# 3.4 ARCHAEOLOGICAL RESOURCES

## 3.4.1 Affected Environment

The Project area is located approximately eight miles offshore Huntington Beach, California and encompasses a survey area of approximately 18.885 square miles (48.91 square kilometers). Water depths in the survey area range from 148 to 1,083 feet (45 to 330 meters). Due to the location of Project activities, potential impacts to cultural or archaeological resources would be limited primarily to underwater archaeological resources within the survey area or vessel transit corridors. Underwater archaeological resources are generally defined as submerged sites which may take the form of isolated prehistoric artifacts, submerged historic shipwrecks, or pieces of ship components (such as cannons or guns).

Early coastal archaeological sites have become submerged by modern sea levels and comprise a comparatively understudied area of archaeology due to their lack of visibility and accessibility. Although marine resources are not represented abundantly in archaeological sites until the Middle Holocene age; early Holocene Native Americans still recognized coastal habitats and littoral zones as regions that produced desirable resources, either for subsistence or for craft. Thus, prehistoric groups would have settled these now-submerged coastal regions. Additionally, since prehistoric Native Americans frequently sailed the waters between the offshore islands and the mainland, it is likely that several isolated artifacts may exist on the seafloor.

Offshore cultural resources in the proposed Project region are primarily historic shipwrecks. More than 500 sunken vessels have been reported within the coastal waters of southern California. Precise locations are usually undisclosed, with vague descriptive narratives of the area in which the ship was last known, or thought to have sunk, being provided. The listed shipwrecks include fishing boats, barges, yachts, cargo carriers, passenger ships, freighters, and target ships. Reasons for their demise include mechanical failure, fire, collision, grounding, or capsizing. The most common reasons for shipwrecks were either running aground on natural hazards such as prominent rocks or colliding in harbors during stormy weather. As such, the most sensitive areas for shipwrecks along the California coast occur where concentrated shipping traffic coincides with navigational hazards such as reefs, headlands, and prevailing bad weather or fog. Some sensitive areas include offshore islands, seaports, and obstructions such as Point Fermin. Less sensitive areas include open sea and coastline away from established shipping routes.

### 3.4.1.1 Federal Outer Continental Shelf (OCS) Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific Outer Continental Shelf (OCS)

In 2013, the U.S. Department of the Interior Bureau of Ocean Energy Management (BOEM) released the Federal Outer Continental Shelf (OCS) Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific OCS. The goal of the study was to assist BOEM in the identification and location of underwater and coastal cultural resources along the Pacific coast to enable them to consider what effects the installation of energy facilities on the OCS may have on these resources. The researchers identified where submerged prehistoric archaeological resources may occur and based on predictive modeling, where at least

10 percent of identified shipwrecks lie based on archival research, and where significant or potentially significant coastal cultural resources exist, including prehistoric and historic archaeological resources, traditional cultural properties, and historic built resources, also based on archival research. For the most part, in the Project area, the resources studied were within approximately three miles of the mainland shoreline and the nearest Channel Island (Santa Catalina). The model indicates that the entirety of San Pedro Bay has a high likelihood (a value of 4 out of 6) of having potentially historic resources. Although this modelling is not exact, it does provide the BOEM a basis to determine how likely it is that a previously unknown historic resource may be located within a certain area.

#### 3.4.1.2 California Shipwreck Database

The California State Lands Commission (CSLC) maintains a list of known shipwrecks in State waters offshore of California within the CSLC Shipwreck Database. Any shipwreck sunk more than 50 years is presumed to be of archaeological or historical significance and is protected under State law. The CSLC shipwreck data is derived from books, old newspapers, and other contemporary accounts that do not contain precise locations. However, the database is designed to be used in conjunction with on-site surveys as a first step in identifying locations of potential historic shipwrecks in a Project area. The CSLC recommends that prior to starting a Project offshore, that the shipwreck database be consulted, and a list of potential nearby historic or archaeological resources compiled, but also that site-specific surveys be carried out to corroborate information from the database. In June 2017, CSLC provided a list of approximately 50 shipwrecks that have been identified within or near an approximately 15-mile radius of the Project region (Table 3.4-1). The CSLC Shipwreck Database list includes several of the shipwrecks identified within previous offshore surveys conducted at or near the Beta Unit Platforms in support of Projects conducted in 1984 and 2010.

