5.5 Cultural Resources

CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.5.1 Setting

Information presented in this section is based on a review of the Proponent's Environmental Assessment (PG&E, 2012a) and including the PEA Appendix D, Cultural Resources Inventory and Archaeological Sensitivity Analysis (Nolte et al., 2012).

Regulatory Background

Cultural Resources

Public Resources Code Section 5024. The California Public Resources Code (PRC Section 5024), enabled by CEQA, mandates that the potential for significant impacts to historical resources be evaluated during the project planning stage. Guidelines (as amended) for determining significant impacts are provided in Section 15064.5. CEQA defines an "historical resource" as any building, structure, object, or archaeological site that is listed in or eligible for listing in the California Register of Historical Resources (CRHR). Properties that are listed in or are eligible for listing in the NRHP, or are California Historical Landmarks (CHLs), Points of Historical Interest, are listed on local registers of historical resources, or are identified as unique archaeological sites, also are considered to be significant historical resources for the purposes of CEQA.

CEQA Guidelines. Section 15064.5(a)(3) of the CEQA Guidelines states that a resource shall be considered historically significant by a lead agency if it meets criteria for listing on the CRHR (PRC Section 5024.1; Title 14 of the California Code of Regulations [CCR], Section 4852).

The CRHR sets forth four criteria for evaluating the eligibility of a cultural property. These criteria closely parallel the National Register of Historic Places (NRHP) with an emphasis on California's past. The property must satisfy one or more of the following:

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

In addition, cultural properties must also possess integrity as defined in PRC 5024.1 and Title 14 CCR, Section 4852(c).

CEQA Section 5020.1 defines a substantial adverse change as demolition, destruction, relocation or alteration that would impair historical significance. Section 21084.1 states that this change in historical significance is a significant effect on the environment. CEQA Guidelines 15126.4(b)(3) requires public agencies, where feasible, to avoid damaging effects on any historical resource. Preservation in place may include avoiding a resource, incorporating sites within open space, covering sites with fill, or deeding sites into a permanent easement (14 CCR 15126.4(b)(3)). 14 CCR 15126.4(b)(1) outlines measures to reduce impacts to buildings and structures, including following Secretary of Interior Standards and Guidelines for the Treatment of Historic Properties for maintenance, repair, restoration, preservation, conservation or reconstruction of buildings. Demolition, however, is considered a significant impact.

California Health and Safety Code. According to Section 7050.5 of the Health and Safety Code, in the event human remains are discovered during excavation, work must stop immediately and the county coroner must be contacted. If the remains are determined by the coroner to be Native American in origin, the coroner is responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. Sections 5097.94 and 5097.98 of the California PRC require consultation with the NAHC, protection of Native American remains, and notification of most likely descendants. Senate Bill (SB) 447 (Chapter 404, Statutes of 1987) also protects Native American remains or associated grave goods.

Paleontological Resources

One of the significance criteria questions to be answered per the CEQA Environmental Checklist (Section 15023, Appendix G, Section V, part c) is: "c) Would the project directly or indirectly destroy a unique paleontological resource or site…?" Unfortunately, CEQA and its implementing regulations do not define a "unique paleontological resource or site" and, in a literal sense, every paleontological site is unique. In order to better address what would constitute significant impact to paleontological resources, Standards of Practice were developed that include ranking systems relating scientific importance of the fossils to the significance or relative severity of impact. These are discussed below.

Other state requirements for paleontological resource management are in PRC Chapter 1.7, Section 5097.5/5097.9 (Stats. 1965, c. 1136, p. 2792), entitled Archaeological, Paleontological, and Historical Sites. This statute defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources.

Local

As noted above, because the CPUC has exclusive jurisdiction over the siting, design, and construction of the project, the project is not subject to local discretionary land-use regulations. The following analysis of local regulations relating to cultural resources is provided for informational purposes and to assist with CEQA review.

San Francisco Planning Commission Articles 10 and 11. San Francisco Planning Commission Articles 10 and 11 establish listings of important City Landmarks, Historic Districts, and Conservation Districts. City Landmarks include buildings, landscape features, and sites. City Historic Districts consist of thematically related significant resources. City of San Francisco Conservation Districts are groupings of architecturally distinctive historical-era structures in the downtown area (San Francisco Planning Department, 2012).

San Francisco Preservation Bulletins. San Francisco Preservation Bulletin No. 9 and No. 10 list 230 City Landmarks, 11 City Historic Districts and 6 City Conservation Districts. In addition, the City and County of San Francisco recognize approximately 30 historic districts that are listed on the NRHP, the CRHR, or are National Historic Landmarks. San Francisco Preservation Bulletin Numbers 1 through 21 outline the process for submitting, reviewing and approving new landmarks and districts, and also provide legal compliance guidelines with respect to cultural resources (San Francisco Planning Department, 2012).

The current general plan for the City and County of San Francisco contains no specific requirements, regulations, goals, or objectives designed to mitigate the negative impacts of development on paleontological resources.

Approach to Analysis of Cultural Resources and Previous Cultural Resources Studies

Existing Information Review

A records search was performed at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) on April 20, 2012. The records search conducted for the proposed route centered on the alignment and included a one-quarter mile buffer on either side. The records search included a review of base maps and resource records on file at the NWIC, as well as California Office of Historic Preservation (OHP) listings of significant resources. The OHP listings reviewed at the NWIC included the NRHP, the CRHR, California Historical Landmarks, the California Inventory of Historic Resources, and California Points of Historical Interest. The records search also included a review of historical county maps, United States Geological Survey (USGS) topographic maps, and United States General Land Office (GLO) maps. In addition to the NWIC records, information was gathered from the City and County of San Francisco Planning Department, the California State Lands Commission, the J. Porter Shaw Library in the San Francisco Maritime National Historical Park, the San Francisco Maritime Museum archives, NOAA Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS), Sonoma State University, the California State Library and various on-line sources.

A search of the Sacred Lands Files maintained by the Native American Heritage Commission (NAHC) was requested on June 27, 2012 and again on July 6, 2012. In its response, the NAHC noted that a search of the Sacred Lands Files failed to indicate the presence of Native American cultural resources in the immediate project area, and provided a list of recommended contacts that may have additional information concerning archaeological sites or traditional cultural properties near the project area. PG&E sent requests for information to these eight additional contacts and made follow-up phone calls. Copies of Native American correspondence can be found in Nolte et al. (2012).

Sensitivity Model

The possibility of encountering potential historical resources, and buried archaeological sites in particular, is a practical problem for resource managers who must make a reasonable effort to identify such resources or sites in a three-dimensional project area, ensuring that such potential historical resources are not affected by project activities. Since the Proposed Project would be located in an urban setting, surface survey offers little likelihood of identifying archaeological sites. Similarly, surface survey would not identify archaeological sites that have been buried by natural deposition or construction fill. The following approach was used to address this issue.

Prehistoric Sites. Geoarchaeologists from Far Western Anthropological Research Group have developed a model of buried-site sensitivity for much of California (Meyer, 2011; Meyer and Rosenthal, 2007 and 2008; Meyer et al., 2010 and 2011; Rosenthal and Meyer, 2004). This model is based on an analysis of the relationship between late Quaternary landscape evolution and the structure and visibility of the

archaeological record. Understanding the age of different landforms is a fundamental step in discerning where the archaeological record is likely to be buried, and where cultural remains deposited over the entire span of human occupation may be preserved on or just below the modern ground surface.

The age of surface landforms can be mapped using soils surveys developed by the Natural Resources Conservation Service. By correlating radiocarbon-dating information with characteristics of soil development and landform superposition, it is possible to produce a detailed map of latest Pleistocene, Holocene, and historical-era landforms in a given area. Once established, landform age is combined with environmental characteristics thought to be attractive for human occupation (e.g., slope and distance to water) to identify those portions of the modern landscape most likely to yield archaeological sites in both near-surface and buried contexts.

The potential for buried prehistoric sites to occur in the project area was determined using landform ages, the age and distribution of known archaeological deposits, and the proximity to natural streams and the prehistoric shoreline of San Francisco Bay (i.e., distance to water). This type of sensitivity assessment has proven effective in many contexts throughout California.

