003	0.1479	1.6700e-003	0.1495	0.0392	1.5200e-003	0.0407		156.2408	156.2408	0.0123		156.4991
Total	**0.1067**	**0.1681**	**1.4629**	**1.8100e-003**	**0.1479**	**1.6700e-003**	**0.1495**	**0.0392**	**1.5200e-003**	**0.0407**		**156.2408**	**156.2408**	**0.0123**		**156.4991**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.466828	0.039998	0.201848	0.176598	0.051139	0.007296	0.018789	0.020374	0.004432	0.001946	0.007536	0.000953	0.002263

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4443	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003
Unmitigated	0.4443	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.1000e-004	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003
Total	**0.4443**	**2.0000e-005**	**2.1700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.5400e-003**	**4.5400e-003**	**1.0000e-005**		**4.8100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4441					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.1000e-004	2.0000e-005	2.1700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.5400e-003	4.5400e-003	1.0000e-005		4.8100e-003
Total	**0.4443**	**2.0000e-005**	**2.1700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.5400e-003**	**4.5400e-003**	**1.0000e-005**		**4.8100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation