3.5 GEOLGY

3.5.1 Introduction

3.5.2 Environmental Setting

3.5.3 Applicable Regulations

Geologic Hazards

Geologic resources and geotechnical hazards in the proposed Project vicinity are governed primarily by the City of Los Angeles. The conservation and safety elements of the City of Los Angeles General Plan contain policies for the protection of geologic features and avoidance of geologic hazards (City of Los Angeles 1996a and 2001a). Local grading ordinances establish detailed procedures for excavation and earthwork required during construction in backland areas. In addition, City of Los Angeles building codes and building design standards for the Port establish requirements for construction of aboveground structures (City of Los Angeles 2002e). Most local jurisdictions rely on the 1997-2007 California Uniform Building Standards Code (UBC) as a basis of seismic design. However, with respect to wharf construction, the LAHD standards and specifications would be applied to the design of the proposed Project. The LAHD must also comply with regulations of the Alquist-Priolo Act, which regulates development near active faults to mitigate the hazard of a surface fault rupture.

The MOTEMS were approved by the California Building Standards Commission on January 19, 2005 and are codified as part of California Code of Regulations, Title 24, Part 2, Marine Oil Terminals, Chapter 31F. These standards apply to all existing marine oil terminals in California and include criterion for inspection, structural analysis and design, mooring and berthing, geotechnical considerations, fire, piping, and mechanical and electrical systems. MOTEMS became effective on January 6, 2006 (CSLC 2006). The process of developing the MOTEMS has produced parallel guidelines and recommended provisions. The Seismic Design Guidelines for Port Structures, published in 2001 by the Port International Navigation Association (PIANC) uses text virtually identical to that found in the MOTEMS. The language

All Port pipelines are designed in accordance with the American Society of Mechanical Engineers/American National Standards Institute B31.4, “*Liquid Transportation Systems for Hydrocarbons, Liquid, Petroleum Gas, Anhydrous Ammonia, and Alcohols*”. The design, construction, operation, and maintenance of all pipelines would be regulated by the U.S. Department of Transportation (DOT), under Title 49 of the CFR, Chapter I, DOT, Part 195. The integrity of marine oil pipelines is maintained through a preventative maintenance program, in accordance with American Petroleum Institute (API) Standards Applicable to Section 2570, Title 2, Division 3, Chapter 1, Article 5.5, of the California Code of Regulations (CSLC 2004b).

**Mineral Resources**

Excavations and pipeline construction in the immediate vicinity of existing oil facilities is regulated in accordance with standards and procedures as set forth by the California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR). If any structure is to be located over or in proximity to a previously abandoned well, the well may require re-abandonment. Public Resources Code, Section 3208.1, authorizes the State Oil and Gas Supervisor to order re-abandonment of any previously abandoned well when construction of any structure over or in proximity to the well could result in a hazard.

SMARA was enacted to promote conservation of the State’s mineral resources and to ensure adequate reclamation of lands once they have been mined. Among other provisions, SMARA requires the State Geologist to classify land in California for mineral resource potential. The four categories include: Mineral Resource Zone (MRZ)-1, areas of no mineral resource significance; MRZ-2, areas of identified mineral resource significance; MRZ-3, areas of undetermined mineral resource significance; and MRZ-4, areas of unknown mineral resource significance.

The distinction between these categories is important for land use considerations. The presence of known mineral resources, which are of regional significance and possibly unique to that particular area, could potentially result in non-approval or changes to a given project if it were determined that those mineral resources would no longer be available for extraction and consumptive use. To be considered significant for the purpose of mineral land classification, a mineral deposit, or a group of mineral deposits that can be mined as a unit, must meet marketability and threshold value criteria adopted by the California State Mining and Geology Board. The criteria vary for different minerals depending on the following: (1) whether the minerals are strategic or non-strategic, (2) the uniqueness or rarity of the minerals, and (3) the commodity-type category (metallic minerals, industrial minerals, or construction materials) of the minerals. The State Geologist submits the mineral land classification report to the State Mining and Geology Board, which transmits the information to appropriate local governments that maintain jurisdictional authority in mining, reclamation, and related land use activities. Local governments are required
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to incorporate the report and maps into their general plans and consider the
information when making land use decisions.

3.5.4 Impacts and Mitigation Measures

3.5.4.3 Project Impacts and Mitigation

The assessment of impacts is based on regulatory controls and on the assumptions
that the proposed Project would include the following:

- The Port will design and construct onshore improvements in accordance
  with Los Angeles Building Code, Sections 91.000 through 91.7016 of the
  Los Angeles Municipal Code, to minimize impacts associated with
  seismically induced geohazards. Sections 91.000 through 91.7016 of the
  Los Angeles Municipal Code regulate construction in onshore areas of the
  Port. These building codes and criteria provide requirements for
  construction, grading, excavations, use of fill, and foundation work,
  including type of materials, design, procedures, etc. These codes are
  intended to limit the probability of occurrence and the severity of
  consequences from geological hazards. Necessary permits, plan checks,
  and inspections are also specified. The Los Angeles Municipal Code also
  incorporates structural seismic requirements of the California Building
  Standards Commission, which provides a minimum standard for building
design through the California Building Standards Code. The latter is based
on the International Code Council, but has been modified for California
conditions. The California Building Standards Code includes, but is not
limited to, specific requirements regarding seismic safety; grading
activities, including drainage and erosion control; and excavation, retaining
walls, and construction to protect people and property from hazards
associated with excavation cave-ins and falling debris or construction
materials. The Project engineers shall review the Project plans for
compliance with the appropriate standards in the building codes.
California Uniform Building Code, which classifies almost all of coastal
California (including the Project site) within Seismic Zone 4, on a scale of
1 to 4, with 4 being most severe. The Project engineers shall review the Project
plans for compliance with the appropriate standards in the building codes.

- The Port will design and construct wharf improvements in accordance
  with MOTEMS and the LAHD standards, to minimize impacts associated with
  seismically induced geohazards. Such construction shall include, but not
  be limited to, completion of site-specific geotechnical investigations
  regarding construction and foundation engineering. Measures pertaining to
  temporary construction conditions, such as maximum temporary slope
  gradient, will be incorporated into the design. A licensed geologist or
  engineer will monitor construction to verify that construction occurs in
  concurrence with proposed Project design.

For consistency with the Deep Draft FEIS/FEIR, MM 4A-4 and MM 4A-6, which
require site-specific geotechnical investigations to reduce geohazard impacts, would
apply to the proposed Project and would be implemented as discussed below for
Impact GEO-1 and Impact GEO-3.
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