Historical Sites. Sensitivity for historical-era buried resources was characterized by determining the location, age and depth of historical fill, considering the location of known below-ground historical resources and researching the patterns of historical development and redevelopment in the area. This process involved extensive research and examination of historical maps and documents relating to the history of development and large-scale land modification in the project vicinity. Sensitivity determinations also take into account the locations of known historical archaeological features, locations of historical buildings, and locations of historical piers and docks. Abandoned ships are often associated with the historical piers, particularly those piers abandoned before 1854 (Sonoma State University, 1993). Many were converted into stores, then later burned or used as fill as the city grew. Areas around old pier locations are considered highly sensitive for deeply buried deposits. In addition, back yards and side lots of private parcels in the area have the highest potential for hollow-filled features such as wells or privies (Praetzellis and Praetzellis, 2009). In general, the streets of the city were laid out early in the city planning process. Work completed by Sonoma State University for the Tar Flat/Rincon Hill Area was used to plot storeship and other sensitive locations for the north end of the project (Sonoma State University, 1993). The San Francisco Planning Department GIS database was consulted for the potential presence of storeships and other maritime resources in the northern, onshore portions of the transmission cable route. Geotechnical data from the *Embarcadero To Potrero Za-1 230kv Underground Transmission Project Feasibility Study* (Black & Veatch, 2012) was used to verify depths of fill.

Fieldwork Methods

Intensive pedestrian archaeological and historical architectural surveys of the Area of Potential Effects (APE) were completed on June 28, 2012. The surveys encompassed the onshore portions of the proposed route as well as substations and focused work areas as depicted on project planning maps. The pedestrian survey of the APE included:

- Approximately 0.7 miles of onshore route along the proposed route alignment
- A windshield survey was conducted for paved and built areas that had no pedestrian access. These areas included:
  - Embarcadero Substation (approximately 2 acres between Folsom and Harrison Streets on the west side of Fremont Street)
  - Potrero Switchyard (approximately 7.5 acres on the north side of 23rd Street)
  - The GenOn Site (0.85 acres contained within the Potrero Switchyard area)

Archaeological Survey

The archaeological survey for the northern extent of the proposed route encompassed Folsom Street between First and Spear streets, Spear Street from Folsom to The Embarcadero, and across The Embarcadero just south of Pier 28. The southern extent of the onshore portion of the proposed route encompassed 23rd Street from the corner of Illinois Street east to the Bay. A pedestrian survey of the northern portions of the proposed route's APE was conducted; however, 100 percent of the route has been paved and developed. The southeastern onshore portion of the proposed route was not accessible for pedestrian survey, but the area is visible from the end of 23rd Street and consists entirely of built-over and paved surfaces. Embarcadero Substation and Potrero Switchyard, located at the northern and southern ends of the proposed route, respectively, were also inspected and found to be 100 percent paved or built-over.

Built Environment Survey

The architectural fieldwork included a pedestrian survey of the onshore portions of the proposed route APE and a windshield survey to verify the locations of historical-era built environment resources. All built environment resources along the proposed route APE were documented and photographed. A windshield survey was also conducted for the GenOn site area and the southeastern extent of the proposed route. Neither area was accessible for pedestrian survey; they were examined and documented with a zoom-lens camera.

Marine Geophysical Survey

A maritime archaeologist reviewed the *Final Embarcadero to Potrero ZA-1 230KV Underground Transmission Project Feasibility Study* prepared by Black and Veatch for PG&E (B&V Project No. 173915.42.3008). A review of the Black and Veatch report included a detailed examination of Exhibit K, *Final Report, Submarine Utility Corridor Investigation, Marine Geophysical Survey, Proposed AZ-1 Transmission Line, San Francisco Bay, California* (OSI Report No. 11ES057), the geophysical report prepared by Ocean Surveys, Inc. (OSI) for Black and Veatch. The review also included a detailed examination of the digital geophysical datasets collected by OSI, specifically the side scan sonar and magnetometer data. Although OSI collected a suite of geophysical data, the datasets most relevant to an evaluation of the potential that historical resources in the form of cultural/archaeological deposits are present within the APE are the side scan sonar imagery and the magnetometer data. As detailed in the OSI report, side scan sonar uses acoustical data to create an image of the sea floor, while the magnetometer records variations in the earth's magnetic field that may represent ferrous metal objects. The side scan sonar imagery records objects visible above the sea floor, while the magnetometer can determine the presence of either visible or buried material. Used together, the instruments are the primary tools used by maritime archaeologists to determine the presence of submerged cultural resources, primarily shipwrecks.

The OSI survey employed state-of-the-art hardware (Klein 3000 Dual 100/500 kHz Side Scan Sonar and Geometrics G-882 Cesium Marine Magnetometer) and software (HYPACK navigation and data collection software) to collect side scan sonar and magnetometer data. OSI also employed industry standard data collection methodology, covering the entire length of the 600-ft wide survey corridor using 50-ft lane spacing. The instruments and methodology used by OSI are considered entirely adequate for determining the presence of submerged cultural resources.

Paleontology

Professional Standards. Professional standards play an important role in paleontological resources assessments because, with a few notable exceptions (e.g., BLM, 2008), federal and state agencies are largely mute on how to conduct paleontological resources assessments. As discussed above, while the CEQA checklist asks if the project might affect a unique paleontological site, it provides no guidance on what a "unique" site might be, and every paleontological resource is unique to a greater or lesser extent. In order to better address what would constitute a significant impact to paleontological resources, Standards of Practice were developed (SVP, 1995; BLM, 2008) that included ranking systems relating significance or relative severity of impact to the scientific importance of the fossils that might be encountered, and their likely abundance in the affected geological unit. Relative abundance of fossil remains, in turn, informs (1) the commonness or "uniqueness" of the remains themselves, and (2) the probability that any will be encountered during excavations.

In particular the Society of Vertebrate Paleontology (SVP), an international organization of professional paleontologists, has established standard guidelines (SVP, 1995) that outline acceptable professional practices in the conduct of paleontological resource assessments. Most practicing paleontologists in the nation adhere to the SVP's guidelines and extend those to address other types of fossils of scientific significance, such as invertebrate fossils and paleontological specimens. More recently the BLM's *Informational Memorandum 2009-009* (BLM, 2008) provides updates and elaboration on assigning levels of paleontological sensitivity, and on procedures for paleontological inventory. These standards are relevant to non-federal undertakings as well, and they are widely used by paleontologists because they provide for detailed analysis of paleontological sensitivity. Their application is outlined below.

Existing Information Review. Published and available unpublished geological and paleontological literature was reviewed to develop a baseline paleontological resource inventory of the project area, and to assess the potential paleontological productivity of the stratigraphic units that may be affected by the project. Sources included geological maps, paleontological and geological reports, and available electronic databases. A paleontological resources record review was conducted for the project on May 12, 2012 using the online database maintained by the University of California at Berkeley Museum of Paleontology (UCMP).

Table 5.5-1. Paleontological Sensitivity Ratings Employed

Category of Paleontological Sensitivity	Definition
High	Assigned to geological formations known to contain paleontological resources that include rare, well-preserved, and/or fossil materials important to ongoing paleoclimatic, paleobiological and/or evolutionary studies. They have the potential to produce, or have produced, vertebrate remains that are the particular research focus on many paleontologists and can represent important educational resources.
Moderate	Stratigraphic units that have yielded fossils that are but moderately well preserved, are common elsewhere, and/or that are stratigraphically long-ranging would be assigned a moderate rating. This evaluation also can be applied to strata that have an unproven but strong potential to yield fossil remains based on the stratigraphy and/or geomorphologic setting.
Low	Sediment that is relatively recent, or that represents a high-energy subaerial depositional environment where fossils are unlikely to be preserved. A low abundance of invertebrate fossil remains, or reworked marine shell from other units, can occur but the paleontological sensitivity would remain low due to their lack of potential to serve as significant scientific or educational purposes. This evaluation also can be applied to strata that have been monitored and that have failed to yield scientifically significant fossil remains.

Table 5.5-1. Paleontological Sensitivity Ratings Employed

Category of Paleontological Sensitivity	Definition
Marginal and Zero	Stratigraphic units with marginal potential include pyroclastic flows and soils that might preserve traces or casts of plants or animals. Most igneous rocks have zero paleontological potential. Other stratigraphic units deposited subaerially in a high-energy environment (such as alluvium) also may be assigned a marginal or zero sensitivity rating. Manmade fill is also considered to possess zero paleontological potential.

