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Exhibit H

UAW Comments on Elmore North Geothermal Project PSA

FINAL BASELINE REPORT

February 2024

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1. Introduction

1.1. PURPOSE AND INTENT OF THE BASELINE REPORT

The purpose of the Lithium Valley Baseline Report (Baseline Report) is to establish an inventory of existing conditions within the Study Area. The existing conditions may be regulatory, physical, demographic, and industry trends. The Baseline Report analyzes the existing conditions for an approximate area of 51,786 acres, located adjacent to the southeastern bend of the Salton Sea in Imperial County, California. This area makes up the Lithium Valley Specific Plan Study Area (Study Area), which is comprised of mostly unincorporated Imperial County land and a small piece of land incorporated by the City of Calipatria. See Figure 1-1, Vicinity, and Figure 1-2, Study Area, for the geographic location.

The drafting of this Baseline Report serves as a starting point for identifying possible implementation strategies for future programs and projects. The Baseline Report in tandem with the Lithium Valley Infrastructure Assessment (Appendix A; Infrastructure Assessment) will help generate discussion between all stakeholders, staff, consultants, and decision makers that will help shape future development within the Study Area. The intent is to build from the analysis of the Baseline Report in the following phases of the Lithium Valley Specific Plan and Programmatic Environmental Impact Report (Project).

1.2. IMPERIAL VALLEY BACKGROUND AND SETTING

1.2.1. History

Salton Sea History

The Salton Sea is one of many bodies of water to occupy the Salton Basin, flooded by the Colorado River. According to the Salton Sea Authority, it is uncertain as to how many times water has filled the Salton Basin over the centuries, but human intervention is responsible for flooding the basin only once, thus creating the Salton Sea (Salton Sea Authority 2017). The Salton Sea has become a key component to the Colorado River's delta.

The Salton Sea is maintained by agricultural runoff from the Imperial and Coachella valleys, that now supports an ecosystem that attracts hundreds of migratory bird species and other wildlife. The Salton Sea is a vital piece of the Pacific Flyway, a major north-south flyway for migratory birds in North and South America.

In 1928, the United States Congress authorized the construction of the Boulder Dam and the All American Canal that would supply water to the Valley and control flooding of the Colorado River. In the 1950's and 1960's, the salinity levels of the Salton Sea were lower and the Sea was a popular tourist spot. However, by the 1970's salinity levels and environmental toxins had devastated the fish and bird populations. Since then, restoration efforts have been launched by local authorities. Groups such as the Salton Sea Authority, the Bureau of Reclamation, the Salton Sea Task Force, Salton Community Services District have all contributed to efforts to restore the Sea. Imperial County has a rich agricultural heritage, producing an abundance of winter vegetables, dependent on imported water sources.

The 2003 Quantification Settlement Agreement (QSA), defined the rights to a portion of Colorado River water for Imperial Irrigation District and the other water districts in Southern California. The QSA established a water transfer of as much as 200,000 acre-feet a year from Imperial Valley to San Diego for up to 75 years, thus reducing the amount of fresh water that runs off fields into the Salton Sea and accelerated the shrinking of the Sea and increased its salinity.

Project History

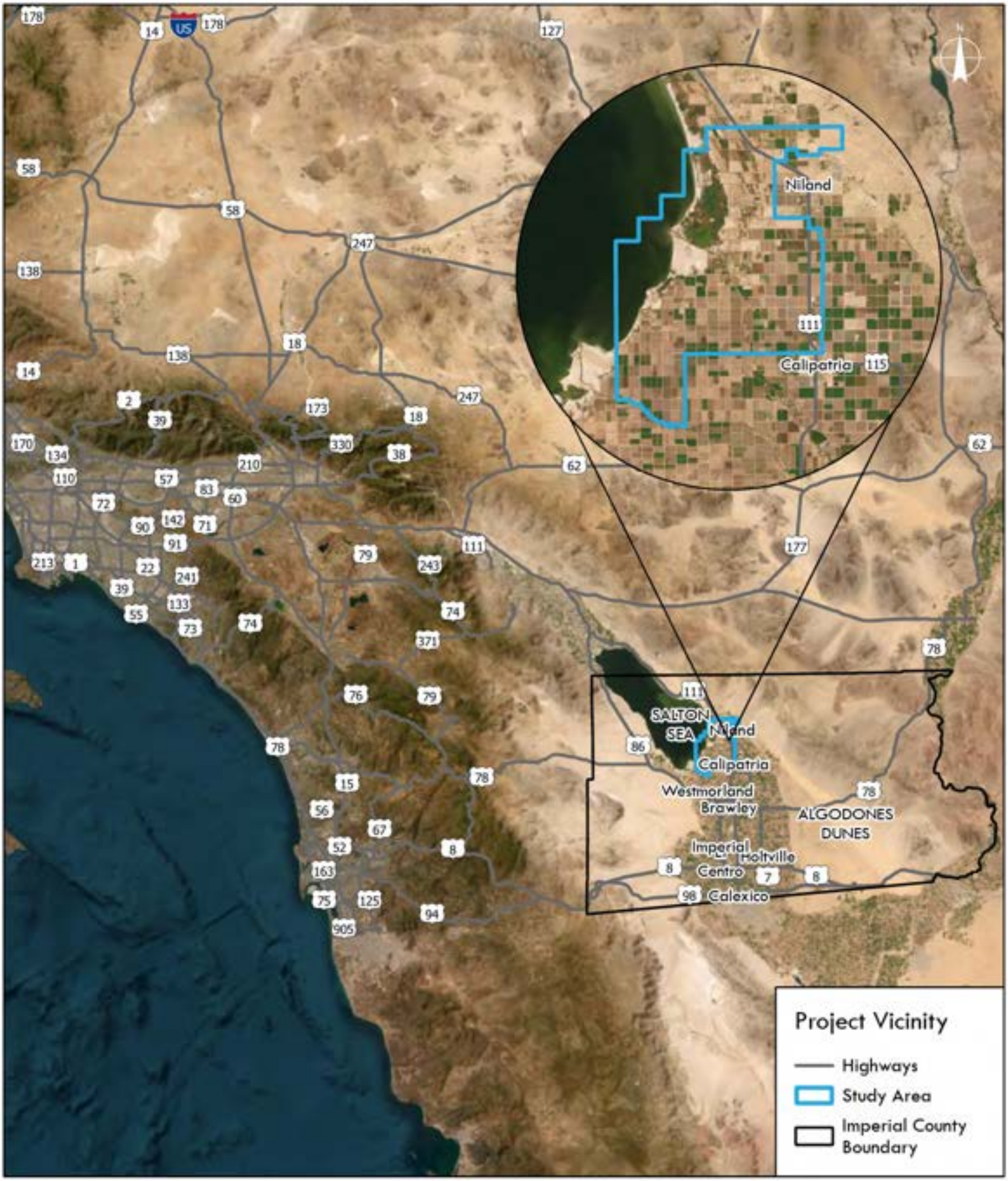
Governor Gavin Newsom signed Assembly Bill 1657 in September 2020 creating the Blue Ribbon Commission on Lithium Extraction, known as the Lithium Valley Commission.[1] The Lithium Valley Commission was charged with investigating and analyzing a range of related issues, in collaboration with other government agencies and members of the public.[1]

In 2022, Governor Gavin Newsom signed into law Senate Bill (SB) 125 authorizing the state to assist in developing Imperial County's lithium resource in an area that is a part of the Salton Sea Known Geothermal Resource Area, known as Lithium Valley. Among other provisions, SB 125 appropriated funding to develop a Lithium Valley Specific Plan and Programmatic Environmental Impact Report (PEIR) and to distribute grants to local community-based organizations to conduct engagement related to the Specific Plan and Programmatic Environmental Impact Report (PEIR).

The Imperial County Board of Supervisors directed County Staff to develop land use and environmental tools to assist in the streamlining of various renewable resources and energy projects in the southern Salton Sea area. In January 2022, the Imperial County Planning and Development Services and Public Works Departments jointly released a Request For Proposals (RFP) for a new Specific Plan and, along with and Infrastructure Assessment and other related General Plan and Zoning Amendments. Imperial County Planning and Development Services Department solicited proposals for the preparation of a Specific Plan and PEIR. The Specific Plan would build on Imperial County's long history of renewable energy development and support California's transition to renewable energy and electric vehicles. A major goal of this effort is to provide opportunity for renewable energy industry investment, including additional geothermal power plants, mineral recovery, lithium battery manufacturing, renewable hydrogen production and other renewable powered options.

The Specific Plan boundary was intended to cover a large portion of the Salton Sea KGRA, while avoiding the unincorporated town of Niland, the City of Calipatria, and State and Federally-owned land within the Salton Sea. The northern boundary extends north to capture the railroad. The eastern and boundaries extend to include the major transportation corridors State Route 111 and Gentry/Forrester Road, and the southern boundary extends to reach the New River. The Specific Plan boundary was confirmed and supported by the Imperial County Board of Supervisors on May 2, 2023.

[1] Paz et al. 2022. Lithium Valley Fact Sheet. https://www.energy.ca.gov/filebrowser/download/4041.



BASELINE REPORT
FIGURE 1-1, Project Vicinity



BASELINE REPORT
FIGURE 1-2, Study Area

1.2.2. Regulatory Setting

Applicable regulations are provided in every subsection of this Baseline Report, however the following regulations relate to the background and history of the Project.

Assembly Bill (AB) 1657

Assembly Bill (AB) 1657 took effect on January 1, 2021, however is currently pending legislation. This bill was drafted and signed with the vision to increase possibilities for the Salton Sea region as a competitive source of lithium supply that could satisfy more than one-third of the worldwide demand (CEC 2022). AB 1657 established a Blue Ribbon Commission on Lithium Extraction in California (Blue Ribbon Commission or Commission), commonly referred to as the Lithium Valley Commission, composed of 14 representatives and experts, to review, investigate, and analyze specific topics relating to lithium extraction in California and submit a report to the Legislature, documenting its findings and any recommendations developed after conducting the required review and analyses.

Senate Bill (SB) 125

On June 30, 2022, Governor Gavin Newsom signed into law Senate Bill (SB) 125 authorizing the state to assist in the development of Imperial County's lithium resource in an area that is a part of the Salton Sea Known Geothermal Resource Area, known as Lithium Valley. Among other provisions of SB 125, the bill appropriated $5,000,000 from the State General Fund to the County of Imperial (County) for various lithium related activities, including, but not limited to, funding to develop a Programmatic Environmental Impact Report (PEIR) and to distribute grants to local community-based organizations to conduct engagement on the PEIR.

1.2.3. Physical Conditions

The 51,786-acre Study Area occurs within the basin of the Salton Sea (i.e., the Salton Trough) in the Imperial Valley. The Alamo River channel runs roughly through the center of the Study Area from the south to the northwest draining into the Salton Sea. Obsidian Butte, Rock Hill, and Red Hill are volcanic domes/deposits. The very northeast corner of the Study Area extends just out of the valley floor into the alluvial fans at the base of the Chocolate Mountains. Nearly the entire Study Area is below sea level and the topography is flat but sloping generally from east to west towards the Salton Sea. The Study Area spans from the Imperial Wildlife Area Wister Unit northwest of Niland, California in the north to Calipatria, California in the south. On the southwest, the Study Area is bounded by the New River and includes the shoreline and open water portions of the Salton Sea from Vail Seven Drain north past the mouth of the Alamo River to Beach Road. The Study Area includes part of the Salton Sea under the assumption that Salton Sea levels will continue to recede, leaving exposed playas. The California Department of Water Resources' Salton Sea Management Program is currently evaluating approximately 30,000 acres of restoration projects along the southwestern Salton Sea shoreline. The Study Area is located in a portion of the following USGS quadrangles: Iris Wash, Niland, Obsidian Butte, Westmorland West, Westmorland East, and Wister.

The Imperial Valley is characterized by extremely hot and dry summers and moderately cold winters. The average annual high temperature is 88 degrees Fahrenheit and the average annual low temperature is 57 degrees Fahrenheit (U.S. Climate Data 2022).

The Study Area is located on the Salton Sea "known geothermal resource area" or KGRA, which is an area designated by the U.S. Geological Survey (USGS) that contains higher-than-normal temperatures likely to occur at a depth possible to be used for heat or power generation. The Salton Sea KGRA is one of five known geothermal resource areas located in Imperial County.

The Study Area encompasses primarily existing agricultural lands and the Salton Sea land use designations and features residential, urban, and recreational uses. The Study Area's adjacency to the Salton Sea, proximity to National Wildlife Refuges and abundancy of open space, spurs largely recreational and commercial farming activities.

1.3. REPORT ORGANIZATION

The Baseline Report is broken into nine chapters based on each topic. Each chapter describes the topic's existing conditions, constraints, opportunities, and recommendations. Analysis of each topic is communicated via text, tables, and graphics. Chapters include:

- Chapter 1 Introduction
- Chapter 2 Land Use
- Chapter 3 Market Conditions
- Chapter 4 Social Conditions
- Chapter 5 Public Services and Resources
- Chapter 6 Utilities
- Chapter 7 Renewable Resources
- Chapter 8 Circulation and Goods Movement
- Chapter 9 Other Environmental Resources
- Chapter 10 References

1.4. EXECUTIVE SUMMARY

Table 1-1, Executive Summary, below provides the key findings for each topic discussed within this Baseline Report. See specific sections for each topic for further information.

Table 1-1, Executive Summary

Topic	Key Findings
Land Use	• There are many landowners in the Study Area, both public agencies and private ownerships. Future changes to land uses will require additional evaluation to ensure compatibility with the other agencies' general plans, master plans, protection laws, etc. • Innovative land use policy implementation and coordination between stakeholder agencies will be necessary for the successful development of renewable energy resource generation in the Study Area.

Market Conditions	• The planning efforts should identify in greater detail the technical skills needed and identify how specific programs and classes will provide the necessary training. • The County may consider conducting a more detailed analysis of housing needed for potential workers. • The County should identify the supply chains needed to serve various types of operations in the County and identify potential operators and their needs, as part of more detailed study. • The Specific Plan should include policies and programs for education, trainings, pre-apprenticeships, and certifications for students and adults interested in future jobs in geothermal, mineral extraction and renewable energies.
Social Conditions	• The County and nearby community population estimates indicate a decline in population. • The County suffers from low education attainment levels. • While public potable water is generally compliant with water quality standards, drinking water sometimes becomes contaminated with chemicals or bacteria above the standards. A likely and common contaminant is Nitrate from fertilizer or manure that can leach into groundwater and contaminate wells. This causes high levels of pollution burden from exposure to contaminated potable and non-potable water, and contaminated groundwater. • There are high levels of pollution burden due to exposure to existing hazardous waste and solid waste facilities that create a high baseline of adverse environmental impacts. Solid waste facilities can bring pollution burden in the form of odors, insect pests, vermin, and truck traffic. • The receding Salton Sea is a hazardous source of dust pollution for nearby residents from the exposed lakebed, leading to public health issues associated with respiratory illness. • Nearly 1 in 5 residents in Imperial County have been diagnosed with asthma. The Study Area and adjacent communities are in the 85th percent for asthma rates. This is largely related to the individual's exposure to agricultural pesticides. • Imperial County has very high rates of: linguistic isolation, individuals with disabilities, poverty, and unemployment. • There is a level of distrust the community has with the local government. • The environmental hazards created from the receding Salton Sea need to be fully researched, documented, and distributed to the community.

	• Tribal nation consultation shall be conducted in alignment with the principles of meaningful input and respect for government sovereignty.
Public Services and Resources	• Coordination between existing public agencies and local governments is necessary to provide essential public services to the Study Area and prepare for a higher demand on services to ensure the standard response times are maintained. • The Specific Plan should consider workforce growth projections to help determine what the future demand will be for public services infrastructure. • The County should target state and local funding towards educational improvements and expansion of available educational resources. This includes recruiting additional school and district staff, expanding available facilities and providing materials to support the student population's success. • The Study Area is largely vacant of any available emergency medical care or high-quality healthcare services in proximity to the neighboring communities of Calipatria and Niland.
Utilities	• The Study Area relies on water supply and distribution from the Colorado River which is managed by the Imperial Irrigation District (IID). • Under current IID policy, approximately 126,000 acre feet (AF) out of the total 149,000 AF of water is apportioned to agricultural land uses. • Wastewater systems in the Study Area are very limited. The City of Calipatria operates the publicly owned Wastewater Treatment Plant within the Study Area. Otherwise, the Study Area utilizes septic. • Numerous public Imperial County landfills and private hazardous waste facilities have been closed. Niland and Calexico landfills remain open, however there may not be enough capacity to service the Study Area and alternative solid waste solutions may be needed. • Electricity and telecommunication systems are provided to customers on a case-by-case basis, once an application is submitted for service. Once a Project preferred land use plan is developed, further recommendations may be provided related to provide access to electrical and telecommunication services to the Study Area.
Low-Carbon Energy Resources	• Geothermal and lithium recovery operations can have intensive water demands, compared to other energy sources (both renewable and non-renewable), however the data remains uncertain on what the true water demand may be for future

	geothermal and lithium recovery operations and additional collaboration with agencies and operators is needed. There is however, great opportunity to recycle water demands within the geothermal and lithium recovery process to reduce the long-term water demands. • Due to the Pacific Flyway for migratory birds within the Study Area, wind energy production is not recommended in the Study Area. • Solar generation has relatively low operations and maintenance costs, thus making it more economical, but provides fewer jobs. • Hydrogen and hydrocarbon fuel cells production is occurring in other parts of Southern California and is receiving heavy interest and investment from the State and Federal government. • Renewable biofuels such as ethanol from second-generation agriculture, algae biofuels, biomass, and anaerobic digestion are clean energy sources that have the potential to be successful within the Study Area given proximity to agricultural solid waste and municipal solid waste resources. New technology and public/private investment is needed to make these renewable biofuels more profitable. • Battery energy storage systems offer energy grid benefits such as peak shaving, load shifting, emergency backup, and the ability to have off-grid facilities. They are seeing heavy private investment with companies mainly creating storage systems for residential and electric vehicle consumers. • The Specific Plan should consider the effects of replacing farmland with renewable energy production on the local farmers and workforce.
Circulation and Goods Movement	• Roadway widths, pavement conditions, and bridge capacities create limitations on the existing roadway network. • Active transportation options are very limited throughout the Study Area making it hard to access for individuals without a personal vehicle. • Rail usage is forecasted to double, according to the 2018 CA State Rail Plan. Improving capacity for rail freight transport can support the County's agricultural industry in distribution of their crops, while also alleviating the demand of the highway freight network. • The County should consider paving several key roadways to improve access into the Study Area. • The County should assess the market potential for construction of a rail spur from UPRR's north-south Class I railroad into the Study Area.
Other Environmental Resources	• Areas of opportunity for development include land that is designated as barren and fallow agricultural land.

	• The Project is located in a nonattainment area for O3 and PM10; therefore, planning practices that would reduce emission sources of O3 precursors and primary PM10 and secondary PM10 precursors are encouraged. • The following reports will better inform the standards, policies, and mitigation measures of the Project: (1) Air Quality Technical Report, (2) Preparation of a Health Impact Assessment, (3) Preparation of a Health Risk Assessment. • Wetland and riparian communities such as the New River, Alamo River, and playa areas around the Salton Sea are potential biological constraints in the Study Area. Some of these resources are considered sensitive by the State. • There are a number of historic structures and archaeological resources within the Study Area. Additional cultural resources assessment would be required of these resources to gain a full understanding of impacts related to these resources. • Geothermal energy extraction is achievable in Lithium Valley because of the natural subsurface permeability that results from local faults and fractures, including the Brawley Seismic Zone. At the Salton Sea geothermal field, the produced fluid is re-injected back into the subsurface to maintain reservoir pore pressure. In geothermal fields where pore pressure is not maintained, subsidence can occur with high fluid volume production. Geology and soil requirements may be made in the form mitigation measures as a part of the PEIR. • Residual concentrations of pesticides are anticipated in the agricultural areas; however, it is anticipated that residual concentrations of organochlorine pesticides such as DDT have degraded to levels below commercial and industrial soil screening levels. Soil sampling in proposed development areas is recommended to determine levels of pesticides (former agricultural areas) or metals (prior or existing geothermal facilities) in soil prior to soil disturbance. Background arsenic levels are present at geothermal sites. • Hazardous materials and geothermal extraction activities are permitted through the RWQCB Land Disposal Program, the local CUPA, the federal EPA Spill Prevention Control and Countermeasure Plan, and state and federal waste disposal regulations. • Future uses must implement water quality management plans that comply with local, state and federal requirements including County stormwater control requirements, NPDES MS4 permit requirements and the SWRCB applicable/approved TMDLs, and

	also prevent discharge of sediment, because the Colorado River RWQCB currently has a prohibition of sediment/silt discharge. • A buffer of open space along the New and Alamo River to be used as a river park, floodplain buffer, and (or) wetlands could provide protection to future developments in the vicinity of the Alamo and New River from increased storm water flows while also improving storm water quality and environmental health. • The Salton Sea geothermal resource area is well-positioned to become a competitive source of lithium, but investment in this resource requires that the technology to recover lithium from geothermal brine on a commercial scale can occur without certain risks and uncertainties. • The County should evaluate the viability of using recycled water to augment future water demands under the Specific Plan. • The County should establish a network of backbone storm drain infrastructure throughout the Study Area • Bridge crossings within the Study Area should be further evaluated in the circulation system of the Specific Plan. • Tribal consultation and engagement with regard to the Project will occur throughout the process and be incorporated into the Specific Plan. • New potential sources of ignition could occur in the Study Area, including vehicles, roadways, sparks associated with grading and welding activities or other hot work, parking on or near dry vegetation, and the overall temporary increase in human activity on site. Constraints on water supply availability for fire prevention for the Study Area will need to be considered.

2. Land Use

2.1. EXISTING CONDITIONS

The Study Area is predominantly unincorporated with a small piece of land incorporated by the City of Calipatria, which mostly presides over land outside of the Study Area. The City of Calipatria developed the 2016 Sphere of Influence (SOI) for the General Plan, which represents the geographic extent to which a city can expand by annexation. The City of Calipatria' s Sphere of Influence extends into the Study Area's Southeastern corner. The Study Area's adjacency to the Salton Sea, proximity to National Wildlife Refuges and abundancy of open space, focuses on primarily recreational and commercial farming activities.

2.1.1. Applicable Regulations

California Government Code Section 65450 mandates every planning agency to prepare and adopt a comprehensive, long-term General Plan intended to guide development of the community through

seven mandatory elements; as well as an Environmental Justice and Air Quality element for eligible jurisdictions. This state law outlined the provisions of a General Plan, which is demonstrated through Imperial County's General Plan. The Imperial County General Plan Land Use Element (described in 2.1.1 below) identifies the land use goals, objectives, policies, principles, standards, and plan proposals that support the County's vision.

Local land use decisions must be consistent with the communities' General Plan and Zoning Ordinance. The Imperial County Municipal Code entitled "Land Use Ordinance" outlines the comprehensive land use regulations for all unincorporated areas of the County of Imperial to "promote and protect the public health, safety, and general welfare (Imperial County, 1993).

The State Constitution, Government Code, Public Resources Code, the California Environmental Quality Act, the Subdivision Map Act, the Housing Act, and the Surface Mining & Reclamation Act represent the existing regulations to be followed by the County to continue maintaining authority throughout the jurisdiction.

2.1.2. Related Planning Documents

Imperial County General Plan

Adopted in 1993, the Imperial County General Plan consists of ten elements entitled Land Use, Housing, Circulation and Scenic Highways, Noise, Seismic and Public Safety, Agricultural, Conservation and Open Space, Renewable Energy and Transmission, Water, and Parks & Recreation. California State Planning and Zoning Law (Government Code Section 65302(a)) establishes the requirements for the Land Use Element (LUE) of the General Plan.

The current LUE along with the Renewable Energy and Transmission Element were approved and amended to the General Plan in 2015. The LUE provides a comprehensive framework for supporting regional development and designating land uses for housing, business, industry, agriculture, open space, public facilities, and other categories of public and private uses. The LUE describes existing land uses within the County and provides goals and objectives for supporting growth through the provision of public infrastructure and services (Imperial County, 2015). The Renewable Energy and Transmission Element was also amended to deal with potential conflicts with the LUE and simultaneously promote renewable energy.

The LUE intends to continue supporting agricultural and economic growth in association with renewable energy while providing safe and abundant resources for the community and surrounding workforce. With proximity to areas such as the Salton Sea and with the abundance of open space and recreational areas, the LUE aims to also preserve the unique natural and cultural resources of the region. Land use designations and descriptions are listed in Section 2.1.6, Land Use Designations and Overlays.

Niland Urban Area Plan

The Imperial County General Plan LUE designated the townsite of Niland as an "Urban Area" with approximately 1,290 acres surrounding the townsite. The Niland Urban Area Plan (Urban Area Plan) provides the townsite with goals, standards, and policies for implementation of the Imperial County General Plan to support land use designations and growth opportunities (Imperial County, 1993).

The Urban Area Plan also identifies current public services supplies and capacities. The Niland Urban Area Plan is incorporated into the Imperial County General Plan LUE.

Existing land uses within Niland consist primarily of agricultural, residential, commercial, and industrial areas. According to the Niland Urban Area Plan, there is no anticipated population or economic growth expected in the area. Catalysts such as the construction of a new power plant would bolster land use developments intended by the General Plan. While the area surrounding Niland is predominately agricultural, increasing recreational/tourist trade and the discovery of abundant renewable energy resources have expanded the urban area's potential land uses. The Urban Area Plan recognizes that with the introduction of additional power plants, Niland's economy could benefit.

Amongst several overall goals for the area, including housing development, transportation maintenance and improvements and agricultural preservation and water conservation, support for renewable energy resource generation and extraction is an objective shared through the Urban Area Plan. There are no significant deviations from the County General Plan regarding the existing townsite's Urban Area Plan.

City of Calipatria 2035 General Plan

Prepared in September 2013, the City of Calipatria's 2035 General Plan is a comprehensive planning document that outlines the city's vision and policies for future growth and development. A parcel of land within the Study Area is annexed by the City, and the City's Sphere of Influence (SOI) extends to contribute to land within the southeastern corner of the Study Area. The plan is intended to allow land use and policy determinations to be made within a comprehensive framework that incorporates economic considerations, public health, safety, and quality of life in a manner that recognizes the community's resource limitations.

The 2035 General Plan emphasizes the importance of ensuring that any future developments within the city, including those annexed into the Study Area, adhere to land use compatibility standards. These standards are crucial for maintaining harmony between different land uses, addressing environmental considerations, and encouraging growth of residential development.

Imperial County Airport Land Use Compatibility Plan

The Imperial County Airport Land Use Compatibility Plan (ALUCP) coordinates existing land uses and assesses their compatibility with airport services. This includes the review of general and specific plans, zoning ordinances and adjacent land use policy mandates. Current ALUCP policies ensure consistency with the County General Plan to ensure that land use development does not hinder airport operations and services (Airport Land Use Commission, 1996).

The ALUC Plan maintains a geographic dataset providing location and Airport Land Use Compatibility (ALUC) zone descriptions for airports throughout the jurisdiction. These areas are determined by the County Airport Land Use Commission to visualize each County airport's "sphere of influence." The Calipatria Municipal Airport located adjacent to the Southeastern border of the Study Area restricts certain land use developments due to the inclusion of Zones B1 and C within the Study Area. (Imperial County, 2022) Consideration of these restrictions in the Specific Plan will be necessary for maintaining compliance with County General Plan guidelines.

Natural Community Conservation Plan and Habitat Conservation Plan

The Imperial Irrigation District (IID) services Imperial Valley with water and energy to support agricultural, commercial, industrial and residential activities throughout the County. IID is currently in the process of preparing a Natural Community Conservation Plan (NCCP) and Habitat Conservation Plan (HCP) through a collaborative effort with the California Department of Fish and Game (DFG) and the United States Fish and Wildlife Service (USFWS).

The NCCP and HCP outline the shared objectives and policy mechanisms between IID and the wildlife agencies to support the protection and conservation of the state's wildlife resources while supporting economic development, population growth and land use change.

Williamson Act

The California Land Conservation Act, better known as the Williamson Act, is a policy intended to restrict the uses of agricultural and open space lands to farming and ranching during the length of the contract period. This incentivizes landowners to engage in protection of open space and agricultural resources in return for substantially reduced property tax assessments. The Williamson Act Program facilitated the mechanism to allow local governments to enter 10 to 20 year contracts with private landowners to restrict land parcels to agriculture or related open space use. Land locked into Williamson Act contracts made it inaccessible to potentially developed industrial uses, such as geothermal energy production and lithium extraction.

Imperial County filed non-renewal on all Williamson Act contracts, effective January 2011, covering 117,246 acres and the last contracts expired in 2020 (CA DOC). Imperial County is currently among six counties across the state that do not have the Williamson Act in place. The other counties include Los Angeles, Del Norte, San Francisco, Inyo and Yuba.

2.1.3. Neighboring Communities

The unincorporated community of Niland is located directly east of the northern portion of the Study Area, as shown in Figure 2-1, Neighboring Communities. Niland's economy has historically been driven by Salton Sea tourism and recreation, commerce brought by the Inter-California Railway, and most recently agriculture. The population of Niland was 1,238 people in 2012, however saw a steady decline through 2018. Despite the devastating fire that blazed through Niland in 2020, Niland's population has seen a slight uptick since 2018 and is now estimated to be 743.

The Niland Service Area is guided by the Niland County Service Area (CSA), which is a special district within Imperial County. The formerly independent special district Niland Sanitary District was dissolved in 2019 by LAFCO and a new district was established. According to the County of Imperial Niland County Service Area Plan (SAP), the Imperial County Department of Public Works maintains the Niland Street Lighting District, which is supplied with electrical power through Imperial Irrigation District (IID).

Existing land uses in the Niland near the Study Area consist primarily of single-family homes and several mobile homes on individual lots. Commercial uses are adjacent to State Highway 111 and industrial uses are located east of the town site along the railroad right-of-way.

The City of Calipatria is located directly east of the southern portion of the Study Area. As shown in Figure 2-1, Neighboring Communities, the City of Calipatria has jurisdiction over a 165-acre island of land within the Study Area. Low Density Residential is the predominant land use designated in Calipatria' s General Plan. The city island within the southeast quadrant of the Study Area is designated as Public Facility, containing the Calipatria Wastewater Treatment Plant, located between English and Brandt Road, north of Lindsay Road.



BASELINE REPORT
FIGURE 2-1, Neighboring Communities

2.1.4. Land Ownerships

As shown in Figure 2-2, Agency Ownership, the Study Area contains State- and Federally-owned lands, including agencies such as the Bureau of Land Management (BLM), US Fish and Wildlife (USFW), California Department of Fish and Wildlife (CDFW), and other State, Local Government, and privately-owned land parcels. The acreage and percentage of land ownership are shown in Table 2-1, Study Area Land Ownership Distribution, below:

Table 2-1, Study Area Land Ownership Distribution

Ownership	Acreage	Percent of Study Area
Private/Unknown	33,577	64.8%
Local Government	13,213	25.5%
State	4,588	8.9%
U.S. Fish and Wildlife Service (USFW)	166	0.3%
Bureau of Reclamation (USBR)	161	0.3%
Bureau of Land Management (BLM)	80	0.2%
Total	51,786	100%

Source: Bureau of Land Management (BLM) Surface Management Agency Ownership

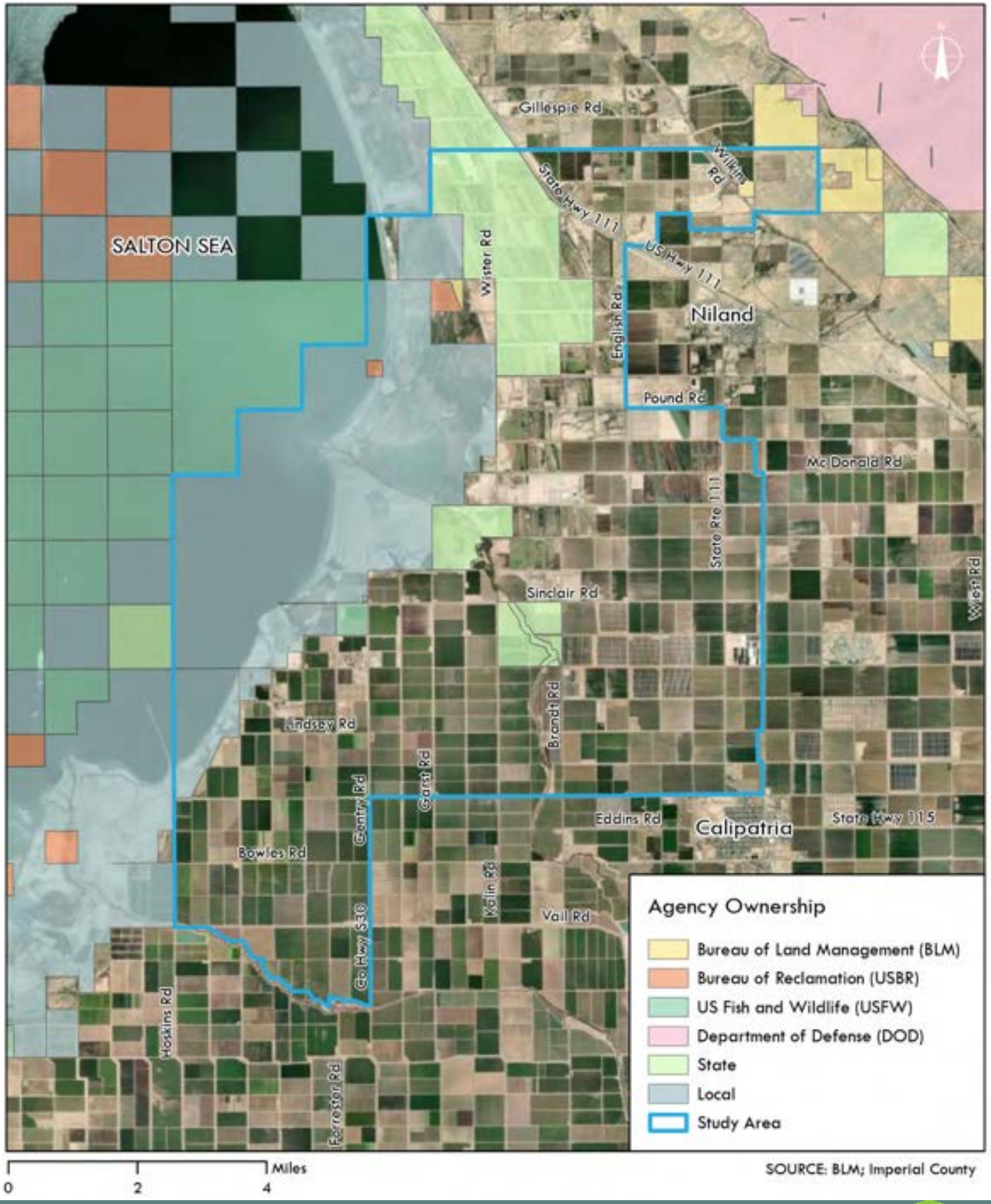
BLM-managed lands near the Salton Sea may have restrictions on off-road vehicle use, camping, and other recreational activities to protect sensitive desert ecosystems and cultural resources. Permits also may be required for certain activities. CDFW manages wildlife areas and ecological reserves near the Salton Sea, implementing regulations to protect habitat for various species of birds, fish, and other wildlife. Access restrictions and permit requirements may be in place to protect sensitive habitats, particularly during nesting seasons for migratory birds. USFWS also manages wildlife refuges and conservation areas near the Salton Sea, implementing regulations to protect habitat for migratory birds and endangered species. Access to certain areas may be restricted during critical times, such as nesting or feeding periods for wildlife.

2.1.5. Natural Environment and Scenic Resources

The Study Area's natural environment and scenic resources include a distinct desert landscape and notable topographic features, including prime soils, Colorado River water and significant sunlight which drive the region's prominent agricultural activity. County-wide, native vegetation communities are highly diverse with terrestrial, wetland and aquatic habitats being reflected by rare, biodiverse species populations which inhabit the region. As discussed in Section 9.4, Biological Resources, vegetation communities that cover the Study Area include but are not limited to: agriculture, desert scrub, freshwater pond, freshwater emergent wetland, Salton Sea playa, and Salton Sea open water.

The Clean Water Act, established by the U.S. Environmental Protection Agency (EPA), imposes regulations on discharges of pollutants into navigable waters, aiming to maintain water quality and protect aquatic ecosystems. Areas within the Study Area have been designated as environmentally sensitive areas by various public agencies or entities. These include the US Fish & Wildlife Service (USFWS) Sonny Bono Salton Sea National Wildlife Refuge, wilderness and wildlife areas, State parks, and other protective designations by Federal and State agencies.

There are no State-designated scenic highways within the Study Area, however, the Imperial County Circulation and Scenic Highway Element places potential designation of Scenic Highway on specified roadways in the County, including State Route 111 and State Route 78. However, there are no segments currently eligible for scenic designation within the Study Area (Imperial County, 2008).



BASELINE REPORT
FIGURE 2-2, Agency Ownership

2.1.6. Land Use Designations and Overlays

As shown in Figure 2-3, Existing General Plan Land Use, the majority of the Study Area has an Imperial County General Plan land use designation of Agriculture. The 2015 County General Plan Land Use Element lists existing Land Use Designations within the Study Area which are included in Table 2-2, Study Area General Plan Land Use Designations, as shown below.