**Table 3.4-1. Shipwrecks Identified by CSLC to be within Approximately 15 miles of the Project Region**

| Ship's Name | Type | Year Sunk |
|---|---|---|
| Explorer | -- | 1929 |
| Annie M Rolph | Bark | 1942 |
| Adelaide Cooper | Bark | 1879 |
| NSK #2 | Barge | 1934 |
| Discovery | Oil screw | 1955 |
| Gipsy Girl | Oil screw | 1945 |
| Saint Louis | Bark | 1887 |
| Brodie | Oil screw | 1965 |
| Elsie #1 | Barge | 1951 |
| Avalon | Gas screw | 1926 |
| Arbutus | Oil yacht | 1936 |
| Bachelor Boy | Gas screw | 1923 |
| Benita | -- | 1951 |
| Gosling | -- | 1958 |
| Nelson | -- | 1936 |
| S N Castle | Three Masted Schooner | 1926 |
| Aquila | -- | 1949 |

| Ship's Name | Type | Year Sunk |
|---|---|---|
| UB-88 | Submarine | 1921 |
| Moody | Destroyer | 1933 |
| Casino | Bark | 1935 |
| Unknown | Wreckage | -- |
| Bahada | Steam tug | 1923 |
| Diamond | Steam screw | 1926 |
| David C Meyer | Steam screw | 1926 |
| El Padre | Oil screw | 1951 |
| Elsie II | Barge | 1956 |
| Johanna Smith | Steam screw | 1932 |
| Little Butte | -- | 1946 |
| Lottie Carson | Schooner | -- |
| Olympic #2 | Barge | 1940 |
| Naughty Queen | Oil screw | 1974 |
| Navajo | Oil screw | 1963 |
| Ottilie Fjord | Schooner | 1942 |
| Robert Mills | -- | 1946 |
| Southern Explorer | Oil screw | 1968 |
| Saint Joseph | Oil screw | 1975 |
| City of Florence | -- | 1900 |
| Rocona | Oil Screw | 1963 |
| Hwa Tung | -- | 1946 |
| Mississippi | -- | 1924 |
| H M Storey | Steam screw | -- |
| Unknown | Aircraft | -- |
| Unknown | Wreckage | -- |
| Georgia Straits | Tug | -- |
| Melrose | Schooner | 1938 |
| Unknown | Sailboat | -- |
| Unknown | Fishing boat | -- |

### 3.4.1.2 Offshore Surveys

**Beta Unit Surveys.** Multiple geophysical surveys have been conducted in and around the Beta Unit Platforms. According to the Shell Oil Company Plan of Development and Environmental Analysis for the Beta Unit completed in 1977, within the "Geophysical Interpretation and Assessment of Cultural Resources and Potential Shallow Drilling Hazards for a Part of Offshore, no magnetic anomalies or seafloor objects were identified in the area of the platform sites." In addition, the Cultural Resources Assessment conducted by Mesa[2] (Westec, 1984) for the Beta Unit targeted 14 anomalies within their bathymetric survey which were identified as potential cultural resource features. Further investigation and side-scan sonar of some of these target features indicated that only one was a possible cultural site. According to Mesa[2], the site (Feature A) was of "undetermined" cultural significance of "obvious man-made origin". This feature is located beyond the proposed geophysical survey approximately 5,000 feet (1,524 meters) south of Platform Eureka, in approximately 1,200 feet (366 meters) of water, and approximately 12,000 feet [3,658 meters] south of Platforms Elly and Ellen. All other target features (Features labeled B-N) described by Mesa[2] in the 1984 report were labeled as "Not Significant."

**Fugro West.** Fugro West, Inc. also completed an extensive offshore survey for the areas around and between Platforms Elly and Eureka (Final Intrafield Pipeline Replacement Project Site Characterization Report, November 2010). Specifically, Fugro conducted a review of the available geophysical/geotechnical reports and trackline charts from the original platform and pipeline route surveys and performed an extensive literature search. Although the Fugro Report was specific only to the pipeline corridor between Platforms Elly and Eureka, it included some portions overlapping the area surrounding Platform Elly. Based on information gained from the Fugro surveys, three topographic targets were identified near Platform Elly and are summarized in Table 3.4-2 below. These included two unknown objects and one seafloor fissure. At that time, the unknown objects were identified by Fugro as "miscellaneous small debris" or natural features of the seafloor. The nearest of these features (Target No. 11), is located approximately 100 feet (30.5 meters) from Platform Elly, between Platform Elly and Platform Ellen.