Source: Adapted from Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources B Standard Guidelines (SVP, 1995) and the U.S. Bureau of Land Management's Informational Memorandum 2008-009 (BLM, 2008)

Geologic Setting

The general geology of the San Francisco area has been described in some detail by Taliaferro (1951), Schlocker et al. (1958), Schlocker (1974), Helley et al. (1979), Wahrhaftig and Sloan (1989), and Wahrhaftig et al. (1993), among others. The geology in the project area has been mapped by Lajoie et al. (1974; 1:62,500 scale) and Schlocker (1958, 1974; 1:24,000 scale). San Francisco Bay fills a north-northwest-trending structural trough in the central Coast Ranges between the San Andreas Fault to the southwest and the Hayward Fault to the northeast. The City of San Francisco is located in the northern portion of the San Francisco Peninsula, which consists of north-northwest oriented ridges comprising the western portion of the Coast Ranges Physiographic Province. The Great Valley Physiographic Province lies to the east of the Berkeley Hills, on the other side of the Bay, and the Pacific Ocean is to the west. During periodic ice ages sea level is much lower, and therefore during these periods the Bay is a complex of dry valleys with rivers running along their axes.

Rocks and sediments in the general project vicinity can be divided into two distinct domains. The first and by far the oldest is bedrock composed of Mesozoic age (Jurassic and Cretaceous) sediments named the Franciscan Complex. The Franciscan Complex forms the bedrock "basement" throughout the area. Sediments resting unconformably on the Franciscan Complex constitute the second major grouping. These are much younger, unconsolidated to poorly consolidated deposits that are geologically young, ranging in age from Pleistocene to Holocene (the last two million years).

Paleoenvironment

The majority of the study area is located within the historical extent of Mission Bay and areas immediately offshore. Embarcadero Substation, at the north end of the study area, is located on the northern slope of Rincon Hill, immediately south of the shore of Yerba Buena Cove. Potrero Switchyard, at the southern end of the project area, is located on Potrero Point, to the east of the base of Potrero Hill. Historically, the remainder of the onshore portion of the study area was within a vast dune field that covered much of the northeast San Francisco peninsula. Dramatic historical-era landscape changes within and near the study area include the leveling of sand dunes and the placement of thick deposits of artificial fill to reclaim Mission Bay, Yerba Buena Cove, and the surrounding areas for development.

Deeper areas of the Bay, generally those that lie 30 feet (10 meters) or more below sea level were fully inundated by sea level rise during the early Holocene more than 7,000 years ago, making them unavailable for subsequent human use and occupation in the Holocene. Additionally, rapid sea level rise during the early and middle Holocene may have eroded portions of this surface along with any associated archaeological deposits. These factors further reduce the potential of discovering buried prehistoric archaeological deposits beneath the Bay Mud in this part of the project area.

There is a higher potential for buried prehistoric sites within the near-shore zone, where Bay Mud deposits are generally thinner and inundation occurred later in time. However, since the earth disturbances proposed in these zones is relatively small and highly localized, relatively little, if any, of the buried surfaces with the potential for buried prehistoric archaeological deposits (if present) would be impacted by project-related activities.

Recent geoarchaeological research on the northeast San Francisco peninsula has documented at least three periods of dune activity and deposition, interspersed with periods of stability and soil formation during the Late Pleistocene and Holocene. The punctuated nature of dune deposition on the northern peninsula resulted in the burial of several prehistoric archaeological sites. The age and stratigraphic context of these sites indicate that they were buried by Late to Latest Holocene dune activity. Additionally, a 5,000-year-old human skeleton (CA-SFR-28) was found in downtown San Francisco during construction of the Bay Area Rapid Transit (BART) tunnel. These remains were found in buried marsh deposits overlain by bay mud and sand dunes at a depth of approximately 59 feet (18 meters) below the historical ground surface and more than 23 feet (7 meters) below modern sea level (Henn et al., 1972). A buried site was recently discovered along Tehama Street a few blocks west of the project area during Extended Phase 1 geoarchaeological coring (Byrd et al., 2010). A radiocarbon date of 1,035 calibrated years Before Present (cal BP) from marine shell from this site (CA-SFR-151/H) indicates that a period of widespread dune deposition around 1,000 years ago probably buried several archaeological sites in this area.

Prehistory

The first extensive study of the Bay Area's prehistory was a survey of shell mounds and middens by N. C. Nelson (1909), who recorded more than 425 sites along the margins of San Francisco Bay. Additional shell mounds have been recorded in the region by others (e.g., Laston and Mezes, 1858), and Nelson's (1909) original map also has been used to plot and sequentially number additional mounds in the area (e.g., Olmsted and Olmsted, 1982:Map 2).

A series of these shell mounds was excavated early in the twentieth century (e.g., Gifford, 1916; Nelson, 1910; Schenck, 1926; Uhle, 1907). Very little subsequent work was carried out on the northern peninsula until the enactment of environmental laws and the emergence of cultural resource management in the mid-1970s. Since then a series of prehistoric sites have been investigated, and as of 2010, at least 17 prehistoric sites in the general project vicinity had been subjected to formal archaeological testing or data recovery excavation.

The excavated sites are mainly shell middens (n=14), along with two shell mounds (SFR-6 and -7) and one isolated burial (SFR-28). With the exception of a Middle Holocene date from SFR-28 (a deeply buried isolated skeleton), all of the sites date to the Late Holocene. They include sites from the Early, Middle, and Late period, although Early period occupation is currently only documented on Yerba Buena Island.

Seven prehistoric shellmidden sites (CA-SFR-2, -113, -114, -147, -155, -154/H, and -175) have been determined eligible for the National Register of Historic Places as part of a "Prehistoric Native American Shellmiddens on Mission Bay" National Register District (ASC, 2010:45) (the "District"). These sites are considered to represent elements of a multi-village community network that was clustered around the shore of Mission Bay (ASC 2010:45; Luby et al., 2006). No boundaries have yet been developed for the District, and the full extent of the seven buried sites has never been determined. However, it is clear that all land routes, including the land portions of the proposed route and the alternative land routes, though not the submarine portion of the proposed route, pass through the District. Sites SFR-2 and SFR-154/H are immediately adjacent to those routes.

Ethnography

The study area falls within the aboriginal territory of the Ohlone, once referred to by the Spanish as Costanos (for "coastal people"). Most of what we know about the Ohlone comes from early Spanish accounts, along with a few twentieth century interviews by anthropologists who gathered information on remembered lifeways (Bean, 1994). Recent interpretations of Ohlone lifeways, sometimes contradictory with earlier studies, are largely based on mission records research done by Milliken (1983, 1995, 2006). A detailed summary of the ethnohistoric context for the study area is provided in Nolte et al. (2012).

Regional History

The onshore portion of the study area extends from the historical Rincon Hill neighborhood (near the corner of Fremont and Folsom streets) south to Potrero Point. This area has been occupied since the earliest days of the California Gold Rush in 1849 and has undergone numerous phases of commercial and residential development. Today, the northern half of the study area, especially along the onshore portion of the proposed route following Spear and Folsom streets, is commercial with limited residential development. Land use in the southern half of the study area, particularly along the onshore portion of the Proposed Project, is currently characterized by industrial development. Occupation within the southern portion of the study area began early and intensified in the 1860s as a ship-building district mixed with residential elements in the Potrero Point neighborhood. About half of the land along the southern onshore portion of the Proposed Project is on historical fill.

A detailed summary of the historical context for the study area is provided in Nolte et al. (2012).

Local Setting

Record Search Results

Record search results are summarized below for the proposed route alignment, as well as the two substations (Embarcadero Substation, Potrero Switchyard) and the associated proposed work area (GenOn Site). The record search identified 165 cultural resources reports and 253 previously documented resources (primarily historical structures) located within the research corridor (within 1/4 mile of project areas). Tables detailing all resources within the 1/4-mile record search perimeter for each of these areas may be found in Nolte et al. (2012).

Prehistoric Resources

The records search for areas within 1/4 mile (~1,320 feet) of the proposed route identified one dual-component site (P-38-004326, CA-SFR-151/H), located about 1/8 mile from the Embarcadero Substation at the north end of the Proposed Project. The prehistoric component of the site consists of a buried deposit located 11.5 feet below the ground surface that was carbon dated to between 1,000 and 2,000 years before present (Kaijankoski, 2008).

Historical Archaeology Resources

The records search identified five previously recorded historic sites (including the above dual-component site) and three reported but not formally recorded sites within the records search area. Six of these resources (P-38-104,-120, -4325, -4326, -4884, and the Wirth Site [defined below]) are located within 1/4 mile of the northern overland portion of the project; two (former Mirant site and Station A Foundations) are within 1/4 mile of the southern overland portion of the project.