Table 2-2, Study Area General Plan Land Use Designations (Acres)

Land Use Designation	Acreage	Percent of Study Area
Agriculture	34,369	66.4%
Water (Salton Sea)	12,451	24%
Government/Special Public	3,313	6.4%
Recreation/Open Space	1,316	2.5%
Urban Area	337	0.7%
Total	51,786	100%

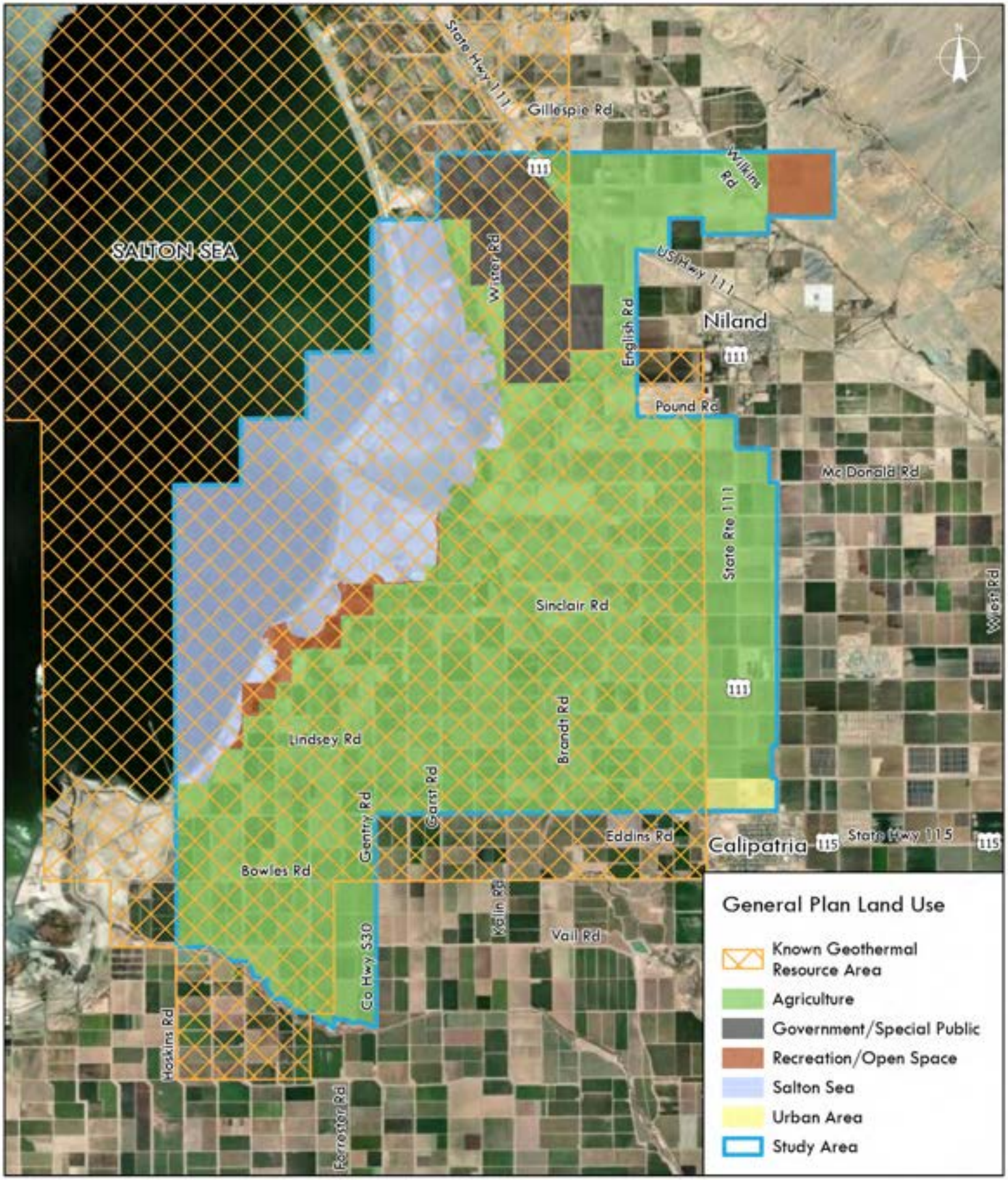
Source: Imperial County Planning and Development Services General Plan Land Use Element Land Use Desginations (2015)

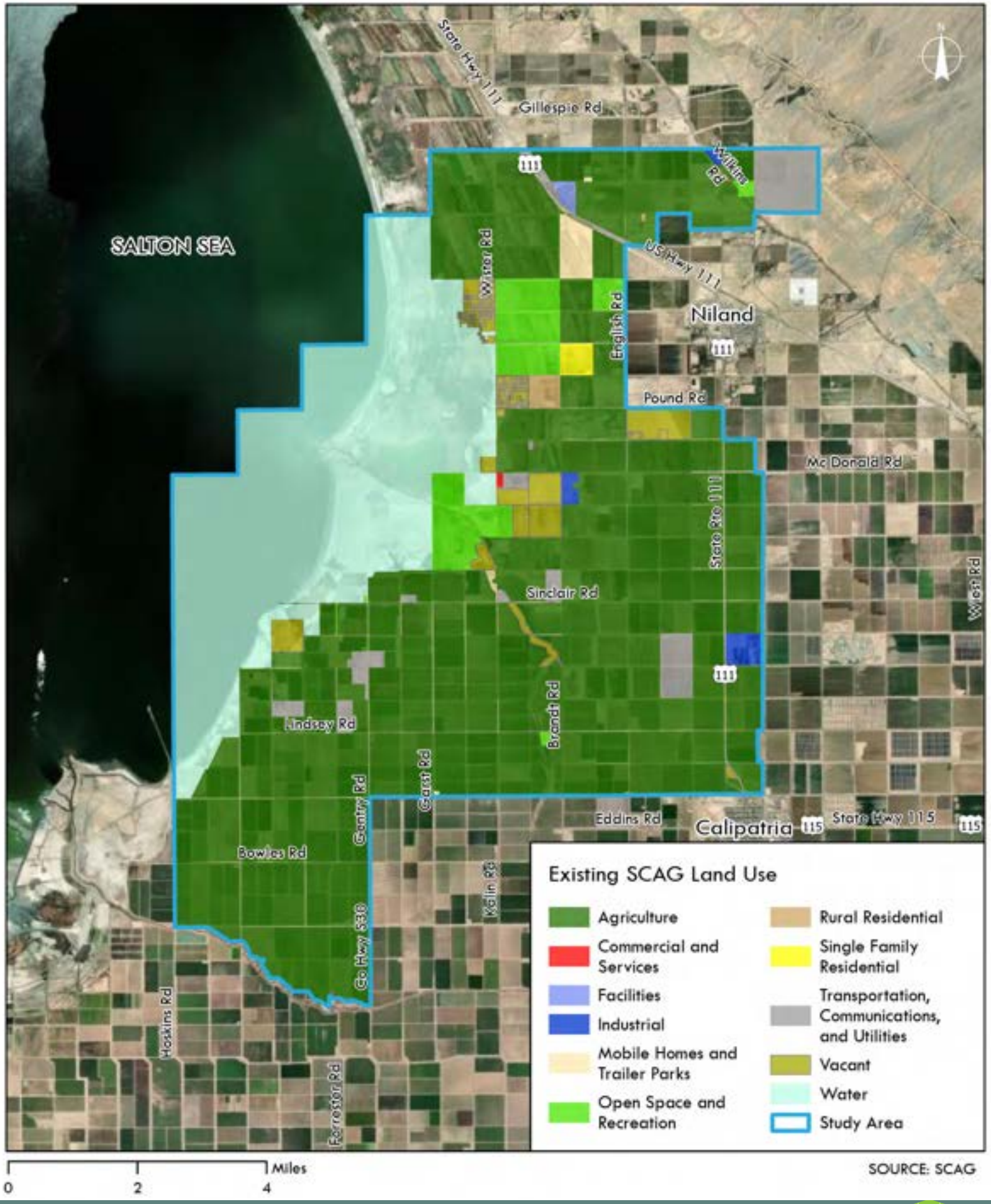
The Southern California Association of Governments (SCAG) collects regional data throughout the Southern California region. SCAG provides public datasets containing existing land use data. SCAG published a 2019 Annual Land Use dataset at a parcel-level using their own land use classifications. A complete list of acreages and percentages of land use designations from SCAG's 2019 Annual Report are shown in Table 2-3, Study Area SCAG Existing Land Use Distribution, below. See Figure 2-4, Existing SCAG Land Use, to see these land uses distributed within the Study Area.

Table 2-3, Study Area SCAG Existing Land Use Distribution (Acres)

Land Use	Acreage	Percent of Study Area
Agriculture	31,875	61.6%
Water	13,206	25.5%
Open Space and Recreation	1,958	3.8%
Vacant	1,609	3.1%
Transportation, Communications, and Utilities	1,553	3%
Mobile Homes and Trailer Parks	325	0.6%
Industrial	299	0.6%
Rural Residential	166	0.3%
Single Family Residential	159	0.3%
Facilities	74	0.1%
Commercial and Services	15	0.03%
None	548	1.1%
Total	51,786	100%

Source: Southern California Association of Government (SCAG) 2019 Annual Land Use Distribution


SALTON SEA
State Hwy 111
Gillespie Rd
Wilkins Rd
Wister Rd
US Hwy 111
English Rd
Niland
Pound Rd
Mc Donald Rd
State Rte 111
West Rd
Sinclair Rd
Brandt Rd
Lindsey Rd
Garst Rd
Gentry Rd
Eddins Rd
Calipatria
State Hwy 115
Bowles Rd
Kalin Rd
Vail Rd
Co Hwy S30
Hoskins Rd
Forrester Rd
General Plan Land Use
Known Geothermal Resource Area
Agriculture
Government/Special Public
Recreation/Open Space
Salton Sea
Urban Area
Study Area
0
2
4
Miles
SOURCE: Imperial County



BASELINE REPORT
FIGURE 2-4, Existing SCAG Land Use

Agriculture

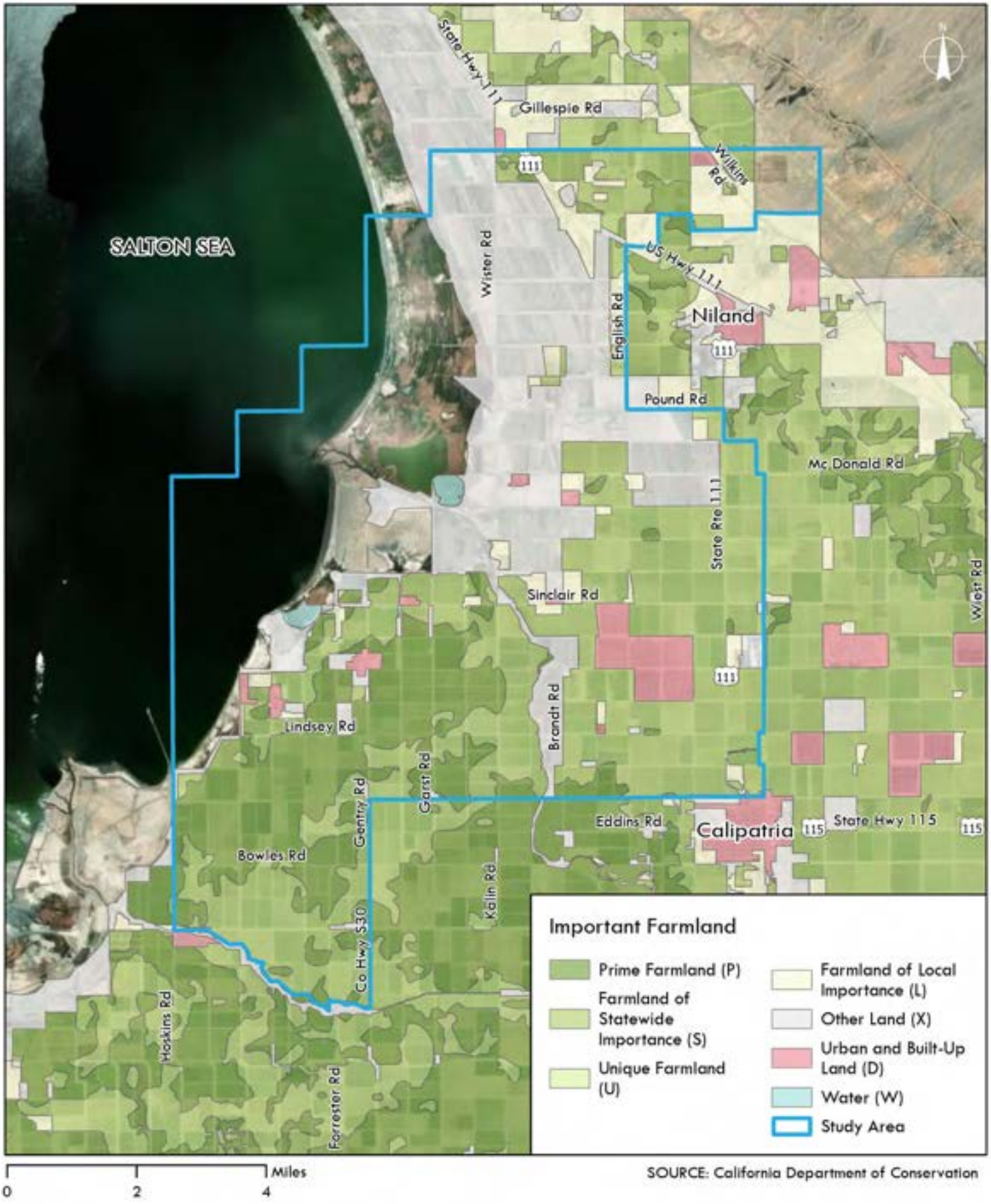
The Study Area consists primarily of agricultural land uses, with nearly 32,000 acres dedicated to sustaining existing crop production. This category is intended to preserve lands for agricultural production and related industries including aquaculture, ranging from light to heavy agriculture. Packing and processing of agricultural products may also be allowed in certain areas, and other uses necessary or supportive of agriculture. Agriculture includes most of the central irrigated area known as the Imperial Valley, the Bard/Winterhaven Valley and the south end of the Palo Verde Valley. Where this designation is applied, agriculture shall be promoted as the principal and dominant use to which all other uses shall be subordinate.

The Farmland Mapping and Monitoring Program (FMMP) identifies, maps, and monitors important farmland in California. Important farmland has the soil quality, growing season, and moisture supply needed to produce high yields and sustain long term agricultural production. The FMMP aims to preserve agricultural land by providing accurate information about its location, extent, and land use. Imperial County is considered one of the most productive agricultural areas in the world. As shown in Figure 2-5, Important Farmland, the southwestern portion of the Study Area contains the most Prime Farmland. The County's Office of the Agricultural Commissioner maintains a record of the estimated acreage, yield, and gross value of Imperial County's agricultural production for 2021 through the 2021 Agricultural Crop & Livestock Report. As shown in Table 2-4, Imperial County 2019 Agricultural Production Summary, Imperial County's gross production was valued at $2,287,312,000, increasing by $260,885,000 (12.9%) compared to the 2020 gross value of $2,026,427,000. In 2021, total harvested acres increased by 44,590, up 9.09% from 2020. Notably, fruit and nut crops gross value dropped by 20% from 2018 to 2019.

Table 2-4, Imperial County 2019 Agricultural Production Summary

Category	Harvested Acres		Changes in Harvested Acres	Changes in Gross Value		Changes in Gross Value
	2018	2019		2018	2019	
Livestock				$490,633,000	$527,490,000	7.5%
Field Crops	331,173	348,5.53	5.25%	$444,693,000	$522,502,000	17.5%
Vegetable & Melon Crops	104,235	125,623	20.52%	$895,978,000	$1,039,092,000	16%
Fruit & Nut Crops	10,844	10,655	-1.74%	$94,574,000	$75,573,000	-20.1%
Seed & Nursery Products	48,427	54,798	13.16%	$95,330,000	$117,650,000	23.4%
Apiary Products	-	-	-	$5,219,000	$5,005,000	-4.1%
Total	**494,679**	**539,629**	**9.09%**	**$2.,026,427,000**	**$2,287,312,000**	**12.9%**

Source: Imperial County 2021 Agricultural Crop & Livestock Report



BASELINE REPORT
FIGURE 2-5, Important Farmland

As shown in Table 2-5, Top Ten Ranked Crops in Study Area, alfalfa remained ranked as the #1 commodity in Imperial County, while increasing market prices increased the value of several top ranked crops in 2021 (Imperial Irrigation District, 2022).

Table 2-5, Top Ten Ranked Crops in Study Area

2021 Rank	2020 Rank	Crop Type	Crop Description	Acres	%
1	1	Field	Alfalfa (All)	147,405	31.8%
2	2	Field	Bermudagrass (All)	74,737	16.1%
3	3	Field	Sudangrass (All)	39,406	8.5%
4	4	Garden	Lettuce (All)	25,279	5.5%
5	5	Field	Sugarbeets	25,212	5.4%
6	6	Field	Kleingrass	19,691	4.2%
7	9	Field	Wheat	16,599	3.6%
8	8	Garden	Onions (All)	14,326	3.1%
9	7	Garden	Carrots (All)	12,988	2.9%
10	11	Permanent	Duck Ponds	9,888	2.1%

Source: Imperial Irrigation District Water Department 2021 Crop Rank and Acreage

Residential in Agricultural Land Use Designations

A variety of existing residential uses occur within a small portion of the agriculture land use designation within the Study Area, consisting of approximately 650 acres in the Northern area of the boundary. Proximity between agricultural and residential land uses initiates the potential for conflict between residents and agricultural operators. The County intends to designate future land uses to ensure compatibility and reduce the opportunity for conflict.

According to the County General Plan, residential development standards under the agricultural land use category are as follows:

- Very-low density residential land uses with not more than 1 single family dwelling unit per 40 acres or per legal parcel.
- Land shall not be subdivided for residential development.
- Agricultural employee housing may be permitted with a Conditional Use Permit and environmental review to determine that continued agricultural use will not be adversely impacted.
- Building height maximum of 35 feet.

In A-1 (Limited Agriculture) zones within urban boundaries, A-2 (General Agricultural/Rural Zone), and M-1 (Light Industrial) zones, regulations allow for employee housing. However, it's essential for property owners and developers to comply with specific zoning regulations and permitting requirements outlined by local authorities to ensure lawful construction and occupation of employee housing units.

Through observing aerial imagery and existing residential land uses of the Study Area, there are several parcels which were designated for Mobile Homes and Trailer Parks, Rural Residential, or Single-Family Residential land uses which were never developed. Of the 650 acres of land designated for Mobile Homes and Trailer Parks, Rural Residential, or Single-Family Residential land uses, only 13 acres of land reflect their intended land use designation.

Salton Sea (Water)

The Salton Sea is excluded from the Imperial County General Plan land use map, however the Salton Sea boundary is outlined on General Plan Land Use map. For the purposes of documenting the existing uses in the Study Area, a Salton Sea designation is applied to that area. The Study Area's Northwestern boundary holds approximately 13,200 acres designated as a "Salton Sea" land use classification.

Government/Special Public

This General Plan land use designation indicates lands generally owned by public agencies which are presently, and for the foreseeable future, used for a specific governmental purpose. This designation includes military bases, schools or school related facilities and public parkland and may also be applied to airports, sewer and water facilities, cemeteries, and public utilities and facilities.

Recreation/Open Space

The Recreation/Open Space General Plan land use designation recognizes the unique recreational character of Imperial County and includes desert, mountain, and waterfront areas with the potential for development as public or private parks and recreation facilities in appropriate areas. Areas designated for Recreation/Open Space are characterized by a low intensity of human utilization and include mountain areas, sand dunes, desert lands and other open lands that are essentially unimproved and not predominantly used for agriculture. The majority of the land in this category is public land administered by the U.S. Bureau of Land Management (BLM) and owned by either BLM or the U.S. Bureau of Reclamation.

Approximately 2,000 acres within the Study Area are designated as Open Space and Recreation. The Sonny Bono Salton Sea National Wildlife Refuge provides recreational opportunities for viewing the unique landscape and diverse wildlife. As this area remains protected through the U.S. Fish and Wildlife Service and State land ownership, nearby land use development and the effects on terrestrial habitat are critical considerations for plans to develop the area.

Urban Area

The Urban Area General Plan land use designation on the Land Use Plan includes areas surrounding the seven incorporated cities; Brawley, El Centro, Westmorland, Holtville, Calipatria, Imperial and Calexico. Urban Areas also include the unincorporated communities of Niland, Heber, Seeley, Winterhaven, Ocotillo, Bombay Beach, Palo Verde and West Shores/Salton City. These areas are characterized by a full level of urban services, in particular public water and sewer systems, and contain or propose a broad range of residential, commercial, and industrial uses (Imperial County, 1993).

According to the Southern California Association of Governments (SCAG), approximately 1,600 acres within the Specific Study Area are designated for the Transportation, Communications and Utilities land uses, which currently accommodate fifteen geothermal power plants and five solar projects. The Renewable Energy and Transmission Element designates several locations throughout Imperial County as a Known Geothermal Resource Area (KGRA). Of the 51,786 acres within the Study Area, nearly 42,750 acres are considered to comprise a KGRA. Solar development comprises approximately 1,900 acres within the Study Area. Imperial County designated land uses from Transportation, Communications and Utilities to agriculture in their General Plan.

As reported by SCAG, approximately 315 acres of land within the Study Area are designated for industrial and commercial land uses. Farming activities, small manufacturing sites and office related activities represent the small portion of the Study Area's existing land use. All existing industrial and commercial land uses within the Study Area were previously operating under the agriculture land use according to the County General Plan.

Vacant

"Vacant" is not an Imperial County General Plan land use designation, however, it is a land use used by SCAG. As shown in Figure 2-4, Existing SCAG Land Use, here are several vacant and/or underutilized parcels within the Study Area identified by SCAG. Approximately 1,600 acres of land within the Study Area are currently designated as vacant.

Under the County General Plan land use map, the existing vacant parcels are mainly designated for future agricultural land uses. One vacant land parcel near the southeastern border of the Salton Sea was designated under Recreational land use under the County General Plan. Upon initial observation of aerial imagery and existing land use parcel designations, vacant areas are mostly undeveloped, or demonstrate characteristics of previous agricultural land developments.

Renewable Energy/Geothermal Overlay Zones

As shown in Figure 2-3, Existing General Plan Land Use, the Study Area includes areas designated with the Geothermal or Renewable Energy/Geothermal Overlay Zones. Imperial County has designated a Renewable Energy/Geothermal overlay zone over approximately 131,650 acres throughout the County. The Imperial County General Plan included a Renewable Energy and Transmission Element to provide a comprehensive policy document that contains the latest knowledge about the resource, workable development technology, legal requirements, policy (County, State, and Federal), and implementation measures (Imperial County, 2015). The Renewable Energy/Geothermal Overlays were intended to direct the locations of new renewable energy facilities to areas in Imperial County that minimize overall environmental impacts.

2.2. CONSTRAINTS

The Study Area presents a unique economic and social investment opportunity for Imperial County. However, there are specific constraints identified regarding existing and future land uses and compatibility with renewable energy land use designations.

- The agriculture land uses within the Study Area are enforced through the County "Right to Farm" ordinance, in which the compatibility of agricultural operations and proposed uses should be examined.
- Several existing land use designations were not realized for development. Actual land uses must be identified prior to proposing plans for development.
- The City of Calipatria has a parcel of land annexed within the Study Area, and the City's Sphere of Influence (SOI) also contributes to land within the southeastern corner of the Study Area.
    - The City of Calipatria's 2035 General Plan provides recommended land use designations for parcels within their municipal boundary. Any future developments must be designed in compliance with land use compatibility standards.
- The County Airport Land Use Compatibility (ALUC) Plan is applicable to certain land parcels within the Study Area due to their vicinity to the Calipatria Municipal Airport. Building development standards for the applicable ALUC zones must be followed to ensure compliance with the Airport Land Use Commission regulations.
- Lack of residential development and necessary utility infrastructure can impede potential workforce development efforts. Current development standards in the nearest urban areas can prevent the introduction of high-occupancy residential accommodations.
- The Study Area's proximity to the Salton Sea and associated public health impacts due to pollution, affect the potential for residential development. Air and water pollution can impact the health and wellbeing of communities and ecosystems which support agricultural activity.
- State and federal surface management agencies overseeing land within the Study Area dictate land use development restrictions and limitations in certain areas.
- Environmental regulations for Endangered and Threatened Species present in and near the Study Area enforce requirements for development and permitting.
- Clean Water Act requirements may constrain development by requiring compliance with standards for stormwater management and wastewater discharge, potentially increasing costs and limiting certain types of land use. Adherence to Clean Water Act provisions may necessitate thorough environmental assessments and mitigation measures, influencing the planning and execution of development projects within the designated area.
- State and federally managed recreation areas and wildlife refuges within the Study Area are subject to preservation requirements related to natural and scenic resources.
- The County General Plan and Land Use Element outlines the physical land use planning compatibility criteria for development. Maintaining compatibility between adjacent land uses and ensuring compliance with zoning regulations will be a necessary consideration for land use policy changes.

- The existing Renewable Energy/Geothermal Overlay Zone does not cover the entire Study Area, therefore applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone.

2.3. OPPORTUNITIES

Listed below are the land use opportunities identified within the 51,768-acre Study Area to support future renewable development and supportive uses:

- Nearly 42,750 acres of the 51,768-acre Study Area is a Known Geothermal Resource Area which will support site selection for potential renewable energy extraction facilities.
- Existing County land use and zoning development standards support the transition from agriculture to renewable land use designations.
- Support existing residential land uses and encourage expansion of housing developments through designating compatible land uses adjacent to the cities of Niland and Calipatria.
- Follow zoning compliance requirements and land use designations to ensure compatibility and reduce conflict.
- Evaluate and enforce Development Impact Fees to be issued to contribute to recreation and conservation efforts.
- Occupy vacant parcels with necessary developments to support renewable energy, workforce development or recreational interests.

2.4. RECOMMENDATIONS

Upon evaluation of the constraints and opportunities regarding land use, the following recommendations have been identified for the Study Area.

- In the Specific Plan, consider expanding the RE Overlay Zone or using another mechanism to eliminate Conditional Use Permits for specific types of renewable energy development.
- It is in the County's best interest to support and expand agricultural operations to continue driving development and economic viability while expanding the renewable energy industry in the Study Area. The continued support of agricultural operations will require maintaining compatibility with agricultural land uses and ensuring that any development projects will not impede them. Strengthening the local economy through continued agricultural activity will encourage development and ensure retention of industrial business in the Study Area.
- Future growth of the workforce population may put pressure on residential development in communities surrounding the Study Area. Since there are no significant planned residential land uses designated by the County General Plan within the Study Area, collaboration between the County, municipalities, and service districts will support residential development to accommodate for population growth. Consideration of applicable city general plans, service area plans, specific plans and spheres of influence will reduce conflict and better inform project stakeholders to understand the full picture of the Study Area. In

addition, the land which is owned by the City of Calipatria within the Study Area, will require additional evaluation to ensure compatibility with the City of Calipatria 2035 General Plan.

- The Sonny Bono Salton Sea National Wildlife Refuge areas are located within the Study Area and are significant landmarks for biological resources within the County. These areas are owned and managed by state or federal agencies and are subject to higher levels of protection due to ownership. These areas within the Study Area should be met with the consideration of existing, planned and future land use designations by their associated owners.
- Maintaining compliance in the B1 and C ALUC Zones located within the Study Area will require adherence to the building development standards outlined in the Imperial County Airport Land Use Compatibility Plan. Cooperation with the Airport Land Use Commission can be best achieved through their participation in the creation of development plans and implementation of projects. The County is intending on updating the ALUC plan in the near future.
- Overall, it is recognized that the Study Area demonstrates promise for the renewable energy industry to expand its presence in Imperial Valley. Innovative land use policy implementation and coordination between stakeholder agencies will be necessary for the successful development of renewable energy resource generation in the Study Area.

3. Market Conditions

3.1. EXISTING CONDITIONS

This section outlines the existing economic picture for Imperial County and the potential for various renewable energy and related manufacturing industries, based upon global and national trends, including:

- Existing Economic Framework
- Lithium Extraction
- Battery Production
- Solar and Wind Renewable Power
- Geothermal Energy Development

The section concludes with a discussion of potential Constraints and Opportunities facing the Salton Sea area and the development of these industries over the next decade.

3.1.1. Existing Economic Framework

According to the Centers of Excellence for Labor Market Research (COE), Imperial County had a population of 177,936 and a total of 70,389 jobs in 2020 (Table 3-1, Total Employment 2020-2030). The COE projects that employment in the county will grow by nearly 5,500 positions during the decade of the 2020s to a total of nearly 76,000 positions in 2030, representing a total growth of 8 percent for the ten-year period. In comparison, the COE projects that total employment in San

Diego County will grow by 6 percent during the decade and employment for California will grow by 7 percent.

Table 3-1, Total Employment 2020 -2030

	Jobs, 2020	Jobs, 2030	Jobs Change, 2020 – 2030	Projected % Change
Imperial County	70,389	75,854	5,465	8%
San Diego County	1,743,087	1,840,067	96,980	6%
California	19,831,760	21,212,782	1,381,022	7%

Source: Imperial County Regional Profile, Centers of Excellence for Labor Market Research, July 2021

Table 3-2, Imperial County Employment by Industry Section, 2020-2030, details projections for changes in employment in Imperial County between 2020 and 2030, by industry sector. Projections included in Table 3-2 do not include employment that may be introduced as a result of the Lithium Valley Specific Plan and PEIR.

Table 3-2, Imperial County Employment by Industry Sector, 2020 - 2030

	Jobs, 2020	Jobs, 2030	Projected % Change
Government	19,210	20,334	6%
Agriculture, Forestry, Fishing & Hunting	11,232	9,956	-11%
Health Care & Social Assistance	9,858	13,540	37%
Retail Trade	8,129	8,552	5%
Accommodation & Food Services	4,050	4,393	8%
Administrative & Support & Waste Management/Remediation Services	2,662	3,100	16%
Construction	2,458	2,628	7%
Transportation & Warehousing	2,239	2,238	0%
Other Services (except Public Administration	2,072	2,001	-3%
Wholesale Trade	1,900	1,826	-4%
Manufacturing	1,863	2,406	29%
Professional, Scientific, & Technical Services	1,184	1,246	5%
Finance & Insurance	881	877	0%

Real Estate & Rental/Leasing	621	584	-6%
Educational Services	515	567	10%
Utilities	458	445	-3%
Mining[2], Quarrying, and Oil & Gas Extraction	376	600	59%
Information	283	274	-3%
Arts, Entertainment, & Recreation	245	254	4%
Management of Companies & Enterprises	151	34	-78%

Source: Imperial County Regional Profile, Centers of Excellence for Labor Market Research, July 2021

Government represents the largest industry sector for employment, and this sector is projected to grow by 6 percent during the decade. COE projects that the second largest sector, Agriculture, Forestry, Fishing, and Hunting, will decline in employment by 11 percent between 2020 and 2030. Health Care and Social Assistance will represent one of the fastest growing industry sectors, with growth in employment of 37 percent during the decade, along with Mining, Quarrying, and Oil and Gas Extraction (59 percent growth) and Manufacturing, with 29 percent growth in employment. As outlined in Table 3-2, most of the other industry sectors will remain fairly steady in terms of employment between 2020 and 2030. The COE does not have an industry sector for Renewable Energy tracked for employment. However, the categories for Manufacturing and Professional, Scientific and Technical Services, which would likely see the most changes to employment spurred by renewable energy industries, are projected to grow by 29 percent and 5 percent, respectively, during the decade.

The COE estimates that the average earnings in 2020 in Imperial County were $56,020, which is well below the national average of $70,917, and the California average of $78,672.

3.1.2. Lithium Extraction

Significant growth over the last several years and anticipated growth of the electric vehicle market has driven an incredible increase in demand for lithium as a component for batteries to power vehicles, as well as other devices, worldwide. Major automakers have pledged to convert significant portions of their fleets to electric vehicle production over the next 10 to 15 years, and many governments, including the United States, have passed sweeping programs providing significant incentives for the growth of the electric vehicle and related markets. This evolving landscape creates significant demand for potential lithium extraction from the Salton Sea vicinity.

Lithium is used to produce virtually all traction batteries used in electric vehicles worldwide as well as consumer electronics, and lithium-ion batteries are used for other applications ranging from energy storage to air freight. Demand for lithium for devices other than electric vehicles may further accelerate demand for lithium resources across the globe over the next decade. Amazingly, just

[2] Does not include lithium recovery operations.

seven years ago, in 2015, batteries accounted for only 30 percent of demand for lithium worldwide, with lithium used for the production of ceramics and glasses, greases, metallurgical powders, polymers, and other industrial uses. By 2030, given current trends, demand for lithium for batteries will account for around 95 percent of the total demand for lithium.

Fueled by the needs of electric car manufacturers, demand for lithium will accelerate in a "hockey stick" pattern of demand growth between now and 2030. Lithium demand globally is projected to increase from around 500,000 metric tons of lithium carbonate equivalent (LCE) in 2021 to 3 to 4 million metric tons in 2030. Analysts expect revenues from the lithium sector to register a compound annual growth rate (CAGR) of 6.8 percent through 2030. However, analysis by consultancy McKinsey and Company estimates that supply will grow commensurately with the growth of demand, with the supply of conventional lithium expanding by over 300 percent between 2021 and 2030. Lithium resulting from direct lithium extraction (DLE) and direct lithium to product (LDP) processes will help the industry provide for the projected acceleration in demand over the next decade (McKinsey & Company 2022).

Lithium production facilities are currently limited in the U.S., however, plans for additional lithium mining operations in Nevada, Tennessee, and North Carolina have been unveiled. Other North American lithium mining projects include Sonora, Mexico and Manitoba and Quebec, Canada. Industry analysts anticipate that lithium production in North America may increase from 1 percent of the global lithium supply now to over 10 percent of the global market within 10 years. South America and Australia also anticipate significant increases in lithium production to serve the market. National security concerns have also stimulated interest in lithium production in the U.S. and other countries, as many countries have concerns that China could direct its significant lithium resources to its own industries in the event of tighter supply. The need to support domestic industries with reliable sources of lithium was a major driver behind passage of government initiatives in the U.S. in 2022 geared to spur domestic production related to renewable and clean energy.

Lithium prices have skyrocketed by around 550 percent in a year and by March 2022 the lithium carbonate price had exceeded $75,000 per metric ton, compared to the five-year average of $14,500 per metric ton.

While industry analysts expect the supply of lithium to grow to match the acceleration of demand over the near term, the world may require additional capacity by 2030. Direct lithium extraction involving geothermal operations, such as types of operations planned in the Salton Sea area, can help fulfill gaps in the lithium supply over the next several years. DLE technology provides a number of benefits, compared to traditional methods of lithium extraction (such as hard rock mining), including: elimination or reducing the footprint of evaporation ponds; decreasing production times compared with conventional brine operations; increasing the recovery rate for lithium resources from 40 percent to over 80 percent; lowering the use of fresh water in the extraction process; and lowering the usage of reagents and increasing product purity compared with conventional brine operations. Other potential sources for additional lithium resources include direct lithium to product (DLP) technology, direct shipping ore (DSO), and the reuse and recycling of lithium-ion batteries. The recycling of batteries can recover up to 80 percent of the lithium contained in batteries at the end of their useful lives. The recycling of batteries is projected to account for around 6 percent of the world's lithium supply by 2030 (McKinsey & Company 2022a). Only one lithium battery

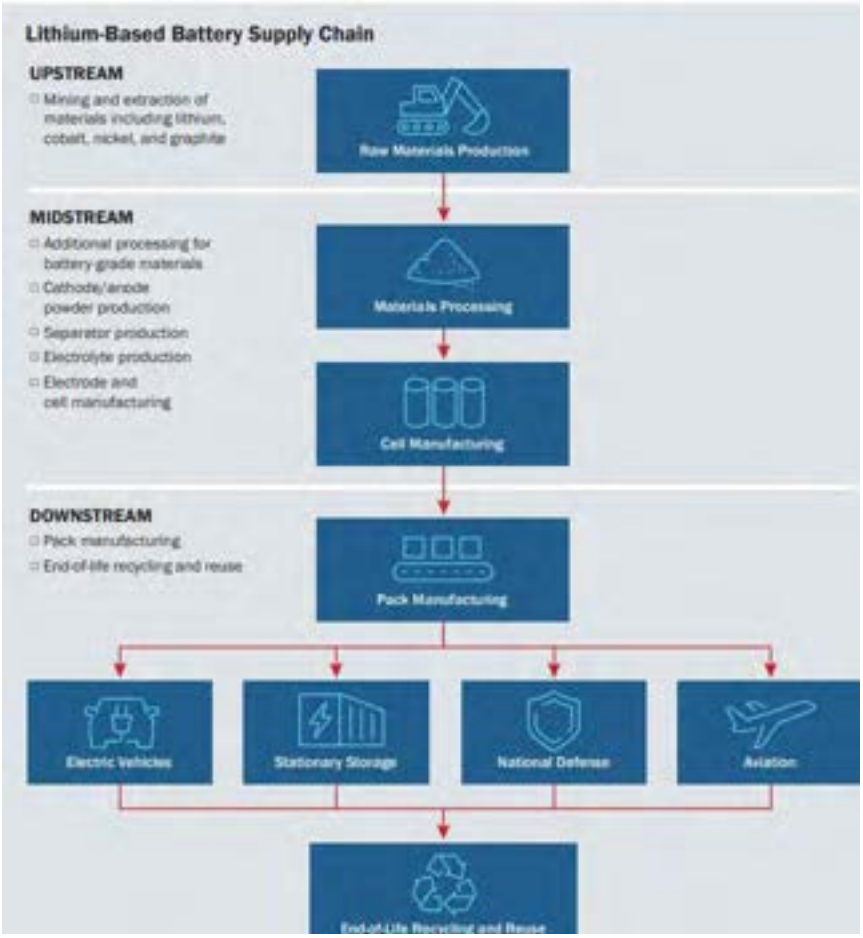
recycling facility currently operates in the U.S., in Lancaster, OH, but additional recycling facilities will likely emerge in the coming years.