**Table 3.4-2. Seafloor Targets Identified by Fugro between Platform Elly and Platform Eureka during Review for the Beta Pipeline Replacement Project, 2010**

| Fugro Report Target Number | Fugro Description and Interpretation of Target | Approximate Distance from Platform Elly |
|---|---|---|
| 11 | Unknown Object: Small, dense feature with minimal height above seafloor. Interpreted as misc. small debris. | 100 feet (30.5 meters) |
| 12 | Unknown Object: Small, dense linear feature exhibiting height above seafloor. Interpreted as misc. small debris or a natural feature. | 500 feet (152 meters) |
| 26 | Fissure 1: Seafloor fissure | Greater than 700 feet (213 meters) |

**Macfarlane Archaeological Consultants.** Following completion of the Fugro Report in 2010, and in support of the same Beta Pipeline Replacement project, Macfarlane Archaeological Consultants (Macfarlane) provided Beta with an investigative letter report characterizing the cultural resources present, or anticipated to be present within the Project area (Macfarlane Archaeological Consultants, 2010). The Letter Report was written in accordance with standard BOEM archaeological requirements as present outlined in NTL Archaeological Resources 98-05 and Gulf of Mexico OCS Region Notice to Lessees (NTL) 2005-0007. Macfarlane conducted a detailed records search of known shipwreck databases. In addition to the CSLC identified shipwrecks, Macfarlane found several shipwrecks within the Project region (San Pedro Bay and surrounding areas) that are classified as significant, moderately significant, or debris. It is important to note that these include several of the shipwrecks identified by the CSLC database, but also several others not previously included within the search. Table 3.4-3 below provides an overview of the shipwrecks MacFarlane identified within the Project region, as well as a listing of the cultural significance of those shipwrecks in accordance with Federal and State requirements.

**Table 3.4-3. Shipwrecks identified within the Project Region for the Beta Unit Pipeline Replacement Project, 2013 Macfarlane Archaeological Consultants**

| Ship's Name | Type | Year Sunk |
|---|---|---|
| **Significant Shipwrecks** | | |
| Santa Cecilia | Frigatte | 1852 |
| UB-88 | German submarine | 1921 |
| **Moderately Significant Shipwrecks** | | |
| Bachelor Boy | Gas screw | 1923 |
| Diamond | Steam screw | 1926 |
| Johanna Smith | Steam screw | 1932 |
| Johanna Smith II | Steel Barge | 1935 |
| NSK #2 | Barge | 1934 |
| Ruby | American Schooner | 1916 |
| El Padre | Oil screw | 1951 |
| Lottie Carson | Schooner | -- |
| Ottilie Fjord | Schooner | 1942 |
| Rossino II | Gas yacht | 1935 |
| Continental | Gas powered freighter | 1930 |
| **Debris** | | |
| Identified as Feature A and Feature 30 by Fugro | Unknown wreckage | -- |
| Unknowns (BLM 464, 518) | Steel debris or wreckage | -- |
| Engine Block at a depth of 60 feet | Unknown wreckage | -- |
| **Unknown Significance** | | |
| Blue Fin | Diesel powered | 1944 |
| Jackie | Gas powered vessel | 1935 |
| K&K | Barge | 1934 |
| Navajo | Oil screw | 1963 |

Macfarlane analyzed the existing data from the previous Beta Unit surveys, the Fugro Desktop Study, and the Fugro Characterization Report. Based on this analysis, the Macfarlane Letter Report identified several features within the Beta Unit which may be cultural in origin, i.e. man-made. According to Macfarlane, the majority of these features appear to be related to seafloor disturbance, accidental deposition of debris, lost anchors and line, and the result of the construction and maintenance activities for Platforms Elly and Eureka. Of these features, two (identified as Targets 3 and 4 within the Letter Report and the Fugro Report), were found to be of potential cultural significance and should be avoided during Project node placement. Targets 3 and 4 are located approximately 1,000 feet (305 meters) from the Beta Unit pipeline corridors. In

addition to Targets 3 and 4, one additional feature (identified as Target 30 in the Letter Report and the Fugro Report and Anomaly A in the Mesa2 Report) was evaluated by Macfarlane as representing probable shipwreck remains and should also be avoided during Project node placement.