There have been a number of historical archaeological studies in San Francisco beginning in the late 1970s that were conducted in response to proposed development projects, post-Loma Prieta earthquake (1989) construction, road work, or other projects. These studies include detailed parcel histories, development of extensive thematic contexts and research design issues, and discussions of levels of underground sensitivity in particular areas (cf. Byrd et al., 2010; Hupman and Chavez, 1997; Pastron and Hattori, 1990; Sonoma State University, 1993). Some studies have led to excavations of all or portions of city blocks, including two sites adjacent to the project (P-38 -120 and -4325) (Byrd et al., 2010:128-129; Hupman and Chavez, 1997; Pastron, 1990; Praetzellis and Praetzellis, 2009; Reed, 1976). Large portions of these sites were subject to archaeological excavation and data recovery as part of the development projects and have been destroyed. In addition, there are buried historical features including brick foundation walls, other structural remains, and nineteenth-century artifacts located immediately west of the Embarcadero Substation. This area was the subject of limited test excavations in the late 1970s but was never formally recorded (Wirth Associates, 1979a and 1979b). For the purposes of the current document, this group of features will be referred to as the Wirth Site.

In recent years the Anthropological Studies Center at Sonoma State University investigated a number of city blocks south of Market Street for the San Francisco-Oakland Bay Bridge West Approach Project (Praetzellis and Praetzellis, 2009). Their study included 14 city blocks from the west anchorage of the bridge between Fremont and Beale streets to the beginning of the SF-80 Bayshore Viaduct between Fourth and Fifth streets. In contrast to the north end of the project around Embarcadero Substation, the Potrero Switchyard area has had little archaeological investigation. In 1979 Wirth Associates conducted studies at the former Potrero Power Plant site, placing a series of trenches through the property. The remains of a mid-nineteenth century powder magazine were exposed (URS Corporation, 2006:4.7-3) but no trinomial number was assigned. In 2006 URS Corporation noted that several buildings and structures, including a large tank, had been demolished at Station A, leaving remnant foundations. The foundations were not called out as an archaeological site but were discussed within the context of the extant buildings at the facility (URS Corporation, 2006). No other work has been conducted in this area.

Shipwrecks

The online California State Lands Commission (CSLC) Shipwreck Database (http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Datapase.asp) lists shipwrecks by county and is based primarily on historical accounts of these incidents. The San Francisco Planning Department updated information in the CSLC database using research provided by the Institute for Western Maritime Archaeology. Additional potential shipwreck locations are maintained in the San Francisco Maritime Museum archives. Additional information about shipwreck locations along the submarine portion of the transmission cable alignment was sought at the J. Porter Shaw Library at San Francisco Maritime National Historical Park. The NOAA Office of Coast Survey's AWOIS database was also consulted for information about potential shipwrecks along the submarine portion of the transmission cable alignment. There are six named shipwrecks mapped within one-half mile of the project area listed in the CSLC database. These are primarily located in the Mission Bay and China Basin areas. The location of only one of these shipwrecks has been confirmed. The AWOIS database and NOAA Chart no.18650 depict a charted shipwreck in the vicinity of the transmission cable alignment. No information is known about the shipwreck other than its location, size, and orientation.

In addition, other potential ship-related sites exist along the northern, onshore portion of the cable route. In 1988, archaeological investigations at the Hills Plaza site (CA-SFR-115H), located on Steuart Street between Harrison and Folsom streets, uncovered remnants of Charles Hare's ship-breaking yard. Artifacts and timbers from at least four dismantled vessels were found. Based on their distribution, it

was thought likely that the site extended southwest beneath Spear Street. In 2005, investigations at 300 Spear Street uncovered additional evidence of Hare's yard and the stern portion of the early nineteenth century whaling ship, *Candace*. The forward section of the vessel was not recovered as it extended under Folsom Street between Main and Spear streets. Additional artifacts and features relating to Hare's ship-breaking yard likely exist under Spear and Folsom streets.

In addition to the recorded shipwrecks, work conducted in City streets by Sonoma State University and others identified a pattern of ships abandoned at piers and docks during the Gold Rush and later reused as stores. As the City expanded, these "storeships" were abandoned, sometimes burned, and buried in fill. The San Francisco Planning Department GIS database was consulted for the potential presence of storeships and other maritime resources in the northern, onshore portions of the transmission cable route. Nearly 50 potential storeship locations have been plotted along The Embarcadero and inland for up to six city blocks. Six have been explored archaeologically and are considered eligible for inclusion in the NRHP and CRHR. There are no storeships currently mapped in the project's area of direct impact. There are, however, three potential storeships mapped within one block of the area, two on Beale between Folsom and Howard streets, and one on Main between Folsom and Howard streets. The locations of many other storeships are still not known.

Built Environment

The NWIC record search included OHP listings of resources that have been evaluated on a national, state, or local level. Registers checked include the NRHP, CRHR, CHLs and California Points of Historical Interest, San Francisco Historic Landmarks, San Francisco Historic Districts, and San Francisco Conservation Districts. There are a total of 240 built environment resources within one-quarter mile of the project route, Embarcadero Substation, Potrero Switchyard, or the GenOn site that are included in the OHP historic properties data files, federal, state, or local listings (Nolte et al., 2012). Built environment resources that are adjacent to the onshore portions of the proposed route are discussed below, under Results of Built Environment Studies. Of the 166 resources that have NRHP status codes in the listed historic properties data file, 12 are listed on the NRHP (4 are individually listed and 8 are contributing elements to a NRHP listed district). Eighteen additional properties are listed as "determined eligible" and seven are coded as "appears eligible" for the NRHP (OHP, 2012). All resources that are eligible for or listed on the NRHP are also eligible for or listed on the CRHR. In addition, a plaque commemorating the historic development of Rincon Hill in the 1860s (SHL No. 86) is located within the quarter-mile record search radius for Embarcadero Substation and the northern onshore portion of the project alignment (OHP, 2012).

There are four designated San Francisco Landmarks, two San Francisco Historic Districts, and one San Francisco Conservation District on listings maintained by the San Francisco Planning Commission within the record search area (San Francisco Planning Department, 2012).

Geologic Units and Paleontological Sensitivity

Geologic mapping by Schlocker (1974) was used to determine the underlying geology for each of the project components. Embarcadero Substation is underlain by artificial fill and sandstone and shale of the Mesozoic Franciscan Complex. Potrero Switchyard is underlain by artificial fill and Mesozoic serpentinite. The submarine portion of the proposed transmission route would be through Holocene deposits of Bay Mud, and the proposed HDD would go through portions of the Pleistocene Colma Formation.

Mesozoic Rocks

Serpentinite. Serpentinite is a metamorphic rock derived from ultramafic igneous rocks or sediments high in manganese and iron and low in silica that have undergone high pressure and low temperature metamorphism. Metamorphic processes generally destroy any fossil material that may have been present in the parent rock; therefore, serpentinite is considered to have no paleontological sensitivity.

Franciscan Complex. The Franciscan Complex consists predominantly of graywacke sandstone interbedded with lesser amounts of dark shale. Outcrops of submarine basalt (greenstone), limestone, chert, and metamorphic blueschist are also contained within the complex.

Fossils from Franciscan Complex rocks are rare, but when found have been important in unraveling the ages, depositional environments, and tectonic history of this continental margin during the Mesozoic. The UCMP database contains two invertebrate fossil localities from the Franciscan Complex within San Francisco County. Schlocker et al. (1958) reported a Cretaceous ammonite found in Franciscan shales in northeastern San Francisco. Schlocker (1974) also referred to fossil plant remains in Franciscan rocks, although usually with such terms as "carbonaceous matter," "lignitic material," "large carbonaceous particles and layers," "large abundant paper-thin flakes of coaly material . . ." or "carbon having relict plant-cell structures." Fossil gastropods (snails) and pelecypods (clams) have been reported from a locality on Alcatraz Island and elsewhere in the San Francisco area by Stewart (1930), Anderson (1938), and Ghent (1963).

These records notwithstanding, the rocks of the Franciscan Complex are usually assigned low paleontological sensitivity because the fossil material is sparsely distributed and frequently consists of limited, non-abundant invertebrates and unidentifiable plant remains.

Quaternary Sediments

An important aspect of Quaternary sediments is that, where they have not been removed by erosion or development, they consist of unconsolidated sediments draped over and filling in the topographically irregular bedrock surface provided by the rocks discussed above. The marine Bay Mud can be expected to display comparatively little lateral variation in sediment type, while terrestrial facies of the Colma Formation likely may range from colluvial (hillslope and landslide debris) and dune deposits that lack paleontological sensitivity, to pond and bog sediments that can yield important paleontological records, as described below.

