Chapter 2.0
Environmental Setting

2.1 Planning Context

2.1.1 Project Location

The city of Irvine (City) is located within the coastal foothill region of central Orange County in the state of California. Located approximately two miles inland from the Pacific Ocean and 40 miles south of the city of Los Angeles, the City is bordered by unincorporated Orange County and a number of cities including Tustin, Santa Ana, Lake Forest, Costa Mesa, Newport Beach, Orange, Laguna Woods, and Laguna Hills. Figure 2-1 presents the regional location of the City.

The City is generally bounded on the southwest by State Route 73 (SR-73) and on the northeast by State Route 241 (SR-241). Interstate 5 (I-5), Interstate 405 (I-405), and State Route 133 (SR-133) cross through the central portion of the City, and multiple interstates and state routes traverse the City and provide connection to surrounding communities throughout the southern California region. Air travel is available at John Wayne Airport, located immediately adjacent to the Irvine Business Complex (IBC) in the southwest area of the City.

Development in the City is guided by the City's General Plan, which provides citywide and area-specific goals and policies; and more specifically by the regulations in the City's Municipal Code, Zoning Ordinance, adopted Master Plans, and the Local Coastal Program Land Use Plan. A detailed evaluation of the project's consistency with relevant plans and ordinances is provided in Section 4.9, Land Use and Planning, of this Program Environmental Impact Report (PEIR).

Per the most recent U.S. Census Bureau count from July 2022, the City has a population of approximately 313,685 residents with a varied demographic profile. The University of California, Irvine, is a driving factor in the City's demographics and the top employer in the City. The City has also been rated the safest Big City in the U.S. for 18 consecutive years.

2.1.2 Current Adopted Irvine General Plan

Most recently amended in 2015, the City's General Plan is a comprehensive, long-range vision for future development and preservation encompassing the built and natural environments, as well as the community and economy. The General Plan addresses all geographic areas of the City and its sphere of influence. It also addresses the community's relation to the region, local issues and trends, service priorities, and methods to guide development and conservation of resources (City of Irvine 2024a).

Irvine City Boundary

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FIGURE 2-1
Regional Location

The General Plan includes both the mandated elements of the California Government Code Section 65302 as they apply to the local conditions, and optional elements designed to address high priority topics of City interest. The General Plan is kept up to date with current issues, trends, and community needs through periodic amendments. When an amendment occurs, special attention is given to make sure that all components work in harmony and the plan maintains its internal consistency as required by state law.

The General Plan contains seven elements required by the state planning, zoning and development laws. Conservation and Open Space have been combined into a single element. There are also eight optional elements relating to the development of the City. They are as follows:

- Mandated Elements
  - Land Use
  - Circulation
  - Housing
  - Conservation and Open Space
  - Noise
  - Safety
- Optional Elements
  - Public Facilities and Services
  - Integrated Waste Management
  - Energy
  - Parks and Recreation
  - Cultural Resources
  - Growth Management
  - Seismic
  - Irvine Business Complex

It should be noted that the optional elements under the existing General Plan will be incorporated into the mandated elements under the General Plan Update and the City will be adding a new optional Environmental Protection and Climate Action Element.

2.1.3 Prior Planning Initiatives

The City completed several major planning initiatives subsequent to the adoption of the existing General Plan, which are summarized below.

2.1.3.1 2021-29 Housing Element

On May 24, 2022, the California Department of Housing and Community Development certified the 2021-2029 Housing Element. The 6th Cycle 2021-2029 Housing Element was adopted by the City Council on January 11, 2022, and an amended adopted 2021-2029 Housing Element was adopted by the City Council on May 10, 2022.

California Government Code Section 65588 requires that local governments review and revise the Housing Element of their comprehensive General Plans (e.g., Irvine General Plan) no less than once every eight years. Before the 6th Cycle Housing Element Update for the 2021–2029 planning period, the City's Housing Element was updated in 2013 for the 5th Cycle (2013–2021). The 6th Cycle Housing Element Update was prepared to comply with state housing laws, as amended, and federal, state, and local requirements as necessary to demonstrate compliance with state law and to gain state certification (City of Irvine 2024b).

2.1.4 Irvine Focused General Plan Update 2045 Process

The City initially adopted its General Plan in December 1973, and the last comprehensive update occurred in 2000 with as-needed General Plan amendments occurring over the ensuing years. Phase 1 of the 2045 General Plan Update commenced in 2015 with the City conducting face-to-face events, stakeholder meetings, and three surveys. Survey #1 identified community issues and priorities, while Survey #2 built on the results of Survey #1 by focusing on the Vision, Guiding Principles, and goals/topical areas for the Update. As directed by the City Council, an additional public outreach campaign, including Survey #3 and focus groups, commenced in summer 2020 by the City's outreach consultant.