To meet projected demands for lithium by 2030, the industry will need to expand operations into new areas of the world. In 2021, three countries (Australia, Chile, and China) accounted for over 90 percent of all lithium mining, and expansion of lithium recovery operations in the United States and other countries will help the worldwide effort to provide lithium for the move to electric transportation and other uses. The industry will also require ongoing investment in research and development to perfect alternative methods of obtaining lithium. Manufacturers of products requiring lithium batteries will also need to communicate with lithium suppliers concerning their needs from year to year to ensure a seamless supply of materials.

Various agencies and companies have continued to explore and refine processes to allow for the extraction of lithium from the area around the Salton Sea through geothermal energy operations. This process allows for the extraction of lithium in a much less invasive manner, compared to open-pit mining or the use of evaporation ponds, the processes used to date around the world to obtain lithium sources. The California Energy Commission (CEC) estimates that the lithium deposits in the Salton Sea KGRA is believed to have the highest concentration of lithium contained in geothermal brines in the world (CEC 2022).

Lithium-Based Battery Supply Chain

The mining and extraction of lithium (as well as materials including lithium, cobalt, nickel, and graphite) represent the first stage in the supply chain surrounding lithium-based batteries. The following provides a breakdown of the stages in this supply chain. The Salton Sea area could gain economic development from all these stages of the supply chain shown in the graphic below.



Source: Draft Report of the Blue Ribbon Commission on Lithium Extraction in California. Lithium Valley Commission, September 2022.

3.1.3. Battery Production

Given its proximity to the potential extraction of lithium resources from the areas around the Salton Sea, the Imperial Valley has potential to develop battery manufacturing operations in the local area.

Bloomberg projects worldwide sales of electric vehicles (EVs) to increase from less than 5 million vehicles in 2020 to 56 million passenger EVs in 2040, of which 17 percent, or around 9.6 million EVs, will operate in the U.S. market. Capturing the market for lithium-ion batteries needed for EVs is imperative for the domestic automobile industry to maintain reliable and efficient supply chains. EVs are a key component of the demand for lithium-ion batteries and represent the primary need for domestic battery production facilities. The capacity of EV lithium-ion cell manufacturing for EVs in the U.S. is projected to grow from 59 GWh in 2020 to 224 GWh in 2025. However, the demand for lithium batteries in the U.S. is expected to far exceed this capacity in 2025, and therefore demand is present for the development of additional battery production facilities (Federal Consortium for Advanced Batteries 2021).

Industry analysts indicate that the market for battery cells will grow on average, by more than 20 percent annually through 2030, reaching a market of at least $360 billion by 2030. The typical battery cell factory designed to produce batteries for EVs, and other uses is referred to as a "gigafactory". The consultancy McKinsey and Company estimates that if the market for battery cells increases by a higher rate of 30 percent per year, an additional 90 gigafactories will be needed in

the next ten years worldwide to provide sufficient demand. Several new battery cell plants have been announced in the U.S. during 2022, and several more may emerge over the next few years to provide sufficient supply for EV manufacturers and other end users.

Several factors influence the degree of success of a battery cell manufacturing operation, including access to lithium supplies, the ability to recruit skilled workers, the ability to increase product quality and longevity, and the ability to gain efficiencies as lessons are learned from previous battery cell manufacturing operations. Successful battery cell operations also will secure partnerships and strong relationships with customers, including EV manufacturers and other users. McKinsey estimates that a typical new battery manufacturing plant with a total capacity of 30 to 40 gigawatt hours (GWh) per year could directly create as many as 3,200 jobs.

In addition to demand generated from EVs, lithium battery demand may also increase due to demands from the stationary storage market, the aviation market, and national defense markets.

3.1.4. Solar and Wind Renewable Power

The solar and wind renewable market has grown significantly over the last ten years and will continue to grow as a share of total renewable energy capacity over the next several years. Solar and wind electricity together represented only 1.7 percent of global electricity generation in 2010 but grew to 8.7 percent of total global generation in 2020. Wind and solar, combined, fulfilled 10 percent of global electricity demand for the first time in 2022. Wind and solar accounted for three quarters of new power generation capacity added worldwide in 2021.[3] Renewable sources, overall, met 100 percent of the rise in global electricity demand in the first half of 2022. The increased use of wind and solar power in the U.S. in 2022 decreased the annual rise in fossil fuel-related power generation from 7 percent to just 1 percent (Electrek 2022a). The growth of solar and wind between 2010 and 2020 was exponential in nature, with the market share of solar and wind in global electricity generation growing at a compound average annual growth rate of 15 percent from 2015 to 2020, due to greater economies of scale and the development of competitive supply chains over time (World Resources Institute 2021). As costs for solar and wind decreased during this period, adoption of solar and wind in turn accelerated, further spurring increased efficiency and build-out of solar and wind infrastructure globally. Between 2010 and 2020, the cost of installing solar capacity decreased by 34 percent (World Resources Institute 2021). In addition to expansions of solar and wind power resulting from increased efficiencies, social factors have favored the ongoing expansion of these forms of renewable power. Research has shown, for example, that when a household in a given neighborhood installs rooftop solar facilities, other neighbors see it, talk about it, and are more likely to install rooftop solar on their own homes. Increases in renewable energy tax credits, subsidies, and other incentives also drove the growth in solar and wind renewable energy during the 2010s. Renewable energy, led by wind and solar, is projected to become the backbone of the world's power supply. New players are entering the market, including oil and gas companies looking to capitalize on the shift to renewable power, private equity and institutional investors, and various manufacturing companies.

McKinsey, a global consultancy, projects that global renewable electricity capacity will rise more than 80 percent from 2020 levels to more than 5,022 gigawatts annually (McKinsey & Company

[3] "Wind, solar fulfill 10% of global electricity demand for first time", *The Register*, September 29, 2022.

2022b). Wind and solar will represent two-thirds of the projected growth in renewable power globally, and renewable energy will generate 60 percent of the world's electricity by 2035. The International Energy Agency (IEA) expects concerns over energy security, spurred by the war in Ukraine, and concerns over climate change will result in a record quantity of new capacity generated through renewable power in 2022. However, in the near term, the IEA anticipates that the growth of renewable energy may plateau during 2023 due to elevated commodity prices for inputs used in wind and solar energy production and increases in freight prices (World Economic Forum 2022).

Several factors influence success in executing solar and wind projects, including the following:

- Securing access to necessary land to conduct operations and finding attractive buyers to offload energy as governments potentially decrease incentives for renewables over time. Potential alternative types of buyers for renewable energy may include data centers or larger industrial operations located closer to the source of renewable energy generation than population centers.
- Expanding efficiencies and economies of scale over time. Successful operators develop efficient operating models by finding employees with the proper mix of technical skills, for example.
- The ability to shift operations as market conditions change. This ability allows solar and wind operators to respond to changes in regulatory landscapes and volatility in the prices paid for renewable energy.

The following presents potential challenges to the solar and wind industry growth over time:

- A scarcity of quality lands available for solar or wind projects. Various regulatory, environmental, and technical constraints limit the quantity of land available for these ventures. McKinsey analyzed Germany and found that of the 51 percent of the country's land that is potentially suitable for wind farms, these various constraints eliminate all but 9 percent of the potential land area for solar and wind operations. Opposition to wind or solar farms from neighbors and regulations from counties and cities pose hurdles to securing land areas for solar and wind operations.
- Labor shortages, of both skilled and unskilled workers. Renewable energy requires particular types of technical expertise, including that of engineers, electricians, and other specialists. McKinsey estimates that the global renewables industry will require an additional 1.1 million blue collar workers to develop and construct wind and solar plants between 2022 and 2030 and another 1.7 million to operate and maintain them (McKinsey & Company 2022b).
- Supply chain pressures. These include rising costs of steel and other inputs, manufacturing disruptions, and transportation blockages that have arisen over the last two years and have affected a wide range of industries, including and beyond renewable energy. Some of the raw materials needed for solar and wind may be in short supply in the coming years, including nickel, copper, silver, aluminum, and lithium (Gielen 2021).

- Pressure on prices and profits. The profitability of solar and wind operations may drop over time as governments taper off incentive programs and as new entrants begin operations in the market.

Solar and Wind Renewable Energy in California

California has historically offered significant incentives to users to install and use solar power and other renewable energy. In addition, the State has a mandated target of 100 percent clean electricity generation by 2045, and in April 2022, for the first time, reached an important milestone, in that renewable sources produced 100 percent of the electricity needed in California (on a particular day) (Electrek 2022b). While the percentage of electricity generated from renewables varies with atmospheric conditions for solar and wind generation, the state anticipates reaching the 100 percent threshold more regularly going forward.

California ranks first in the nation in installed solar capacity and has sufficient solar facilities installed to power over 10.5 million homes, with solar representing around 27 percent of the state's electricity generation on average. A total of over 75,000 jobs in California are associated with the solar industry and the industry includes over 2,300 companies operating in the State, including manufacturers, installers or developers, and other entities. California ranks second nationally in its projected growth in solar energy production over the next five years. As the market has continued to grow, the prices for solar power have decreased by 52 percent over the last ten years (SEIA). Beginning in 2020, all new homes built in California were required to have solar power capabilities. Notable solar installations completed in the State the last few years include the Mount Signal Solar Farm, developed from 2018 to 2020 in Calexico, which provides enough electricity to power over 146,000 homes, and the 325-Megawatt Aquamarine project in Lemoore (Kings County, in the Central Valley), completed in 2021, which provides enough electricity for over 90,000 homes.

A policy known as "net metering", in which power companies were required to compensate solar-powered homes and businesses for solar energy they contribute to the grid at retail rates, contributed to the rapid growth of the solar industry in California over the last ten years. However, the state's Public Utilities Commission sharply reduced these incentive payments in December 2022, indicating that the program had contributed to higher electric bills for households that don't have rooftop solar panels, including low-income families that can't afford them (Los Angeles Times 2022). Power companies will now compensate customers with solar power contributed to the grid at varying rates depending on electricity demand and varying by the time of day and the time of year. Average compensation to customers with solar power will decrease substantially. Many advocates in the renewable energy field have raised concerns that the change in the incentive program for solar energy will result in reduced installations of solar power panels on existing homes and businesses across California.

In 2021, wind energy generated within California totaled 15,173 gigawatt-hours (GWh) or 7.8 percent of California's in-state generation portfolio. Wind energy power plants generating in California during at least part of the year had a total capacity of 6,281 megawatts. This represents enough electricity to power about 2.3 million California households. Wind energy plants stretch from Imperial County in southern California to Shasta County in far northern California.

The State also imports electricity generated from out-of-state wind sources. The combined portfolio of wind-generated electricity (in-state, and out-of-state) provides more than enough power for all the homes in Sacramento, San Francisco, and Los Angeles counties combined (CalWEA). The wind industry has continued to explore the potential to expand offshore wind energy production facilities, given the availability of wind off the Pacific coast and the proximity to large population centers seeking out sustainable energy sources.

3.1.5. Geothermal Energy Development

The Salton Sea provides a prime location for additional development of new geothermal resources. The geothermal resources under the area are robust and well-mapped. The area around the Salton Sea contains a Known Geothermal Resource Area (KGRA) that has only been partially developed and is located near major metropolitan areas (Los Angeles and San Diego). Geothermal development is also attractive given the political support for renewable energy expansion in California. However, most of the geothermal plants in the Salton Sea area date to the 1980s. While the area has significant untapped geothermal resources, only limited development has occurred over the last few decades (PNNL 2022). The Salton Sea KGRA currently supports a combined output of approximately 400 megawatts (MW) of electricity, which is a fraction of the Salton Sea KGRA estimated capacity of over 2,500 MW (Kaspereit et al., 2016). It is expected that geothermal power production in the SS-KGRA will increase by a net output of 357 MW over the next 3-5 years (Dobson et. al 2023). Extraction of other critical metals beyond lithium, such as manganese and zinc, can add to the revenue and tax streams for geothermal. Market demands for geothermal energy development have increased in the last decade due to the global demand for lithium, a symbiotic biproduct of geothermal energy operations in the Salton Sea KGRA. In addition, unlike solar and wind, geothermal energy has the capability to provide reliable baseload power at all times and also has the flexibility to ramp up production when power demand is high.

Companies in the Salton Sea area have an opportunity to simultaneously harness geothermal energy for renewable electricity and to use the geothermal processes to extract lithium in a more environmentally sustainable manner, as discussed previously. A prototypical geothermal plant at the Salton Sea would produce 49 MW annually over a lifespan of 30 years. Capital expenditures associated with plant development would total over $171 million, with around $3.25 million in annual operating costs. The prototypical plant would require four years for exploration processes, four years for construction, and generate $3.5 million in annual property taxes. The plant would generate 8,350 tons of lithium per year through the geothermal process. State officials believe that geothermal plants that produce lithium as a byproduct can serve as a game changer for the area, generating millions in new tax revenue and a significant pool of new employment in the local area (PNNL 2022).

California has set a goal that at least 60 percent of its electricity must come from eligible renewable energy resources by 2030, and 100 percent by 2045 (Paz et al., 2022). Further, the California Public Utilities Commission has ordered utilities to procure 11,500 MW of new electricity from preferred resources, such as renewables and zero-emitting sources, by 2026 (Richter 2021).

One potential concern of geothermal energy interests is that the potential growth of battery energy storage systems may increase the value proposition of solar and wind power versus geothermal and would make solar and wind more attractive versus geothermal-generated energy.

The following steps would help to support additional development of geothermal energy projects in the Salton Sea area.

- Understanding and streamlining the permitting process and timeline.
- Acquiring water rights necessary to support geothermal energy operations.
- Ensuring that transmission systems have sufficient capacities to support geothermal energy projects
- Engaging the public, stakeholders, and state and federal governments throughout the approval and construction processes
- Targeting geothermal projects to align, in terms of co-location, with minerals development (i.e., lithium extraction) (PNNL 2022)

3.2. CONSTRAINTS

The following highlight potential constraints limiting the potential of the Salton Sea area to explore and capitalize on the various renewable energy and manufacturing opportunities.

- The development of battery manufacturing and various renewable energy resources will require the hiring of numerous engineering and specialized positions. Given the labor shortages present across the country across various industries, this factor poses a risk to the development of resource-oriented industries in the Salton Sea area.

- Operating a wider range of resource-based industries in the Salton Sea area will require adding employment across a range of technical fields. This may require bringing in workers from outside the local area and this in turn may create the need to generate additional affordably priced housing for this new workforce. If the local area is unable to create sufficient housing for workers or is otherwise unable to attract the necessary workforce, this would present significant constraints on industry expansion.

- Potential developers of battery manufacturing, solar, wind, and other natural resources may elect to develop in other states with less burdensome regulatory frameworks for permitting and approvals, compared to California. For example, several states with less regulation across the South and Midwest have attracted battery manufacturing facilities over the last year and many of these same states have offered significant incentives to attract these industries.

- Potential supply chain issues for raw materials and construction components could limit the potential growth of manufacturing and natural resource production across the Salton Sea area.

- Potential limits on water supplies, resulting from the megadrought across the West and potential curtailments of water allocations from the Colorado River basin to the state of California, could present issues in the development of geothermal projects across the Imperial Valley area.

3.3. OPPORTUNITIES

- The massive demand for additional lithium resources and the presence of the nation's largest potential deposits of lithium in the local area present a tremendous opportunity for new economic development in the Salton Sea vicinity.

- The development of lithium and related renewable energy resources has the potential to expand the breadth and quantity of development and employment, for a wide range of industries, across Imperial County. The growth of these industries should produce spin-off development, in terms of housing and various services to provide resources for the additional industries entering the local area.
- The resource-based economic development opportunities present significant opportunities for local educational institutions in the Imperial Valley to develop and tailor training programs for the needs of industry in the area. There are opportunities to retain young people with desired skills in the Imperial Valley after graduation from schooling or training programs.
- The presence of significant lithium resources at the Salton Sea makes the area attractive for the potential development of lithium battery manufacturing operations. As noted, the typical battery plant employs in excess of 3,000 people. Development of battery plants also has the potential to spur the development of other industries and operations in the area to provide the necessary supply chain to support battery manufacturing.
- Bring in sustainable jobs through maintenance agreements for those who helped construct the facilities to be responsible for long-term maintenance of new facilities.

3.4. RECOMMENDATIONS

To maximize the potential opportunities resulting from renewable energy and related types of development, the County of Imperial should pursue the following actions.

- Completion of formalized planning efforts with local educational institutions to identify the training programs necessary to provide an adequate workforce for the potential jobs created by renewable energy and related industries. The planning efforts should identify in greater detail the technical skills needed and identify how specific programs and classes will provide the necessary training.
- Consult with local schools and higher education to educate staff and students about the types of job opportunities being promised, as well as the skills and trainings needed for these jobs. Outreach with educational institutions can occur throughout the project process.
- Consider including policies and programs related to pre-apprenticeships, trainings, and certifications in Imperial County and Mexicali.
- Given the scale of potential operations spurred by renewable energy, the County should conduct a more detailed analysis of housing needed for potential workers. For example, an electric battery plant employing 3,000 people would clearly result in additional needs for housing. A more detailed housing analysis would help determine the types of housing and the price points needed to house the local workforce.
- The County should complete more detailed, and regionally coordinated, planning for transportation to serve emerging renewable energy industries. The studies should examine the rail and roadway capacities needed to connect industries in Imperial County to markets both domestically and internationally.

- The County should work with renewable energy industry representatives to identify the supply chains needed to serve various types of operations in the County and identify potential operators and their needs, as part of more detailed study.

4. Social Conditions

4.1. EXISTING CONDITIONS

This section provides an overview of demographic conditions in the Study Area and surrounding communities. This section also provides a summary of how the State defines environmental justice and how that definition applies to the Study Area. Constraints and opportunities included in this report related to environmental justice take into consideration the comments heard at various community engagement efforts. Community engagement is ongoing to fully understand the environmental justice issues within the Study Area and the ongoing public health concerns in nearby communities.

4.1.1. Applicable Regulations

California Government Code Section 65040.12

Government Code Section 65040.12(e) defines environmental justice as: "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

'Environmental justice' includes, but is not limited to, all of the following:

> (A) The availability of a healthy environment for all people.
>
> (B) The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities.
>
> (C) Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process.
>
> (D) At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions."

Senate Bill (SB) 1000

SB 1000 of 2016 was signed into law by Governor Brown to require local governments to identify environmental justice communities (called "disadvantaged communities") in their jurisdictions and address environmental justice in their general plans. SB 1000 requires local governments to address pollution and other hazards that disproportionately impact low-income communities and communities of color in their jurisdiction by identifying any "disadvantaged communities" within its Study Area.

SB 1000 defines "disadvantaged communities" as either:

1. An area identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code, or
2. An area that is low-income and disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.

i. Government Code Section 65302(h)

Government Code Section 65302(h), of SB 1000, defines disadvantaged communities as: "an area identified by the California Environmental Protection Agency pursuant to Section 39711 of the Health and Safety Code or an area that is a low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation."

Government Code Section 65302(h) also defines low-income areas" as: area with household incomes at or below 80 percent of the statewide median income or with household incomes at or below the threshold designated as low income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093.

California Health and Safety Code Section 39711

California Health and Safety Code Section 39711 states disadvantaged communities "shall be identified based on geographic, socioeconomic, public health, and environmental hazard criteria, and may include, but are not limited to, either of the following:

1. Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation.
2. Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.

b. The California Environmental Protection Agency shall hold at least one public workshop prior to the identification of disadvantaged communities pursuant to this section.

c. Chapter 3.5 (commencing with Section 11340) of the Part 1 of Division 3 of Title 2 of the Government Code does not apply to the identification of disadvantaged communities pursuant to this section."

Senate Bill (SB) 535

In 2012, SB 535 established initial requirements for minimum funding levels to Disadvantaged Communities (DACs). SB 535 gave CalEPA the responsibility for identifying disadvantaged communities stating that CalEPA's designation of disadvantaged communities must be based on "geographic, socioeconomic, public health, and environmental hazard criteria." SB535 designates 25% of funding purchased carbon credits from the cap and trade system towards disadvantaged communities, identified through CalEnviroScreen.

Assembly Bill (AB) 1550

In 2016, AB 1550 directed CalEPA to identify DACs and also established the currently applicable minimum funding levels:

- At least 25 percent of funds must be allocated toward DACs;
- At least 5 percent must be allocated toward projects within low-income communities or benefiting low-income households;
- At least 5 percent must be allocated toward projects within and benefiting low-income communities, or low-income households, that are outside of a CalEPA-defined DAC but within ½ mile of a disadvantaged community.

CalEnviroScreen 4.0

The California Communities Environmental Health Screening Tool ("CalEnviroScreen") is a data tool developed by CalEPA's Office of Environmental Health Hazard Assessment (OEHHA) pursuant to Health and Safety Code Section 39711 and other statutory requirements. CalEnviroScreen provides statewide data that can be used to identify communities disproportionately impacted by, or vulnerable to, environmental pollution and contaminants. The mapping tool contains 12 indicators related to pollution burden and 8 indicators that track population characteristics and other vulnerabilities. It is being used to identify disadvantaged communities in California pursuant to SB 535 and AB 1550 and Health and Safety Code Section 39711. CalEnviroscreen 4.0 maps disadvantaged communities that represent the 25% highest scoring census tracts in CalEnviroScreen 4.0, census tracts previously identified in the top 25% in CalEnviroScreen 3.0, census tracts with high amounts of pollution and low populations, and federally recognized tribal areas as identified by the Census in the 2021 American Indian Areas Related National Geodatabase (CalEPA 2021).

4.1.2. Demographics

The Study Area is mostly unincorporated, with small portions of neighboring city Calipatria occupying 165 acres of land within the boundary. As an unincorporated area, understanding demographics within the Study Area presents a unique circumstance for analysis as there are no existing boundaries for the Study Area alone to compare with neighboring cities. Due to this, our findings are based on comparison between demographics for nearby cities to an average of the census tracts which comprise the Study Area. Portions of Census Tracts 101.01 and 101.02 comprise the Study Area, as well as the neighboring unincorporated community of Niland and the incorporated city, Calipatria. Inclusion of ACS data from these census tracts demonstrate a more representative sample of demographics of the Study Area than consideration of neighboring incorporated cities alone.

This methodology was used to capture census data from areas outside of incorporated communities as well as within them. In cases where data from one census tract was not available, the existing demographic metrics for the other census tract represented the metrics for the census tracts. The US Census Bureau's American Community Survey (ACS) 2020 and 2019 5-Year Estimates were used for the calculation of the Census Tract 101.01 and 101. 02 averages. This report refers to the average of these two census tracts as the "Census Tract Study Area."

Demographic data included in this report originate from the U.S. Census Bureau American Community Survey (ACS) 2020 5-Year Estimates. Developed by the U.S. Census Bureau, the American Community Survey (ACS) is a national survey to provide information about social, economic, and demographic characteristics of the U.S. population. ACS 5-Year data is collected over a longer period than annually collected data, providing larger sample sizes and increased reliability for less populated areas and small population subgroups. All statistics in this report use the ACS 5-year data which includes data from the year of the report and data from the four previous years.

Population and Migration Trends

Based on the 2020 U.S. Census, Imperial County's (including incorporated areas) population was 179,702 residents, with 35,934 residents occupying the unincorporated areas within the County boundary. Imperial County has experienced a three percent increase in total population since 2000. Over the next 10 years, the population is expected to increase by 5,719 residents, or another three percent (San Diego-Imperial Center of Excellence for Labor Market Research, 2021). As shown in Table 4-1, Population Demographics, the Study Area and the surrounding cities of Calipatria and Westmorland have experienced a decrease in population, while Brawley and the County as a whole have experienced increases in population. Population density in Imperial County is approximately 43 persons per square mile, demonstrating the lowest ranking population density values in Southern California (U.S. Census Bureau, 2020).

Imperial County's population increased rapidly between 2007-2018, with most of the migration incoming from Riverside, San Diego and Los Angeles County. Riverside County is the main contributor to in-migration, while out-migration from Imperial County is primarily to the neighboring counties of Riverside, San Diego and Los Angeles (San Diego-Imperial Center of Excellence for Labor Market Research, 2021).

Migration patterns serve as an indicator for positive or negative changes in the economic, political, and social conditions of areas migrants immigrate or emigrate to. Housing costs, employment opportunities and provision of public services are a few examples of why people may immigrate to and from Imperial County.

As shown in Table 4-1, Between 2010 and 2020, Imperial County's population grew by 3%, growing from 174,528 to 179,702 people. The City of Brawley also grew by 6% nearly double the County's overall population change throughout 2010 and 2020. The City of Calipatria and the Census Tract Study Area's population declined by nearly 15%. The Census Tract Study Area's population was reduced from 9,608 to 8,237 people. According to the 2020 American Community Survey (ACS) 5-Year Estimates, approximately 3% of the County population, 5,749 people, are veterans. 30% of Imperial County and 26% of Brawley residents identified as foreign born persons, while in Calipatria and the Census Tract Study Area reported close to half of those approximations.

Calipatria State Prison reported an inmate population of approximately 2,800 incarcerated individuals as of December 2023. Census data for the City of Calipatria also accounts for the population of incarcerated individuals, which can distort the comparison of population statistics with neighboring communities. Considering the existing population within the correctional facility and how this may impact our understanding of demographic information and population dynamics is critical for establishing context in the Study Area and surrounding communities.

Table 4-1, Population Demographics and Characteristics

Population	County Estimate	Calipatria	Brawley	Westmorland	Census Tract Study Area
Population (Census 2020)	179,702	6,515	26,416	2,014	8,237
Population (Census 2010)	174,528	7,705	24,953	2,225	9,608
Population, percent change (Census 2010 – Census 2020)	3.0%	-15.4%	5.9%	-9.5%	-14.3%
Veterans, 2016-2020	5,749	159	697	N/A	384 (Total)
Foreign born persons, percent, 2016-2020	30.1%	16.1%	26.6%	N/A	14.9%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Age and Health Circumstances

In 2020, 53% of Imperial County's population was under 35 years old. 31% of the population is under 20 years old, representing the largest portion of the population (San Diego-Imperial Center of Excellence for Labor Market Research, 2021). According to the Bureau of Labor Statistics, the "prime-working age" is between 25 and 54 years old. In 2020, 38% of Imperial County's population was classified within the "prime-working age" and projections suggest that this percentage will remain stable through 2030 (San Diego-Imperial Center of Excellence for Labor Market Research, 2021). See Table 4-2, Age, for comparative statistics on age between geographic areas. As shown in Table 4-3, Health Circumstances, approximately 8-14% of people in incorporated and unincorporated areas of Imperial County have a disability, while the national average is 8.7% (U.S. Census Bureau, 2021).

Table 4-2, Age

	Imperial County	Imperial	Calipatria	Brawley	Census Tract Study Area
Persons under 5 years, percent	8.0%	11.6%	3.4%	10.6%	5.1%
Persons under 18 years, percent	28.7%	37.4%	13.4%	33.3%	16.5%
Persons 65 years & over, percent	12.9%	9.3%	5.7%	11.6%	6.2%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Table 4-3, Health Circumstances

	National Estimate	Imperial County	Imperial	Calipatria	Brawley	Census Tract Study Area
With a disability, under age 65 years, percent, 2016-2020	8.7%	11.2%	8.0%	8.5%	13.5%	12.8%
Persons without health insurance, under age 65 years, percent	9.8%	8.0%	4.0%	6.4%	5.8%	5.9%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates, 2017-2021 American Community Survey (ACS) 5-Year Estimates

It should be noted that the public health metrics shown in Table 4-3 may not include the undocumented population within Imperial County and may be underestimated.

Ethnicity

As demonstrated in Table 4-4, Ethnicity Demographics, in 2020, the U.S. Census reported that 85% of the total population in Imperial County reported their ethnicity as Hispanic or Latino, representing 153,027 total residents. In contrast, neighboring San Diego County is estimated to have 35% of their residents from Hispanic origin and 52% in Riverside County. The remainder of Imperial County population is made up of White alone, not Hispanic or Latino (9%), Black or African American (3%), Asian (2%) or Two or More Races (2%).

The composition of racial and ethnic groups in Imperial County indicates a difference in household characteristics, income and cultural practices. The attitudes toward housing density and costs may vary across these groups. The Study Area's tract average for race and Hispanic origin demographics indicates that approximately 74% of the population is of Hispanic or Latino origin. Approximately 15% of the Study Area are Black or African American alone while 9% are white, not Hispanic or Latino. Finally, around 5% are of two or more races.

Table 4-4, Ethnicity Demographics

Demographics	County Estimate	Calipatria	Brawley	Census Tract Study Area
Black or African American alone, percent	2.6%	16.8%	1%	5.5%
American Indian and Alaska Native alone, percent	1.2%	1.3%	1.4%	1.1%
Asian alone, percent	1.4%	1.1%	0.4%	2.6%
Native Hawaiian and Other Pacific Islander alone, percent	0.1%	0.5%	0.2%	0.4%

Two or More Races, percent	10.8%	10.2%	9.3%	9.3%
Hispanic or Latino, percent	84.7%	73.2%	83.7%	68.2%
White alone, not Hispanic or Latino, percent	10.2%	6.7%	13.6%	9.4%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Education and Language

Regarding educational attainment, 70% of Imperial County residents are high school graduates or higher in persons age 25+ years. 15% of Imperial County residents age 25+ years have earned a Bachelor's degree or higher. As shown in Table 4-5, Education Levels, in Imperial County and Brawley, approximately 70% of Imperial County residents are at least high school graduates, while 15% hold at least a Bachelor's degree. In contrast, in Calipatria and the Census Tract Study Area there are lower education attainment levels, with approximately 60% of residents being at least high school graduates and 1.5% holding higher education attainment with at least a Bachelor's. 75% of the population in Imperial County report having a language other than English spoken at home, 32% higher than the state average (U.S. Census Bureau, 2020).

Table 4-5, Education Levels

	National Estimate	County Estimate	Imperial	Calipatria	Brawley	Census Tract Study Area
High school graduate or higher, percent of persons age 25 years+, 2016-2020	88.9%	70.2%	79.8%	59.2%	72.8%	60.7%
Bachelor's degree or higher, percent of persons age 25 years+, 2016-2020	33.7%	15.4%	20.0%	1.7%	15%	1.5%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates, 2017-2021 American Community Survey (ACS) 5-Year Estimates

As shown in Table 4-6, Computer and Internet Use, metrics in Imperial County and Brawley are at least 5% less than the national estimates. Similarly, there are at least 8% less households with a computer and at least 10% less households with a broadband Internet subscription in Calipatria and the Census Tract Study Area compared to Imperial County. Access to technology can also serve as indicators for education and employment opportunities. Students can use computers and the Internet as a study resource while facilitating work from home employment models. In addition, students seeking higher education attainment may require computers and internet subscriptions to earn their degree. According to SCAG's Broadband Speed Test Map by Zip Code for Imperial County, the Study Area experiences download speeds between 1-25Mpbs and upload speeds of 0-3+ Mbps, unlike cities of El Centro, Brawley and Imperial which all experience upload speeds above

25 Mbps. Limited broadband speed can inhibit business, remote work, and personal use in the Study Area.

Table 4-6, Computer and Internet Use

	National Estimate	County Estimate	Calipatria	Brawley	Census Tract Study Area
Households with a computer, percent, 2016-2020	93.1%	88.8%	77.8%	88.9%	80.1%
Households with a broadband Internet subscription, percent, 2016-2020	87.0%	81.8%	69.5%	82.5%	72.0%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Income and Home Ownership

As shown by Table 4-7, Housing Characteristics, the median value of owner-occupied housing units is considerably less in the Calipatria and the Census Tract Study Area by nearly $50,000 compared to Imperial County and Brawley. Total housing units shown by the table demonstrate the current housing availability within the County and the Census Tract Study Area currently has approximately 2,000 housing units within the Census Tract Study Area, which is 3.5% of the County estimate. Additionally, the Census Tract Study Area also has significantly less of a median gross rent, reduced by $300 compared to Calipatria, Brawley and the County.

Table 4-7, Housing Characteristics

	County Estimate	Calipatria	Brawley	Census Tract Study Area
Housing units, July 1, 2021, (V2021)	57,855	1,333	8,331	2,029 (Total)
Owner-occupied housing unit rate, 2016-2020	58.1%	62.1%	52.9%	52.9%
Median value of owner-occupied housing units, 2016-2020	$206,700	$144,200	$214,900	$144,000 *N/A for 01*
Median selected monthly owner costs -with a mortgage, 2016-2020	$1,463	$1,270	$1,520	$1,192 *N/A for 01*

Median selected monthly owner costs -without a mortgage, 2016-2020	$468	$447	$533	$441 *N/A for 01*
Median gross rent, 2016-2020	$847	$744	$840	$483
Building permits, 2021	555	N/A	N/A	N/A

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Based on 2015-2019 ACS data, the average household size in Imperial County was 3.81 individuals in 2019. In the unincorporated county, about 63.4% of households were comprised of one or two persons, 16.1% had three persons, and 20.4% had four or more persons. Owner-occupied households exhibited a higher proportion of smaller, one- or two-person households. Countywide, roughly 46.6% of households were one- or two-person, 17.5% were three-person, and 36.0% were households with four or more persons. For detailed information on household size by tenure, refer to Table 4-8 for both the unincorporated county and Imperial County as a whole.

Table 4-8, Household Size by Tenure

Household Size	Unincorporated County		Total County	
	Number	Percentage	Number	Percentage
Owner-occupied	**3,155**	**68.5%**	**26,156**	**58.3%**
1-person	1,285	40.7%	5,022	19.2%
2-persons	1,008	31.9%	7,579	29.0%
3-persons	382	12.1%	4,382	16.8%
4-or-more persons	480	15.2%	9,173	35.1%
Renter-occupied	**1,452**	**31.5%**	**18,673**	**41.7%**
1-person	339	23.3%	4,213	22.6%
2-persons	290	20.0%	4,054	217.0%
3-persons	362	25.0%	3,465	18.6%
4-or-more persons	461	31.7%	6,941	37.2%
Total Households	**4,607**	**100.0%**	**45**	**100.0%**

Source: 2015-2019 American Community Survey (ACS) 5-Year Estimates

Housing tenure, reflecting whether a housing unit is owner-occupied or renter-occupied, is influenced by demographic factors like household composition, income, and age, as well as housing costs. In unincorporated Imperial County, approximately 68.0% of occupied housing units were owner-occupied in 2019, a higher rate than the county's overall ownership rate of 38.9%. Vacancy rates, indicating housing supply and demand, were notably high, with a 32.0% vacancy rate in the

unincorporated county and 11.1% in the entire county according to the 2015-2019 ACS. However, a significant portion of vacant units in the unincorporated county were designated for seasonal or recreational use, suggesting a housing supply which falls below demand. Further details can be found in Table 4-9 for both the unincorporated county and Imperial County as a whole.

Table 4-9, Tenure and Vacancy

Tenure and Vacancy Status	Unincorporated County		Total County	
	Number	Percentage	Number	Percentage
Occupied Housing Units	**4,607**	**68.0%**	**44,829**	**38.9%**
Owner-occupied	3,155	46.6%	26,156	22.7%
Renter-occupied	1,452	21.4%	18,673	16.2%
Vacant Housing Units	**2,170**	**32.0%**	**12,861**	**11.1%**
For rent	74	1.1%	764	0.7%
For sale	78	1.2%	397	0.3%
Rented or sold, not occupied	94	1.4%	342	0.3%
For seasonal, recreational, or occasional use	833	12.3%	2,603	2.3%
For migrant workers	20	0.3%	56	0.0%
Other	1,071	15.8%	8,699	7.5%
Total Housing Units	**6,777**	**100.0%**	**57,690**	**100.0%**

Source: 2015-2019 American Community Survey (ACS) 5-Year Estimates

Table 4-10, Families and Living Arrangements, provides information on Families and Living Arrangements. Imperial County, Calipatria and Brawley all have on average at least three persons per household, while the Census Tract Study Area's average persons per household is about two. Additionally, the table indicates that nearly 75% of County residents speak a language other than English at home. Calipatria, Brawley and the Census Tract Study Area have lower percentages than the County average, with the Census Tract Study Area showing around 60% of the population speaking a language other than English spoken at home.

Table 4-10, Families and Living Arrangements

	County Estimate	Calipatria	Brawley	Census Tract Study Area
Households, 2016-2020	45,768	955	6,957	1,477 (Total)

Persons per household, 2016-2020	3.73	3.21	3.71	2
Living in same house 1 year ago, percent of persons age 1 year+, 2016-2020	89.3%	89.8%	86.6%	87%
Language other than English spoken at home, percent of persons age 5 years+, 2016-2020	75.1%	61.3%	66.9%	59.1%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

As shown by Table 4-11, Income & Poverty, median household income in Imperial County and Brawley is approximately $46,000 significantly lower than the state median household income of $78,672. Calipatria's median household income is approximately $10,000 less than the aforementioned jurisdictions at $37,196. On the other hand, the Census Tract Study Area has a very low median household income compared to the surrounding communities, at $18,387. Approximately 22.5% of the persons in Imperial County are in poverty, with incomes below 50% of the federal poverty threshold. The Census Tract Study Area has a significantly higher poverty rate, with over 40% of the population reporting incomes below the poverty threshold (U.S. Census Bureau, 2020).