Colma Formation. The Colma Formation, formed under shallow marine and subaerial dune and fluvial conditions during the late Pleistocene (between 70,000 and 130,000 years ago) typically consists of weakly consolidated and friable sand with some sandy silt, clay, and gravel (Schlocker, 1974). Although the UCMP database contains no fossil localities from the Colma Formation within San Francisco County, the literature indicates that the Pleistocene Colma Formation has produced significant marine and terrestrial fossils, particularly within the City of San Francisco. Rodda and Baghai (1993) reported the remains of mammoth, extinct bison, and ground sloth from the Colma Formation. Schlocker (1974) reported fossil plant remains and a peat layer at the top of the Colma Formation possibly representing "an old soil that developed in or near local marshes or lakes." Marine facies of the Colma Formation have produced marine megafossils, marine and nonmarine diatoms, and sponge spicules (Schlocker, 1974). Savage (1951) listed other vertebrate fossil localities in the San Francisco Bay region to which he assigned an "undifferentiated Pleistocene" age, and some of these may also be referable to the Colma Formation. While some of these records are scientifically significant, as noted above not all facies of the Colma Formation yield paleontological material, and some of that material is not particularly scientific-

ally important in and of itself (e.g., sponge spicules, diatoms). An overall relative paucity of fossils from the Colma Formation may account for the lack of paleontological records attributable to the unit in the UCMP database, which can be expected to offer relatively comprehensive coverage of fossil sites in the Bay Area. Therefore the Colma Formation is assigned moderate paleontological sensitivity.

Bay Mud. Bay Mud consists of water-saturated, estuarine mud underlying the marshlands and tidal mudflats of the San Francisco Bay, and in subtidal areas. Generally composed of soft and silty clays, Bay Mud also typically contains lenses of fine sand and peaty material. Bay Mud deposits were laid down after the post-glacial rise of sea level inundated the San Francisco Bay area approximately 10,000 radiocarbon years ago (Atwater, 1979) and, as such, are Holocene in age. This unit is therefore designated as having low paleontological sensitivity.

Artificial Fill. Artificial fill materials consist of loose to very well-consolidated gravel, sand, silt, clay, rock fragments, organic matter, and man-made debris in various combinations. The thickness of artificial fill materials in San Francisco is variable and may exceed 30 feet in some areas (Schlocker, 1974). Geologic mapping of the project area indicates that much of the project route has underlying artificial-fill materials or native soils that have been otherwise mechanically altered by historical earthwork operations. Artificial-fill materials are primarily found along the shores of the Bay both on the northern and southern ends of the project. Although artificial fill may contain fossils transported from its source, those fossils would be lacking stratigraphic context and provenance and therefore would have only limited scientific and educational value. Therefore, artificial fill possesses little if any paleontological significance.

Native American Consultation

PG&E sent requests for information to the eight NAHC-recommended contacts who may have additional information concerning archaeological sites or traditional cultural properties near the project area. No responses were received. Follow-up phone calls were made on November 7 and December 4, 2012. Of the six individuals who could be reached by phone, two indicated that they knew of sensitive resources in the vicinity and requested additional information about the project before they would provide formal comments; two recommended monitoring during construction; one requested that the legally required procedures be followed in the event of an unanticipated discovery of a prehistoric resource; and one had no comments or concerns. Copies of Native American correspondence can be found in Nolte et al. (2012).

Archaeological Surveys Results

The majority of the project is fully developed and paved and as a result, the surface archaeological survey was limited; no surface evidence of prehistoric or historical-era deposits or features were noted during the archaeological survey.

The GenOn site was inspected visually by looking through the fence and by examining aerial images available on line. One large circular tank foundation and a linear stem wall foundation were identified both from the satellite image and from the visual inspection. These foundations are associated with Station A and are discussed by URS Corporation (2006) in conjunction with the overall built environment for the facility. They are included in the built environment section below.

Archaeological Sensitivity Studies Results

For the purposes of this analysis, the sensitivity analysis for “buried” archaeological sites includes both deeply buried sites and those that may have been located at or near the historical-era ground surface that were either covered or destroyed by development and construction within the project area. Thus,

the sensitivity model described above takes into account the potential for both deeply buried and near-surface archaeological resources. The historical structures and sensitive areas along the transmission line route are limited to the land areas of the route. The submarine portion of the route is very unlikely to penetrate the thick Bay Mud, or to come into contact with a buried terrestrial surface, which generally lies at elevations of 60 to 80 feet (18.2 to 24.4 meters) below sea level across most of the route. Therefore, the offshore, submarine portion of the transmission route has a low level of prehistoric archaeological sensitivity. The archaeological sensitivity for historical resources in the submarine portion of the transmission route is discussed below.

The greatest potential for buried prehistoric sites exists within the near-shore zone, where Bay Mud deposits are generally thinner and inundation occurred later in time. However, since the earth disturbances proposed in these zones are relatively small and highly localized, relatively few, if any, buried surfaces with the potential for buried prehistoric archaeological deposits would be impacted by project-related activities (see Nolte et al., 2012).

Embarcadero Substation is moderately sensitive for prehistoric archaeological remains and highly sensitive for historical-era archaeological deposits. Buried prehistoric sites are known to exist in the vicinity (Byrd et al., 2010), and historical maps indicate that a series of buildings stood on the site beginning in the mid-nineteenth century. One NRHP- and CHRH-eligible building (Klockars Blacksmith Shop) still stands adjacent to the substation.

Potrero Switchyard, including the proposed GenOn site, is of low sensitivity for prehistoric remains and moderate to high sensitivity for historical archaeology. The GenOn site is immediately adjacent to the four buildings contained in Station A, an NRHP- and CHRH-eligible gas manufacturing plant.

Table 5.5-2 provides a summary of site sensitivity in the project areas.

Table 5.5-2. Site Sensitivity in the Proposed Project Areas

Alternative	Prehistoric Sensitivity/Sites	Historical Sensitivity/Sites	Built Environment Resources
Proposed Route	Low	Moderate to High	19
Embarcadero Substation	Moderate	High	1
Potrero Switchyard/GenOn Site	Low	Moderate to High	3

Results of Built Environment Studies

There are hundreds of buildings and structures within the study area that are over 50 years of age (see Nolte et al., 2012). Buildings over 50 years of age that are along the onshore portions of the proposed route (buildings on the streets that the proposed onshore route follows) are categorized in Table 5.5-3 as either in the northern or southern portion of the route, and graphically presented in Nolte et al. (2012). There are no buildings or structures along the submarine section of the proposed route.

Table 5.5-3. Buildings Along or Adjacent to Onshore Portions of the Proposed Route

Building/Location	Regulatory Summary	Eligibility
Northern Land Section		
Building 1: 443 Folsom Street/Klockars Blacksmith Shop/SF Historic Landmark No. 149, (P-38-004069) Southwest of Embarcadero Substation.	Historical resource for the purposes of CEQA; a historic property under Section 106 of the National Preservation Act	Considered eligible for listing in the NRHP and CRHR under Criterion A for its association with the manufacturing development of San Francisco (OHP, 2012; Bunse, 2012:2).
Building 2: 353 Folsom Street, O'Donnell Coppersmith Building (P-38-004443)	This building is considered by the City of San Francisco to be a potential historic resource, although it has not been formally evaluated.	Considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource for the purposes of CEQA (San Francisco Planning Department, 2011).
Building 3: 301 Folsom Street/ Coffin-Redington Building (P-38-3063)	This resource is listed on the NRHP and the CRHR (OHP, 2012).	It was evaluated as individually eligible under Criterion C on 3/29/2000 and 7/13/2001 (OHP, 2012). It is considered a historical resource for the purposes of CEQA.
Building 4: 285 Main Street, 150 and 160 Folsom Street/Eucharist Church	The building has not been formally evaluated, but is considered a potentially historic resource by the City of San Francisco (San Francisco Planning Department, 2011).	For the purposes of this project, it is considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource for the purposes of CEQA.
Building 5: 2 Harrison Street (P-38-000120/CA-SFR-115H)	The plant building is San Francisco Historic Landmark number 157. It has not been formally evaluated for eligibility for the CRHR or the NRHP (San Francisco Planning Department, 2012).	For the purposes of this project, it is considered potentially eligible for inclusion in NRHP and CRHR and is considered a historical resource for the purposes of CEQA.
Building 6: 1 Harrison Street (P-38-004438)	The building has not been formally evaluated, but is considered a potentially historic resource by the City of San Francisco (San Francisco Planning Department, 2011).	For the purposes of this project, it is considered potentially eligible for inclusion in NRHP and CRHR and is considered a historical resource for the purposes of CEQA.
Building 7: 100 Harrison and 350 and 360 Spear Street	The building is considered to be potentially historic by the City of San Francisco (San Francisco Planning Department, 2011); however, it has been significantly modified and today appears to be a completely modern structure.	It is not considered to be a historic property under Section 106 of the NHPA or a historical resource for the purposes of CEQA.
Building 8: 101 Harrison Street and 400 Spear Street	This building has been determined by the City of San Francisco to appear individually eligible for listing on the NRHP through the survey process.	It is eligible for inclusion in the CRHR and is also considered a historical resource under CEQA (OHP, 2012).
Building 9: 444 and 470 Spear Street and Building 10: 2 Bryant Street	This building has been surveyed by the City of San Francisco and is considered to be a historic structure by the City (San Francisco Planning Department, 2011).	For the purposes of this project, it is considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource under CEQA.
Building 10: 2 Bryant Street	The building has not been formally evaluated, but is considered a potentially historic resource by the City of San Francisco (San Francisco Planning Department, 2011).	For the purposes of this project, it is considered potentially eligible for inclusion in NRHP and CRHR and is considered a historical resource for the purposes of CEQA.