During Phase 2 of the Update, continued input was provided from City commissions, the City Council, and stakeholders that will help serve as the foundation to develop and formulate a draft Update with specific goals, objectives, policies, and future implementation programs. Phase 2 Update work commenced in spring 2022 concurrent with the review process for state certification of the 6th Cycle Housing Element Update. Outreach for Phase 2 of the Update began in fall 2022 and included extensive community outreach efforts in various formats and settings. Community engagement occurred in the form of informational sessions, virtual and in-person workshops, open houses, stakeholder meetings, and pop-up events at City events such as the Great Park Farmer's Market and the Mid-Autumn Festival. The Update is a multi-year, multi-phase project with a completion deadline of mid-October 2024.

2.2 Existing Physical Site Conditions

2.2.1 Land Use

The City is divided into a series of master planned communities or neighborhoods called Planning Areas, with each Planning Area defined by its own character and development goals. Each Planning Area is also designed to serve a diversity of lifestyles. Prior to 2000, residential development was primarily concentrated within the central portions of the City, known as the residential core (Planning Areas 5, 8, 10, 11, 12, 14, 15, 19, 20, 21, 24, 36, 38, and 50). Since 2000, residential growth has occurred outside of the residential core in the Great Park (Planning Area 51), the IBC (Planning Area 36), the Spectrum (Planning Area 33), and the Northern Sphere (Planning Areas 1, 5B, 6, 9, and 40). Each Planning Area has a unique theme which provides a sense of identity through its design and connection with surrounding retail and other amenities. Existing neighborhoods include conveniently located parks and open space, retail, office, and public facilities to support residential development. The convenient location of community facilities, in relation to the residential areas, promotes their viability and vitality (City of Irvine 2015a). The northern and southern hillside areas of the City are largely undeveloped lands. These areas provide views of the surrounding mountains and the ocean. Portions of these hills will eventually be developed with residential units, while other portions will remain as permanent open space. Portions of these hills have been developed into the Great Park Neighborhood and Great Park, while others will eventually be developed with residential units or remain as permanent open space.

2.2.2 Aesthetic/Topographical Features

The City and its sphere of influence are located within the coastal and foothill region of central Orange County. Prominent landforms in the City include the Santiago Hills, northern flatlands, central flatlands, and San Joaquin Hills. The Santiago and San Joaquin Hills have ridgelines that can be seen from various vantage points within the City (including major roadways), while views of the flatlands and the Pacific Ocean can be seen from the higher elevations. San Diego Creek and numerous other washes run through the City. These resources are predominately protected through the City's Conservation/Open Space Dedication Program (City of Irvine 2015a).

The northern and southern hillside areas of the City are largely undeveloped lands. These areas provide a view of the surrounding mountains and the ocean, with much of this area falling within the Orange County Central/Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) area. Under NCCP/HCP protection, development on this land is managed in alignment with habitat preservation and protection agreements and policies.

Table 2-1
Notable Visual Resources in the City

Type of Resource	Examples
Hills	The Santiago Hills and San Joaquin Hills, including canyons, plateaus, narrow ridges, and rock outcroppings
Natural watercourses[1]	San Diego Creek, Agua Chinon Wash, Bee Canyon Wash, Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, Sand Canyon Wash, and San Joaquin Freshwater Marsh
Artificial lakes	Woodbridge Lakes and the William R. Mason Regional Park lakes

SOURCE: City of Irvine 2020a.
[1]Notable visual resources are the natural portions of those watercourses only.

2.2.3 Air Quality and Climate Conditions

The state of California is divided geographically into 15 air basins for the purpose of managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and therefore are expected to have similar ambient air quality.

The City lies within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The 6,745-square-mile Basin encompasses Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and is bound by the Pacific Ocean to the west, the San Gabriel, San Bernardino, and Jacinto mountains to the north and east, respectively, and San Diego County to the south. The City is located within the southwestern portion of the Basin, which encompasses Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties.

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted

infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds (SCAQMD 2022).

The most recently published Air Quality Management Plan (AQMP) and State Implementation Plan is the 2022 AQMP. The 2022 AQMP is a comprehensive strategy aimed at achieving and maintaining compliance with federal and state air quality standards. As outlined in the 2022 AQMP, the Basin has nonattainment status for 8-hour ozone, meaning that the region has not met the National Ambient Air Quality Standards (NAAQS) set by the U.S. Environmental Protection Agency (U.S. EPA) for a particular pollutant, in this case, 8-hour ozone.