Table 4-11, Income & Poverty

	County Estimate	Calipatria	Brawley	Census Tract Study Area
Median household income (in 2020 dollars), 2016-2020	$46,222	$37,196	$46,177	$18,387
Per capita income in past 12 months (in 2020 dollars), 2016-2020	$18,064	$6,632	$19,222	$6,927
Persons in poverty, percent	22.5%	35.4%	31.4%	41.9%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

Gender and Labor Force

As shown in Table 4-12, Labor Force, it is estimated that approximately 48% of females age 16+ years within the population of the Census Tract Study Area participate in the civilian labor force. For reference, the entire total percent of population also only has approximately 30% of the population within the civilian work force, which represents the non-institutionalized population. For reference, the percent of female population within the civilian labor force fall between 45-50% for the County, city of Brawley and city of Calipatria. These metrics indicate that the Study Area has lower employment within the civilian work force overall as well as for women specifically.

According to the 2020 ACS 5-Year Estimates, Imperial County's prominent agricultural industry is nearly 80% male workers. Conversely, 20% are female. The industries in Imperial County which women are more prevalent in include educational services, health care, social assistance, arts, entertainment, and recreation, and food services. To note, institutionalized individuals are included in population estimates in Table 4-12.

Table 4-12, Labor Force

	County Estimate	Calipatria	Brawley	Census Tract Study Area
In civilian labor force, total, percent of population age 16 years+, 2016-2020	51.2%	18.5%	53.2%	24.2%
In civilian labor force, female, percent of population age 16 years+, 2016-2020	49.3%	45.5%	45.8%	48.3%

Source: 2016-2020 American Community Survey (ACS) 5-Year Estimates

According to SCAG and the 2017 U.S. Department of Agriculture (USDA) Census of Agriculture, Imperial County has a significant farming workforce, with approximately 945 residents identified as farmers. As shown in Table 4-13, the majority of hired farm workers (7,934) in both incorporated and unincorporated areas are permanent employees (4,634), while others are seasonal (3,714) or migrant (1,057). Average hourly wages for agricultural workers in Imperial County were $14.14 in the first quarter of 2020, with many being of Hispanic descent.

The County's proximity to Mexicali, Mexico, where a portion of the farm labor pool resides, allows workers to commute daily, reducing the seasonal housing demand. The Imperial Valley Housing Authority (IVHA) operates four farmworker housing complexes in El Centro, Brawley, and Heber, regulated by the USDA's Rural Development. This housing arrangement helps address the fluctuating demand for rental units, particularly during the winter and spring months when demand is highest.

Table 4-13, Farm Workers

	Imperial County
Hired Farm Workers	7,934
Permanent Employees (more than 150 days)	4,634
Seasonal Employees (less than 150 days)	3,330
Migrant Workers	1,057

Source: USDA 2017 Census of Agriculture

Tribal Nations

Home to the Quechan Indians, the Fort Yuma Quechan Indian Tribal lands are located in southeastern Imperial County and western Yuma County in Arizona. The tribe reported a resident population of 1,233 persons on the Fort Yuma Indian Reservation. Of the 837-person population 16 years and over, 397 are in the civilian labor force. The unemployment rate is 17.6%. The median household income for the Tribe is $33,456 and approximately 26% of Quechan households were in poverty over the last twelve months (U.S. Census Bureau, 2021).

As part of the public outreach process, the Quechan tribe was engaged to provide input on Lithium Valley's draft report of the Blue Ribbon Commission on Lithium Extraction in California, dated September 21, 2022. In the tribe's response letter, the Quechan Tribal President expressed their frustration with the lack of government-to-government tribal consultation conducted by the County. In addition, the tribe states that the draft report should state what impacts to the Salton Sea landscape have already occurred from the current geothermal and lithium extraction facilities in the area.

The tribe maintains that, to bring the processes into legal compliance and assess effects and mitigation, including siting, design, and indirect effects on the tribes' sacred sites at the Salton Sea, these matters must be considered.

The Torres Martinez Desert Cahuilla Indians are a federally recognized tribe of Cahuilla Indians, located in Imperial and Riverside County. The tribe reported a resident population of 2,202 persons on the Torres-Martinez Reservation. Of the 1,724-person population 16 years and over, 1,274 are in the civilian labor force. The unemployment rate is 24.3%. The median household income for the Tribe is $17,179 and approximately 40.7% of the tribe's households were in poverty over the last twelve months (U.S. Census Bureau, 2021).

The Kumeyaay Nation inhabited the southwestern corner of the U.S. and the northwest corner of Mexico and consist of three tribal groups, the Ipai, Tipai and Kamia. There are several Kumeyaay reservations and village communities throughout the region. Due to this, there are no authoritative data sources to report on population demographics and economic indicators.

The US Bureau of Indian Affairs describes the tribal consultation as a formal, two-way, government-to-government dialogue between official representatives of Tribes and Federal agencies to discuss Federal proposals before the Federal agency makes decisions on those proposals.

SB 18 (Burton), Chapter 905, Statutes of 2004, requires cities and counties to conduct consultations with California Native American tribes before the local officials adopt or amend their general plans. Among other things, the consultation process provides a venue for a formal government–to–government discussion on preserving or mitigating impacts on Native American historical, cultural, and sacred sites, features, and objects. SB 18 added Government Code section 65352.4, which references essential consultation principles of meaningful input, respect for government sovereignty, and development of partnerships in pursuit of consensus where feasible.

AB 52 (Gatto) Chapter 532, Statutes of 2014 AB 52 amends the California Environmental Quality Act (CEQA) to require lead agencies to consider the potential impacts that a project will have on Tribal cultural resources. The bill establishes a process for a California Native American tribe to engage in the California Environmental Quality Act (CEQA) review process to avoid significant effects on tribal cultural resources.

Tribal consultation and engagement with regard to the Lithium Valley Specific Plan and PEIR will occur throughout the Project process.

4.1.3. Environmental Justice

As discussed in Section 4.1.1, Applicable Regulations, the State of California defines environmental justice as the "Fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (California Government Code Section 65040.12. In other words, environmental justice ensures that people of all races, cultures and incomes are equitably valued, protected and served by laws, regulations and policies that impact the environment around us, including those about buildings and uses of land, transportation, parks and natural spaces, the urban landscape and city services.

In 2018, the California Environmental Protection Agency (CalEPA) Environmental Justice Task Force initiated an effort in Imperial County to identify the environmental concerns of the community in order to better focus environmental enforcement and compliance efforts (CalEPA 2018). This section highlights some of the findings of the Imperial County Environmental Justice Initiative.

Disadvantaged Communities

Local jurisdictions have discretion to select the methods and criteria for identifying "disadvantaged communities" within their planning area based on a series of factors specific to the area. Imperial County has some of the highest rates of the population considered to be low-income, communities of color, compared to the rest of the state. Historical land use patterns, access to critical infrastructure and proximity to polluting sources represent just some of the systemic issues which have affected low-income communities in Imperial County. While Imperial County has not officially identified their "disadvantaged communities," there are established standards and criteria which have been employed by other government agencies to address this provision of the state policy. Characteristics pertaining to population demographics, land use, environmental exposures, and adequacy of infrastructure represent the considerations included in this analysis to emulate similar strategies for identifying EJ communities.

Imperial County is in the process of creating its first Environmental Justice General Plan Element (EJ Element). The EJ Element will identify the environmental and social issues faced by environmental justice communities and establish goals, policies, and implementation programs to mend and improve these identified issues. While this process is still ongoing to date, the draft environmental justice communities have been identified within the County, as shown in Figure 4-1, Disadvantaged Communities. The County's two Indian Reservations in the southeast and northwest corners of the county are included in this map. County staff has been in consultation with the tribes through the SB 18 tribal consultation process.

As mentioned in Section 4.1.1, Applicable Regulations, California Senate Bill 535 provides financial investment to disadvantaged communities. CalEnviroscreen 4.0 maps SB 535 disadvantaged communities that represent the 25% highest scoring census tracts in CalEnviroScreen 4.0, census tracts previously identified in the top 25% in CalEnviroScreen 3.0, census tracts with high amounts of pollution and low populations, and federally recognized tribal areas as identified by the Census in the 2021 American Indian Areas Related National Geodatabase (OEHHA 2022). The Office of Planning and Research (OPR) recommends overlaying census tracts with a combined CalEnviroScreen score of 75 or higher (i.e., top 25th percentile) with the low-income areas to geographically identifying disadvantaged communities (DACs).

Figure 4-1, also shows characteristics from CalEnviroScreen. Census Tract 101.02, which comprises most of the Study Area is in the 82nd percentile relative to all other census tracts, therefore making them eligible from funding from the state's cap and trade program, which can contribute to investments into the local community for the development of renewable energy (De León, 2012). This means that it is considered an SB 535 Disadvantaged Community designated by CalEPA. Census Tract 101.01 does not have an overall CalEnviroScreen score because of a low population or the socioeconomic and/or health data is unreliable. However, Census Tract 101.01 scored similarly, if not worse on various criteria, and is mostly comprised of agriculture which presents various pollution exposure risks. Considering that, there is a strong case to be made that Census Tract 101.01 is also a disadvantaged community.

Pollution Burden

Imperial County was designated as an area in serious nonattainment for larger particulates, PM 10, caused by things like dust and smoke which result in acute health impacts. Sources of air pollutants that led to the designations include agricultural and industrial operations, proximity to solid waste facilities and heavy-duty diesel truck emissions. The California Air Resources Board (CARB), EPA and the Imperial County Air Pollution Control District (ICAPCD) represent the agencies responsible for regulating and enforcing compliance with air quality regulations in the County. Each agency conducts their own inspection and review processes to reduce the public's exposure to localized air pollution impacts.

According to the 2010 U.S. Census, there are 130,000 people living within 15 miles of the Salton Sea, while nearly 600,000 directly encounter dust emitted from the exposed lakebed. The Salton Sea Air Basin population is projected to increase by 88,440 people between 2020 and 2045 (Pacific Institute, 2014). The high prevalence of asthma around the Salton Sea has become increasingly apparent, with nearly 1 in 5 residents in Imperial County having been diagnosed with asthma. For reference, the national prevalence for asthma is 7.7% for adults and 8.4% for children, in stark contrast to the 22.4% prevalence seen in Imperial County. These staggering statistics shed light on the public health crisis occurring around the Salton Sea, which will only be magnified by increasing air pollution levels from dust dispersal (Salton Sea Task Force, 2021).

Additionally, the acreage being impacted by the dust particles is increasing dramatically, as exposed areas went from 862 to 16,542 acres between 2013–2016 due to lowering water levels (Formation Environmental, 2018). The receding Salton Sea shoreline has transformed the former lakebed into exposed "playa", creating a dusty landscape riddled with nearly a century's worth of agricultural

runoff substances, including ammonia, DDT, arsenic and selenium. Desert winds billow the dust of the dry lakebed into the air and towards Salton Sea Communities, leading to damaging public health impacts associated with respiratory illness and high rates of asthma in children. Refer to Section 9.3, Air Quality, of this report for further analysis of the existing air quality of the Study Area. Recent studies by UCR's Medical School show that a bacterial component in the playa dust triggers the asthmatic response in lungs, suggesting that simple dust filtering (PM 2.5 and 10) may be insufficient mitigation (Biddel et al. 2022).

The Salton Sea is a water body with extremely high saline concentrations, exacerbated by weak river inflows and no natural outflows. As temperatures in the region rise and water input diminishes, the Salton Sea's water levels continued to decline, having lost nearly a third of its water in the last 25 years. Refer to Section 9.9, Hydrology and Water Quality, of this report for further analysis of existing water quality of the Study Area.

According to CalEnviroScreen, or CalEnviroscreen, Census Tract 101.02 is in the 80th percentile of overall pollution burden. Census Tract 101.01 does not have an overall CalEnviroScreen score because of a low population or the socioeconomic and/or health data is unreliable. More specifically, these are the pollution burdens of significant concern in the Study Area (i.e. in the 70th percentile or greater):

- The majority if not all of Imperial County is in the 90-100th percentile for impaired water bodies. The Study Area is no exception to this.
- Census Tract 101.01 is in the 95th percentile for exposure to contaminated drinking water. A common contaminant is nitrate from fertilizer or manure leaching into groundwater and contaminating wells.
- Census Tract 101.02 is in the 93rd percentile for exposure to hazardous waste. The two hazardous waste generators located in the Study Area documented in CalEnviroScreen are two geothermal power plants.
- Census Tract 101.02 is in the 91st percentile for exposure to agricultural pesticides. Census Tract 101.01 is in the 84th percentile for exposure to agricultural pesticides. For additional context, most of Imperial County is within the top 80th to 100th percentile of Census tracts where residents are exposed to agricultural pesticides.
- Census Tract 101.02 is in the 87th percentile for proximity and exposure to solid waste facilities. Census Tract 101.01 is in the 93rd percentile for this.
- Census Tract 101.02 is in the 74th percentile for exposure to contaminated cleanup sites, and Census Tract 101.01 is in the 84th percentile for exposure to cleanup sites.
- Census Tract 101.02 is in the 78th percentile for threats to groundwater contamination from pollutants such as heavy metals, solvents, and pesticides.

Population Characteristics

In addition to pollution burden, CalEnviroScreen accounts for population characteristics. Population characteristics represent physiological traits, health status, or community characteristics that can

result in increased vulnerability to pollution. The Study Area's combined population characteristics results are in the 86th percentile, meaning the rates of these population characteristics that make the population more vulnerable are higher than 88% of the census tracts in California.

More specifically, these are the population characteristics of significant concern in the Study Area (i.e. in the 70th percentile or greater):

- Census Tract 101.02 is in the 99th percentile for unemployment indicators (not including students, active duty, military, retired people or people who have stopped looking for work).
- Census Tract 101.02 is in the 95th percentile for poverty.
- Census Tract 101.02 is in the 89th percentile for linguistic isolation.
- Census Tract 101.02 is in the 85th percentile for asthma rates, and Census Tract 101.01 is in the 83rd percentile.
- Census Tract 101.02 is in the 83rd percentile for low education attainment, and Census Tract 101.01 is in the 93rd percentile.

See Section 9.3, Air Quality, of this report, for further details about the air pollutants the Study Area is in nonattainment for, that may lead to health issues such as asthma.

Colonias

Colonias are defined as rural communities and neighborhoods within 150 miles of the United States-Mexico border that lack adequate infrastructure and often lack other basic services. Colonias typically have high rates of poverty, making it difficult for residents to help pay for roads, sanitary water and sewer systems, decent housing, street lighting, and other services. The 2013 Imperial County Master Plan identified nine unincorporated communities as Colonias. Designation as a Colonia was considered in the analysis for identifying "Disadvantaged Communities" in Imperial County.

Funds utilized for improvements to Colonias are primarily obtained through the Department of Housing and Urban Development Community Development Block Grants (CDBG) – Colonia Allocation. Colonia improvements focus on addressing the lack of adequate sewage systems, water services, and decent housing.

As shown in Figure 4-1, Disadvantaged Communities, nearby colonias include Bombay Beach and Niland.

Disadvantaged Unincorporated Communities (DUCs)

SB 244 requires cities and counties to address the infrastructure needs of disadvantaged unincorporated communities (DUCs) in city and county general plans, Local Agency Formation Commission (LAFCO) Municipal Service Reviews (MSRs), and annexation decisions related to the DUCs.

SB 244 defines a DUC as a place that meets the following criteria:

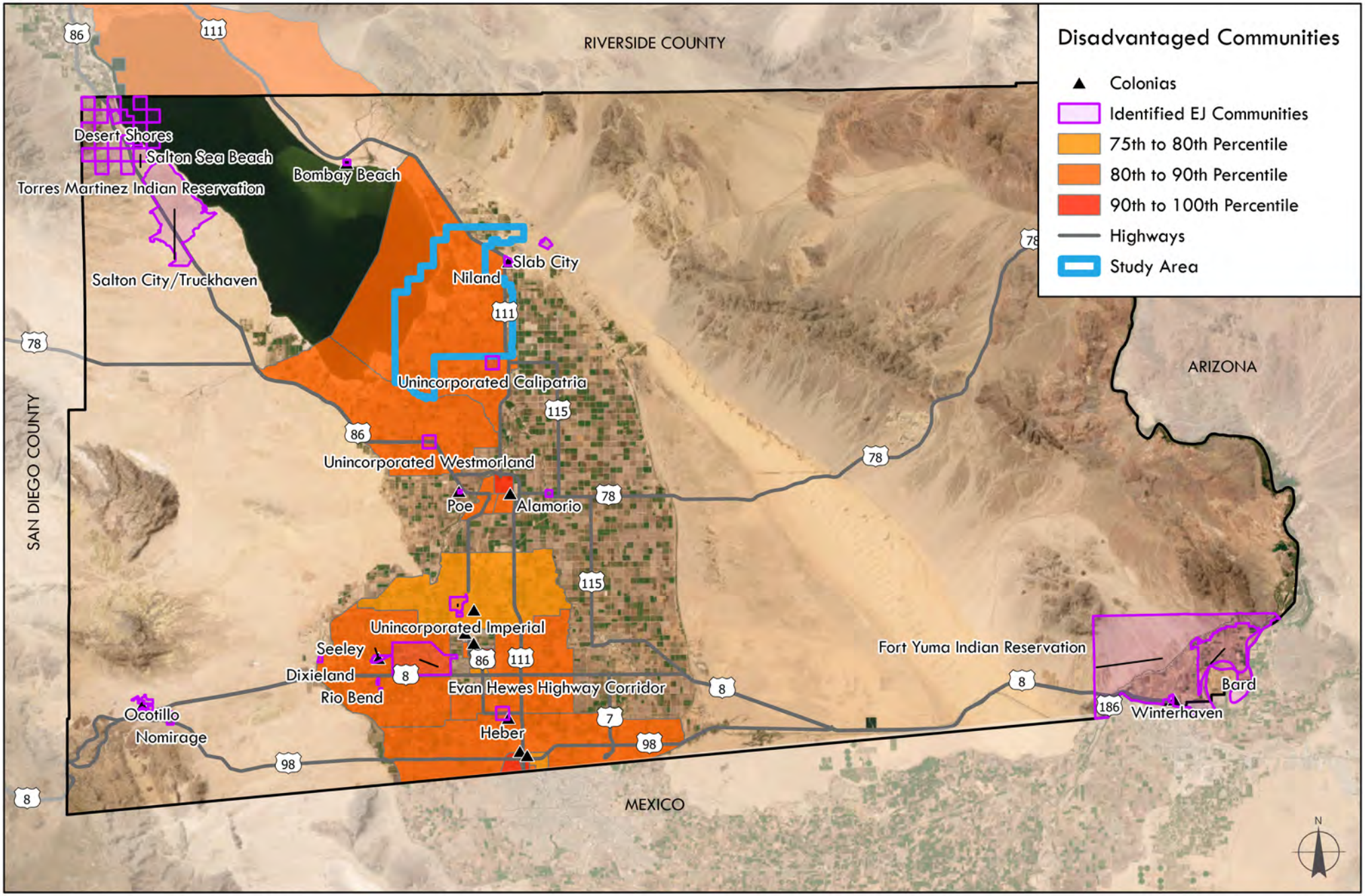
- Contains 10 or more dwelling units in "close proximity" to one another where 12 or more registered voters reside (for the purpose of this analysis, "close proximity" is defined as a density greater than 250 residential units per square mile).
- Is either within a city's SOI (also known as a fringe community), is an island within a city boundary (also known as an island community) or is geographically isolated and has existed for at least 50 years (also known as a legacy community).
- Has a median household income that is 80 percent or less than the statewide median household income (according to the US Census Bureau, American Community Survey, the median household income for California between 2014 and 2018 [most comprehensive figures available at the census block group level] was $80,440. Eighty percent of that is $64,352).

As shown in Figure 4-1, nearby DUCs include: Niland, Bombay Beach and Slab City.

Niland is small town located in the north/central portion of Imperial County. According to the 2021 ACS, Niland has a population of 452 residents and 259 occupied housing units. The current Imperial County zoning in Niland is Light Agricultural (A-1-U), General Agricultural/Rural (A-2-U), Light Commercial (C-1), Government/Special Public (G/S), Light Industrial (M-1), Light Industrial Urban (M-1-U), Low Density Residential Zone (R-1), and Mobile Home Park or Subdivision Zone/High Density Residential (R-4). Surrounding land uses mainly consist of agriculture, vacant arid/shrubland, and a solar panel farm to the northeast. According to the 2021 SB 244 analysis conducted for the Housing Element, the median household income is $21,205. Niland is a designated Colonia and DUC.

There are multiple unincorporated communities in proximity to the Study Area, however do not fully meet the criteria to be considered a DUC. These are included on Figure 4-1, and include Unincorporated Calipatria, Unincorporated Westmorland, and Salton City/Truckhaven.

Unincorporated Calipatria is in the northern area of Imperial County adjacent to the City of Calipatria, bounded by Young Road to the north, Lyerly Road to the east, Bowles Road to the south, and English Road to the west. The community is surrounded by agricultural uses and the urban areas of Calipatria. Median household income, number of residents, and number of housing units is not reported in the 2021 ACS. Unincorporated Calipatria lacks easy access to medical facilities, the closest of which is located in Brawley to the south. The current Imperial County zoning in Unincorporated Calipatria is Limited/light Agricultural with a geothermal and urban area overlays (A-1-G-U).



SOURCE: Placeworks, California Environmental Protection Agency (CalEPA)

Other Environmental Justice Considerations

Extreme Heat and Drought

Temperatures are expected to increase by 2°F to 5°F by 2050 and 4°F to 9°F by 2100 in Imperial County (California Department of Public Health Office of Health Equity, 2017). Increased temperatures manifested as heat waves and sustained high heat days directly harm human health through heat-related illnesses. It also intensifies smog and ground level ozone and fine particulates (PM2.5), which contribute to and exacerbate respiratory disease in children and adults (California Department of Public Health Office of Health Equity, 2017).

Drought may increase exposure to health hazards including wildfires, extreme heat events, flash flooding, degraded water quality, reduced water quantity, and dust storms that may increase incidents of Valley fever, a fungal pathogen (California Department of Public Health Office of Health Equity, 2017). Future droughts and extreme heatwaves are expected to continue to rise in frequency and severity, disproportionately affecting those already impacted by health disparities (Doede, A. L., & DeGuzman, P. B., 2020).

Life Expectancy

Life expectancy is one of the most basic measures of public health. Per the CDC 2010-2015 estimates, the average life expectancy for the Study Area is 76.7 years, compared to the County average life expectancy of 80, and the State average life expectancy of 81.3.

Public health concerns are also driven by the lack of quality health care in rural areas of the County. In addition, despite facing a higher instance of averse respiratory conditions, many agricultural workers do not have health insurance. Individuals and families with fewer economic resources may be unable to avoid exposure or seek treatment (e.g., adhering to asthma guidelines) in order to reduce exposure to poor air quality (Doede, A. L., & DeGuzman, P. B., 2020).

4.2. CONSTRAINTS

Establishing a baseline for the social conditions provides context for the potential constraints to future uses under the Lithium Valley Specific Plan. The following constraints were identified through this process:

- Unincorporated areas lack comparable information on demographics, housing and economic indicators in comparison to urban areas in other words, comparing the Study Area to cities like Brawley and Calipatria can misrepresent the social conditions currently being experienced in this area, and therefore must be included in analysis with this consideration in mind.
- The Study Area's proximity to the US-Mexico border brings undocumented individuals into the region, who may not be represented in the US Census data.
- A population decline of 15% in the Study Area and the City of Calipatria may indicate a reduction in the adjacent workforce population.

- Agriculture creates a seasonal job market which may fluctuate employment opportunities depending on which crops are productive during certain times of the year. This could challenge opportunities for developing a sustainable workforce for renewable energy.
- Language barriers for non-native English speakers in Imperial County, who speak a language other than English at home.
- Lack of access to technology such as a computer or broadband Internet in the Study Area.
- Lower median income in the Census Tract Study Area and surrounding communities compared to the State average.
- Lower participation in the civilian labor workforce in Imperial County and the Study Area.
- Higher rates of individuals with disabilities in the Study Area and surrounding communities.
- Public health concerns related to air and water pollution in Imperial County, which have led to much higher rates of asthma and respiratory illness. Potential health (asthma) issues pertaining to the drying Salton Sea and the toxicity of its airborne playa dust could also impact workforce development in northeastern Imperial County.
- Increasing pollution due to the receding Salton Sea, which lifts toxic particulate matter into the air basin and perpetuates public health issues. There have also been reports of un exploded ordnances which are explosive weapons (bombs, bullets, shells, grenades, mines, etc.) that did not explode when they were employed and still pose a risk of detonation.
- The Salton Sea Air Basin already experiences poor air quality; thus any future development will already be exceeding air quality standards.
- Increase in the frequency and severity of heat waves, droughts, and dust storms due to climate change. The Specific Plan needs to consider where people will take shelter in the event of such extreme weather events.
- Imperial Irrigation District holds the power to enact water transfers, leaving Imperial County with less water supply.
- Disadvantaged communities such as colonia, disadvantage unincorporated communities, and communities identified in Figure 4-1 should be considered when creating a Lithium Valley Land Use Plan; such communities should be given equitable access to public facilities and resources, economic benefits, and open space. Uses that historically emit pollutants should be located far enough away from disadvantaged communities to avoid further adverse effects.

- Per CalEnviroScreen 4.0, the Study Area and adjacent communities are exposed to high rates of pollution burdens compared to the rest of California; in the 70th percentile or higher in exposure to:
    - Impaired water bodies;
    - Contaminated drinking water;
    - Hazardous waste;

- Agricultural pesticides;
- Solid waste facilities;
- Contaminated cleanup sites; and
- Groundwater contamination.

- Per CalEnviroScreen 4.0, the Study Area and adjacent communities are exposed to high rates of concerning population characteristics compared to the rest of California; in the 70th percentile of higher in:
  - Unemployment;
  - Poverty;
  - Linguistic isolation;
  - Asthma; and
  - Low education attainment.

- The community has expressed a level of distrust between the community and government. Related to this distrust, there have been many scientific studies on the environmental quality of the Salton Sea and the health effects on the neighboring communities; yet these studies have lacked follow-up action and funding to actually address the issues identified. As such, the community and Environmental Justice advocates are expecting real corrective action to come along with this project.

4.3. OPPORTUNITIES

While there are several constraints to renewable energy development in the Study Area, specific opportunities were realized through the development of baseline social conditions. The opportunities identified are as follows:

- Designation as a "disadvantaged community" makes the Census Tract Study Area eligible for priority investment opportunities through SB 535 and AB 1550.

- Increasing population in neighboring city of Brawley and Imperial County overall to support development of a renewable energy workforce.

- The percentage of population at prime-working age expected to remain stable until 2030.

- Relatively low monthly rent costs in the Census Tract Study Area can attract working individuals seeking low-income housing.

- Concerns about pollution and associated public health impacts could benefit from shifting from an agriculture centric economy to green energy where people are less prone to dust exposure by working inside a facility instead of outside.

- Reinvestment in the Study Area and contributions from Development Impact Fees can contribute to restoration of the Salton Sea which may reduce public health impacts from pollution.

- Increasing the demand for workforce housing can result in new residential development in and around the Study Area.

- Attracting highly skilled workers through renewable energy development can result in higher education attainment levels in the Study Area.

4.4. RECOMMENDATIONS

Upon identification of constraints and opportunities to renewable energy development in the Study Area, the following recommendations have been provided for the County:

- Senate Bill 535 and Assembly Bill 1550 designate priority investment opportunities. The County should leverage these funding resources to support the growth of renewable energy development in the Study Area.
- The County should conduct the assessment necessary for the Study Area to be designated as a "disadvantaged unincorporated community" (DUC).
- Continue collecting and regulating Development Impact Fees (DIFs) from developers to contribute to reinvestment into the Study Area and provide funding for Salton Sea restoration. Restoring the Salton Sea could reduce pollution and public health impacts concerning the community.
- Consider establishing a system for monitoring the allocation and utilization of DIFs, conduct regular audits, establish reporting mechanisms, and perform community engagement for implementation of accountability measures.
- To ensure Imperial County will capture the economic boost of future development, there are opportunities to incorporate geothermal, solar, lithium and the like, into elementary, junior, and high school education programs, as well as high-education programs. Continue coordination with Imperial Valley College, SDSU and other academic institutions in the region on their new technical programs related to geothermal power plants.
- Increase low-income residential housing opportunities to accommodate growing workforce population.
- Increase employment opportunities and grow other industries in Imperial Valley to supplement the seasonal job market for agriculture and transition to renewable energy development.
- Consider a program that earmarks a certain percentage of tax revenue to go to research and monitoring of health and environmental conditions.

5. Public Services and Resources

5.1. EXISTING CONDITIONS

As a predominately unincorporated area, the availability of public services within the Study Area relies heavily on the provision of services by Imperial County and neighboring communities such as Niland and Calipatria. The Study Area consists of primarily agricultural and Salton Sea land uses (e.g., open water, playa). Due to this, adequate public services and infrastructure are necessary to support industrial operations while ensuring public safety and access to community resources. This chapter

discusses the various public services and facilities provided to the Study Area. The Imperial Fire Department serves residential and nonresidential development in the unincorporated areas, providing fire protection and emergency medical services to residents and businesses. Parks and recreation facilities benefit all residents of the County, whether living in an unincorporated area or incorporated, providing parkland, amenities, and centers for the community to congregate. Police protection is provided by the County Sheriff's Department, providing services to unincorporated areas while operating the County jail and coroner's office for all County residents.

5.1.1. Applicable Regulations

Imperial County Multi-Jurisdiction Hazard Mitigation Plan Update

The County of Imperial, City of Brawley, City of Calexico, City of Calipatria, City of El Centro, City of Holtville, City of Imperial, City of Westmorland, the Imperial Irrigation District, and the Imperial County Office of Education, have all come together to adopt the Multi-Jurisdiction Hazard Mitigation Plan Update that identifies actions in the form of projects and programs that can become long- term, cost effective means for reducing the impact of hazards. The following objectives from the Multi-Jurisdictional Hazard Mitigation Plan Update may be relevant to the Project:

> Objective 3.1 Maintain and improve the quality of life, the protection of property and the public health, safety, and welfare in Imperial County
>
> Objective 8.3 Ensure that school facilities are adequate to meet the existing and projected needs of the population.
>
> Objective 8.4 Ensure that all future proposed private and public facilities are adequate to meet expected population growth and the needed additional services around local cities.

Imperial County General Plan Parks and Recreation Element

The Imperial County Parks and Recreation Element establishes a framework for the stewardship of County parks and other recreational amenities which enhance the quality of life for County residents and visitors. Factors such as existing park conditions, funding sources, and anticipated recreational needs, are identified within the Parks and Recreation Element. The Imperial County General Plan Parks Element establishes a goal that, "The County shall provide five net acres of parkland for every 1,000 residents." The Parks Element also states that, by 2030, the County will need an estimated 187 additional acres of parkland solely to serve residents within unincorporated areas (Imperial County 2008).

Quimby Act

The Quimby Act (Government Code §66477), passed in 1975, is a State Ordinance that requires developers to help mitigate the impacts of property improvements. The Act is designed to ensure "adequate" open space acreage in a jurisdiction using Quimby Act standards (e.g., five acres of open space per 1,000 residents). Developers must set aside land, donate conservation easements, or pay fees for park improvements to comply. The land, fees, or a combination thereof are to be used only for the purpose of developing new or rehabilitating existing neighborhood parks, community parks and recreational facilities to serve the subdivision. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities.

Impact Fees

The Imperial County Board of Supervisors approved the most recent Development Impact Fees (DIFs) Ordinance in 2006, which provides funds to provide additional needed facilities. DIFs supplement the share of costs for public facilities, equipment, and services. Rates are assessed based on the demand for services from the population which is a necessary consideration for developers wishing to invest in the Study Area. Imperial County is the governing body which oversees and regulates the collection of DIFs to accommodate new developments. Subjection of DIFs is concurrent with the agreements between Imperial County and cities issuing development permitting services.

DIFs are typically assessed on a per-unit basis, which require the cost of infrastructure and public facilities which serve new housing developments. The adopted fees provide necessary services and facilities such as fire protection and emergency services, police protection, and operation and maintenance of public parks. For other developments, such as commercial and industrial facilities, DIFs are based on both the overall square footage of the building as well as the type of land use. Non-residential DIFs do not include fees for library or park facilities.

The County establishes DIFs for development within unincorporated areas, however territories recently annexed into surrounding cities remain subject to County fees to account for lack of existing public services and infrastructure. Cities are responsible for collecting these prior to the issuance of building permits and share agreements with the County to properly distribute funding.

Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Act)

The Act establishes procedures for local government changes of organization, including city incorporations, annexations to a city or special district, and city and special district consolidations. Local agency formation commissions (LAFCOs) have numerous powers under the Act, but those of primary concern are the power to act on local agency boundary changes and to adopt spheres of influence for local agencies. Among the purposes of LAFCOs are the discouragement of urban sprawl and the encouragement of the orderly formation and development of local agencies.

Government Code Section 56430 requires LAFCO to review and make certain findings relative to the scope, quality, and viability of municipal services. In conducting a Municipal Services Review (MSR), LAFCO is required to comprehensively review all of the agencies that provide the identified service or services within the designated geographic area. An MSR is required every five years and must be adopted before changes are approved in the local government's sphere of influence. Information from local MSRs may be of value to the analysis of the Specific Plan.

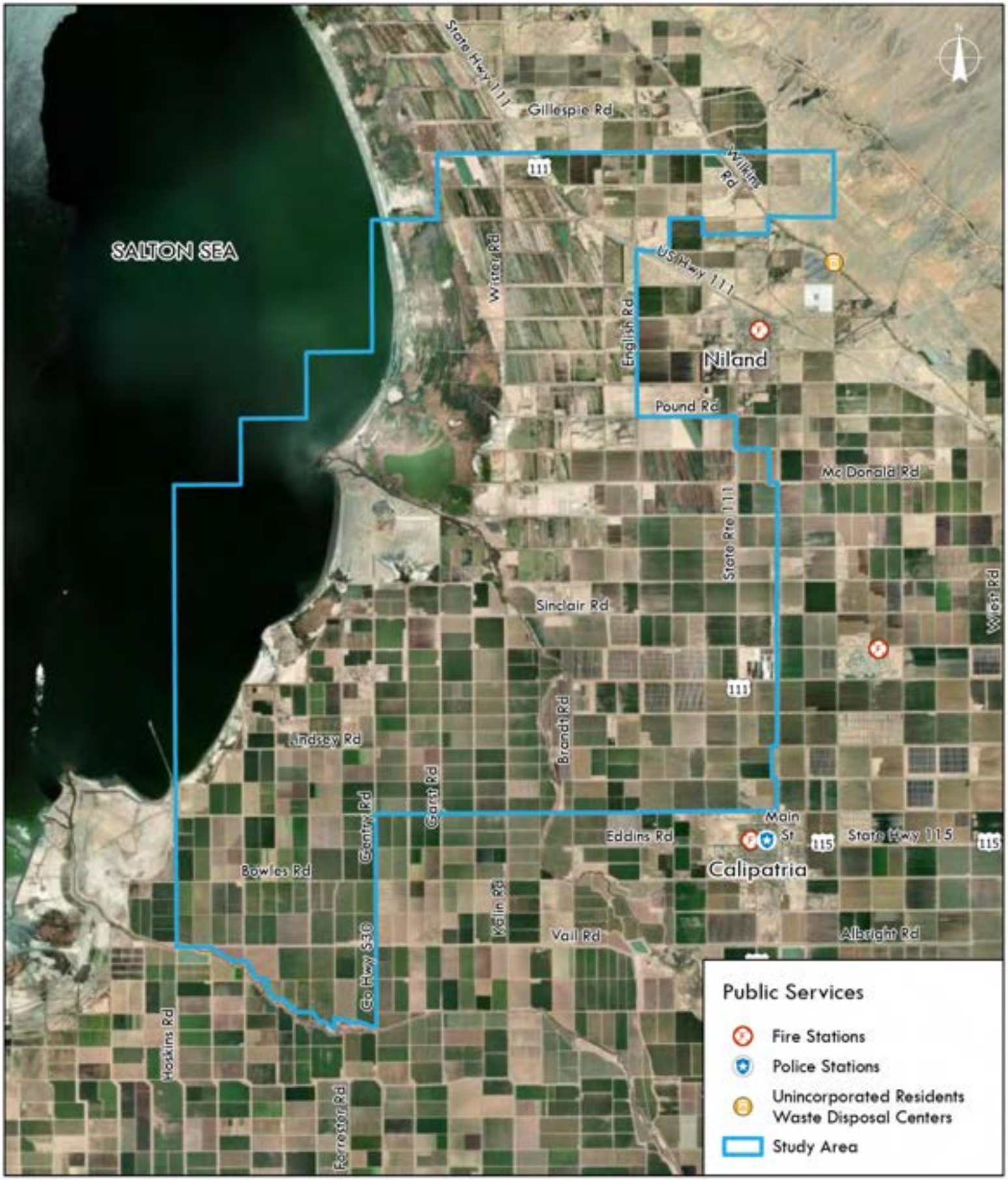
5.1.2. Police

Imperial County's Sheriff (ICSO) Office

ICSO provides police protection for the Study Area. The ICSO office is in El Centro, however a sheriff substation is located in Niland which services the surrounding unincorporated area. The Study Area is within the North County Patrol Division, and the ICSO deputy assigned to the region serves as the first responders to service calls. The Sheriff has cooperative agreements with the cities of Calipatria and Brawley to provide backup support in case of emergencies.

City of Calipatria Police Department

As shown in Figure 5-1, Public Services, the nearest police station is located in Calipatria, outside of the Study Area. While the Study Area remains under ICSO supervision and authority, the City of Calipatria Police Department provides police protection and emergency response services to the Calipatria community. The City of Calipatria 2018 Service Area Plan establishes evaluation metrics and projected demands for police protection in the City, including performance standards of 1 officer/1,000 population and a 3-minute emergency response time (Calipatria 2018).