Table 5.5-3. Buildings Along or Adjacent to Onshore Portions of the Proposed Route

Building/Location	Regulatory Summary	Eligibility
Building 11: Pier 28	The pier is part of the Port of San Francisco Embarcadero Historic District and is listed on the NRHP as a contributor to the district. It is a known historic resource in the City of San Francisco (San Francisco Planning Department, 2012).	It is listed on the CRHR and is considered a historical resource for the purposes of CEQA (OHP, 2012).
Building 12: HiDive Restaurant/Pier 28 1/2	It was surveyed in 1976 as a historic resource and is a known historic resource in the City of San Francisco. It was evaluated in 1997 as contributing to the NRHP- eligible Port of San Francisco Embarcadero Historic District (San Francisco Planning Department, 2011).	The district was listed on the NRHP in 2006 (National Register #06000372). The building is listed on the CRHR and is considered a historical resource for the purposes of CEQA (OHP, 2012).
Building 13: Red's Java House/Pier 30	This building is considered a historic resource by the City of San Francisco (San Francisco Planning Department, 2011).	For the purposes of this project, this building is considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource under CEQA.
Structure 14: Pier 28 Bulkhead	This section of sea wall is known as the Pier 28 Bulkhead, was constructed between 1899 and 1912 and is considered part of the Port of San Francisco Embarcadero Historic District (National Register #06000372). It is considered a known historic resource by the City of San Francisco (San Francisco Planning Department, 2012).	The sea wall is listed on the CRHR and is considered a historical resource for the purposes of CEQA (OHP, 2012).
Structure 15: San Francisco-Oakland Bay Bridge	The bridge has been determined eligible for listing on the NRHP under criteria A, B, and C (National Register #00000525).	It is listed on the CRHR and is considered a historical resource for the purposes of CEQA (OHP, 2012).
Southern Land Section		
Building 16: Mirant Potrero Power Plant (now GenOn)	A tall concrete stack lies on the bay side of the existing, apparently modern power plant structure. The stack appears on the historical aerial photographs and was built in the 1960s.	For the purposes of this project, it is considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource under CEQA (Nolte et al., 2012).
Buildings 17 and 18: Western Sugar Refinery Warehouses	These warehouses were evaluated in 2001 and determined to be eligible for the CRHR as the last remaining structures associated with the Western Sugar Refinery under Criterion 1 at a local level of significance (OHP, 2012).	The warehouses are considered to be historical resources by the City and County of San Francisco (San Francisco Planning Department, 2012) and are historical resources for the purposes of CEQA. They are considered eligible for the NRHP for the purposes of this project.
Building 19: Station A-Manufactured Gas Plant	The CHRIS Historic Property Datafile for San Francisco currently lists the remaining buildings of the Station A complex as status "7," indicating the Office of Historic Preservation has received information on the resources, but has not made a determination (OHP, 2012). The City of San Francisco considers the Station A complex to be historically significant and the CEC and City have determined the four buildings within Station A meet CRHR criteria (URS Corporation, 2006: 4.7-3).	The standing structures at Station A are considered potentially eligible for inclusion in the NRHP and CRHR and are considered a historical resource under CEQA. The foundations present on site represent the historical location of a tank and shops that were removed around 2004 and no longer contain integrity to qualify for the NRPH and CRHR. They do not contain scientific value under Criterion D and are not considered individual historical resources for the purposes of CEQA (Nolte et al., 2012).

Table 5.5-3. Buildings Along or Adjacent to Onshore Portions of the Proposed Route

Building/Location	Regulatory Summary	Eligibility
Building 20: 2349 – 2353 Third Street	This building has been evaluated as ineligible for local listing or designation, and is ineligible for the NRHP or CHRH (San Francisco Planning Department, 2011).	Because of the building's ineligibility for any local or national listing or designation, it is not considered a historical resource of the purposes of CEQA (Nolte et al., 2012).
Building 21:2501 Third Street	The building is considered a known historic resource by the City of San Francisco (San Francisco Planning Department, 2011).	This building is considered potentially eligible for inclusion in the NRHP and CRHR and is considered a historical resource under CEQA (OHP, 2012).

Marine Geophysical Survey Results

The results of the Marine Geophysical Survey indicate a variety of small, isolated side scan sonar targets and magnetometer anomalies throughout the survey area. These are typical results expected in a harbor that has had an active maritime industry for more than 150 years. OSI documented 106 side scan sonar targets (OSI, 2011:Appendix 3). The majority is identified as isolated "linear" or "oblong" objects varying in length from 3 ft. to 220 ft. Five targets are identified as tires or groups of tires; one target (SS62) is identified as a rectangular object measuring 19 ft. long by 7 ft. wide by 2 ft. high, which OSI indicated as a possible wreck. There is no magnetic anomaly directly associated with the target (the nearest magnetic anomaly is approximately 80 ft. north), and additional review by a maritime archaeologist suggests the object is unlikely to be a shipwreck, but is most likely an isolated piece of non-ferrous debris. The most striking side scan sonar target recorded in the survey area is a large shipwreck located in the northeastern portion of the survey area. The target is approximately 300 ft. long by 150 ft. wide and is located approximately 165 ft. east of the 600-ft survey corridor centerline, extending outside the survey corridor. The side scan sonar target corresponds to the charted wreck location from NOAA's AWOIS database (see above). Review of the side scan sonar data by a maritime archaeologist revealed that no other targets of interest were recorded.

OSI recorded 272 magnetic anomalies in the survey area, ranging in size from less than 20 gammas to nearly 15,000 gammas (OSI, 2011: Appendix 4). The majority of the anomalies are low to moderate intensity and of short duration, indicating they are likely caused by isolated ferrous masses. Additional processing of the magnetometer data using magnetic gradient processing, which looks for changes in the earth's magnetic field over short distances, helped to isolate magnetic anomalies that may be associated with cultural objects such as shipwrecks. The largest magnetic anomaly recorded during the OSI survey, which is nearly 15,000 gammas, is associated with the shipwreck also recorded by the side scan sonar (see above). The extremely large magnetic anomaly associated with the shipwreck suggests the vessel is iron or steel. There are a number of large magnetic anomalies associated with piers at both the southern and northern ends of the survey area and associated with the Trans Bay Cable in the southern end of the survey area. One additional magnetic anomaly recorded within the survey area is of interest. The anomaly is an 800 gamma anomaly with a 368-ft duration located in the southern half of the survey area (identified by OSI as anomaly no. M63 at 6019099E, 2106491N). There is no side scan sonar target associated with M63, indicating that the source of the anomaly is buried beneath the bay floor. Although it is impossible to predict the size or composition of the ferrous material causing the anomaly, the high intensity and long duration suggests it is either a very large, isolated ferrous object or a cluster of smaller ferrous masses.

Because the survey area has been part of an active commercial port for more than a century-and-a-half, there are a large number of small, isolated side scan sonar targets and magnetometer anomalies that create a relatively noisy geophysical environment. Despite this fact, a review of the geophysical data by a maritime archaeologist revealed that, with the exception of the shipwreck described above and the single, large magnetic anomaly, the cable route is relatively clean in regards to potentially significant historical archaeological resources. The majority of the side scan sonar targets and magnetometer anomalies recorded during the OSI survey likely represent small, isolated objects that do not need to be considered during transmission cable installation. It is possible, however, that the noisy geophysical environment within the survey area has masked targets or anomalies that may be associated with unrecorded historical resources.