### 3.4.2 Regulatory Setting

Part of the mission of the Bureau of Ocean Energy Management (BOEM) is to ensure that significant archaeological sites are not adversely affected by oil and gas exploration and development. This responsibility often includes the protection of historic shipwrecks. In addition to the BOEM, the following regulations provide guidance regarding cultural and archaeological resources within the Project area (Table 3.4-4).

**Table 3.4-4. Regulations Considered for Proposed Project Area**

| Agency or Regulation | |
|---|---|
| Archaeological Resources Protection Act (ARPA) of 1979 | National Historic Preservation Act (NHPA) of 1966 and Section 106 |
| CEQA Guidelines Section 15120(d) | Califonria Public Resources Code 30244 |
| National Park Service (NPS) Abandoned Shipwreck Act of 1987 (43 USC 2101-2106 | Executive Order 13158 - Marine Protected Areas |

### 3.4.3 Impact Assessment

Due to the size of the survey area, as well as its location within heavily trafficked transportation corridors, Project activities will occur in a region identified as “highly likely” to have potentially historic resources nearby. Potential impacts to cultural resources associated with the proposed Project would be limited to underwater archaeological resources. As discussed above, the Project area is located approximately eight miles offshore Huntington Beach, California in the areas between and surrounding the Beta Unit Platforms, and partially overlaps with established offshore transportation corridors. No known shipwrecks have been identified within the Project area, however, Targets 3 and 4 identified within the Macfarlane Letter Report and the Fugro Report, could be of cultural significance and should be avoided during Project node placement. Targets 3 and 4 are located approximately 1,000 feet (305 meters) from the Beta Unit pipeline corridors. In addition to Targets 3 and 4, one additional feature (identified as Target 30 in the Letter Report and the Fugro Report and Anomaly A in the Mesa$^2$ Report) was evaluated by Macfarlane as representing probable shipwreck remains and should also be avoided during Project node placement.

In accordance with Federal and State laws and requirements, avoidance of potential shipwrecks is the preferred method of mitigating potential impacts to these resources. In order to minimize the potential for disrupting previous shipwrecks or shipwreck debris that could occur in the area, a pre-Project seafloor clearance will be conducted. The pre-Project seafloor clearance will identify any areas that could indicate possible submerged, man-made resources including anomalies from previous surveys that may require additional investigation. If any potential

resources areas are identified during the pre-Project seafloor clean race, or if these areas are unable to be investigated further, avoidance measures will be put in place prior to the placement of Project nodes.

All Project operations will be conducted on a moving vessel, and will not require anchoring. By avoiding the use of anchoring within the Project area, potential impacts to underwater cultural or archaeological resources would be further avoided.

In the unlikely event that previously unidentified archaeological site (shipwreck) is discovered, Beta will require the contractor to immediately stop all work activities. The South Central Coastal Information Center or State Historical Information Preservation Office (SHPO) would be notified within 48 hours if no other overriding issues are identified to warrant earlier notifications. Although no impacts to subsurface cultural or archaeological resources are anticipated based on Project design and construction methodology; the following measures have been incorporated into the Project to further reduce the potential for such impacts to occur.

Project Incorporated Measures to Reduce Potential Impacts:

- **Avoidance of Potential Archaeological Resources.** Project nodes will be placed in such a manner as to avoid any known targets or potential man-made anomalies identified within any previous Project area surveys.
- **Pre-Project Seafloor Clearance**
  - A pre-Project seafloor clearance will be conducted to confirm habitat type that the nodes will be placed on. In addition, this will provide information on what debris currently exists within the survey area.
- **Post-Project Seafloor Clearance**
  - A post-Project seafloor clearance will be completed by a remote operated vehicle (ROV) once the Project is complete and all nodes are removed from the seafloor. This seafloor clearance will aid in confirmation that no debris was left behind and to help access if damage occurred as a result of node placement.

### 3.4.4 References

BOEM. 2013. Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific Outer Continental Shelf

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Fugro West, Inc. 2010. Intrafield Pipeline Replacement Project Geohazards Desktop Study. Prepared for Pacific Energy Resources

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Shell Oil Company. 1977. Beta Unit Plan of Development

Westec Services Inc. 1984. Platform Eureka Beta Unit Environmental Report - San Pedro Bay Offshore California. Prepared for the Shell California Production Company / Aera by Mesa[2]