SALTON SEA
State Hwy 111
Gillespie Rd
Wilkins Rd
Wister Rd
US Hwy 111
English Rd
Niland
Pound Rd
Mc Donald Rd
State Rte 111
West Rd
Sinclair Rd
Brandt Rd
Lindsey Rd
Garst Rd
Gentry Rd
Main St
Eddins Rd
State Hwy 115
Calipatria
Bowles Rd
Kalin Rd
Vail Rd
Albright Rd
Co Hwy S30
Hoskins Rd
Forrester Rd
Public Services
Fire Stations
Police Stations
Unincorporated Residents Waste Disposal Centers
Study Area
0
2
4
Miles
SOURCE: Imperial County

California Highway Patrol (CHP)

California State Highway 111 and Imperial County Sign Route S30 have roadway segments within the Study Area which are patrolled by California Highway Patrol (CHP). The CHP provides traffic regulation enforcement, emergency accident management, and service and assistance on state roadways and other major roadways in the unincorporated portions of Imperial County. Under an existing mutual aid agreement, additional law enforcement services are provided if and when required by all of the cities within the county as well as with Border Patrol and the CHP.

5.1.3. Fire

The Imperial County Fire Department and Office of Emergency Services (ICFD/OES) performs fire protection and emergency response services for unincorporated communities within the County, townships and the City of Imperial. The ICFD oversees nine stations staffed with a Captain, Firefighter and Reserve Firefighter and has a Type I engine as its primary apparatus. The ICFD/OES currently enforces the 2010 California Fire, Building, Electrical, County Ordinances, as amended by the County of Imperial Land Use Ordinance, in addition to National Fire Protection Association standards; Title 19, of the California Public Safety Code; and the California Health and Safety Code.

As shown in Figure 5-1, Public Services, the two fire stations nearest to the Study Area are in Calipatria and Niland. The Calipatria Fire Department provides fire protection services to the City, as well as unincorporated areas of Imperial County surrounding the city. The Department renews its County contract each year to oversee 250 square miles of unincorporated County land. The contract states that the Calipatria Fire Department shall deliver and operate County fire-fighting apparatus and equipment to respond to service calls in other areas of the County as necessary.

There is also a County fire station in Niland, the community adjacent to the northeastern Study Area boundary, which is managed by the Niland Fire District, staffed with a Fire Chief, Captain and volunteer firefighters. Services provided by the ICFD/OES include Fire Protection, Medical, Aircraft Rescue Firefighting, Technical Rescue and Hazardous Material and Hazardous Devices incident response. The ICFD/OES Emergency Units aim to maintain a response time of 1.5 minutes after receiving the initial tone for service.

5.1.4. Schools and Libraries

The Study Area is located within the Calipatria Unified School District (CUSD), a public school system serving Calipatria, Niland, and Bombay Beach in Imperial County. As shown in Figure 5-2, Community Resources, these schools are located within the urban areas neighboring the Study Area, in Calipatria and Niland. Bordering the southeastern portion of the Salton Sea, the CUSD encompasses approximately 480 square miles. The district office is in Calipatria and oversees two elementary schools, one middle school and one high school as follows:

- Fremont Primary School, located in Calipatria, serving grades TK-4.
- Grace Smith School, located in Niland, provides a K-4 setting for students from Niland, Bombay Beach, and the community of Slab City.
- Bill E. Young, Jr. Middle School, located in Calipatria, provides the district's 5-8 grade program.
- Calipatria High School, located in Calipatria, provides the district's 9-12 grade program.

In addition to grades K-12, Imperial Valley also supports two higher education campuses. Imperial Valley College, located in the city of Imperial, is a two-year junior college servicing students throughout Imperial County. San Diego State University's Imperial Valley Campus, located in Calexico, provides students with opportunities to earn a Bachelor and Master's degree through their higher education programs.

Imperial Valley College (IVC), in collaboration with the County of Imperial and industry representatives, announced the launch of the Lithium Industry Force Training (LIFT) program. Scheduled to commence in Fall 2023, LIFT aims to equip the local workforce with essential skills for the geothermal energy and mineral extraction industries, particularly in the emerging Lithium Valley. The program offers one-year certificate programs in Plant Operation, Instrumentation, and Chemical Lab Technician roles, with access to state-of-the-art equipment and industry certifications. Led by experienced faculty, LIFT aligns with the region's economic growth and sustainability goals.

There are

The Imperial County Free Library provides free and equal access to information for members of the County to service their educational, professional, personal, and recreational resource needs. The County manages four branch locations in Calipatria, Salton City, Holtville and Heber. The Calipatria branch location is the nearest library to the Study Area and is also within walking distance of the CUSD schools located in the community.

5.1.5. Regional and Community Parks

The Study Area is home to the Sonny Bono Salton Sea National Wildlife which was established as a protected area and breeding ground for birds and wetland species. The area's location and environmental conditions attract millions of migratory birds every year, providing a nesting site along the major north-south flyway route known as the Pacific Flyway. The Sonny Bono Salton Sea National Wildlife Refuge consists of approximately 36,000 acres, 34,250 of which are inundated by the Sea, leaving 1,750 acres of agricultural fields, freshwater marsh, and river lands. This refuge is considered a critical wildlife habitat along the Pacific Flyway, with over 400 bird species recorded.

The California Department of Parks and Recreation (CDPR) manages the Salton Sea State Recreation Area on the northeast shore of the Sea and the Anza-Borrego Desert State Park to the west in the Santa Rosa Mountains. The California Department of Fish and Wildlife (CDFW) manages the Imperial Wildlife Refuge Area-Wister Unit on the east shore of the Salton Sea near Niland.

As shown in Figure 5-2, Community Resources, the Study Area contains two Imperial County parks on the eastern shore, Red Hill Marina on the southeast edge of the Sea, west of Niland, and Niland Marina County Park, on the eastern shore, southeast of the Salton Sea State Recreation Area. The types of recreation uses occurring here are strongly linked with the wildlife values associated with this area and include wildlife viewing, hiking, fishing, and boating. The State Imperial Wildlife Area, operated by the CDFG, has been maintained as a hunting, fishing, and passive recreation use area for nearly fifty years. However, the lack of water quality has brought down recreation activities such as swimming, water skiing, and boating.

5.1.6. Community Cool Centers and Hydration Stations

Imperial County experiences extreme heat events regularly during peak periods of the summer seasons. Maintaining community safety and providing adequate resources for residents to protect themselves from heat is a critical aspect of supporting public health in the region.

As shown in Figure 5-2, Community Resources, the Imperial County Public Health Department (ICPDH) has established seven local Cool Centers which are available throughout Imperial County where individuals can cool off during the hottest parts of the day. In addition, this offers the opportunity for individuals to reduce their own air conditioning use which lowers utility billing rates and living expenses for residents.

Another community service provided by the County includes the setup of Hydration Stations in areas of need where drinking water is available during extreme heat events. Imperial County provides this information through helpful map-based platforms, in addition to bilingual content to ensure the most effective delivery of information to residents.

5.1.7. Healthcare

Communities throughout Imperial Valley vary in their access to quality healthcare and emergency services, which results in health disparities between populations and geographic areas. Residents near the Salton Sea region experience limited access to emergency healthcare services in comparison to other tracts in Imperial County (Juturu, 2021). The Study Area is largely vacant of any available emergency medical care or high-quality healthcare services in proximity to the neighboring communities of Calipatria and Niland.

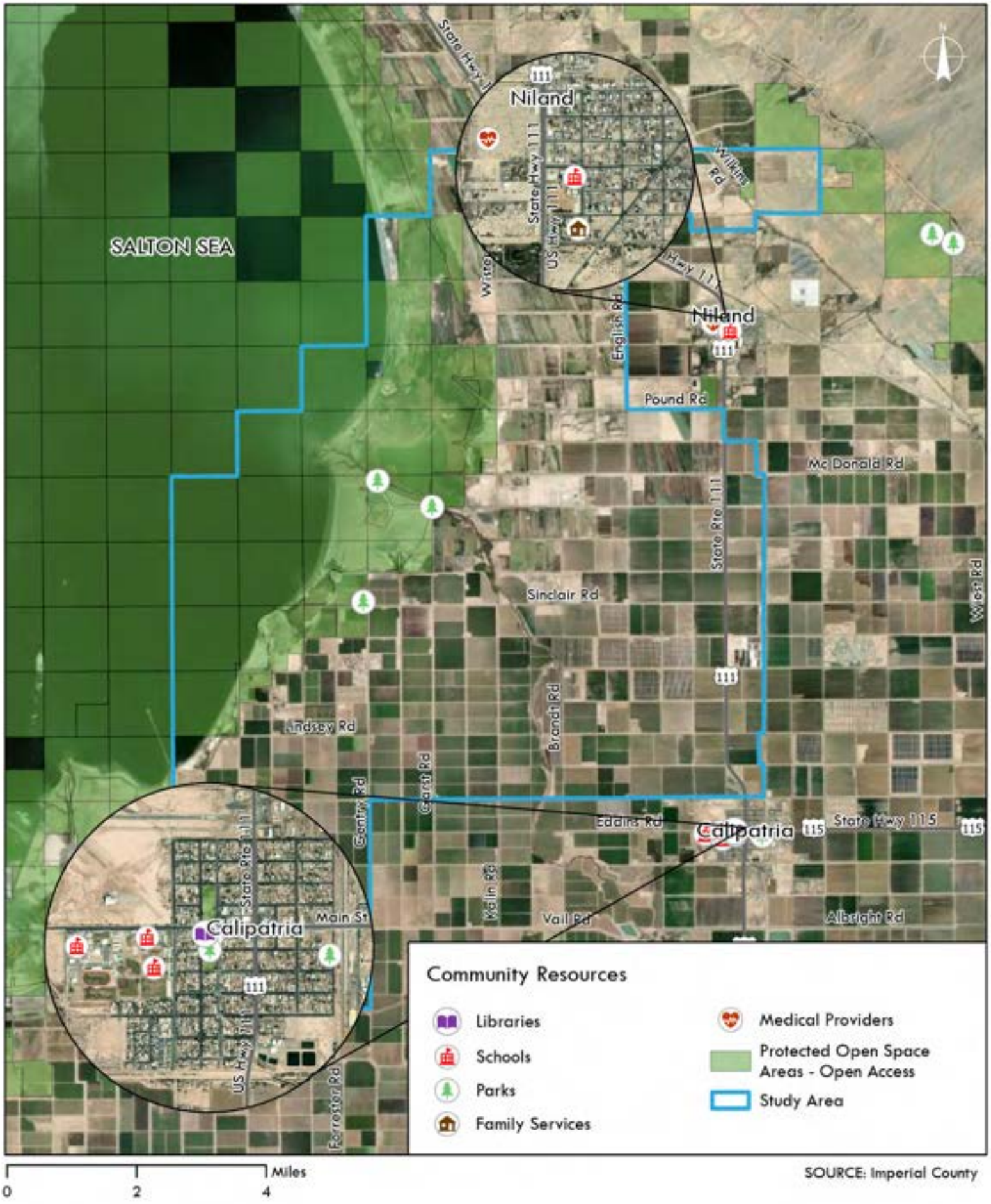
According to the Imperial County Public Health Department (ICPHD) 2018-2019 Health Status Report, 11.83% of the total civilian non-institutionalized population in Imperial County are without health insurance coverage. However, financial coverage is not the only challenge, the Salton Sea region also has extremely limited access to primary-care providers (PCPs), which are essential for preventive care, primary care, and referrals to appropriate specialty care.

The Imperial County region endures pediatric asthma-related emergency healthcare visits that double the state average (Juturu, 2021). Poor air quality resulting from the Salton Sea's contribution to dust pollution poses severe environmental health concerns for residents near the Study Area.

Inhaling particulate matter can aggravate lung diseases and worsen pre-existing respiratory conditions, resulting in a higher frequency of emergency healthcare visits. Proximity to hospitals and access to emergency medical care represent a critical aspect of mitigating health impacts of particulate matter exposure, ensuring timely and effective interventions for individuals with respiratory issues.

The nearest hospital to the Study Area is Pioneers Memorial Hospital, located approximately 13 miles from Calipatria. Pioneers Memorial Hospital is a 107-bed acute care facility located in Brawley. In July 2023, Pioneers Memorial Hospital became the base hospital of the Imperial Valley for patients accessing 911 emergency services. A base hospital provides oversight and online medical direction to Imperial County Emergency Medical Services Agency personnel conducting pre-hospital treatment, triage, and transport of advanced life support care patients. The hospital's recognition as a base hospital has resulted in higher financial contributions to the facility and has drawn in medical professionals experienced with emergency care. However, the average travel time from the Study Area to Pioneers Memorial Hospital is approximately 50 minutes, which is approximately 20 minutes higher, on average, than other census tracts in Imperial County (Juturu, 2021).

The next closest hospital is the El Centro Regional Medical Center (ECRMC), which is located approximately 30 miles from the Study Area. ECRMC is a 161-bed acute care medical center in El Centro, which provides a range of services, including emergency care and surgery. The medical center emphasizes patient-centered care and the use of modern medical technology. Challenges involving financial constraints and staffing issues have caused the institution to restructure their governance and develop a partnership with University of California San Diego Health to provide interim care as public healthcare issues are addressed throughout Imperial Valley. ECRMC plays a vital role in emergency preparedness, coordinating responses to potential disasters with neighboring jurisdictions. The average travel time from the Study Area to ECRMC is approximately 61 minutes, approximately 14 minutes higher, on average, than other Imperial County census tracts.



BASELINE REPORT
FIGURE 5-2, Community Resources

5.2. CONSTRAINTS

Based on the existing conditions of public services and resources in the Study Area, the following constraints were identified as obstacles to the growth of the renewable resource industry:

- Unincorporated areas often lack dedicated public services and resources. There is a lack of existing infrastructure to provide public services, such as water for fire protection.
- Upholding and maintaining performance standards for rapid emergency response times may be challenging without dedicated agencies overseeing the area.
- Population growth will require an expansion of public services and facilities, which can be difficult to finance without dedicated funding sources.
- Ongoing coordination and collaboration between multiple authorities and agencies will be necessary to maintain a high level of service to the community.

As an unincorporated area, residents within the Study Area rely on the provision of services by neighboring cities, special districts, and the County. The County is responsible for providing police and fire protection services but maintains agreements with the City of Calipatria and Brawley to oversee the unincorporated Study Area. Responding to service calls is the primary mechanism by which the County upholds the police and fire protection services in the Study Area.

While it is the responsibility of the County to uphold fast response times when attending service calls to residents, existing agencies like the Calipatria Police Department provide insight into the performance standards for response. It is standard practice for emergency responders to arrive at sites within three minutes of the service call. As population in and around the Study Area grows with the expansion of employment opportunities, maintaining the standard response time will become more difficult without more staff or additional public facilities.

As an area that is primarily unincorporated, preparing for a growing population will require an expansion of existing public services and resources. Without a dedicated funding source, however, it is difficult to acquire the necessary funding to achieve these objectives. Another challenge is the lack of existing infrastructure to support the expansion of public services and resources. Water availability is restricted to provisions by the Imperial Irrigation District (IID). Coordination between the utility, municipalities and the County would be required to ensure that water can be accessed to support fire protection. There are currently not agreements with incorporated cities for utility services.

Neighboring incorporated cities can be useful for supporting public services and resources in the Study Area, as they already oversee dedicated agencies which provide these services to the community. Agreements between cities, special districts and the County have provided and will be necessary to continue to provide the necessary level of public services to residents as demand grows.

Access to education in the Study Area is dependent upon the CUSD public school system, which serves the communities of Calipatria, Niland, and Bombay Beach in Imperial County. Currently, the Study Area does not have any educational facilities within its boundary, however the city of Calipatria and community of Niland have all four schools within CUSD. Demand on public education

and facilities will increase with a rise in employment opportunities from renewable resource energy development. The capacity of the schools within the CUSD will have to increase to continue to provide high standards of education to a growing community. Increasing school staff, facilities and learning materials will require adequate funding from state and local agencies to provide quality education to community residents.

Library facilities will also experience increased demand for study spaces, educational resources, technology, and learning materials. The Calipatria Branch of Imperial County Free Library will require the addition of new programs, resources and funding to accommodate for the community's development. Coordination between the Imperial County Office of Education (ICOE), CUSD and other local school districts will ensure equal access to community educational resources.

Community resources, such as cool zones and shelters provide a unique opportunity for the County to directly support residents. Necessary funding for the community resources will be provided by the County, which may drive certain funding mechanisms in the Study Area.

Limited access to emergency healthcare services in the Salton Sea region compared to other areas in Imperial County creates health disparities and poses challenges for timely interventions for residents, who already experience higher rates of pediatric asthma-related emergency healthcare visits, compounded by poor air quality from the Salton Sea's dust pollution.

5.3. OPPORTUNITIES

While there are several constraints, there are also certain opportunities to expand public services and resources in the Study Area. The following opportunities will assist in accommodating for population growth and the development of an industrial-based economy In Imperial Valley:

- Coordination and collaboration between the County, existing public agencies and local governments will be critical for expanding essential public services to the Study Area to prepare for a higher demand on services.
- Upholding and maintaining rapid emergency response times demonstrates capacity to expand public services and accommodate for increasing demand.
- Maintaining agreements between city departments, special districts, and the County to provide police and fire protection support in unincorporated areas.
- Provision of police, fire, and other public services by the County to help supplement and meet projected demand for services in incorporated areas.
- State funding sources dedicated toward financing education can be leveraged to expand educational facilities, provide additional resources and recruit staff to accommodate for a growing student population.
- Workforce growth and population projections can help determine what the future demand will be for public services, allowing the County to develop the necessary facilities, infrastructure and staff to provide them.
- By increasing the presence of emergency medical services in the region, residents would benefit from reduced travel times to healthcare facilities, addressing the 20-minute disparity

observed in comparison to other census tracts in Imperial County. Implementing targeted solutions, such as the establishment of Emergency Medical Technician (EMT) stations or expanding healthcare services, becomes imperative to mitigate these disparities and ensure timely medical interventions for the vulnerable population in the Salton Sea region.

5.4. RECOMMENDATIONS

Based upon the assessment of constraints and opportunities regarding public services in the Study Area, it's recommended that the County:

- Maintain the agreements currently held to continue providing fire and police protection in the Study Area. It is recommended to maintain the agreement between the Calipatria Fire Department and the County to oversee approximately 250 square miles of unincorporated area.
- Improvements to the service call response time will indicate effective investment in the Study Area and will demonstrate a high standard for public safety.
- Expand emergency response resources, facilities and staff as a higher demand for services and resources occur.
- Meet or improve upon performance standards for emergency response time through effective training and staff recruitment.
- Target state and local funding towards educational improvements and expansion of available educational resources. This includes recruiting additional school and district staff, expanding available facilities, and providing materials to support the student population's success.
- Collect and reassess DIFs to ensure new developments can connect with existing utility infrastructure and provide the same standard of living to residents in an incorporated area.
- Establish EMT stations strategically located around the Study Area and expand healthcare services in Calipatria and Niland to ensure timely access to medical interventions. This would improve emergency preparedness and address the constraints identified, promoting equitable healthcare access and enhancing the overall health outcomes of the incoming populations to inhabit Calipatria and Niland.
- Reinforce existing medical centers at Pioneers Memorial Hospital and ECRMC to benefit the populations in Calipatria and Niland, as well as the Imperial Valley region as a whole. Strategically investing in these medical facilities, create an opportunity to enhance overall healthcare capacity, improve infrastructure, and expand critical medical services currently unavailable in Imperial County.

6. Utilities

6.1. EXISTING CONDITIONS

This section includes an assessment of the existing water and wastewater systems. Utilities and service systems include water supply and treatment and wastewater treatment facilities.

6.1.1. Applicable Regulations

Senate Bill 610

SB 610 was approved by the Governor in 2001 and came into effect January 1, 2002. SB 610 requires a lead agency to provide a Water Supply Assessment for any project subject to the CEQA which meets the definition of California Water Code Section 10912. The lead agency must identify any public water system that may supply water for the project to be included in the assessment. With the introduction of SB 610, any project under the CEQA shall provide a WSA in the following circumstances: (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space; (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area; or (7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

QSA- Water Transfer Agreement

The 2003 Quantification Settlement Agreement and Related Agreements (QSA) serve as the laws, regulations, and agreements granting California the most senior water rights along the Colorado River and specifying that IID has access to 3.1 million acre-feet (maf) of Colorado River water per year. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona, and Mexico. Water is transported to the IID water service area through the All American Canal (AAC) for use throughout the Imperial Valley.

Imperial Irrigation District (IID) Integrated Water Resources Management Plan

On September 23, 2008, the IID Board of Directors adopted a strategic plan tasking the Water Department to develop an Integrated Water Resources Management Plan (IWRMP, IID Plan) to assist in meeting future water resource demands. The IRWMP identified policy-oriented options that could be developed to address forecasted new demands (IID 2024).

Interim Water Supply Policy for Non-Agricultural Projects

The Interim Water Supply Policy for Non-Agricultural Projects (IWSP) was adopted by the IID Board of Directors on September 29, 2009, to ensure sufficient water was available for new development, in particular much anticipated renewable energy projects. In 2012, IID incorporated the Interim Water Supply Policy for Non-Agricultural Projects (IWSP) into IRWMP by reference. This policy designates up to 25,000 acre-feet of IID's annual water entitlement be made available for new non-agricultural projects until such time that projects identified in the IRWMP, or other water conservation or supply augmentation projects, are implemented to address new water demands (IID 2024). Until the IID board selects and implements such capital development projects, IID provides water to new non-agricultural projects under the terms of the Equitable Distribution Plan and the Interim Water Supply Policy for Non-Agricultural Projects (IID 2024).

IID Drought Contingency Plan

Persistent drought affecting the Colorado River watershed has led to a concerted effort by Section 5 contractors in the Upper and Lower basins to develop what has become known as a Drought

Contingency Plan to arrest the declining elevation at both Lake Mead and Lake Powell. A Settlement Agreement was reached in 2021 between IID and MWD reaching agreement on additional storage for excess conservation.

CalRecycle

CalRecycle is a state agency that administers and provides oversight for all of California's state-managed non-hazardous waste handling and recycling programs. CalRecycle sets minimum standards for the handling and disposal of solid waste designed to protect public health and safety, as well as the environment. CalRecycle also provides training and ongoing support for local enforcement agencies which regulate and inspect California's active and closed solid waste landfills, as well as materials recovery facilities, solid waste transfer stations, and compost facilities.

Integrated Waste Management Act (AB 939)

The Integrated Waste Management Act (IWMA), introduced as AB 939, was passed by the State Legislature in 1989 due to the increase in waste stream and decrease in landfill capacity. It was intended to reduce dependence on overallocated landfills and to ensure an effective and coordinated waste management system for waste generated within California.

AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of 25% by 1995 and 50% by the year 2000. AB 939 also established an integrated framework for program implementation, solid waste planning, solid waste facility operations and landfill compliance.

Construction and Demolition Waste Materials Diversion Requirements (SB 1374)

Senate Bill 1374, Construction and Demolition Waste Materials Diversion Requirements was passed in 2002, requiring that jurisdictions include a summary of the progress made in diverting construction and demolition waste in their annual AB 939 report. The legislation also required that CalRecycle adopt a model ordinance for diverting 50 to 75 percent of all construction and demolition waste from landfills.

Federal Communications Commission

The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in the United States. The FCC operates as an independent government agency and serves as the primary authority for communications law, regulations, and technological innovation. The FCC is organized into seven separate bureaus; Consumer and Governmental Affairs, Enforcement, International, Media, Public Safety and Homeland Security, Wireless Telecommunications, and Wireline Competition.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, and transportation companies. CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities, and the local pipelines of natural gas. In addition, CPUC regulates rates and charges for basic telecommunication services, such as how much one pays for the ability to make and receive calls.

County of Imperial Land Use Code Division 24 - Communication Facilities

This division establishes a consistent set of standards regulating the placement and design of all types of communication facilities in unincorporated areas of Imperial County. These standards are intended to protect and promote public health, safety, community welfare and the unique visual character of Imperial County by encouraging the orderly development of communication infrastructure.

6.1.2. Water

As discussed in Section 2.1, Water System, of Appendix A, Infrastructure Assessment, water and sewer services in the unincorporated areas of the County are generally limited to parcels within or immediately adjacent to established communities or incorporated cities. Each city and unincorporated community has its own water treatment facilities for treating and distributing water (including booster pump stations) to the users of each jurisdiction. Ten communities within Imperial County receive water for domestic purposes from the IID, including Calipatria and Niland. The Study Area relies on water distribution from the Colorado River which is managed by the Imperial Irrigation District (IID).

IID's Interim Water Supply Policy (IWSP) allows industrial water supply for new Non-Agricultural Projects, providing raw Colorado River water to municipal, industrial, and commercial customers. The policy allocates 25,000 acre-feet per year (AFY) of IID's annual Colorado River water supply for such projects, with 22,800 AFY available as of December 2021. Projects seeking water supply from IID must adhere to a process involving the preparation of a Water Supply Development Report, the establishment of a Water Supply Agreement, and payment of associated reservation and water supply development fees. Under current policy, all new development is subject to the IWSP and the generation of conservation water to meet the projected water supply demand is required. Therefore, , the water conservation programs and/or projects to meet this demand would also need to be assessed in the Lithium Valley PEIR.

Within the Study Area, currently approximately 126,000 acre feet (AF) out of the total 149,000 AF of water is apportioned to agricultural land uses, inclusive of IID Trust Lands leased to growers (Gamboa-Arce 2023). The Agricultural Water User's apportionment is a hybrid apportionment consisting both of the historical use for the same period (2003-3012) and a straight-line component as described in the EDP (Gamboa-Arce 2023). Under current conditions, IID does not service all parcels within the Study Area. Federal lands, private lands, or non-profit entity lands are currently not able to receive water by IID (Gamboa-Arce 2023).

In December 2023, the IID Board of Directors unanimously approved the 2023 System Conservation Implementation Agreement (SCIA) with the U.S. Bureau of Reclamation, as part of the historic Lower Basin Plan to conserve 3 million acre-feet of water by 2026. The agreement commits IID to conserving up to 100,000 acre-feet of water in 2023, contributing to the broader May 2023 Lower Basin Plan to protect the Colorado River system from extended drought and safeguard critical reservoir elevations. IID aims to address extended drought concerns for the Colorado River system. The conserved water, generated through IID's On-Farm Efficiency Conservation Program, exemplifies collaborative efforts with innovative agreements. The IID continues to explore additional conservation efforts beyond 2023, proposing a cumulative target of 800,000 acre-feet by 2026.

The commitment also includes supporting the Salton Sea, with $70 million released for environmental projects.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in California Water Code (CWC) Section 10912 [a]) that are subject to the California Environmental Quality Act (CEQA). The Imperial Irrigation District (IID) and Imperial County Planning & Development Services (ICPDS) requested a Water Supply Assessment (WSA) for this project. The project's Programmatic Environmental Impact Report (PEIR) will provide the foundation for the Water Supply Assessment (WSA). The water supply assessment for the Lithium Valley Specific Plan and PEIR shall include a discussion with regard to whether the total projected water supplies, determined to be available by the County for the project during normal, single dry, and multiple dry water years during a 20 year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and industrial uses.

Existing critical water infrastructure includes the Senator Was Dam and Reservoir, Imperial Dam and Desilting Works, and Imperial Valley Reservoir Facilities. See Appendix A, Infrastructure Assessment for greater detail on existing water infrastructure and water sources. Further detail on water quality is included in Section 9.9, Hydrology and Water Quality.

6.1.3. Wastewater

As discussed in Section 2.2, Wastewater System, Appendix A, Infrastructure Assessment, the unincorporated areas of Imperial County are assumed to have little to no wastewater infrastructure except septic systems. The Study Area (Calipatria, Niland and unincorporated Imperial County areas) includes wastewater infrastructure in the developed areas but utilizes septic systems in other areas.

Public sewer services are available within the 7 incorporated cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial and Westmorland, as well as within the community service district areas of Salton City, Winterhaven, Desert Shores, Bombay Beach, Heber, Seeley, and Niland. Private septic system utilization is predominately concentrated in the outlying community areas of Ocotillo/Nomirage, Palo Verde, Salton Sea Beach, Vista del Mar, Bard, Walter's Camp/Riverfront, and the rural agricultural areas surrounding the incorporated cities within the central Imperial Valley. According to the 2015 Onsite Wastewater Treatment Systems (OWTS) report prepared by the Imperial County Public Health Department, it was estimated that 6,608 occupied housing units are serviced by OWTS in Imperial County.

The City of Calipatria operates the publicly owned Wastewater Treatment Plant, which is recommended to be upgraded by 2025 to accommodate future conditions average flow. The existing facilities consist of four ponds with a 1 MGD Capacity and an Aeration System with a total Treatment Capacity of 1.7 MGD. The facilities are designed/permitted for an 80 percent capacity at peak flow. The City of Calipatria owns over 15 miles of sanitary sewer collection pipelines ranging in size from 6-inch to 15-inch in diameter that collect wastewater from the urbanized City Limits before transmitting it to the Wastewater Treatment Plant at Lindsay Road. The City of Calipatria operates two lift stations into its collection system: The Delta Pump Station and the Calipatria Prison Pump Station. Reclaimed water is not currently a significant source of supply in the Imperial Valley.

The potential use of wastewater from the Calipatria Wastewater Treatment Plant has been evaluated previously but deemed not viable compared to imported water or groundwater.

The Niland Wastewater Treatment Plant (WWTP) has a design or ADF capacity of 0.50 MGD. The process flow scheme consists of a manual headworks structure, influent pump station, three (3) aeration ponds, chlorination/dechlorination structure, and a flowmeter sampling vault. In 2023, The California Department of Housing and Community Development (HCD) notified the County of Imperial of an award of a $3 million Community Development Block Grant (CDBG) toward improvements to the Niland WWTP and Collection System. Funds from the grant will address effluent quality issues and sewer collection pipeline improvements.

See Appendix A, Infrastructure Assessment for greater detail on existing wastewater infrastructure and treatment facilities.

6.1.4. Electricity

Renewable energy facilities in the Study Area are clustered along the southeastern boundary of the Salton Sea, largely connected via a transmission line that is under 100 kilowatts. This transmission line is owned and operated by IID and provided to retail customers such as geothermal power plants. As discussed in Section 3.1, Electricity and Energy Grid, Appendix A, Infrastructure Assessment, due to the high volume of energy grid data within the 51,786-acre Study Area, it has not been feasible for the Imperial Irrigation District (IID) to provide focused information that would be best-utilized. Ongoing consultation with IID will provide analysis of existing electrical infrastructure once a focus area is established and/or land use alternatives are prepared.

6.1.5. Solid Waste, Recycling, and Composting

As discussed in Section 3.2, Solid Waste, Recycling, and Composting of Appendix A, solid waste and hazardous waste services are provided by Imperial Valley Resource Management Agency, and CR&R Environmental Services.

The Imperial Valley Resource Management Agency (IVRMA) is a Joint Powers Authority (JPA) focused on solid waste and recycling for public agencies in Imperial County. The agency operates household hazardous waste collection facilities in Brawley, Calexico, and El Centro. CR&R Environmental Services provides non-hazardous waste services to Calipatria, taking waste to sorting facilities in El Centro before disposal This municipal waste is taken to CR&R's El Centro sorting facility prior to landfill disposal at either Republic Landfill or the South Yuma County Landfill. Imperial County is currently facing compliance issues with mandatory state recycling regulations, leading to decisions to close certain solid waste sites, impacting waste disposal options in the region. The Imperial County Board of Supervisors decided to close the Imperial Landfill, which is permitted to accept Class III solid waste. The closest alternative landfill for disposing of Class III non-hazardous solid wastes is Niland, with an authorized capacity of 358,000 cubic yards. However, as of 2020, only approximately 200,000 cubic yards were available for use at the Niland landfill. County landfill facilities may rely on trucking waste out of state should the Clean Harbors Westmoreland hazardous waste facility remain closed (Appendix A).

6.1.6. Telecommunications

As discussed in Section 3.3, Telecommunications, Appendix A, Infrastructure Assessment, telecommunication services are provided by a number of companies in the area including AT&T, HughesNet and Viasat. Services are currently provided on a customer-by-customer basis. The BorderLink program, initiated by the Imperial County Office of Education (ICOE) in collaboration with local school districts, aims to provide wireless internet connectivity to students in various communities, including the Study Area. The Imperial Valley Telecommunications Authority (IVTA), a joint powers authority, focuses on broadband infrastructure for public agencies in Imperial County, including schools and other entities.

The Study Area lacks residential broadband customers but is served by private providers extending beyond city limits. AT&T, T-Mobile Home Internet, Beamspeed, HughesNet, Viasat, and EarthLink are among the common providers. AT&T offers 4G LTE wireless coverage to most of Imperial County, including the Study Area. Various providers offer services like DSL Internet, Satellite Internet, Fiber Internet, and direct wireless internet connection. Due to the remoteness of the Study Area, servicing commercial customers in the Study Area can be costly.

6.2. CONSTRAINTS

Constraints related to utilities include:

- Existing Colorado River Water Rights – Long standing appropriations dating back to 1914 define the amount of water allocated to the various stakeholders including Arizona, New Mexico and Imperial County.
- Reliability on the IID for increasing water demand. Alternative sources to access freshwater are limited due to the water distribution supply delivered by IID. Under current IID policy all new development is subject to the IWSP and the generation of conservation water to meet the projected water supply demand is required. As such, the Lithium Valley Specific Plan PEIR must consider water conservation programs and/or projects to meet projected demand that would also need to be environmentally assessed.
- Improvements proposed for the Study Area will require that water connections/lines be constructed for the undeveloped parcels including transmission lines, service laterals, booster pumps and associated appurtenances.
- There is a potential need for a regional storage water facility, considering the IID canals/laterals have historically experienced up to 5-day outages.
- The existing system is comprised of main and supply canals with diversions to lateral canals, and from lateral canals into customer's head ditches. These supply canals and lateral canals will need to remain operational for all existing development not impacted by proposed improvements.
- IID's Present Perfected Right to use Colorado River consists of an annual diversion of 2.6 million acre-feet from the mainstream or the quantity of mainstream necessary to supply the consumptive use required for irrigation of 424,145 acres and the satisfaction of related uses,

whichever is less. This volume agreement presents challenges to sufficiently support future industrial demand.

- The Senator Wash Dam provides flow regulation for three different states' supply: California, Arizona and New Mexico. Although the supply from this dam is controlled by IID's River Water Dispatching Unit under the direction of the USBR's Yuma Area Office, coordination with interstate municipalities may be required to increase overall supply to the All American Canal which supplies IID.
- Distribution system operations from IID will likely need to be updated to accommodate supply release from the Hoover Dam to support increased residential, industrial and commercial developments.
- Need for potential upgrades to conveyance canals/ditches depending on water demand, adjusted supply, and land use planning.
- Future development will require extensive installation of trunk sewer mains, laterals/service lines, lift stations (due to the existing flat topography) and upgrades to appropriate wastewater treatment facilities to handle currently projected future flows as well as development within the Study Area.
- Septic systems in the area will need to be systematically removed and replaced as development occurs.
- Due to the exorbitant rates of residential water use for disadvantaged communities, lack of political acceptance of rate increases and the limited ability of ratepayers to pay taxes required to fund continued maintenance and improvements, these facilities could be in jeopardy.
- Imperial County landfills have been temporarily closed. If closures remain, alternative solid waste solutions may be needed such as trucking waste out of state. Currently the county system does not have an end use in mind. After the landfills are closed there remains a financial constraint as well as continued maintenance requirements that have to be completed for thirty years.
- Hazardous waste facilities are limited within Imperial County.
- Telecommunication services are currently provided on a customer-by-customer basis. Due to the remoteness of the Study Area, servicing commercial customers in the Study Area can be costly.

6.3. OPPORTUNITIES

Opportunities related to utilities include:

- Since there is limited existing water infrastructure within the Study Area, future development within this area will not be constrained due to other existing infrastructure.

- IID's Interim Water Supply Policy allocates 25,000 acre-feet per year (AFY) of IID's annual Colorado River water supply for industrial projects, with 22,800 AFY available as of December 2021.
- Alternative strategies for water provision are suited toward those who participate in groundwater diversion or well completion projects. Maintenance of these alternate water resource extraction strategies can assist in sustaining a reliable freshwater resource for a workforce in the Study Area. Certain groundwater well resources provide supplemental supply of freshwater to residents inhabiting areas outside of the existing public service infrastructure network.
- Water recycling practices and requirements may be a feasible way to reduce total water demands across industrial land uses, considering the limited water supply allocated to non-agricultural use.
- Similar to the aforementioned project constraint, the existing system is comprised of main canals, supply canals, and lateral canals that supply customer's head ditches. This could also be viewed as an opportunity, where properties already have water access and are not reliant on development improvements to provide service.
- Service to the IID region is supplied by the All-American Canal, Coachella Canal, Westside Main Canal and Central Canal, which provides opportunities for design flexibility and options.
- New development opportunities could assist with funding necessary improvements to the existing wastewater treatment plants at Calipatria and Niland, provide funding for upgrades and improvements in addition to potential construction of additional facilities which are more cost effective and efficient.
- IID maintains utility poles within the Study Area that may be used for future telecommunication equipment.
- Alternative end uses for landfills should be explored that will not only mitigate maintenance costs at the site but bring in revenue. Further, the County landfills are currently permitted at class III and still contain plenty of air space. Any interested entities willing to expand capacity at the sites can re-permit and reopen a closed landfill easier than it would be to open up a new site. Efforts to divert waste solids from landfills to useful purpose should be encouraged to save landfill space (Dobson et.al 2023).