Applicant Proposed Measures

PG&E proposes to implement measures during the design, construction, and operation of the Proposed Project to ensure it would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. Applicant Proposed Measures (APMs) are considered part of the Proposed Project in the evaluation of environmental impacts. CPUC approval would be based upon PG&E adhering to the Proposed Project as described in this document, including this project description and the APMs, as well as any adopted mitigation measures identified by this Initial Study (see Table 5.5-4).

Table 5.5-4. Applicant Proposed Measures (APMs) Related to Cultural Resources and Paleontological Resources

APM Number	Issue Area
	Cultural Resources and Paleontological Resources
APM CUL-1	**Pre-Construction Worker Cultural Resources Training.** Prior to construction, PG&E will design and implement a Worker Cultural Resources Training Program for all project personnel who may encounter and/or alter historical resources or unique archaeological properties. Construction supervisors, workers, and other field personnel will be required to attend the training program prior to their involvement in field operations. The program will be conducted in conjunction with other environmental awareness training and education for the project. The cultural resources training session will be led by a qualified instructor meeting the Secretary of Interior's Professional Qualification Standards as listed beginning on page 44716 of Volume 48 of the Federal Register and as may be updated by the National Park Service. This Program will minimally include: ▪ A review of the environmental setting (prehistory, ethnography, history) associated with the project; ▪ A review of Native American cultural concerns and recommendations during project implementation; ▪ A review of applicable federal, state, and local laws and ordinances governing cultural resources and historic preservation; ▪ A review of what constitutes prehistoric or historical archaeological deposits and what the workers should look out for; ▪ A discussion of site avoidance requirements and procedures to be followed in the event unanticipated cultural resources are discovered during construction; ▪ A discussion of procedures to follow in the event human remains are discovered during construction; ▪ A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies; ▪ A discussion of eligible and potentially eligible built environment resources and procedures to follow regarding minimizing vibration from equipment in designated areas; and ▪ A statement by the construction company or applicable employer agreeing to abide by the program conditions, PG&E policies, and applicable laws and regulations.

Table 5.5-4. Applicant Proposed Measures (APMs) Related to Cultural Resources and Paleontological Resources

APM CUL-2	**Resource Avoidance.** There are no known archaeological or historical resources within the direct impact areas defined for the proposed route. In keeping with the intent of the NHPA and CEQA, PG&E's preferred approach for archaeological resources and historical resources is avoidance of impacts to significant (or unevaluated) resources. Where avoidance is not feasible, potential impacts to significant cultural resources must be treated in a way that is acceptable to PG&E, the State Historic Preservation Officer (SHPO), and if applicable, the local Native American community. Treatment might include data recovery excavations, public interpretation/education, Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) recordation, or other measures. If there is an unanticipated discovery of a buried archaeological deposit or human remains, or unanticipated impacts to a historical building cannot be avoided, PG&E will implement APM CUL-4, -5, and -7.
APM CUL-3	**Construction Monitoring.** A professional archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards will monitor all project-related on-shore excavation that is within an area of moderate to high sensitivity for prehistoric or historical buried resources, as such areas are presented in PEA Appendix D (Nolte et al. 2012). This shall include monitoring areas within 167 feet (50 meters) of recorded or previously identified prehistoric and historical-era sites or features. APM CUL-3 will be guided by an Archaeological Monitoring and Inadvertent Discovery Plan, which will include the framework for evaluation and treatment of any unanticipated discoveries described in APM CUL-4. In addition to the monitoring archaeologist, a qualified maritime archaeologist will be on call during construction to assist with implementation of the Archaeological Monitoring and Inadvertent Discovery Plan should maritime resources be identified during excavation. If appropriately qualified, the same person may act as both the monitoring archaeologist and maritime archaeologist. This APM CUL-3 in combination with APM CUL-4 will ensure that archaeological resources will not be impacted during construction without adequate evaluation and any necessary actions (as further detailed in APM CUL-4 and the Archaeological Monitoring and Inadvertent Discovery Plan) to preserve information regarding impacted resources. Site assessment procedures and data recovery or other measures will be developed as part of the Archaeological Monitoring Plan and applied during the monitoring process.
APM CUL-4	**Unanticipated Discoveries of Cultural Deposits.** In the event that previously unidentified archaeological, cultural, or historical sites, artifacts, or features are uncovered during implementation of the project, work will be suspended within 100 feet (30 meters) of the find and redirected to another location. PG&E's cultural resources specialist or designated representative will be contacted immediately to examine the discovery and determine if additional work is needed. If the discovery can be avoided or protected and no further impacts will occur, the resource will be documented on California Department of Parks and Recreation 523 forms and no further effort will be required. If the resource cannot be avoided and may be subjected to further impacts, PG&E or their representative will evaluate the significance of the discovery following federal and state laws outlined above and implement data recovery or other appropriate treatment measures if warranted. Evaluation of historical-period resources will be done by a qualified historical archaeologist while evaluation of prehistoric resources will be done by a qualified archaeologist specializing in California prehistoric archaeology. Evaluations may include archival research, oral interviews, and/or field excavations to determine the full depth, extent, nature, and integrity of the deposit.
APM CUL-5	**Unanticipated Discovery of Human Remains.** If human remains or suspected human remains are discovered during construction, work within 100 feet of the find will stop immediately and the construction foreman shall contact the PG&E cultural resources specialist, who will then call the City and County of San Francisco Medical Examiner. There shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent remains, until the medical examiner has determined that the remains are not subject to provisions of Section 27491 of the Government Code. If the medical examiner determines the remains to be Native American, he/she shall contact the NAHC within 24 hours. The NAHC will appoint a Most Likely Descendent for recommendations on the treatment and disposition of the remains (Health and Safety Code Sect. 7050.5, Public Resources Code Sect. 5097.24).

Table 5.5-4. Applicant Proposed Measures (APMs) Related to Cultural Resources and Paleontological Resources

APM CUL-6	**Vibrations to Historical Structures.** Historical buildings are present near the project route and may be vulnerable to damage from heavy equipment vibrations. To ensure that resources are not inadvertently damaged or impacted during construction implementation, the crews will be informed of historical structure locations and instructed to confine all excavation and backfill work to the existing city streets right-of-way (historical structure locations are depicted in PEA Appendix D (Nolte et al. 2012) as part of APM-CUL-1). Project construction in proximity to Station A will include the use of Tubex and the smallest possible machinery to minimize vibration effects. A structural engineer will check the condition of the building prior to construction. Once activities that result in vibration have begun, the engineer will check the condition of the building to monitor Station A during construction (at 25 percent, 50 percent, 75 percent, and 100 percent completion of excavation using heavy equipment) and assess the effects on the building. If the structural engineer determines that structural integrity is compromised, the interior of the building will be documented following the procedures outlined in APM-CUL-7.
APM CUL-7	**Record to Historic American Building Survey/Historic American Engineering Record Standards.** Station A's setting will be affected by construction of the GIS building. The currently visible exterior façade on the west side of the main turbine building may be blocked from view, and the brick wall that fronts Station A and that serves as a visual barrier will be partially or completely removed. Prior to construction, the setting and exterior of the Station and brick wall will be documented using HAER standards. These standards include large format photography of the structures, photo reproduction of historical plans, mapping, and a descriptive and historical narrative. The resulting documentation will be archived with PG&E, the SHPO, the Bancroft Library at the University of California Berkeley, the San Francisco Landmarks Preservation Advisory Board files at the San Francisco Planning Department, the Foundation for San Francisco's Architectural Heritage, and the San Francisco Public Library.
APM CUL-8	**Apply Secretary of the Interior Standards for the Treatment of Historic Properties to Brick Wall Modifications.** The gate in the brick wall that fronts Station A will be widened and the wall removed or modified to allow access for large transformer equipment and future maintenance activities. Modifications to or removal of the wall will follow the Secretary of the Interior Standards for the Treatment of Historic Properties (available at http://www.nps.gov/hps/tps/standguide/) and will be designed to be compatible with the historic character of Station A. PG&E will submit a draft of its design for the brick wall modifications to the Commission no less than 30 days prior to any alteration of the wall.
APM PR-1	**Worker Environmental Awareness Program Paleontological Resources Module.** The project's worker environmental awareness program, which all workers will complete prior to beginning work on the project site, will include a module on paleontological resources (fossils). The module will discuss the laws protecting paleontological resources, recognition in the field and types of paleontological resources that could be encountered on the project, and the procedures to be followed if a paleontological resource is discovered. A copy of the project's worker environmental awareness training will be provided to the CPUC for recordkeeping prior to the start of construction.
APM PR-2	**Unanticipated Paleontological Resource Discovery.** If fossils are observed during excavation, work in the immediate vicinity of a paleontological find will be halted or redirected to avoid additional impact to the specimen(s), and to allow a professional paleontologist to assess the scientific importance of the find and determine appropriate treatment. If the discovery is significant, the qualified paleontologist will implement data recovery excavation to scientifically recover and curate the specimen.