2.2.4 Cultural and Tribal Cultural Resources

The City is located within the traditional territory of Indigenous Peoples who, after Spanish contact in historic times, were called the Gabrieleno. See Section 4.4 for a full discussion of tribal chronology. The largest concentrations of archaeological sites in the City exist in the Upper Newport Bay and the Santiago and San Joaquin Hills. The majority of archaeological resources in the City reflect the historical settlements and activities of the Gabrieleno people (also known as the Tongva), who began occupying the area approximately 3,000 years ago, and the Juaneño (also known as Acjachemen), who began occupying the area nearly 1,300 years ago.

Historical resources include current and former locations of historic buildings, historical archaeological sites (often near historic use areas), and the location of extant historic homes more than 45 years old. Old Town Irvine has the highest number of historic buildings.

2.2.5 Geology and Soils

The City is located within the northern extent of the California Geomorphic Province known as the Peninsular Ranges. The Peninsular Ranges geomorphic province extends from Mount San Jacinto in the north, through the tip of Baja, Mexico in the south. Subparallel to these ranges on the east is the San Andreas fault zone. The northwestwards motion of the Pacific Plate has created these ranges and their corresponding valleys.

The City and its sphere of influence are affected by both local and regional active faults. There are multiple regional faults located within Alquist-Priolo special study zones close to the City; however the City itself is not in an Alquist-Priolo earthquake fault zone. These faults pose potential seismic hazards in the event of an earthquake along any of them. Notable fault zones include the Newport-Inglewood-Rose Canyon fault zone (about 1.5 miles west of Irvine), Pelican Hill fault (around 1.5 miles west of Irvine), El Modena fault (approximately 5 miles north of Irvine), and Peralta Hills fault (roughly 5 miles north of Irvine).

Although several faults have been identified within the City itself, they are deemed inactive, having not exhibited surface movement in the past 13,000 years. Consequently, they are not subject to delineation within a special study zone. The San Joaquin Hills blind thrust fault is the only known fault that runs through Irvine and travels in an east-west/southeasterly direction through the City. The City and sphere of influence are located in Seismic Zone 4, as identified in the Uniform Building

Code. This zone indicates the highest classification of the four zones in the United States, with the most stringent requirements for building design.

2.2.6 Hydraulic Conditions

The City resides primarily within the Newport Bay Watershed, which is defined by the foothills of the Santa Ana Mountains to the east (Loma Ridge) and the San Joaquin Hills to the west and southwest. The Newport Bay Watershed is a part of the larger Orange County Watershed Management Areas (WMA), which is split into a south, north, and central WMA. The total area of the Newport Bay Watershed is approximately 154 square miles (98,500 acres) of the Central Orange County WMA. Each watershed is comprised of channels that ultimately deliver stormwater to the Pacific Ocean. Santa Ana Delhi Channel, Bonita Creek, Borrego Creek, Peter Canyons, San Diego Creek Reach 1, and Newport Bay City drain to the City's receiving water bodies.

The southwestern portion of the City is located within the Laguna Coastal Streams Watershed. Laguna Canyon Creek runs north to south, directly through the middle of its watershed, and ultimately discharges into the Pacific Ocean at Laguna Beach. The 11-square-mile watershed also includes portions of the cities of Aliso Viejo, Laguna Beach, Laguna Woods, and portions of unincorporated Orange County. Laguna Canyon Creek runs parallel to Laguna Canyon Road, underneath the San Joaquin Hills Transportation Corridor, through the city of Laguna Beach, and underneath the Pacific Coast Highway, before emptying into the Pacific Ocean. The creek is joined by a few small, unnamed drainages and larger tributaries as it makes its way through the watershed.

Surface water quality in the City is regulated by the Santa Ana Regional Water Quality Control Board (RWQCB). The Santa Ana Regional Water Quality Control Board Basin Plan (Basin Plan) (California Water Boards, Santa Ana – Region 8 2008) establishes water quality standards for all the ground and surface waters of the region. The Santa Ana RWQCB currently identifies five water bodies within the City as currently on the 303(d) list: Bonita Creek, Borrego Creek, Peter Canyons, San Diego Creek Reach 1, and Upper Newport Bay. The 303(d) list is a roster of waters failing to meet established water quality standards including beneficial uses, requisite water quality objectives to safeguard these uses, and the antidegradation policy, all detailed in the Basin Plan. Once a water body makes it onto the 303(d) List, it remains listed until the adoption of a Total Maximum Daily Loads targeting the pollutants responsible for standards violation and attainment of water quality standards are established, or until adequate data supports delisting due to standard compliance. See Section 4.8, Hydrology/Water Quality for a complete discussion of the existing hydrological setting of the City.