6.4. RECOMMENDATIONS

Recommendations related to utilities include:

- Future programmatic water and wastewater studies should be completed to determine viability of existing infrastructure, feasibility of future infrastructure development and tie in points.
- Once a preferred land use plan is developed, further recommendations may be provided related to assessing electrical and telecommunication services to the Study Area.

7. Low-Carbon Energy Resources

7.1. EXISTING CONDITIONS

The Salton Sea region is a leading area for California renewable energy production, especially solar and geothermal energy (CEC 2022). Imperial County's climate with minimal precipitation and warm temperatures makes it very suitable for these types of renewables.

The low-carbon energy resources section of this report documents the existing renewable energy sources located within the Study Area and the County. This section also intends to document a-typical low-carbon energy resources that have potential to exist within the Study Area and the trends of those resources at the national and global scale. This section also identifies the major providers of these resources to understand the potential players and stakeholders as preparation of the Lithium Valley Specific Plan progresses.

7.1.1. Applicable Regulations

Governor Executive Orders

Governor Gavin Newson's Executive Order, B-55-18, of September 2018, establishes the statewide goal to achieve carbon neutrality by 2045 and maintain net negative emissions thereafter (State of California 2018).

Governor Gavin Newson's Executive Order, N-79-20, of September 2020, sets forth an aggressive zero-emission transportation goal which requires that all new passenger vehicles sold are zero-emission by 2035, all drayage trucks shall be zero-emission by 2035 and all medium- and heavy-duty vehicles in California are to be zero-emission by 2045 where feasible (State of California 2020). The Executive Order also tasked CARB to develop and propose regulations that require increasing volumes of zero-emission passenger vehicles, medium- and heavy-duty vehicles, drayage trucks, and off-road vehicles toward their corresponding targets of 100 percent zero-emission by 2035 or 2045, as listed above.

SB 100

SB 100 establishes a 2045 goal requiring that all retail electricity sold in California and for state agency facilities be powered by eligible renewable and zero-carbon resources. SB 100 requires at least 60 percent of the state's electricity come from eligible renewable energy resources by 2030 (State of California 2021a). Eligible renewable energy resources include solar, wind, geothermal, bioenergy, fuel cells, existing hydroelectric, and existing nuclear.

AB 1757

Signed in September 2022, this bill requires the California Natural Resources Agency (CNRA) to collaborate with other agencies to develop targets for carbon sequestration and emission reductions on natural and working lands. The bill also requires the state board to develop methods for state agencies to track greenhouse gas emissions and reductions by January 1, 2025.

AB 1657

Assembly Bill 1657, of 2021, authorizes the California Energy Commission (CEC) to convene a Blue-Ribbon Commission on Lithium Extraction in California (Lithium Valley Commission), with 14 members appointed by a combination of the CEC, other state agencies, an Assembly Speaker, and a Senate Committee on Rules. The Lithium Valley Commission is charged with reviewing, investigating, and analyzing certain issues and potential incentives, as further detailed in the statute, regarding lithium extraction and use in California; and, to consult, if feasible, with the United States Environmental Protection Agency and the United States Department of Energy in performing these tasks (CEC 2021).

SB 125

The Salton Sea Restoration Act, or SB 125, establishes the Salton Sea Restoration Fund for environmental and engineering studies related to the restoration of the Salton Sea and the protection of fish and wildlife dependent on the sea, conservation measures necessary to protect the fish and wildlife species dependent on the Salton Sea, and the preferred Salton Sea restoration alternative, including administrative, technical, and public outreach costs related to the development and selection of that alternative, as specified.

SB 125 would create a Lithium Subaccount within the Salton Sea Restoration Fund for restoration projects and grants for community engagement, public amenity, capital improvement, or community-benefit projects at or around the Salton Sea and those communities impacted by the Salton Sea's restoration and development. The directly affected communities are listed below:

- Bombay Beach.
- The City of Brawley.
- The City of Calipatria.
- Niland.
- The City of Westmorland.

The indirectly affected communities listed below:

- Bard.
- The City of Calexico.
- Desert Shores.
- The City of El Centro.
- Heber.
- The City of Holtville.
- The City of Imperial.
- Ocotillo.
- Palo Verde.
- Salton City.
- Salton Sea Beach.
- Seeley.
- Winterhaven.
- Vista Del Mar.

SB 154

The Budget Act of 2022, SB 154, includes financial provisions related to Lithium Valley development, including a newly created volume-based tax on lithium extraction that will take effect on January 1, 2023. The tax rate shall be $400 per metric ton for the first 20,000 tons of lithium carbonate equivalent extracted, $600 per metric ton extracted over 20,000 up to 30,000 metric tons, and $800 per metric ton for lithium carbonate equivalent extracted over 30,000 metric tons (CEC 2022). Eighty percent of the money collected will go to counties where the extraction is occurring, in the same proportion as the tax was collected from those counties. Imperial County is required to distribute no less than 30 percent of the funds it receives to Imperial County communities directly and indirectly impacted by lithium extraction.

SB 1075

SB 1075 requires CARB, by June 1, 2024, to prepare an evaluation that includes: policy recommendations regarding the use of hydrogen, and specifically the use of green hydrogen, in California; a description of strategies supporting hydrogen infrastructure, including identifying policies that promote the reduction of GHGs and short-lived climate pollutants; a description of other forms of hydrogen to achieve emission reductions; an estimate of GHG and emission reductions that could be achieved through deployment of green hydrogen through a variety of scenarios; an analysis of the life-cycle GHG emissions from various forms of hydrogen production; and an analysis of air pollution and other environmental impacts from hydrogen distribution and end uses.

California Sustainable Freight Action Plan

This Action Plan establishes a statewide goal of 25% improvement in freight system efficiency by 2030, as well as deploy 100,000 freight vehicles and equipment capable of zero-emission freight. This Action Plan provides action items to plan and invest in infrastructure to modernize freight corridors.

AB 1279

AB 1279 (Muratsuchi and Christina Garcia), of 2022, demands that the state achieve carbon neutrality no later than 2045, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85% below the 1990 levels.

SB 1020

Senate Bill 1020 (Laird), of 2022, creates clean electricity targets of 90% by 2035 and 95% by 2040 with the intent of supporting the state in reaching the existing goal of 100% clean electricity retail sales by 2045.

SB 643

SB 643 (Archuleta), of 2021, requires the California Energy Resources Conservation and Development Commission to prepare a statewide assessment of the fuel cell electric vehicle fueling infrastructure and fuel production needed to support the adoption of zero-emission trucks, buses, and off-road vehicles.

7.1.2. Geothermal Energy

Imperial County is the second largest geothermal energy producing county in the nation due to the presence of several Known Geothermal Resources Areas (KGRAs) and discovery of renewable energy potential. Figure 7-1, Known Geothermal Resource Area, visualizes the Salton Sea KGRA, which encompasses a majority of the Study Area. The Salton Sea KGRA currently supports a combined output of approximately 400 MW of electricity, which is a fraction of the Salton Sea KGRA estimated capacity of over 2,500 MW (Kaspereit et al., 2016). It is expected that geothermal power production in the SS-KGRA will increase by a net output of 357 MW over the next 3-5 years (Dobson et. al 2023).

Geothermal energy requires a well to be drilled approximately 1 to 3 kilometers (km) into the ground within a KGRA. The well allows subsurface hot high-pressure brine (up to 480 degrees Fahrenheit) to surface from the earth. Steam is drawn off to run electrical turbines, and the spent brine is clarified and reinjected into the ground to replenish the geothermal reservoir.

There are three types of geothermal power plants:

1. Direct Steam: Direct steam plants are used at sites where the geothermal resource consists of high-quality steam where the steam is routed directly through a steam turbine for generating electricity.
2. Flash: Flash plants are used at sites that produce high-temperature waters (347° - 572°F). The geothermal fluid is brought to the surface under pressure and when the fluid reaches the surface, where pressures are lower, the fluid "flashes" to steam, which turns a turbine generator. There are currently 11 flash plants operating or planned in Imperial County.
3. Binary Cycle: Binary cycle plants convert lower temperature geothermal waters (194°–347°F) to electricity by routing the fluid through a closed-loop heat exchanger, where it heats a hydrocarbon working fluid. The hot brine converts the working fluid, which has a very low boiling point, to its gaseous phase; the gas is then used to turn the turbine.

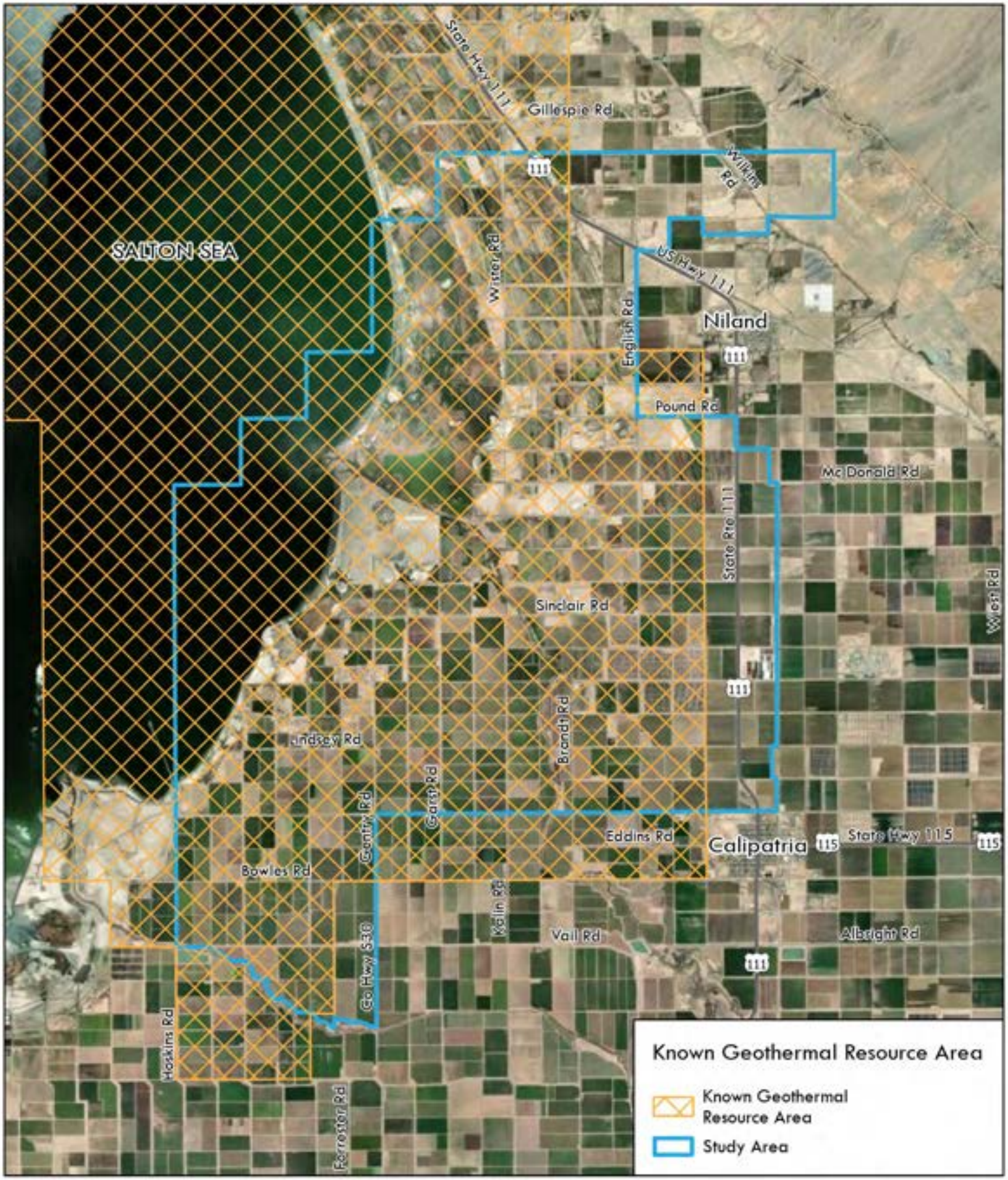
Geothermal energy has been found to have supplemental potential to extract valuable minerals from geothermal brine. This process may offer an environmentally superior alternative to sourcing essential minerals.[4] For example, lithium recovery from geothermal brine involves chemical processing of the spent brine that is produced as part of the geothermal power plant operation (UCR 2021). In addition to lithium, the other primary minerals found to have valuable characteristics that may be found in the Salton Sea KGRA brine include manganese, zinc, and copper. Other elements found in the Salton Sea KGRA geothermal brine include helium, sodium, calcium, potassium, silica, and iron (Neupane & Wendt 2017). Studies anticipate the total masses of dissolved metals in the Salton Sea KGRA brines include 15 million metric tons of manganese, 5 million metric tons of zinc, and 2 million metric tons of lithium (McKibben et al. 1990; McKibben and Hardie 1997).

The chemical process used in recovering valuable minerals from the geothermal brine was analyzed in the Lawrence Berkeley National Lab report, which studied the chemicals used at existing facilities involved in geothermal power production and lithium extraction (Dobson et. al 2023). This report notes that all geothermal power plants in the Salton Sea Geothermal Field uses a crystallizer-clarifier

[4] The environmental impacts of the LVSP will not be fully understood until the PEIR is complete.

process that deliberately precipitates silica to avoid silica scaling in pipes, wells, and elsewhere in the plants. However, the report concludes that geothermal lithium recovery operations do not identify any persistent organic pollutants or acutely toxic chemicals. This study found the chemical use is consistent with chemical use in industrial settings, and the analysis did not identify any persistent organic pollutants or acutely toxic chemicals among those currently being used (Dobson et al. 2023). Chemical use and hazardous materials will be evaluated in the PEIR.

The Lawrence Berkeley National Lab also studied the water usage in the geothermal and lithium extraction process, which determined that historically, geothermal plants purchased on average 16 acre feet (AF) of water per megawatt (MW) per year. However, the lithium operations the water demand varies from 24 to 35 AF per MW per year (Dobson et al. 2023). The variation in water demands also depends on the type of geothermal process used (i.e. flash vs. binary). As discussed in Section 6.1.2, Water, the Lithium Valley Specific Plan Programmatic Environmental Impact Report (PEIR) will provide a Water Supply Assessment (WSA) that will include a discussion with regard to whether the total projected water supplies, determined to be available by the County for the project during normal, single dry, and multiple dry water years during a 20 year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and industrial uses.


SALTON SEA
State Hwy 111
Gillespie Rd
Wilkins Rd
Wister Rd
US Hwy 111
English Rd
Niland
111
Pound Rd
Mc Donald Rd
State Rte 111
West Rd
Sinclair Rd
Brandt Rd
Lindsey Rd
Garst Rd
Gentry Rd
Eddins Rd
Calipatria
115
State Hwy 115
Bowles Rd
Keln Rd
Vail Rd
Albright Rd
Co Hwy S30
Hoskins Rd
Forrester Rd
Known Geothermal Resource Area
Known Geothermal Resource Area
Study Area
0
2
4
Miles
SOURCE: Imperial County

Current Providers

Geothermal providers within Imperial County and the Study Area vicinity are described below and represented in Table 7-1, Geothermal Providers and Production.

Berkshire Hathaway Energy (BHE) Renewables is a subsidiary of Berkshire Hathaway Energy. BHE Renewables owns 10 geothermal power plants in Southern California's Imperial Valley. CalEnergy is also a subsidiary to Berkshire Hathaway Energy. CalEnergy operates the BHE Renewables' geothermal facilities in the Study Area (BHE 2022). BHE Renewables is currently proposing three geothermal plants in Imperial County for certification with California Energy Commission: Black Rock, Elmore North, and Morton Bay.

CYRQ Energy owns the Hudson Ranch Power Plant, a 3-stage flash geothermal plant with a capacity of 49.8MW. Electricity generated at Hudson Ranch is currently sold to Salt River Project in Phoenix, Arizona (CYRQ 2023).

EnergySource constructs and operates comprehensive energy projects for commercial and industrial users, contracted by utility providers. EnergySource Minerals is a subsidiary of EnergySource that is developing a lithium extraction component to an existing geothermal facility. Energy Source Minerals uses the brine from the neighboring CYRQ Energy's Hudson Ranch Power Plant for their ATLiS Li extraction project. The ATLiS project is being constructed to produce lithium hydroxide as well as zinc and manganese products which would be sold commercially (Chambers Group 2021).

Ormat Technologies (Ormat) constructs and operates geothermal power plants in over 30 countries. Ormat owns approximately ten geothermal power plants in Imperial County. Orni 21 is a subsidiary of Ormat that operates a geothermal plant in Imperial County.

Controlled Thermal Resources (US) Inc. via its subsidiary Hell's Kitchen Geothermal, LLC is proposing the Hell's Kitchen PowerCo1 (HKP1) and Hell's Kitchen LithiumCo 1 (HKL1).. HKL1 involves the development of a geothermal power plant that will produce up to 49.9 MW net of geothermal power as well as 25,000 tons of lithium in 2024 (Controlled Thermal Resources). HKL1 involves development of mineral extraction and processing facilities capable of producing lithium hydroxide, silica and polymetallic products, and possibly boron compounds, for commercial sale.

Hy Power Industries Incorporated plans to develop a 1,300-acre site for mineral mining and refinery and solar and geothermal development land uses with the balance of the site allocated to the Energy Park. The geothermal energy facility will have the primary purpose of lithium extraction from geothermal brine. Hy Power Study Area is located on the west side of the Salton Sea, outside of the Study Area; and therefore will need to pursue an independent environmental impact analysis.

Production Scale & Intensity

California contains the largest geothermal capacity in the world; currently producing nearly 11,000 gigawatt hours (GWh) of electricity annually from 43 existing geothermal power plants across the state. Imperial County is home to 26 geothermal power plants owned by various companies listed above. See Figure 7-2, Existing Renewable Energy Facilities, for the locations of these plants. Table 7-1, Geothermal Providers and Production, provides the geothermal providers and capacities of geothermal producers in both Imperial County, and the Study Area.

Table 7-1, Geothermal Providers and Production

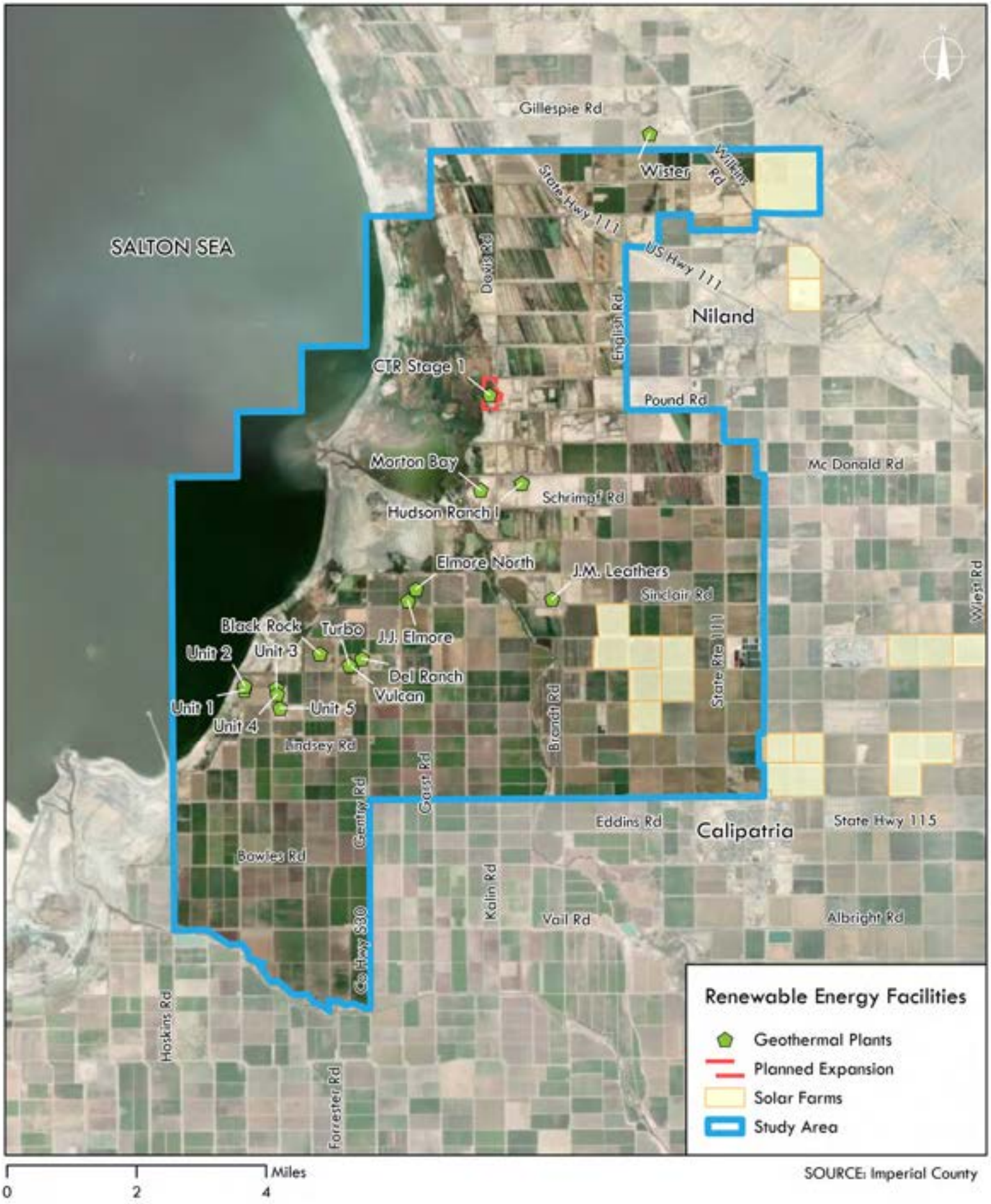
Imperial County		Study Area	
Provider	Existing and Approved Production Capacity (megawatts)	Provider	Existing and Approved Production Capacity (megawatts)
CalEnergy	344	CalEnergy	344
Ormat	174	Ormat	--
Energy Source	49	Energy Source	49
Total MW	567 (2018) 1,388 (2023)	Total MW	393 (2018)

Source: BHE 2022; Imperial County Planning and Development Services

Trends

Because of the relatively high start-up and maintenance costs of geothermal energy, the growth of geothermal electric power generation in California has been slowed by the widespread availability and low costs of solar and wind power (OEERE 2022). Therefore, the majority of existing geothermal plants within the Study Area are between 20 and 38 years old (OEERE 2022). Currently the world's lithium production comes from China, Australia, Chile and Argentina through pit mining and evaporation ponds. However, with the world demand for lithium expected to grow significantly, the lithium-rich geothermal brine in Imperial County has made geothermal energy more financially enticing because of the additional revenue that will be generated by lithium extraction and other strategic minerals.

The geothermal energy providers are investing tens of millions of dollars, supplemented by millions of dollars from State and Federal grants, to extract lithium from the geothermal brines (OEERE 2022). Three of the companies mentioned above are in the process of developing projects to recover lithium from geothermal brine at existing or new geothermal power plants in Imperial County using direct lithium extraction (DLE) technologies.


SALTON SEA
Gillespie Rd
Wister
Wilkins Rd
State Hwy 111
US Hwy 111
Davis Rd
English Rd
Niland
CTR Stage 1
Pound Rd
Morton Bay
Hudson Ranch I
Schrimpf Rd
Mc Donald Rd
Elmore North
J.M. Leathers
Sinclair Rd
Wiest Rd
Black Rock
Turbo
J.J. Elmore
Unit 2
Unit 3
Del Ranch
Vulcan
Unit 1
Unit 5
Unit 4
Lindsey Rd
Brandt Rd
State Rte 111
Gast Rd
Gentry Rd
Eddins Rd
Calipatria
State Hwy 115
Bowles Rd
Kalin Rd
Vail Rd
Albright Rd
Co Hwy S30
Hoskins Rd
Forrester Rd
Renewable Energy Facilities
Geothermal Plants
Planned Expansion
Solar Farms
Study Area
0
2
4
Miles
SOURCE: Imperial County

7.1.3. Solar Energy

Imperial County is ideally suited for solar energy production with over 350 days of sunshine annually. Solar power technologies use either the heat of the sun or the energy in the photons in sunlight to generate power. Electrical power can be generated directly with the use of semiconductor materials, such as in photovoltaics (PV), or indirectly by collecting heat and then using it to drive a turbine or engine (solar thermal).

Broadly speaking, there are two solar market segments: central station and distributed generation. Centralized plants are typically located at the point of best resource availability (Woods Institute 2010). Central station solar fits the typical power-production model employed throughout the grid, generating electricity at an often remote location and wheeling that energy across the grid to recipient utilities and other customers (NREL 2010). In contrast, distributed solar systems are installed on rooftops or on land adjacent to buildings. Distributed generation will be located at or near the point of electrical load and can be connected to the utility's distribution lines or provide stand-alone power (NREL 2010). The solar farms operating in Imperial County are large-scale centralized generation, each producing roughly between 20 and 300 MW of power. As shown in Figure 7-2, Existing Renewable Energy Facilities, the existing facilities are generally located along the southwestern edges of the County along the western agricultural edge of Imperial Valley and the international border. There are also clusters of solar projects north of Calipatria and along the northeastern agricultural edge of Imperial Valley. Utility-scale solar farms (greater than 20 MW facilities) generally utilize land at a rate of 7.9 acres per megawatt acre (acres/MWac). For comparison, geothermal generally utilizes land at a rate of 0.1 acres/MWac (Kagel et al. 2007). Solar farms also use around 1.5 acre-feet per year of water per acre of solar field (or 6.5 – 13 acre feet per year/ MW of capacity) (NREL 2013).

Current Providers and Production

Solar providers within Imperial County and within the Study Area described below and represented in Table 7-2, Solar Providers and Production.

There are approximately 60 solar projects throughout Imperial County, with over a dozen different owners and providers. The major providers include Southern Power, ZGlobal, and Ormat. Southern Power owns 28 solar facilities in the United States, Three of Southern Power facilities are within Imperial County: Campo Verde Solar Facility (147 MW), Calipatria Solar Facility (20 MW), and Solar Gen 2 Solar Facility (163 MW). ZGlobal designs and operates transmission, distribution, substation, and generating infrastructure for asset owners and utilities. Ormat designs, builds and supplies power generating equipment for geothermal and recovered energy power plants around the world. Ormat has built and supplied solar technology for multiple solar projects in Imperial County, resulting in approximately 147 MW throughout the County.

Table 7-2, Solar Production Scale & Intensity			
Imperial County		Study Area	
Provider	Existing and Approved Production Capacity (megawatts)	Provider	Existing and Approved Production Capacity (megawatts)
Southern Power	330	Southern Power	20
ZGlobal	120	ZGlobal	120
Ormat	147	Ormat	40
Other	5,371	--	--
Total	5,968		180

Source: Imperial County Planning and Development Services

Trends

The solar energy industry in the United States has experienced significant growth over the past decade. Strong federal policies and rapidly declining costs have led to a 33% growth rate since 2012 (SEIA 2022). Of all the solar projects accounted for in Imperial County, approximately 32% of the total project solar project land acreage are either pending entitlements, approved but not built, or approved and under construction (Imperial County 2022). This demonstrates that solar projects are a growing industry with gaining interest and action in Imperial County. Demand for utility-scale solar should remain strong as the Inflation Reduction Act brings certainty and supply stability as more states, utilities and corporations seek to fulfill their clean energy goals (Imperial County 2022). It is anticipated that over the next five years, the solar industry is expected to install nearly 200 GW of new solar capacity across the U.S., which is more than double the amount of solar currently installed today (Imperial County 2022). There are increasing incentives and financial support for innovative land use practices such as revegetation of sites with pollinators or growing agriculture and generating power on the same parcels.

7.1.4. Wind Energy

Wind energy refers to the process of creating electricity using the wind or air flows that occur naturally in the earth's atmosphere. As wind blows across the blades of the wind turbines, the wind turbines capture kinetic energy from the wind to generate electricity.

Current Providers

There is only one windfarm in Imperial County, Ocotillo Express Windfarm. The Ocotillo Express Windfarm is owned by Pattern Energy (Ocotillo LLC) and produces all wind energy for Imperial County. The facility utilizes 112 wind turbines and is the first renewable energy project to transmit power over the Sunrise Powerlink transmission line that connects San Diego with Imperial Valley (Pattern Energy 2022). The facility includes twenty full-time on-site personnel that operate and maintain the site, in addition to the use of contractors and seasonal workers. It is estimated that the facility generates electricity equal to the needs of approximately 300,000 Californians each year. The facility sells its energy to San Diego Gas & Electric (SDG&E) through a 20-year Power Purchase Agreement.

Production Scale & Intensity

Unites States Wind Production

Per the American Clean Power Association, there are nearly 70,000 wind turbines on land across the United States that are generating clean, reliable power. Wind power capacity totals nearly 140 GW, making it the fourth-largest source of electricity generation capacity in the country. This is enough wind power to serve the equivalent of 43 million American homes (American Clean Power 2022).

Wind energy is currently the top source of renewable electricity generation in the United States according to the U.S. Energy Information Administration, surpassing hydroelectric generation for the first time in history (American Clean Power 2020). The annual wind generation in 2019 totaled 300 million megawatt hours (MWh), exceeding hydroelectric generation by 26 MWh.

The same article estimated that ground wind projects were able to deliver 7.2% of the United States electricity in 2019 and aims to achieve 20% by 2030 with billions of dollars being invested in new projects over the next few years. As of 2022, the American Wind Energy Association estimates that wind is now generating 10.2% of the United States electricity.

California Wind Production

The majority of wind turbines are located in the following six regions of California; Altamont, East San Diego County, Pacheco, Solano, San Gorgonio, and Tehachapi (CEC 2023). In 2021, wind energy generated within California totaled 15,173 gigawatt-hours (GWh) which equated to 7.8 percent of California's in-state electricity generation. Wind energy power plants generating in California during at least part of the year had a total capacity of 6,281 megawatts.

Imperial County Wind Production

Per the California Energy Commission, in 2021, Imperial County ranked sixth behind Kern, Solano, Riverside, Beaver, UT and Alameda in total wind production by County in the State of California. The County has a capacity of 265 MW and produces a net of 438,929 MWh, all of which is produced by the Ocotillo Express Windfarm.

Trends

At the countywide scale, wind energy is expected to continue to grow and remain the largest renewable energy generator in the United States for the foreseeable future. It is estimated that the industry is well into investing $62 billion in new projects over the next few years (American Clean Power 2020). While the State has billions of dollars in the State budget for wind and other renewable energy production projects, Imperial County has various biological constraints that limit the geographical extent of potential wind farms.

In August 2022, the California Energy Commission released a report discussing the potential and feasibility of an offshore wind energy development off the coast of California in order to help California meet its climate and energy goals. The interest at a State level to invest in offshore wind energy could mean less funding and resources for on land wind turbines, however, as the report

concludes, significant investment would need to be made to establish the required transmission infrastructure.

7.1.5. Hydrogen and Hydrocarbon Fuels

Elemental hydrogen does not actually exist freely in nature and is only produced from other sources of energy; and when hydrogen is combined with oxygen in a fuel cell it produces heat and electricity with water vapor as a by-product (NREL 2022). Hydrogen can play an important role in improving energy security and reliability in the U.S., as well as decarbonizing transportation, buildings, and industrial sections. Hydrogen can be produced from domestic resources such as natural gas, biomass, and renewable power like solar, geothermal and wind (NREL 2022). Because of this, hydrogen is an attractive fuel option for transportation and other electricity generation applications. The most common method of producing hydrogen fuel is the thermal process that produces hydrogen fuel through steam reformation of natural gas (NREL 2022).

For the purposes of this report, hydrogen production can be spoken about in two ways, depending on the extraction process: green hydrogen and blue hydrogen. Green hydrogen is obtained through a renewable energy source (wind, solar, geothermal, or biomass). Blue hydrogen involves hydrocarbons and compounds such as methane to obtain hydrogen with an output of carbon dioxide. Blue hydrogen does not reduce energy dependence on gas and perpetuates a development model based on fossil fuels (Iberdrola 2024).

Renewable hydrocarbon fuels replace traditional petroleum fuels such as gasoline, diesel and jet fuel. The hydrocarbons can be produced from biomass sources through a variety of biological or thermochemical processes that are nearly identical to the traditional petroleum-based fuels so they can replace those fuels in vehicles and other infrastructure.

Hydrogen fuel cells are currently being used in fuel cell electric vehicles, fuel cell electric buses, and fuel cell electric trucks. According to the CEC, there are currently 62 light-duty open retail hydrogen refueling stations, 32 planned light-duty stations, six heavy-duty stations that are operating, and five planned heavy-duty stations, with the majority of stations in Los Angeles County (CEC 2022).

While biomass conversion to biofuels is discussed in Section 7.1.6, Renewable Biofuels, hydrogen fuel and hydrocarbon fuels can be produced through organic wastes and renewable feedstocks. Given California's supply of biomass, there is remarkable potential for utilizing California's non-merchantable biomass for commercializing hydrogen fuel (CEC 2022). Biomass sources include agriculture solid waste[5]; municipal solid waste; gaseous waste from landfills and anaerobic digesters; and waste forest biomass (University of California Berkeley 2020). Many hydrocarbon fuels can be reformed to produce hydrogen, including natural gas, diesel, renewable liquid fuels, gasified coal, or gasified biomass.

These are various methods of producing these biofuels and new technologies being explored[6]. Some of these techniques are listed below:

[5] Agricultural solid waste refers to agricultural solid waste such as unwanted or unsalvageable materials produced wholly from agricultural operations directly related to the growing of crops or raising of animals.
[6] While the County of Imperial has not received formal hydrogen plant development applications to date, there has been interested parties exploring the renewable energy opportunities the County has to offer.

- Biological sugar rading – This method uses a biochemical deconstruction process, similar to that used with cellulosic ethanol with the addition of organisms that convert sugars to hydrocarbons.
- Catalytic conversion of sugars – This method involves a series of catalytic reactions to convert a carbohydrate stream into hydrocarbon fuels.
- Gasification – This process thermally converts biomass to syngas and catalytically converted to hydrocarbon fuels.

  Hydrothermal processing – This method uses high pressure and moderate temperature to initiate chemical decomposition of biomass or wet waste materials to produce an oil that may be catalytically upgraded to hydrocarbon fuels (OEERE).

Providers

Where commercial renewable hydrocarbon biofuel production is occurring, facilities largely focus on renewable diesel production, however increased sustainable aviation fuel (SAF) production is expected with several plants under construction. As of 2020, there were five commercial renewable diesel plants with a combined capacity of 550 million gallons and one facility producing both renewable diesel and SAF with a capacity of 42 million gallons. Three plants are under expansion and eight are under construction, which are expected to add another 2 billion gallons of capacity. The United States continues to import renewable diesel, largely from production facilities in Singapore. All SAF and nearly all renewable diesel is used in California due to the state's Low Carbon Fuel Standard (AFDC 2022).

Companies like Air Products have invested billions of dollars in low-carbon hydrogen projects to drive decarbonization of heavy transportation and industrial sectors. Air Products plans to construct a new hydrogen plant and expand its hydrogen pipeline network in Paramount, California to the existing World Energy facility, while utilizing renewable feedstocks to produce 100% sustainable aviation fuels (Air Products 2023). As shown in Table 7-3, California Hydrogen Production Facilities, approximately 766,604 tons of hydrogen are produced per year by a few large industrial gas producers spanning across California.

Table 7-3, California Hydrogen Production Facilities

Producer	City	Technology	Capacity (tons/year)	Industry
Air Products	Sacramento	SMR	2,023	Multiple
Praxair	Ontario	SMR	7,276	Multiple
Air Liquide	El Segundo	SMR	75,643	Oil Refining
Air Liquide	Rodeo	SMR	105,547	Oil Refining
Air Products	Carson	SMR	87,956	Oil Refining
Air Products	Martinez	SMR	77,402	Oil Refining

Air Products	Martinez	SMR	30,785	Oil Refining
Air Products	Sacramento	SMR	Unknown	Food
Air Products	Wilmington	RFG SMR	140,730	Oil Refining
Praxair	Ontario	SMR	10,555	Multiple
Praxair	Richmond	SMR	228,687	Oil Refining
Total			766,604	

Source: EIN California Hydrogen Production Facilities

As indicated in Table 7-3, the majority of these are supplying oil refineries and other industries, rather than being marketed commercially. However, there are several new hydrogen projects targeting California's transportation market. As shown in Table 7-4, Proposed Renewable (Green) Hydrogen Plants in California, green hydrogen production plants are located in Palm Springs, Long Beach, Lancaster, and Kings County.

Table 7-4, Proposed Renewable (Green) Hydrogen Plants in California

Producer	City	Technology	Capacity (tons/year)	Deployment Year
Air Liquide	California (undetermined)	Landfill-derived methane	10,950	2022
Air Products	California (undetermined)	Electrolysis (Wind/Solar)	Unknown	2021
Fuel Cell Energy and Toyota	Long Beach	Electrolysis	483	2020
Stratos Fuels and Hydrogenics	Palm Springs	Electrolysis	365	Phase I - construction
H2B2	Kings County	Electrolysis	365	2020
SGH2	Lancaster	Recycled mixed paper waste – Gasification	4,015	2022
Sunline	Palm Springs	Electrolysis	328	2018

Source: Gilani and Sanchez 2020.

The following are some of the primary organizations that identify, evaluate and deploy technologies to produce hydrogen in California:

NuFuels is a sustainable energy provider with the goal of providing commercially deployable renewable "green" hydrogen using Biomass Gasification technology. Biomass gasification uses a controlled process involving heat, steam, and oxygen to convert biomass to hydrogen and other products, without combustion. Biomass can include agriculture crop residues, forest residues, special crops grown specifically for energy use (such as switchgrass or willow trees), organic municipal solid

waste, and animal wastes (OEERE). NuFuels has designed a plant that can convert 40 tons of biomass per day (TPD). These plants can be easily replicated and located near feedstock sources to reduce transportation impacts. NuFuels is currently negotiating to construct plants in California.