5.5.2 Environmental Impacts and Mitigation Measures

a. Would the project cause a substantial adverse change in the significance of an historical resource as defined in §15064.5 [§15064.5 generally defines historical resource *under CEQA]?*

LESS THAN SIGNIFICANT. Construction of the proposed Potrero 230 kV Switchyard and GIS structure would modify the visual setting of the former Potrero Power Plant by introducing a new industrial building to the west of and approximately adjacent to a multi-story brick industrial building within the former power plant site (Station A) and by removing or modifying the existing brick wall that fronts Station A. It would also result in the removal of foundations from other structures at Station A that have been demolished in the past. The proposed building, while altering the setting of Station A, would not result in

removal of buildings, or change the relationships between the remaining Station A structures. The setting of Station A has been impacted in the past by removal of related buildings, construction of other industrial structures, and construction of the existing Potrero Switchyard. Implementation of APM-CUL-7 would document and record the setting of Station A and its few remaining buildings, and APM CUL-8 would require treatment of the brick wall modifications according to the Secretary of the Interior Standards for the Treatment of Historic Properties, resulting in a less than significant change. Therefore, the construction of the proposed Potrero 230 kV Switchyard and GIS building, while altering the existing setting of Station A, would not result in a substantial adverse effect.

Excavation of a 10-foot-deep foundation for the proposed switchyard may create ground-borne vibration that could affect the structural integrity of Station A and the remaining brick building. Section 5.12, Noise, discusses construction-related vibration and the potential for vibration during construction to cause structural damage. Distance attenuates the effects of construction-related ground-borne vibration so that only the immediate area around the activity (within about 50 feet) would be impacted. Construction of the proposed Potrero 230 kV Switchyard would be sufficiently distant from these structures that damage would be unlikely. As previously noted, APM-CUL-7 and APM CUL-8 require PG&E to document and record the setting of Station A. Additionally implementation of APM CUL-1 and APM CUL-6 would include training and monitoring to avoid potential damage and result in a less-than-significant impact.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. No known archaeological sites are present along the project route. A study of known prehistoric site locations, historical shoreline maps, and historical land development has resulted in the identification of areas of low, moderate, and high sensitivity within the proposed route, Embarcadero Substation, Potrero Switchyard, and work areas for both prehistoric and historical resources. APM CUL-1 through APM CUL-5 include environmental awareness training of crews, avoidance of resources, construction monitoring for areas designated as moderate to high sensitivity, recordation and investigation of resources that cannot be avoided, and actions to implement in the event that human remains are encountered during construction. However, mitigation is recommended to supersede APM CUL-4. Mitigation Measure C-1 (Unanticipated discoveries of cultural deposits) would be necessary to ensure that a CPUC-approved cultural resources specialist provides oversight and evaluation of any unanticipated discoveries and that the preferred method of mitigation is preservation in place. Similarly, to clarify the procedures for avoiding known and potential shipwrecks, identified by side scan sonar and magnetometer surveys conducted for the Proposed Project (see Marine Geophysical Survey Results), Mitigation Measure C-2 (Avoid known and potential shipwreck locations) would be necessary to supplement APM CUL-2. Implementation of the APMs and Mitigation Measures C-1 and C-2 would ensure a less-than-significant impact during project construction.

Mitigation Measure for Preservation of Unanticipated Discoveries

MM C-1 **Unanticipated discoveries of cultural deposits.** This mitigation supersedes APM CUL-4. In the event that previously unidentified archaeological, cultural, or historical sites, artifacts, or features are uncovered during implementation of the project, work will be suspended within 100 feet (30 meters) of the find and redirected to another location. The CPUC-approved cultural resources specialist shall be contacted immediately to examine the discovery and determine if further investigation is needed. If the discovery can be avoided or protected and no further impacts will occur, the resource will be documented on California Department of Parks and Recreation 523 forms and no further effort will be required.

If the resource cannot be avoided and may be subject to further impact, the CPUC-approved cultural resource specialist/archaeologist shall evaluate the resource and determine whether it is: (1) eligible for the CRHR (and thus a historical resource for purposes of CEQA); or (2) a unique archaeological resource as defined by CEQA. If the resource is determined to be neither a unique archaeological nor an historical resource, work may commence in the area. If the resource meets the criteria for either an historical or unique archaeological resource, or both, work shall remain halted, and the cultural resources specialist/archaeologist shall consult with CPUC staff regarding methods to ensure that no substantial adverse change would occur to the significance of the resource pursuant to CEQA Guidelines Section 15064.5(b).

Preservation in place, i.e., avoidance, is the preferred method of mitigation for impacts to historical or unique archaeological resources. Alternative methods of treatment that may be demonstrated by the CPUC to be effective include evaluation, collection, recordation, and analysis of any significant cultural materials in accordance with a Cultural Resources Management Plan prepared by the CPUC approved qualified cultural resource specialist/archaeologist. The methods and results of evaluation or data recovery work at an archaeological find shall be documented in a professional level technical report to be filed with CHRIS. Work may commence upon completion of treatment, as approved by the CPUC.

Mitigation Measure to Avoid Known and Potential Cultural Resources

MM C-2 **Avoid known and potential shipwreck locations.** This measure incorporates and supplements portions of APM CUL-2, Resource Avoidance. During installation of the submarine cable, PG&E and its contractors shall map the as-built alignment of the cable in relation to known cultural resources, and the contractors shall ensure that the cable passes at least 100 feet to the west of the known shipwreck located in the northeastern portion of the marine geophysical survey area and mapped on NOAA Chart no.18650. In addition, prior to the installation of the cable, PG&E and its contractors shall map a 50 foot buffer around the magnetic anomaly identified by OSI as anomaly no. M63 in the southern half of the marine geophysical survey area and located at 6019099E, 2106491N, as the anomaly may result from the remains of a shipwreck buried beneath the bay floor in that location. PG&E and its contractors shall ensure that no sediment disturbing excavation or hydroplowing is conducted within the 50 foot buffer zone. If the project cannot be routed around the anomaly, additional evaluation and mitigation as detailed in Mitigation Measure C-1, for unanticipated discoveries, and detailed in the Unanticipated Discoveries Plan may be necessary prior to excavation.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

LESS THAN SIGNIFICANT. The project would not occur near or on a unique geologic feature. Artificial fill, which possesses no paleontological sensitivity, occurs beneath Embarcadero Substation and Potrero Switchyard. At an unknown depth beneath artificial fill at Embarcadero Substation are sandstone and shale deposits of the Mesozoic Franciscan Complex, which possess low paleontological sensitivity. At an unknown depth beneath artificial fill at Potrero Switchyard lies Mesozoic serpentinite, which possesses no paleontological sensitivity.

The onshore northern portion of the project alignment would require trenching through artificial fill and potentially some low-sensitivity Holocene Bay Mud. The northern HDD would cross artificial fill, the moderate-sensitivity Pleistocene Colma Formation, and Bay Mud for most of the length of the HDD segment. The submarine portion placed by hydroplow would be located in sand or Bay Mud. The southern end of the project alignment would likely affect Mesozoic serpentinite and artificial fill along the onshore segment, and Holocene Bay Mud for the submarine segment.

Only activities affecting moderate-sensitivity Colma Formation sediments on the northern HDD route have the potential to affect paleontological resources. This excavation would involve three small-diameter (12-inch) HDD borings. If the three HDD borings enter the Colma Formation, it is possible that paleontological resources would be impacted. However, given the moderate sensitivity of the Colma Formation and the limited effects of the 12-inch borings, no significant impact to paleontological resources would occur.

Drilling activities within the moderate sensitivity Colma Formation and low-sensitivity Franciscan Complex and Bay Mud geology would be unlikely to impact scientifically important paleontological resources. However, in the unlikely event that a previously unidentified paleontological resource is uncovered during implementation of the project, the impact to paleontological resources resulting from this project would be less than significant with implementation of the APMs PR-1 and PR-2.

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

NO IMPACT. The Proposed Project would not impact any formal cemeteries. Project impacts to human remains are not anticipated. If human remains are discovered, PG&E would implement APM CUL-5; therefore, no impacts are expected.

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