2.2.7 Noise

The most pervasive noise in the City comes from mobile noise sources such as motor vehicles, railroads, and aircraft. Major freeways including Santa Ana (I-5), San Diego (I-405), and Eastern Transportation Corridor toll roads (SR-133 and SR-261), railroad lines including Amtrak and Metrolink, and the John Wayne Airport (SNA) expose the City to significant noise impacts. Aircraft flight tracks also impact particular areas of the City. Aircraft noise generally affects areas within the airport vicinity during takeoffs and landings, and areas located around the flight tracks. Airborne noise sources currently include civil air operations at John Wayne Airport (City of Irvine 2015b). The City is also exposed to noise emanating from sources such as industrial, commercial, and construction activities.

Railway lines that pass through the central part of the City in an east/west direction are located on right-of-way that is owned and managed by the Orange County Transportation Authority. The railroad operation includes commuter trains and freight trains. There are also spur lines located within the IBC (Planning Area 36) and Irvine Spectrum Area (Planning Area 35). The noise generated by these spur lines is insufficient to provide community noise equivalent level contours in excess of 60 decibels outside the right-of-way.

2.2.8 Transportation

I-5 and I-405 bisect the City in an east/west alignment. SR-261 and SR-133 bisect the City along a north/south alignment, and SR-241 forms the northern boundary of the City, while SR-73 forms the southern boundary. The City is served by multiple modes of transportation, including bus, commuter rail, train, biking, and walking. The City partners with the Orange County Transportation Authority (OCTA), Amtrak, Metrolink, and Spectrumotion (City of Irvine 2020b).

The iShuttle is operated and managed by the OCTA and serves employees and employers to and from work. In the Irvine Spectrum Area, the iShuttle provides service to and from the Irvine Station and in the IBC it carries commuters to and from the Tustin Station. The OCTA also provides ACCESS which is a shared-ride service for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by disability. Spectrumotion is a rideshare association that helps City residents commute to the Irvine Spectrum area.

The Irvine Station, located in the Spectrum area of the City, is a transportation hub in south Orange County, serving over one million commuters annually prior to the COVID pandemic. It is served by Amtrak and Metrolink. Amtrak is an intercity rail system that operates throughout the nation and has several stops throughout Orange County and southern California. Metrolink is a commuter rail system throughout southern California linking communities to employment and activity centers.

The Irvine Transit Vision, completed in 2022, recommended a Yale-Barranca route to connect residents in the heart of the City with parks, schools, community centers, hospitals, shopping centers, and the Irvine Station. A pilot of the Irvine CONNECT service will begin in spring 2024.

2.2.9 Utility and Services

Residential, institutional, regional commercial, and industrial solid waste is presently collected by private firms, with residential and village commercial collections franchised by the City. The waste collected is transported directly to the Frank Bowerman landfill, which is located north of Sand Canyon Avenue in Planning Area 3 (Limestone Canyon-Open Space) and is operated by the County of Orange. A solid waste transfer station also exists within Planning Area 36 (IBC).

The City's existing wastewater system is primarily managed by the Irvine Ranch Water District. The Orange County Sanitation District provides service to Planning Area 36 only. Most of the City's wastewater is collected and then treated at the Michelson Reclamation Plant located in Planning Area 23 (San Joaquin Marsh). The plant was constructed in 1966 and expanded in 1980 to its present capacity of 15.0 million gallons per day. Most treatment effluent from the plant is used in agricultural

and landscape irrigation, with some excess pumped to the Orange County Sanitation District for disposal.

2.2.10 Biological Resources

The City consists primarily of urban development, although natural habitat exists in the northern portion of the City, as well as south of I-405. There are 33 special status plant species known to occur historically in the region of the City. Ten of these species have been reported within the City or just outside the City limits (see Section 4.3). A variety of resident and migratory wildlife species are present within the City. Many of the resident species have adapted to survival within the interface of the urban lands and adjacent open space, parks, and preserves. The City provides habitat for both common and special status species including invertebrates, amphibians, reptiles, birds, and mammals. There are 59 special status wildlife species known to occur historically within the region. Twenty-four of these species have been reported within the City or just outside the City limits. Critical habitat has been designated by the U.S. Fish and Wildlife Service for two species within the City: Riverside fairy shrimp (*Streptocephalus woottoni*) and coastal California gnatcatcher (*Polioptila californica californica*) (see Section 4.3).