Yosemite Clean Energy secured their first commercially scale plant site. The site is located in Oroville, California and will be used for developing carbon-negative green hydrogen and renewable natural gas (RNG). The plant is expected to produce 13,000 kg per day of green hydrogen. Yosemite Clean Energy utilizes gasification technology to convert biomass into hydrogen. Their process does not involve the input or output of water, or the burning of any biomass, and is considered carbon negative (Yosemite Clean Energy).

SGH2 utilizes their patented Solena Plasma Enhanced Gasification (SPEG) technology to produce green hydrogen from any kind of waste (even including paper, plastics, tires, textiles, etc.). SGH2 is planning to build the world's largest green hydrogen production facility in Lancaster, California. The Lancaster facility would have the capacity to produce 11,000 kg of green hydrogen per day and up to 3.8 million kg per year. The Lancaster plant will process 40,000 tons of waste annually.

SoCalGas is a natural gas provider that services cities throughout Imperial County and other Southern California cities, which has a Research, Development, and Demonstration program that is proposing to develop the nation's largest clean hydrogen energy system, Angeles Link, for the Los Angeles region (SoCalGas 2022). The intent is to deliver clean hydrogen via pipelines from outside the LA Basin to industries that need it most. The Angeles Link could have the ability to convert up to four natural gas plants to clean hydrogen to aid the ultimate retirement of natural gas storage facilities (CEC 2022b).

Oberon Fuels provides an indirect renewable hydrogen source. Oberon Fuels is a renewable energy manufacturer that plans to upgrade and expand an existing facility in Brawley that converts methanol into renewable dimethyl ether (rDME). Once converted to rDME, it can be converted to renewable hydrogen (Imperial Valley Press 2021). The plant is expected to produce 1.6 million gallons of DME from more than 5,500 metric tons of waste material when operating at full capacity. This approach offers renewable hydrogen production from a variety of wastes and other renewable source.

Production Scale & Intensity

Hydrogen fuel can be produced through several methods. The most common methods are a thermal process, and electrolysis. However, other methods include solar-driven and biological processes.

- Thermal Processes typically involve steam reforming, a high-temperature process in which steam reacts with a hydrocarbon fuel to produce hydrogen. Many hydrocarbon fuels can be reformed to produce hydrogen, including natural gas, diesel, renewable liquid fuels, gasified coal, or gasified biomass. Today, about 95% of all hydrogen is produced from steam reforming of natural gas.
- Electrolytic Processes include separating water into oxygen and hydrogen. Electrolytic processes take place in an electrolyzer, which functions much like a fuel cell in reverse- instead of using the energy of a hydrogen molecule, like a fuel cell does, an electrolyzer creates hydrogen from water molecules.

- Biological Processes use microbes such as bacteria and microalgae, and can produce hydrogen through biological reactions. In microbial biomass conversion, the microbes break down organic matter like biomass or wastewater to produce hydrogen while, in photobiological processes, the microbes use sunlight as the energy source (OEERE 2023). In addition, there are a few solar-driven processes, including photobiological, photoelectrochemical, and solar thermochemical. Photobiological processes use the natural photosynthetic activity of bacteria and green algae to produce hydrogen. Photoelectrochemical processes use specialized semiconductors to separate water into hydrogen and oxygen. Solar thermochemical hydrogen production uses concentrated solar power to drive water splitting reactions often along with other species such as metal oxides.

Trends

In October 2022, the Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) was established in California. ARCHES is a shared not-for-profit LLC public-private partnership designed to accelerate hydrogen's contribution to decarbonizing the economy in California and beyond (GO-Biz 2022)

In 2021, the Infrastructure Investment and Jobs Act (IIJA) allocated $8 billion dollars for the development of at least four regional clean hydrogen hubs as part of the Regional Clean Hydrogen Hubs Program (GO-Biz). California announced its intent to seek one of these hydrogen hubs and one of the first tasks for ARCHES was to apply for a portion of this funding to create a hydrogen hub in the State, accelerating the production of clean hydrogen technology.

There are more than $22 million dollars in upcoming hydrogen research investments for projects such as renewable hydrogen production, like hydrogen-based power generation systems (CEC 2021).

To make hydrogen fuel a largely used form source of energy, new technologies are needed to properly store and transport it, including improving fuel cell technology and materials. Fuel cell technology offers increased production efficiency and developed a cost-effective way to store and transport hydrogen (CEC 2022).

Biomass resources such as wood, agricultural residues and municipal solid waste can also be used as feedstock to produce hydrogen.

7.1.6. Renewable Biofuels

Due to a thriving crop and livestock industry, Imperial Valley is a prime location for the production of renewable biofuels. The most common renewable biofuels are ethanol, biodiesel, and renewable hydrocarbon fuels, which can be successful as an alternative or for replacing traditional fuels. However, Imperial Valley has the potential to produce other types of biofuels that are less common and utilize existing resources. For example, Imperial County has become a global leader in algae bio-crude production with algae plants producing clean fuel options for large-scale transit including aviation, marine shipping, commercial trucking and rail (IVEDC 2022).

Ethanol

Ethanol is a renewable fuel that can be made from first- or second-generation agricultural waste (BETO). However, currently, most ethanol is made from first-generation plant starches and sugars in the United States. The most common method for converting biomass into ethanol is called fermentation. Sugarcane for ethanol is grown in the Imperial Valley. There are also opportunities to produce ethanol with other plant varieties such as sweet sorghum, sugar beets and switchgrass.

Algae Biofuel

Algae plants in Imperial Valley are producing clean fuel options for large-scale transit including aviation, marine shipping, commercial trucking and rail (IVEDC 2022). Algae's conversion of carbon dioxide and sunlight into biomass can reduce greenhouse gas emissions by 70%. It is believed that high-energy density algae biofuel has the potential to use microalgae that converts CO_2 and sunlight into oil-rick biomass that can be refined into renewable diesel and jet fuel.

Biomass

Imperial County's agriculture industry provides enormous potential for biomass from agricultural waste and manure (IVEDC, 2022). These biomasses are typically not treated and are sent to a landfill which produces emissions as they decompose. First generation biofuels produced from biomass are made through a fermentation or chemical process that converts biomass such as corn, soy, or sugar into liquid fuels. First-generation biofuel markets and technologies are well-established, the most common in the U.S. being corn ethanol which is blended into most gasoline sold domestically (Nagler 2020). However, first generation biofuels can negatively impact water demand and water quality, due to increased use of fertilizer to grow crops for biofuels (Rawel et al. 2015).

Second-generation agricultural waste occurs as crops are harvested, such as stems, leaves, stalks, shells, peels, and husks. These unused parts of the crop can be converted into feedstock for biofuels (bioethanol, biobutanol, biogas, biohydrogen, and biodiesel) (Pattanaik et.al. 2019). These fuels burn cleaner than fossil fuels and sequester the same amount of carbon they release (USDA 2022). Renewable biofuels from biomass sources are produced using biological, thermal, or chemical processes. Second generation biofuels may also present water demand and water quality risks due to its agricultural nature.

There are four types of biomass power plants which include: biomass, anaerobic digestion, landfill gas, and municipal solid waste. Biomass refers to plant materials and agricultural, industrial, and municipal wastes and residues. The anerobic digestion process produces biogas from organic wastes such as livestock manure and food processing waste, by placing the organic wastes in an airtight container called an anaerobic digester (CEC 2023a). Anaerobic digesters reduce the odor and liquid waste disposal problems and produces a biogas fuel that can be used for process heating and/or electricity generation (CEC 2023b). The two types of biomass most applicable to the Study Area include organic biomass and anaerobic digestion.

Current Providers/Production Scale & Intensity

Ethanol

There are 192 Ethanol Plant Production Facilities in the United States, of which four (4) are located in California. Table 7-5, California Fuel Ethanol Plant Production Capacity, below identifies the plants, their location and capacity.

Table 7-5, California Fuel Ethanol Plant Production Capacity

Respondent	City	Capacity (millions of gallons/year)
Aemetis Advanced Fuels Keyes Inc	Keyes	70
Calgren Renewable Fuels LLC	Pixley	55
Parallel Products	Rancho Cucamonga	3
Pelican Renewables LLC	Stockton	60
Total		188

Source: EIA 2022

Ethanol Plants are expanding across the United States and Imperial Valley is no exception. Sugar Valley Energy (California Ethanol & Power, LLC) plans to develop a facility that produces ethanol fuel, electricity and bio-methane. Located in Brawley, the plant is expected to produce 68 million gallons of low-carbon, fuel-grade ethanol, 40 MW of electricity, and 737,000 cubic feet (737 MCF) of biomethane. It is intended to use by-product of sugarcane plants from local farmers as feedstock.

Algae Biofuel

Imperial County is home to Viridos, a California-based biotechnology company in partnership with ExxonMobil. Their initial deployment is a scalable platform for low-carbon intensity biofuel to fuel heavy transportation. As the company moves towards commercialization, they estimate the productivity of engineered microalgae will be 20x times greater than any existing terrestrial crop (Viridos 2022). This pilot project has not yet produced biofuel at a commercial scale.

Biomass

There are about 30 direct-combustion biomass facilities in operation with a capacity of 640 MW (CEC 2023c). Greenleaf Power's Desert View Power facility in Riverside County is a biomass facility that consumes between 360,000 and 390,000 tons of woody biomass diverted from regional landfills, providing more than 350,000 megawatt-hours annually. This facility is California's largest biomass-fueled generation facility (Greenleaf Power 2021). Dynalectric had an 18MW biomass power plant in Imperial County south of Brawley, that consumed 420 tons of recycled wood a day to generate 18 MW of renewable energy (EMCOR 2023). However, the facility was damaged by an earthquake in April 2010, which rendered it unprofitable, and the owner is looking to sell it.

Oberon Fuels will be operating a demonstration project of Sunvapor's solar steam and thermal battery technology at its Maverick Innovation Center in Brawley. This project will harness solar energy to produce steam and high pressure required to further lower the carbon intensity and renewable dimethyl ether (DME) to replace traditional fossil propane (Oberon Fuels 2023).

Per the CEC, many anaerobic digestion technologies are commercially available and have been demonstrated for use with agricultural wastes and for treating municipal and industrial wastewater. Swine farms in Tulare and Fresno have used manure for biogas fuel. In Chico, organic matter from wastewater was used to produce biogas.

Trends

Per the International Energy Agency (IEA) the global demand for biofuels is set to grow by 41 billion litres, over the next five (5) years. This increase is fueled by government policies as well as other factors such as overall transport fuel demand, costs and specific policy design. These factors not only influence the amount produced but also where growth occurs, in which fuels grow quickest (IEA 2021).

The demand for renewable diesel is expected to triple over the next five (5) years, primarily thanks to policies in the United States and Europe. However, ethanol demand growth is expected to surpass renewable diesel in terms of volume. The majority of renewable diesel growth is concentrated in the United States and Europe. Renewable diesel is particularly popular in these regions as it can be produced with a low GHG intensity using wastes and residues. In 2020, biodiesel was second to fuel ethanol as the most produced and consumed biofuel in the United States and accounted for about 11% and 12% of total U.S. biofuels production and consumption, respectively (EIA 2022).

In the United States, the Sustainable Aviation Challenge sets a goal for the airline industry to use 11 billion liters of sustainable aviation fuel (SAF) by 2030 (OEERE, 2021), equivalent to 15% of current jet fuel demand.

The biomass industry has struggled with profitability and anaerobic digesters tend to produce just enough energy to offset the facility's energy demand. However, with international, national, and state policy pivoting towards more sustainable fuel supplies, demand for alternative biofuels will continue to increase, making these biofuel production methods more economical.

7.1.7. Battery Energy Storage Systems

Battery energy storage systems are rechargeable battery systems that store energy from a renewable energy source, predominantly solar, or the electric grid and provide that energy to a home or business. Currently, Lithium-ion batteries (used in mobile phones and electric cars) are the dominant storage technology for large scale plants to help electricity grids ensure a reliable supply of renewable energy. Battery energy storage systems and battery recycling plants have historically presented fire risks due to the lithium-ion battery's tendency to ignite when crushed or bent which puts additional demand on local first responders (Quinn 2023). However, through increased collaboration between and action by consumers, industry, and regulators, approaches to safely managing these batteries could be evaluated and implemented (EPA 2021).

While Lithium-ion batteries are currently the most economically viable energy storage solution, there are several other technologies for battery storage currently in development. Some of these are listed below:

1. Compressed air energy storage: With these systems, generally located in large chambers, surplus power is used to compress air and then store it. When energy is needed, the compressed air is released and passes through an air turbine to generate electricity.

2. Mechanical gravity energy storage: One example of this type of system is when energy is used to lift concrete blocks up a tower. When the energy is needed, the concrete blocks are lowered back down, generating electricity using the pull of gravity.

3. Flow batteries: In these batteries, which are essentially rechargeable fuel cells, chemical energy is provided by two chemical components dissolved in liquids contained within the system and separated by a membrane (National Grid 2021).

4. Flywheels: Flywheels are another energy storage system that uses kinetic energy to store and release electricity. Flywheels are typically used for short-term storage applications, such as load leveling or backup power generation (Stein 2023)

5. Rechargeable batteries: Common types of rechargeable batteries include lead acid batteries, nickel cadmium batteries, nickel metal hydride battery, lithium-ion batteries, lithium-ion polymer batteries. Zinc-ion batteries use the same fundamental design as lithium-ion but use zinc-ions instead of lithium-ions to store electrical charge. Zinc is approximately 100 times more abundant than lithium. One of the well-developed zinc battery chemistries is zinc-bromine flow, which can be ideal for both small commercial uses and for medium to large grid-sized applications (Daniel-Ivad 2022).

Application of battery energy storage systems at a commercial scale provides the following benefits:

- Peak shaving reduces the peak electricity demand by using stored energy to meet part of the demand. This can help reduce the overall cost of electricity and the need for new power plants or upgrades to the existing grid. Flattening the output of renewable power generation better mimics the consistency of fossil fuel energy sources (Gallagher 2023).
- Provides emergency backup electricity (Ideal Energy 2020).
- Allows the possibility of microgrids in conjunction with renewable energy.
- Battery energy storage systems do not generate pollution or noise, require no employee time to operate, and do not impact business operations.

Disadvantages of battery energy storage systems include:

- The local electrical grid must be conducive for battery energy storage systems thus requiring a utility interconnection study.
- Higher upfront costs compared to other energy storage solutions (Stein 2023).
- Issues with performance and lifespan are associated with certain types of battery energy storage systems, such as lithium-ion batteries or flywheels (Stein 2023).
- Increased need for maintenance and monitoring, especially if a qualified technician does not install the BESS (Stein 2023).
- May have harmful environmental impacts during the manufacturing, use, storage, treatment, disposal and recycling of these systems.

- Threats to public health and safety include the risk of thermal runaway and offgassing. Thermal runaway is the uncontrollable self-heating of a battery cell which generates flammable and toxic gasses. Offgassing is where the battery releases methane or carbon monoxide, which can lead to health and safety risks (NFPA 2023).

Current Providers

There are a number of battery energy storage providers and systems in California. Major energy storage providers and manufacturers include (IHS Markit 2021):

- Fluence
- NextEra Energy Resources
- Tesla Energy
- Urban Electric Power

Fluence has the largest deployed energy storage projects of any company worldwide. Their products offer industrial-strength energy storage products. The company currently has approximately 2.4 gigawatts of projects deployed or awarded across 24 countries and territories around the world. In October 2022, Fluence announced the commercial operation of a combined 908 MWh battery-based energy storage system complex in Lancaster, California (Fluence Energy 2022). The projects include the 100 MW/400 MWh Luna Battery Storage Project and 127 MW/508 MWh Lancaster Area Battery (LAB) energy storage system comprising one of the largest energy storage complexes operating in California or around the world.

NextEra Energy Resources is one of the largest producers of wind and solar energy technologies in the United States and worldwide. NextEra Energy has approximately 4,500 megawatts of battery storage operating and under construction. NextEra Energy has several California projects, including the North Central Valley Project which is a battery energy storage project proposed for the San Joaquin County (NextEra Energy). The company planned to build nearly 700 MWs of fully-contracted battery storage projects in California before the end of 2022 (NextEra Energy 2020). The battery storage projects were intended to be co-located at six existing NextEra Energy Resources solar projects.

Tesla Energy produces large scale battery storage units called Megapack. In April 2022, Tesla Energy and Pacific Gas and Electric Company partnered to design and construct a 182.5-MW energy storage system in Moss Landing, Northern California (Renewable Energy World 2022). The system includes 256 Tesla Megapack battery units on 33 concrete slabs and has the capacity to store and dispatch up to 730 MWh of energy to the electrical grid at a maximum rate of 182.5 megawatts per hour during periods of high demand. Tesla Energy and in particular the Megapack battery units are being utilized in 17 major projects in the works all over the world. The countries with the most significant demand are the United States, the United Kingdom, Australia, and Canada. Additionally, the latest Tesla facility built in California is solely dedicated to Megapack production (Teslarati 2022).

Urban Electric Power recently completed an installation of its rechargeable alkaline battery technology at the San Diego Supercomputer Center, where it replaced 20,000 pounds of legacy lead-acid batteries with 5,200 individual alkaline zinc-manganese cells which store 1 MWh of electricity. An additional 5,200 cells will be added during the project's second phase.

Production Scale & Intensity

In 2017, the United States generated 4 billion megawatt-hours (MWh) of electricity, but only had 431 MWh of electricity storage available (EESI 2019). Currently, Contemporary Amperex Technology Co. Ltd. Is the world's largest supplier of lithium-ion batteries, and is based in Ningde, China. China produces approximately 70% of the world's lithium-ion cells.

In the United States, Ford Motor Company, Tesla and other companies have begun to invest in battery storage. In September 2022, Ford Motor Co. broke ground on a multibillion-dollar advanced manufacturing complex for electric trucks and lithium-ion batteries in western Tennessee. Additionally, General Motors Co. and LG Energy Solution Ltd., another South Korean battery maker secured a $2.5 billion loan from the U.S. Energy Department for their Ultium Cells LLC venture. The companies have announced plans to invest at least $7.2 billion into lithium-ion battery cell plants in Michigan, Ohio and Tennessee. Similarly, Panasonic, which makes batteries for electric vehicles, now plans to expand their facilities to produce the company's lithium-ion 4680 cells.

Zinc8, a Canadian battery developer, plans to bring battery manufacturing to New York state and deliver power in the range of 20 kW to 50 MW to storage and discharge energy from 4 to 100 hours. Zinc8 intends to be utilized for microgrids, utilities, commercial, and industrial projects (PV Magazine 2022a).

Trends

Securing both high quality batteries and the scarce materials needed to make them has become a top priority for automakers that have bet their future on succeeding in the EV market. Companies like Ford, Tesla, and GM are securing multi-year exclusive supply contracts from miners and battery makers to avoid falling victim to future shortages. Suppliers are eager to sign these contracts since they provide guaranteed revenue for the multi-billion-dollar investments they need to improve their production capacity (PV Magazine 2022b).

Western governments are now spending billions of dollars to kickstart their own cell production, but since China accounts for 80% of global cathode material production and 90% of global anode material production, the world's automakers will be dependent on Chinese supply chain for the foreseeable future.

Forecasts have shown that the energy storage industry will need as many batteries as the EV industry does to achieve global decarbonization targets. Lithium-ion's dependence on scarce raw materials means this technology will not be able to fill demand from both markets.

The United States has a unique opportunity to avoid the same outcome for its energy storage industry by prioritizing the development of a supply chain based on zinc batteries. A robust domestic supply chain for both zinc mining and refining already exists, and it produces far more zinc than the energy storage market would require – the only missing link for a domestic energy storage supply chain is cell production. Fortunately, zinc-ion batteries can be built using the same standard techniques and equipment used to produce lithium-ion cells. The Department of Energy is already investing billions of dollars in cell production for EVs.

7.2. CONSTRAINTS

The Study Area presents a unique economic investment opportunity related to renewable resources. However, even though some of these renewable resources production methods have been around for decades, there are constraints associated with each of these topics.

Geothermal/Lithium Recovery

- Geothermal and lithium recovery operations can have intensive water demands, compared to other energy sources (both renewable and non-renewable), however the data remains uncertain on what the true water demand may be for future geothermal and lithium recovery operations. Additional collaboration with agencies and operators is needed.
- Compared to other energy sources, the development of geothermal power has longer lead times and higher capital costs compared to those intermittent renewable energy resources.
- Geothermal power is limited to sites with specific characteristics, thus limited the land use designations.
- Geothermal production requires expensive chemical engineering, mainly the addition of a reactor/clarifier circuit to remove solids from reinjected brines.
- For decades, geothermal energy production by itself was not seen as an economical source of renewable energy in the United States.
- There is potential for subsidence associated with geothermal energy extraction. Further study is needed to forecast the subsidence and seismicity magnitude associated with geothermal and lithium extraction.
- Freshwater is currently purchased from the IID and treated onsite to achieve the water quality needed for geothermal and lithium extraction; i.e., clean water is necessary to keep the equipment from deteriorating. Therefore, a local supply of clean water is needed to fulfill future water demands.
- Additional research and development are being performed to demonstrate the durability of lithium extraction methods at commercial scales (CEC 2020).

Solar

- Solar power generation facilities are limited to zones that allow this use, such as the Renewable Energy Overlay Zone.
- Utility-scale solar energy production requires large amounts of land.
- Utility-scale solar energy production has historically been replacing agricultural land that once provided agricultural jobs; thus has a limited benefit on the local economy.
- Photovoltaics may pose threat to migratory birds.
- Utility-scale solar may be constrained by the capacity of transmission lines in the area and greater region.

- Solar facilities can be sources of fugitive dust emissions, requiring innovative land techniques, such as prohibiting "disc and roll" techniques to avoid dust.

Wind

- The major constraint to additional wind energy production in Imperial County and specifically the Salton Sea area is migratory birds. Every year more than 350 species of birds follow the migratory route called “The Pacific Flyway” which extends from Alaska and Canada, through California, to Mexico and South America. The Salton Sea State Recreation Area is a key wintering and staging area for migrating birds along this route and serves as a southern terminus for many of the birds. Wind turbines can be potentially harmful to these migrating species, and therefore limits the creation of wind farming in the County. This is evident by the fact that there is only one wind farm (Ocotillo) in the entire County. Due to these reasons, it is unlikely that there will be large scale investment in wind energy in the County or around the Salton Sea area.

Hydrogen and Hydrocarbon Fuel Cells

- Blue hydrogen fuel requires an energy intensive process and may require fossil fuels and large amounts of water.
- The cost to produce green hydrogen fuel is relatively high. Precious metals such as platinum and iridium may also be required as a catalyst agent for the fuel cells adding to the high cost to produce (TWI 2023).
- Electrolysis powered by a solar facility may require a large amount of land.
- Hydrogen plants may require significant pipeline infrastructure that will need to be considered in the land use plan.
- There is a lack of infrastructure out there ready to employ hydrogen fuel cell technology for EVs.
- Hydrogen is a highly flammable fuel source which causes concern for safety (TWI 2023).

Renewable Biofuels

- Commercial processing of biofuels is limited under the County’s existing zoning designations.
- Production of biofuels can require high upfront investment. The demand for biofuels has historically been limited.
- Crops grown in the Study Area may have limited amount of potential agricultural waste to produce biomass for biofuels at an economical scale.
- Algae biofuel requires a water source; ideally a source that’s naturally high in salt and pollutants to be consumed by algae.
- The lack of infrastructure inhibits commercial-scale biofuel production (i.e., electrical, water, sewer, broadband, rail, and paved roads).

Battery Energy Storage Systems

- The battery energy storage system technology is still being developed and enhanced to achieve competitive costs, increase capacities, improve power quality, and voltage stability.
- Regulatory policy is still needed to standardize and regulate residential, commercial, and industrial systems.
- Utilization of battery energy storage systems can aid the grid in transitioning to a smart grid system.

7.3. OPPORTUNITIES

Geothermal/Lithium Recovery

- The Salton Sea Geothermal Field is estimated to contain a proven lithium resource of 4.1 million metric tons of lithium carbonate equivalent (LCE) and a probable lithium resource of 18 million metric tons of LCE (Dobson et al. 2023). The region could be a substantial domestic supplier of lithium to the U.S. and help meet its green energy needs over the remainder of the 21st century.
- Geothermal can be designed to be integrated with pumped storage to make it more attractive to utility companies facing large fluctuations in daily electrical demand-to-supply ratios.
- Geothermal can be placed on uneven desert land where solar would be much more challenging to install.
- Additional geothermal energy sources would assist IID's Salton Sea Restoration and Renewable Energy Initiation meet its greenhouse gas emission reduction goals.
- By supplementing geothermal energy production with lithium recovery methods, geothermal energy production becomes far more economical due to the value of lithium carbonate and lithium hydroxide for lithium batteries.
- Lithium was listed in the Federal Register as a critical mineral "essential to the economic and national security of the United States" pursuant to the 2017 presidential Executive Order Number 13817 titled "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals." Developing a domestic supply of lithium can support national security.
- Any significant production of lithium, manganese and zinc from geothermal brines could reduce the United States' large import reliance on these minerals, as well as provide corresponding commodity tax revenues to local, state and federal governments. The Study Area could potentially become a major supplier of lithium or other valuable minerals to the global market, eliminating imports of this strategic metal from South America and China.
- California's 2022-2023 budget provisions include a lithium extraction tax that would support Salton Sea restoration projects as well as support the Imperial County communities (SB 125).

- Alternative water supplies such as local groundwater may be investigated for feasibility to support the geothermal and lithium recovery efforts.
- There is great opportunity to recycle water demands in the geothermal and lithium recovery process to reduce the long-term water demands.

Solar

- Imperial Valley provides flat, dry land with abundant sunlight, prime for solar energy production.
- Solar power is becoming increasingly more economical as technology improves and prices of panels decrease.
- Solar generation has relatively low operations and maintenance costs.
- Solar power uses a modest amount of water for cleaning solar panels (SEIA 2023). Researchers found a solar plant in Imperial Valley uses approximately 25 percent of the water required for a similar parcel of land growing alfalfa (SEIA 2023). As Colorado River water supplies become more uncertain, diversification of agricultural land use may be beneficial.
- Collocating of ground-mounted solar photovoltaic systems amongst agricultural land is also known as agrivoltaics. Agrivoltaics may provide benefits to both solar and agricultural industries such as an increase in production value with lower soft costs (or non-hardware costs) of solar energy, a more diverse revenue source for farmers, as well as the benefits of retaining the jobs and agricultural products produced by agriculture.

Wind

- The Study Area does not provide wind energy generation opportunities dues to the potential impact on migratory birds to the Salton Sea via the Pacific Flyway.

Hydrogen and Hydrocarbon Fuel Cells

- The only byproduct of green hydrogen power is water.
- Hydrogen fuel doesn't require large areas of land to produce.
- Hydrogen fuel cells provide a high-density source of energy, meaning they are highly efficient, with similar energy density to natural gas (TWI 2023).
- As manufacturing capacity for more efficient and cost-effective technology grows, it is expected that costs of green hydrogen production will fall alongside other renewable power generation technologies (TWI 2023).

Renewable Biofuels

- The Study Area contains multiple potential second-generation sources of biomass from agricultural waste and the wastewater treatment plant.

- Some of the crops grown in Imperial County are crops sought after for first-generation ethanol production. Ethanol production from low-water crops can expand Imperial County's agricultural employment base.
- Algae biofuel production has the potential to use polluted Salton Sea and river waters and return cleaner water with lower salinity to the Salton Sea.

Battery Energy Storage Systems

- Battery energy storage systems enable further renewable generation, both from an operational and reliability perspective.
- Battery energy storage systems are a critical piece of the evolution and transition to renewable energy.
- They offer energy grid benefits such as peak shaving, load shifting, emergency backup, and the ability to have off-grid facilities (Ideal Energy 2020).
- Battery energy storage systems do not generate pollution or noise, require no employee time to operate, and do not impact business operations.

7.4. RECOMMENDATIONS

Renewable resources recommendations for the Study Area include:

- The Lithium Valley Specific Plan PEIR shall provide a Water Supply Assessment (WSA) discussing whether the total projected water supplies, determined to be available by the County for the project during normal, single dry, and multiple dry water years during a 20 year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and industrial uses.
- Evaluate Imperial County's existing land use and zoning regulations for ways to strategically expand permitted uses in appropriate areas to allow for renewable resource production and processing.
- Consider the effects of replacing farmland with renewable energy production on the local farmers and the workforce. Quantify the potential number of jobs generated for local workers.
- Consider requirements for best practices to avoid avian solar conflicts for all new renewables development.
- Continue to avoid wind energy production in the Study Area due to the potential adverse effect on migratory birds.
- Engage with stakeholders such as renewable resource providers in the region that can specify the constraints and opportunities within the Study Area.
- Understand the ways existing agriculture practices can contribute to biofuels and renewable energy production.

- Understand the specific skills and requirements for renewable resource jobs to proactively solicit and engage with the community.
- Incentivize uses that integrate industrial water conservation practices and contribute to improved water quality of the New River, Alamo River, and Salton Sea.
- Increase collaboration between battery storage system industry and regulators to find implementable approaches to safely managing these batteries.

8. Circulation and Goods Movement

8.1. EXISTING CONDITIONS

The Study Area mobility network is comprised of roadways and limited public transit, bicycle and pedestrian infrastructure. The Study Area is generally located between the Salton Sea shoreline and State Highway 111 near the communities of Niland and Calipatria. The northern section of the Study Area extends east of Highway 111 to Wilkins Road, and the southernmost section is bounded by the New River. Although visitors and residents of the Study Area rely primarily on private automobiles, public transit opportunities are available in the form of bus routes.

The Circulation and Goods Movement chapter analyzes the current state, regional, and local land use regulatory environment and existing conditions related to local and regional mobility and circulation. This section presents the physical and operational conditions of the existing circulation network in the Study Area, including an evaluation of streets, pedestrian and bicycle facilities, and public transit.

8.1.1. Applicable Regulations

Federal

Congestion Management Process

Federal Highway Administration (FHWA) 23 Code of Federal Regulations (CFR) 450.320 requires that all transportation management areas address congestion management through a process involving an analysis of multimodal metropolitan-wide strategies that are developed to enhance safety and integrated management of new and existing transportation facilities eligible for federal funding. The Imperial County Transportation Commission (ICTC) has been designated as having jurisdiction over the transportation management areas for the Imperial County region.

Highway Capacity Manual

The Federal Highway Capacity Manual, 6th Edition, adopted in 2016, is a publication of the Transportation Research Board of the National Academies of Science in the United States. It contains concepts, guidelines, and procedures for computing the capacity and quality of service of various highway facilities, including freeways, highways, arterial roads, roundabouts, signalized and unsignalized intersections, and rural highways, and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

State

California Environmental Quality Act (CEQA)

Environmental legislation in California is largely provided by CEQA and its implementing guidelines (CEQA Guidelines). These regulations required projects with potential adverse environmental effects (or impacts) to undergo environmental review. The Lithium Valley Specific Plan will undergo a CEQA review process. If adverse environmental impacts are identified as a result of Specific Plan implementation, such effects are typically mitigated in conformance with existing laws and regulations.

Senate Bill 375

Senate Bill (SB) 375 (codified in the Government Code and the Public Resources Code) took effect in 2008 and provides a planning process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the greenhouse gas (GHG) reduction goals established by Assembly Bill (AB) 32. SB 375 requires metropolitan planning organizations (MPOs) to incorporate a Sustainable Communities Strategy in their Regional Transportation Plans to achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities. SB 375 required the California Air Resources Board (CARB) to set regional targets for reducing GHG from passenger vehicle use. In 2010, CARB established targets for 2020 and 2035 for each region in California governed by an MPO. The Southern California Association of Governments (SCAG) is the designated MPO for six (6) Counties in Southern California including Imperial County. The SCAG target, as set by CARB, is to reduce the region's per capita emissions of greenhouse gases from cars and light trucks by 8 percent by 2020, and by 2035, the target is a 13 percent per capita reduction. SB 375 does not require CARB to set targets beyond 2035. Nevertheless, the Imperial County Regional Climate Action Plan (June 2021) includes a 2050 time horizon to reduce greenhouse gas emissions.

Senate Bill 743

SB 743 was signed into law September 2013 and became effective on July 1, 2020, which changed the way that transportation impacts were analyzed under CEQA. SB 743 requires the amount of driving and length of trips – as measured by "vehicle miles traveled" or VMT – be used to assess transportation impacts on the environment for CEQA review. These impacts will be reduced or "mitigated" by options such as Transportation Demand Management (TDM), increasing transit options, or providing for active transportation such as walking and biking. All jurisdictions have the option to tailor requirements to their unique communities.

SB 743 had required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service (LOS) and auto delay for evaluating transportation impacts. The alternative criteria, VMT, was developed to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. The Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA (Draft Guidelines) provided recommendations for updating the state's CEQA Guidelines in response to SB 743 and contained recommendations for a VMT analysis

methodology in an accompanying Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018).

California Department of Transportation (Caltrans) Highway Design Manual (HDM)

The Highway Design Manual (HDM) was prepared by the California Department of Transportation (Caltrans) to establish uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions. The standards, procedures, and requirements established and discussed in the HDM are for the information and guidance of the officers and employees of Caltrans. Many of the instructions given in the HDM are subject to amendment as conditions and experience warrant. The current Seventh Edition of the HDM was last updated on May 20, 2022.

California Freight Mobility Plan

The California Freight Mobility Plan governs immediate and long-term planning and capital investments related to freight movement in the state. It is developed by the California Transportation Agency (Caltrans) and the Department of Transportation, with input from the California Freight Advisory Committee. Additionally, the implementation of the California Sustainable Freight Action Plan, initiated by Executive Order No. B-32-15, involves collaboration among state departments to create an integrated action plan. This plan aims to set clear targets for improving freight efficiency, transitioning to zero-emission technologies, and enhancing the competitiveness of California's freight system.

SB 671 - Clean Freight Corridor Efficiency Assessment

Senate Bill 671 mandates the California Transportation Commission, in collaboration with other state agencies, to formulate a Clean Freight Corridor Efficiency Assessment. The bill further requires the incorporation of these assessment recommendations into respective programs for freight infrastructure. It also officially codifies the existing guidelines for eligible projects under the Trade Corridor Enhancement Program. The bill has been signed into law by the Governor and is now Chapter 769, Statutes of 2021. In a related budget action, $1.15 million ongoing funding and three positions were allocated to the California Transportation Agency. This funding supports the establishment of a freight policy team tasked with overseeing and coordinating freight policy throughout the state, including managing freight transportation research projects.

Imperial County's proximity to the US-Mexico Border, the Port of San Diego, Port of Long Beach and the Port of Los Angeles contributed to the region's suitability for transporting freight between manufacturers, distributors, and consumers throughout Southern California. Rail connections from Mexico, Arizona and Riverside County provide critical transportation pathways for manufactured and agricultural products to and from Imperial County.

The class to which a carrier belongs is determined in accordance with the following revenue thresholds (ICTC 2022).

- Class I railroads have annual carrier operating revenues of greater than $250 million;
- Class II railroads (or short line railroads) have annual carrier operating revenues less than $250 million but more than $20 million; and

- Class III railroads have annual carrier operating revenues of less than $20 million.

The Union Pacific Railroad Company (UPRR) owns and operates three rail lines which run through the County. Railroads are classified by their annual carrier operating revenues. UPRR's Class I railroad, which operates revenues greater than $250 million, originates at one of the two main Ports of Entry (POEs) within the County, known as Calexico West. At the Calexico West POE, this railroad connects with the "Ferrocarril Mexicano (FXE)" freight rail network or "Mexican Railway," facilitating international transport of freight across the border. This rail line extends toward El Centro, continues north adjacent to the Study Area's eastern border and ultimately connects with UPRR tracks in Niland (ICTC 2022).

The other two UPRR railroads servicing the County are Class III railroads with annual carrier operating revenues less than $20 million, indicating far less volume in cargo transport. The Sunset Line which connects with the Class I railroad in Niland travels southeast toward the California-Arizona border near Yuma and ultimately reaches El Paso. This rail line is a critical pathway for goods being transported throughout the Southwestern United States.

The Class I and Class III UPRR rail lines converge in Niland and continue alongside US Highway 111, traveling northwest toward Riverside County. There are approximately 2.25 miles of rail within the Study Area across the northern corner of the boundary. The Class III rail line ultimately connects to a complex rail network in Riverside County and Los Angeles County leading to the Alameda Corridor, which connects directly to the San Pedro Bay Ports at the Port of Los Angeles. As an intermodal transportation facility, freight trains arrive directly at the Port to transfer freight onto the ships and from ships onto trains.

The third UPRR rail line, known as the Desert Line, operates the section between Plaster City and the City of El Centro, loosely following Imperial County Sign Route 80 (S80). The Desert Line extends west from El Centro where it intersects the UPRR Class I rail line. It leads to the Pacific Imperial Railroad which transports freight from Imperial County to San Diego County and eventually arrives at the border crossing near Campo. From there, freight enters the FXE until it reaches another international crossing in San Ysidro, a border city in San Diego County. Upon reaching the San Ysidro POE, freight can be transported north through San Diego County, ultimately reaching the Port of San Diego, which oversees the intermodal facility to deliver cargo between rail and ship transport carriers. The Desert Line rail network provides alternative eastbound and westbound routes to service the distribution, transportation, and supply chain needs of the Cali-Baja region.

According to 2019 IHS Markit Transearch data, commodity flow volumes by rail account for about 3% of total commodity flow volumes in the County (ICTC 2022). Alternative modes of transport, such as truck or air, comprise a much greater portion of the County's total commodity flow volume. However, the significant role of rail in facilitating interstate, international and intermodal forms of freight transportation cannot be understated in its contribution to the greater regional economy.

The Imperial County Transportation Commission's (ICTC) Long Range Transportation Plan (LRTP) states that since private companies own and operate rail facilities in California, information on track conditions are not public. However, the UPRR Class I railroad infrastructure in Imperial County is considered to be in good condition and is compliant with North American shipment weight standards.

Regional

Imperial County Long Range Transportation Plan (November 2013)

The 2013 Imperial County Long Range Transportation Plan (LRTP) was jointly prepared by the Imperial County Transportation Commission (ICTC), the Southern California Association of Governments (SCAG) and Caltrans District 11 to identify regional transportation goals, objectives, and strategies through the year 2035. Such plans are required to be prepared in conformance with the goals of Senate Bill (SB) 375 aimed at reducing regional GHG emissions from automobiles and light-duty trucks through changes in land use and transportation development patterns. ICTC serves as the Regional Transportation Agency for Imperial County and is therefore required to adopt and submit an updated RTP to the California Transportation Commission and Caltrans every 4 to 5 years, based on regional air quality attainment status. Working with local governments, ICTC is required by federal law to prepare and implement an RTP that identifies anticipated regional transportation system needs and prioritizes future transportation projects.

In 2020 SCAG updated their Regional Transportation Plan and Sustainable Transportation Strategy, which triggered the need to conduct a comprehensive update to the Imperial County Long Range Transportation Plan (LRTP). In January 2024, the Imperial County Transportation Commission (ICTC) released the Final LRTP, which guides future transportation funding plans and policies through the year 2050. The Final LRTP identifies priority transportation projects that will enhance Imperial County's transportation network. The plan addresses improvements for transit, rail and bus service, express and managed lanes, highways, local streets, bicycling, and walking to achieve an integrated, multimodal transportation system by 2050. Improvements that relate to the Study Area include SR-111 Collision Reduction and rehabilitating various County bridges.

Imperial County Regional Active Transportation Plan

The Imperial County Regional Active Transportation Plan was adopted by the Imperial County Transportation Commission (ICTC) in February 2022. The plan was prepared to guide and build an active transportation network that reflects the existing and future needs of the 180,000-plus residents of Imperial County. The plan includes an existing conditions analysis, community engagement, and project recommendations to guide the development of active transportation infrastructure projects and programs for the ICTC. The Imperial County Regional Active Transportation Plan identified the existing walking, bicycling and transit mode shares and facilities for each incorporated city and unincorporated community in Imperial County. Based on feedback from community outreach in the local jurisdictions, active transportation infrastructure and programmatic improvement projects were recommended to enhance active transportation in Imperial County. Future active transportation projects were recommended for all of the incorporated and unincorporated jurisdictions in Imperial County and were prioritized as either short-term or long-term improvements.

Local

Imperial County General Plan Circulation and Scenic Highways Element

The County's General Plan Circulation and Scenic Highways Element includes guidance for development of a balanced, multimodal transportation system to facilitate and enhance the

movement of people and goods in the unincorporated areas of the County (Imperial County 2008). The element is aimed at achieving a balanced transportation system that offers multiple modes of travel, including motor vehicles, public transportation, bicycles, pedestrians, and to a lesser extent, rail and air transportation. Issues addressed include regional transportation coordination and facilities, achieving a safe and efficient multimodal system, improving public transit, implementing transportation system management (optimizing the transportation network) and travel demand management (reducing the use of the road network), parking, protecting and enhancing scenic highway corridors, and providing bicycle, pedestrian, and trail facilities. The Circulation and Scenic Highways Element also recognizes its correlation with the Land Use Element and includes identification of a road network that can adequately support the uses designated on the General Plan Land Use Map at buildout, based on a reasonable expectation for funding of the regional transportation network.

Imperial County Pedestrian Master Plan

The Imperial County Pedestrian Master Plan was adopted in April 2021. The plan aims to assist the Imperial County Transportation Commission (ICTC) in developing an integrated network of pedestrian facilities in the unincorporated communities of the County, most of which lack formal sidewalks or established walking paths. The Pedestrian Master Plan highlights needs and priorities that address issues such as safety and security, environmental issues, convenience, accessibility and connectivity of pedestrian infrastructure. The goal of the plan is to be the guiding document for ICTC as it goes through the process of grant development for Active Transportation Program funding.

8.1.2. Existing Roadway Network

Circulation and Scenic Highways Element Roadway Classifications

Expressway – the main function of this classification is to provide regional and intra-county travel services. Features include high design standards with six travel lanes; wide, landscaped medians; highly restricted access; provisions for public transit lanes, including but not limited to, bus lanes, train lanes, or other mass transit type means; and no parking. Minimum right-of-way (ROW) is 210 feet consisting of three travel lanes per direction, a 56-foot median, and shoulders along both sides of the travel way. The ROW width is exclusive of necessary adjacent easements such as for IID facilities as these vary. The minimum intersection spacing is one (1) mile.

Prime Arterial — the main function of this classification is to provide regional, sub regional, and intra-county travel services. Features include high design standards with four to six travel lanes, raised and landscaped medians, highly restricted access, which in most cases will be a one mile (1 mile) minimum, provisions for public transit lanes, including but not limited to bus lanes, train lanes, or other mass transit type means and no parking. The absolute minimum right of way w/o public transit lanes is 136 feet.

Minor Arterial — these roadways provide intra-county and sub regional service. Access and parking may be allowed, but closely restricted in such a manner as to ensure proper function of this roadway. Typical standards include the provision for four and six travel lanes with raised and landscaped medians for added safety and efficiency by providing protected left turn lanes at selected locations.

Some may also contain provisions for public transit lanes or other mass transit type means. Minimum right of way is 102 feet for 4 lanes and 126 for 6 lanes.

Major Collector (Collector) — these roadways are designed for intra-county travel as a link between the long-haul facilities and the collector/local facilities. Although it frequently provides direct access to abutting properties, that is not its primary purpose. Typical design features include provision for four travel lanes without a raised median and some may also contain provisions for public transit lanes or other mass transit type means. Minimum right of way is 84 feet. Parking is generally not permitted.

Minor Local Collector (Local Collector) — this is designed to connect local streets with the adjacent Collectors or arterial street system. Design standards include provision for two travel lanes and parking, except in specific locations where parking is removed to provide a turn lane at intersections. Local Collector streets frequently provide direct access to abutting properties, although that should be avoided where feasible. Minimum right of way is 70 feet.

Residential Street — this street type also includes residential cul-de-sac and loop street and is designed to provide direct access to abutting properties and to give access from neighborhoods to the Local Street and Collector Street system. This classification should be discontinuous in alignment such that through trips are discouraged. Typical design standards include provision for two travel lanes, parking on both sides, and direct driveway access. Minimum right of way is 60 feet.

Major Industrial Collector (Industrial) — the main function of this classification is to provide for efficient movement of goods for regional, subregional, and intra- county travel services. Access and parking may be allowed, but closely restricted in such a manner as to ensure safe and proper function of industrial traffic on this roadway. Typical design standards include provisions for up to four travel lanes and parking on both sides. Minimum right of way is 96 feet.

Industrial Local Street — this classification is designed to connect industrial properties and areas with the adjacent Industrial Collector, Residential, Collector or arterial system. Design standards include provisions for two travel lanes of a minimum of 13 feet width each, and parking. Industrial streets frequently provide direct access to abutting industrial sites and parking of industrial-sized vehicles. Minimum right of way is 64 feet.

The typical cross-section for each roadway classification type as described above is illustrated in Figure 4-1, Typical Cross-Sections by Roadway Classification Type, in Appendix A.

Existing Roadway Network of Specific Study Area

Highway 78/86 is oriented in a general east-west direction along the segment that is shared by both highways. Highway 78/86 is classified as a divided 6 Lane State Highway/Expressway and is currently built as a divided 4 Lane State Highway/ Expressway with a pavement width of 164 feet (including the 84 foot center median), except through Westmorland, where Highway 78/86 is currently built as an undivided 4 lane roadway with a pavement width of 76 feet. Sidewalks are generally not provided except along several blocks in Westmorland. There are currently no bike lanes along Highway 78/86, but a 4-6 foot shoulder is generally provided. On-street parking is prohibited on Highway 78/86. The posted speed limit ranges from 35 mph through Westmorland to 65 mph between cities and communities. Highway 78/86 is a major goods movement route and

would provide regional access between the Specific Plan site and areas to the west and south of the Specific Plan.

Highway 111 is oriented in a general north-south direction, and is classified as a divided 6 Lane State Highway/Expressway. Highway 111 is currently built as an undivided 2 lane State Highway facility in the area with a pavement width ranging from 32 feet to 54 feet, except for a 4-block segment in Calipatria where 4 lanes are currently provided with a pavement width of 76 feet. Sidewalks are generally not provided except along the east side of the roadway for several blocks in Calipatria. There are currently no bike lanes along Highway 111, but a 4-6 foot shoulder is generally provided. On-street parking is prohibited on Highway 111. The posted speed limit ranges from 40 mph through Calipatria, to 45 mph through Niland, to 65 mph between cities and communities. Highway 111 serves as a major goods movement route in Imperial County and would provide primary regional access to and from the Study Area.

Main Street (Calipatria)/Highway 115 is oriented in a general east-west direction, and is classified as a 4 lane Major Collector from Lyerly Road to Highway 111, and as a divided 6 Lane State Highway/Expressway along the Highway 115 segment east of Highway 111. Main Street is currently built as an undivided 2 lane roadway between Lyerly Road and Hornet Street (Calipatria High School). Main Street is currently built as a 4 lane roadway with between Hornet Street (Calipatria High School) and Park Avenue, with a pavement width of 76 feet. West Main Street between Park Avenue and Highway 111 is currently built as an undivided 2 lane roadway with on-street angled parking, with a pavement width of 76 feet. East Main Street (Highway 115) between Highway 111 and Northeast/ Southeast Avenue is currently built as an undivided 4 lane roadway, with a pavement width ranging from 52 feet to 76 feet, and transitions to an undivided 2 lane roadway east of Northeast/ Southeast Avenue, with a pavement width ranging from 32 feet to 44 feet. Sidewalks are generally provided between Lyerly Road and Industrial Avenue. Bike lanes are not provided along Main Street/Highway 115. The posted speed limit on Main Street/Highway 115 ranges from 25 mph to 45 mph through Calipatria, and is 65 mph on Highway 115 east of Northeast/ Southeast Avenue. West Main Street would provide access between Highway 111 and the southern portion of the Study Area (via Eddins Road), whereas East Main Street/Highway 115 would provide regional access between the Study Area and areas to the southeast of the Specific Plan.

Forrester Road/Center Street is oriented in a general north-south direction, and is classified as a 6 lane Prime Arterial. Forrester Road/Center Street is currently built as an undivided 2 lane roadway between Walker Road and Interstate 8, with a pavement width generally ranging from 24 to 26 feet. A half-mile section of Forrester Road becomes Center Street through Westmorland that is currently built as an undivided 2 lane roadway with a two-way left-turn lane and on-street parallel and angled parking, with a pavement width ranging from 48 to 72 feet. Sidewalks are generally not provided except along several blocks in Westmorland where Forrester Road becomes Center Street. A Class II bike lane is currently provided in each direction along a 2-block section of Center Street between 7th Street and 5th Street. The posted speed limit on Forrester Road ranges from 35 to 55 mph, except through Westmorland where the posted speed limit on Center Street is 25 mph. Forrester Road would provide access between Highway 78/86 and the southern and central portions of the Study Area via Gentry Road (north of Walker Road).

Sinclair Road is oriented in a general east-west direction, and is classified as a 4 lane Major Collector. Sinclair Road is currently built as an undivided 2 lane roadway between Gentry Road and Wiest Road, with a pavement width ranging from 24 to 26 feet. Sidewalks and bike lanes are not provided on Sinclair Road, and on-street parking is prohibited. No posted speed limit sign was observed on Sinclair Road. Sinclair Road is located entirely within the Study Area and would provide access between Highway 111 and the central portion of the Specific Plan.

Eddins Road is oriented in a general east-west direction, and is classified as a 4 lane Major Collector. Eddins Road is currently built as an undivided 2 lane roadway between Gentry Road and Lyerly Road, with a pavement width of 24 feet. Eddins Road transitions to Main Street east of Lyerly Road at the City of Calipatria western boundary. Sidewalks and bike lanes are not provided on Eddins Road, and on-street parking is prohibited. No posted speed limit sign was observed on Eddins Road. Eddins Road would provide access between Highway 111 (via Main Street) and the southern portion of the Study Area.

Gentry Road is oriented in a general north-south direction, and is classified as a 4 lane Major Collector. Gentry Road is currently built as an undivided 2 lane roadway between Sinclair Road and Walker Road, with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on Gentry Road, and on-street parking is prohibited. No posted speed limit sign was observed on Gentry Road. Gentry Road would provide access between Highway 78/86 and the southern and central portions of the Study Area via Forrester Road (south of Walker Road). Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Gentry Road via Eddins Road.

Kalin Road is oriented in a general north-south direction, and is classified as a 4 lane Major Collector. Kalin Road is currently built as an undivided 2 lane roadway between Sinclair Road and Carter Road south of Highway 86, with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on Kalin Road, and on-street parking is prohibited. No posted speed limit sign was observed on Kalin Road. Kalin Road would provide access between Highway 86 and the southern and central portions of the Study Area. Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Kalin Road via Eddins Road.

Main Street (Niland) is oriented in a general east-west direction, and is classified as a 2 lane Minor Local Collector. Main Street is currently built as an undivided 2 lane roadway between Highway 111 and the Wilkins Road/Beal Road intersection, with a pavement width of 24 feet. Sidewalks and bike lanes are not provided on Main Street, and on-street parking is prohibited. The posted speed limit is 35 mph. Main Street would provide access between Highway 111 and areas in the northeast corner of the Study Area (via Wilkins Road).

Wilkins Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Wilkins Road is currently built as an undivided 2 lane roadway between Beal Road and Hobbs Road, with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on Wilkins Road, and on-street parking is prohibited. No posted speed limit sign was observed on Wilkins Road. Wilkins Road would provide access into the northeast corner of the Study Area.

English Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. English Road extends from Coachella Canal Road to Bowles Road, and is currently unpaved between Coachella Canal Road and Wilkins Road, and between Highway 111 and Sinclair Road. English Road is paved between Wilkins Road and Highway 111, and between Sinclair Road and Bowles Road, and is built as an undivided 2 lane roadway with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on English Road, and on-street parking is prohibited. No posted speed limit sign was observed on English Road. English Road would provide access into the northeast corner of the Study Area.

Brandt Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Brandt Road is currently built as an undivided 2 lane roadway between Sinclair Road and Webster Road south of Highway 86, with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on Brandt Road, and on-street parking is prohibited. No posted speed limit sign was observed on Brandt Road. Brandt Road would provide access between Highway 78 and the southern and central portions of the Study Area. Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Brandt Road via Eddins Road.

Lack Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Lack Road is currently built as an undivided 2 lane roadway between Bowles Road and Baughman Road south of Highway 78/86, with a pavement width ranging from 22 to 24 feet. Sidewalks and bike lanes are not provided on Lack Road, and on-street parking is prohibited. No posted speed limit sign was observed on Lack Road. Lack Road would provide access between Highway 78/86 and the southern portion of the Study Area.

Figure 4-2, Existing Roadway Configurations in Study Area, in Appendix A, illustrates the existing roadway configurations of the above-listed roadways that provide access to and within the Study Area. Figure 4-3, General Plan Circulation Element Roadway Classifications In Study Area, in Appendix A, illustrates the Imperial County General Plan Circulation Element roadway classifications of the above-listed roadways and others in the Study Area. Figure 4-4, Existing Study Intersection Lane Geometry and Traffic Controls, in Appendix A, illustrates the existing conditions intersection geometry and traffic control of the eight (8) study intersections, which are listed in the next section.

Existing Electric Vehicle Charging Network

In 2023, Comité Cívico Del Valle launched the Lithium Valley EV Charger Equity Initiative, locating their first charger in the City of Brawley (CCV 2023). This initiative is a non-profit model to construct and operate an EV charging station network in the Imperial Valley (Beyond Borders Gazette 2024). With Imperial Valley having the lowest rate of EV chargers per capita of all 58 counties in California, Comité Cívico Del Valle's goal is to install 20 publicly accessible charging stations across the Imperial Valley (CCV 2023).

8.1.3. Existing Traffic Volumes, Operations and VMT

Traffic Volumes

Existing intersection turning movement volumes for the study intersections, including both bicycles and pedestrians, were obtained from traffic counts conducted on Wednesday, November 9, 2022 during the AM (7:00-9:00) and PM (4:00-6:00) peak periods. The calculated peak hour volumes within the count period of each intersection were utilized in the analysis. The study intersections where traffic counts were collected are listed below:

1. Highway 111 / Davis Road
2. Highway 111 / English Road
3. Highway 111 / Main Street (in Niland)
4. Highway 111 / Sinclair Road
5. Highway 111 / Main Street (in Calipatria)
6. Highway 78/86 / Lack Road
7. Highway 78/86 / Center Street (Forrester Road)
8. Highway 78 / Brandt Road

Existing roadway segment volumes on the study area roadways for both regular vehicles and heavy trucks were obtained from 24-hour traffic counts conducted on Wednesday, November 9, 2022 and on Thursday, November 17, 2022. The study roadway segments where traffic counts were collected are listed below:

1. Highway 111, between Davis Road and Main Street Niland
2. Highway 111, between Main Street Niland and Sinclair Road
3. Highway 111, between Sinclair Road and Main Street Calipatria
4. Highway 111, between Yocum Road and Ruegger Road
5. English Road, north of Highway 111
6. Wilkins Road, between Beal Road and Gillespie Road
7. Main Street (Niland), between Commercial Avenue and Railroad Tracks
8. Sinclair Road, between Brandt Road and Highway 111
9. Eddins Road, between Brandt Road and Highway 111
10. Highway 115, between Northeast Avenue and Blair Road
11. Highway 78/86, between Lack Road and Martin Road
12. Kalin Road, between Sinclair Road and Eddins Road
13. Gentry Road, between Sinclair Road and Eddins Road
14. Lack Road, between New River and Bannister Road
15. Forrester Road, between New River and Bannister Road
16. Brandt Road, north of Vail Road
17. Brandt Road, between Swink Road and Hovley Road

Figure 4-5, Existing Conditions Intersection Volumes In Study Area, in Appendix A, illustrates the existing conditions intersection turning movement volumes within the Study Area. Figure 4-6, Existing Conditions Roadway Segment Volumes In Study Area, in Appendix A, illustrates the existing conditions roadway segment volumes within the Study Area, including the percentage of heavy

vehicles on these roadway segments. The intersection and roadway segment traffic counts are contained in Appendix B, Part 1.

Intersection and Roadway Operations

Intersection Operations

Level of Service (LOS) is a qualitative measure describing the efficiency of traffic flow. LOS describes the way such conditions are perceived by persons traveling in a traffic stream, with LOS measurements accounting for such variables such as speed and travel time, freedom to maneuver, traffic interruptions, traveler comfort and convenience and safety. Measurements are graduated ranging from LOS A, representing free flow and excellent comfort for the motorist, passenger or pedestrian, to LOS F, reflecting highly congested traffic conditions where traffic volumes approach or exceed the capacities of streets. As indicated in the County's General Plan Circulation Element, Imperial County will strive to maintain LOS C or better on roadways and intersections wherever possible.

The Level of Service (LOS) for signalized intersections was analyzed using the methodologies described in Chapter 19 of the 6th Edition Highway Capacity Manual (HCM 6). The LOS for signalized intersections is defined in terms of control delay, which is made up of several factors that relate to right-of-way control, geometrics and traffic volumes. The signalized intersection analysis also considers intersection spacing and coordination.

The LOS for two-way and all-way stop controlled intersections was calculated using the methodologies described in Chapters 20 and 21 of the 6th Edition HCM. The LOS for a two-way stop controlled intersection is determined by the computed control delay for each minor street movement and major street left turns, and not for the intersection as a whole. The LOS reported reflects the highest delay and associated LOS for an individual movement, typically occurring on the stop controlled approach.

The computerized analysis of signalized and unsignalized intersection operations was performed utilizing the *Synchro 11* traffic analysis software. The *Synchro 11 s*oftware supports the HCM-6 methodologies for signalized and stop controlled intersections and was utilized to produce the analysis results.

Signal timing data and parameters, such as cycle lengths, splits, and clearance intervals, were obtained from the current signal timing sheets provided by the County and calibrated into the Synchro model. Synchro reports delays, which correspond to a particular LOS, to describe the overall operation of an intersection. The criteria for the intersection LOS grade designations are provided in Table 8-1.

Table 8-1, LOS Criteria for Intersections

LOS	Control Delay (sec/veh)		Description
	Signalized Intersections	Unsignalized Intersections	
A	≤10	≤10	Operations with very low delay and most vehicles do not stop.

B	>10 and ≤20	>10 and ≤15	Operations with good progression but with some restricted movements.
C	>20 and ≤35	>15 and ≤25	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35 and ≤55	>25 and ≤35	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55 and ≤80	>35 and ≤50	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80	>50	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source: 6th Edition Highway Capacity Manual.

Existing traffic operations were analyzed for eight (8) intersections in the Study Area, based on the existing turning movement volumes and intersection geometry.

Table 8-2, Existing Conditions Intersection Operations, shows the existing conditions intersection operations during the peak hours. Appendix B, Part 2, contains the HCM intersection operations worksheets.

As shown in the table, all Study Area intersections currently operate at Level of Service (LOS) C or better, which is considered acceptable by Imperial County standards.

Table 8-2 Existing Conditions Intersection Operations

Intersection / Peak Hour		Control	Movement	Existing (2022) Operations	
				DELAY[1]	LOS[2]
Highway 111 / Davis Rd					
1	AM Peak Hour	Uncontrolled	NBL	0.0	A
		(OWSC)	EBL/R	9.4	A
	PM Peak Hour	Uncontrolled	NBL	7.5	A
		(OWSC)	EBL/R	8.9	A
Highway 111 / English Rd					
2	AM Peak Hour	(TWSC)	NBL/T/R	9.4	A
		(TWSC)	SBL/T/R	7.5	A
		Uncontrolled	EBL/T/R	0.0	A
		Uncontrolled	WBL/T/R	0.0	A
	PM Peak Hour	(TWSC)	NBL/T/R	8.9	A
		(TWSC)	SBL/T/R	9.1	A
		Uncontrolled	EBL/T/R	7.5	A
		Uncontrolled	WBL/T/R	0.0	A
Highway 111 / Main St (Niland)					
3	AM Peak Hour	Uncontrolled	SBL	0.0	A
		(OWSC)	WBL/R	9.5	A
	PM Peak Hour	Uncontrolled	SBL	0.0	A
		(OWSC)	WBL/R	9.1	A
Highway 111 / Sinclair Rd					
4	AM Peak Hour	Uncontrolled	NBL	0.0	A
		Uncontrolled	SBL	0.0	A
		(TWSC)	EBL/T/R	10.7	B
		(TWSC)	WBL/T/R	10.3	B
	PM Peak Hour	Uncontrolled	NBL	0.0	A
		Uncontrolled	SBL	0.0	A
		(TWSC)	EBL/T/R	9.6	A
		(TWSC)	WBL/T/R	9.2	A
Highway 111 / Main St (Calipatria)					
5	AM Peak Hour	(AWSC)	Overall	12.0	B
	PM Peak Hour	(AWSC)	Overall	12.4	B

Intersection / Peak Hour		Control	Movement	Existing (2022) Operations	
				DELAY[1]	LOS[2]
Highway 78/86 / Lack Rd					
6	AM Peak Hour	(TWSC)	NBL/T	13.2	B
		(TWSC)	NBR	0.0	A
		(TWSC)	SBL/T	13.5	B
		(TWSC)	SBR	0.0	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	0.0	A
	PM Peak Hour	(TWSC)	NBL/T	14.8	B
		(TWSC)	NBR	0.0	A
		(TWSC)	SBL/T	15.3	C
		(TWSC)	SBR	9.4	A
		Uncontrolled	EBL	8.6	A
		Uncontrolled	WBL	0.0	A
Highway 78/86 / Center St (Forrester Rd)					
7	AM Peak Hour	(Signal)	Overall	20.3	C
	PM Peak Hour	(Signal)	Overall	20.0	B
Highway 78 / Brandt Rd					
8	AM Peak Hour	(TWSC)	NBL/T	15.8	C
		(TWSC)	NBR	9.4	A
		(TWSC)	SBL/T	14.9	B
		(TWSC)	SBR	9.1	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	8.6	A
	PM Peak Hour	(TWSC)	NBL/T	15.0	C
		(TWSC)	NBR	9.3	A
		(TWSC)	SBL/T	15.4	C
		(TWSC)	SBR	9.1	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	8.6	A

Notes:
Results calculated utilizing the methodologies described in Chapters 19, 20, 21, and 22 in the 6th Edition of the HCM.

1. Delay is measured in seconds per vehicle.
2. Level of Service

(AWSC)=All-Way Stop Controlled, (TWSC)=Two-Way Stop Controlled, (OWSC)=One-Way Stop Controlled
NB=Northbound, WB=Westbound, etc.
L=Left-turn movement, T=Thru movement, R= Right-turn movement, etc.
L/T=Left-Through lane, L/T/R=Left-Through-Right lane, etc.

Roadway Segment Operations

Roadway segments were analyzed based on the volume-to-capacity (v/c) ratios and the County's daily LOS capacity thresholds per Table 5 of the County's General Plan Circulation and Scenic Highways Element (Imperial County 2008). The analysis results provide a planning-level assessment of whether a segment is under, approaching, or over capacity, where LOS E represents capacity. Imperial County considers LOS C or better to be acceptable for daily roadway segment operations. Table 8-3, LOS Criteria for Roadway Segments, presents the roadway segment capacity and LOS thresholds utilized by Imperial County.

Table 8-3, LOS Criteria for Roadway Segments

ROADWAY CLASSIFICATION	X-SECTION	LEVEL OF SERVICE (LOS)				
		A	B	C	D	E
Expressway	154/210	30,000	42,000	60,000	70,000	80,000
Prime Arterial	106/136	22,200	37,000	44,600	50,000	57,000
Minor Arterial	82/102	14,800	24,700	29,600	33,400	37,000
Major Collector (Collector)	64/84	13,700	22,800	27,400	30,800	34,200
Minor Collector (Local Collector)	40/70	1,900	4,100	7,100	10,900	16,200
Local County (Residential)	40/60	*	*	<1,500	*	*
Local County (Residential Cul-de- Sac or Loop Street)	40/60	*	*	<200	*	*
Major Industrial Collector – (Industrial)	76/96	5,000	10,000	14,000	17,000	20,000
Industrial Local	44/64	2,500	5,000	7,000	8,500	10,000

Source: Imperial County General Plan Circulation and Scenic Highways Element (January 29, 2008)

The existing roadway level of service results are based on existing daily traffic volumes and roadway capacity. Table 8-4 summarizes the existing conditions roadway segment capacity analysis results. As shown in the table, all study roadway segments currently operate at an acceptable level of service (LOS C or better).

Table 8-4 Existing Conditions Roadway Segment Operations

	ROADWAY SEGMENT	EXISTING/ FUNCTIONAL CLASSIFICATION	ROADWAY CAPACITY (LOS C) [a]	EXISTING (2022) OPERATIONS	
				ADT	LOS
1	Highway 111, between Davis Road and Main Street Niland	2-Lane State Highway	20,000	1,729	A
2	Highway 111, between Main Street Niland and Sinclair Road	2-Lane State Highway	20,000	2,820	A
3	Highway 111, between Sinclair Road and Main Street Calipatria	2-Lane State Highway	20,000	2,799	A
4	Highway 111, between Yocum Road and Ruegger Road	2-Lane State Highway	20,000	6,930	B
5	English Road, north of Highway 111	2-Lane Road	7,100	266	A
6	Wilkins Road, between Beal Road and Gillespie Road	2-Lane Road	7,100	190	A
7	Main Street (Niland), between Commercial Avenue and Railroad Tracks	2-Lane Road	7,100	778	A
8	Sinclair Road, between Brandt Road and Highway 111	2-Lane Road	7,100	431	A
9	Eddins Road, between Brandt Road and Highway 111	2-Lane Road	7,100	1,097	A
10	Highway 115, between Northeast Avenue and Blair Road	2-Lane State Highway	20,000	2,537	A
11	Highway 78/86, between Lack Road and Martin Road	4-Lane Divided Highway	40,000	11,270	A
12	Kalin Road, between Sinclair Road and Eddins Road	2-Lane Road	7,100	209	A
13	Gentry Road, between Sinclair Road and Eddins Road	2-Lane Road	7,100	873	A
14	Lack Road, between New River and Bannister Road	2-Lane Road	7,100	241	A
15	Forrester Road, between New River and Bannister Road	2-Lane Road	7,100	1,196	A
16	Brandt Road, north of Vail Road	2-Lane Road	7,100	514	A
17	Brandt Road, between Swink Road and Hovley Road	2-Lane Road	7,100	756	A

Notes:

a. Roadway capacity sourced from the Imperial County General Plan Circulation and Scenic Highways Element (January 29, 2008). Imperial County accepts LOS C or better for roadway operations as identified in the Circulation Element.

Vehicle Miles Traveled

Since SB 743 became effective on July 1, 2020, the metric of analyzing transportation impacts under CEQA has changed from level of service (LOS) to vehicle miles traveled (VMT) for development and transportation projects. The Technical Advisory on Evaluating Transportation Impacts in CEQA prepared by OPR in December 2018 provides a recommended methodology for VMT analysis that includes screening criteria, significance thresholds and mitigation measures. Local jurisdictions have the option to either prepare their own VMT analysis requirements or to defer to the recommended VMT analysis methodology in the OPR Technical Advisory document. Imperial County has not yet adopted their own VMT analysis requirements; therefore, the OPR Technical Advisory would be utilized to conduct VMT analysis in Imperial County.

The OPR Technical Advisory recommends the following VMT screening criteria for land development projects:

- Screening Threshold for Small Projects (<110 daily trips)
- Map-Based Screening for Residential and Office Projects (15% below regional average)
- Presumption of Less Than Significant Impact Near Transit Stations
- Presumption of Less Than Significant Impact for Local-Serving Retail (<50,000 sq. ft.)
- Presumption of Less Than Significant Impact for Affordable Residential Development

The OPR Technical Advisory recommends that the map-based screening and significance thresholds for residential and employment development projects should be 15 percent below the regional average VMT per capita resident or VMT per employee. The regional average VMT per capita resident and VMT per employee for Imperial County is obtained from the Imperial County Transportation Model (ICTM), which was developed in 2018 by the Southern California Association of Governments (SCAG) in conjunction with Caltrans District 11. The ICTM Base Year is 2014, and the ICTM Base Year 2014 average VMT per capita resident and VMT per employee for Imperial County were obtained from the City of El Centro General Plan Update Transportation Impact Study (Chen Ryan Associates, March 2021) and are provided below:

- Regional Average VMT Per Capita Resident: 13.76 miles
- Regional Average VMT Per Employee: 18.59 miles

However, the ICTM is a sub-area model of the overall Southern California Association of Governments (SCAG) regional travel demand model, which covers the entire Southern California region except for San Diego County. The current SCAG regional travel demand model has a Base Year of 2016, and VMT data for Imperial County in the current SCAG model would differ from the 2014 Base Year VMT data in the ICTM.

SCAG provided VMT per capita resident data for all Travel Analysis Zones (TAZs) in Imperial County for Base Year 2016 from the latest SCAG regional travel demand model that was run for the SCAG 2020 Regional Transportation Plan (RTP). VMT per Employee data for TAZs in Imperial County for Base Year 2016 is not currently available from SCAG.

The SCAG Base Year 2016 VMT data showed that for the 10 TAZs in which the Study Area is located, the average VMT per capita resident is 32.11 miles, which is considerably higher than the regional Imperial County average. However, most of the Study Area currently consists of agricultural or geothermal uses, and residential uses are not proposed to be developed within the Specific Plan boundary. VMT per employee would be the appropriate metric to use for the VMT analysis since employment-based uses are proposed for the Specific Plan.

The VMT data from the City of El Centro General Plan Update Transportation Impact Study (Chen Ryan Associates 2021) and the current SCAG regional travel demand model for Base Year 2016 is provided in Appendix B, Part 3.

Employee Commute Patterns

The Longitudinal Employer-Household Dynamics (LEHD) data provided by the U.S. Census Bureau shows that approximately 30% of all workers who live in Imperial County work in a different county, primarily Riverside County, San Diego County, and Yuma County (Arizona). The U.S. Census Bureau LEHD data also shows that nearly 20% of all workers in Imperial County travel more than 50 miles to their jobs. The primary commute routes for these workers are Highway 86 and Highway 111 to the Coachella Valley, Interstate 8 west to San Diego County, and Interstate 8 east to Yuma, Arizona.

Within Imperial County, the majority of jobs are located in the cities of El Centro, Calexico and Brawley. These same cities are also where the majority of residents live in Imperial County, and therefore, the primary commute patterns in Imperial County follow a north-south direction between Brawley, El Centro and Calexico. The section of Highway 111 within the Lithium Valley Specific Plan area would include commute traffic for both employees traveling to and from the Coachella Valley in Riverside County, and employees traveling to and from the cities of Brawley, El Centro or Calexico.

8.1.4. Existing Pedestrian, Bicycle and Transit Facilities

Pedestrian Facilities

The Study Area is generally lacking sidewalks and other pedestrian facilities with the exception of roadways within the City of Calipatria and the City of Westmorland. Informal dirt paths are the most common form of pedestrian facilities found in the Study Area, while many of the sidewalks along the roadways in these small cities and communities are discontinuous with gaps between properties and blocks or are only provided on one side of the street along some segments. Below are descriptions of the existing pedestrian facilities in the Study Area:

Community of Niland

The unincorporated community of Niland is generally lacking sidewalks except for three blocks along the south side of 4th Street, one block along the south side of 5th Street, and two blocks along the west side of Isis Avenue.

The Imperial County Pedestrian Master Plan (2021) includes recommendations for pedestrian facility improvements in the unincorporated community of Niland, which include high-visibility

continental crosswalks, rectangular rapid flashing beacons (RRFBs), pedestrian lighting enhancements, and new sidewalks and pedestrian paths.

City of Calipatria

The majority of streets within the City of Calipatria either lack sidewalks or have sidewalks provided along only one side of the street. Sidewalk is provided along the east side of Highway 111 between Delta Street and Date Street, and on both sides of West Main Street and East Main Street (Highway 115) between Lyerly Road and Industrial Avenue. Most sidewalks are built to the minimum 5-foot width; however, several street blocks along Highway 111 and along Main Street have sidewalks that are 8 feet in width on either one or both sides of the street. The Highway 111 / Main Street intersection currently has high-visibility continental crosswalks on all four legs of the All-Way Stop Controlled intersection.

City of Westmorland

The majority of streets within the City of Westmorland either lack sidewalks or have sidewalks provided along only one side of the street. Sidewalk is provided along one or both sides of Center Street between 8th Street and Beverlee Way; however, the sidewalk is discontinuous along the corridor. Sidewalks are also provided along both sides of Highway 78/86 between G Street and B Street. Most sidewalks are built to the minimum 5-foot width; however, several street blocks along Center Street have sidewalks that are 8 feet in width on either one or both sides of the street. The Highway 78/86 / Center Street intersection currently has protected pedestrian crossings with high-visibility continental crosswalks on all four legs of the signalized intersection. Pedestrian enhancements including bulb-outs and continental crosswalks are currently provided at the Center Street/3rd Street and Center Street/2nd Street intersections.

The Imperial County Regional Active Transportation Plan (2022) recommends pedestrian improvements at the Highway 78/86 / G Street and Highway 78/86 / C Street intersections and constructing new sidewalks along several blocks within the City of Westmorland.

Bicycle Facilities

According to the Southern California Association of Governments (SCAG), there are no existing bicycle facilities within the Study Area. The Imperial County Bicycle Master Plan Update, prepared in 2011, proposed bike routes which would connect the Study Area to Calipatria, Niland and Westmorland. These include routes from S30 to SH111, also leading to the Salton Sea. Currently, these bicycle facilities remain to be developed causing the Study Area to lack in opportunities for active transportation.

The Study Area is generally lacking bicycle facilities, and there are no existing bicycle facilities in the City of Calipatria and the community of Niland. There is an existing Class II bike lane in each direction along two blocks of Center Street between 7th Street and 5th Street in the City of Westmorland, which was observed to be the only bicycle facility in the entire Study Area. The City of Brawley's

existing bicycle facilities include 1.7 miles of Class I, 2.55 miles of Class II, and 0.25 miles of Class III bicycle facilities.

The Imperial County Regional Active Transportation Plan (2022) includes the following proposed future bicycle facilities in the Study Area:

- Highway 111: Class II bike lanes from Imperial County north boundary to Niland
- Highway 111: Class II bike lanes from Calipatria north boundary to Brawley
- Highway 78/86: Class II bike lanes from Highway 78/86 Junction to Boarts Road (Westmorland east boundary)
- English Road: Class II bike lanes from Highway 111 to Eddins Road
- Gentry Road/Forrester Road: Class II bike lanes from Sinclair Road to Highway 78/86
- Sinclair Road: Class II bike lanes from Gentry Road to English Road
- Eddins Road: Class II bike lanes from English Road to Lyerly Road
- Main Street Calipatria: Class IV separated bike lane from Lyerly Road to Brown Avenue (east of Highway 111)

Transit Facilities

Imperial Valley Transit Route 2 currently provides all-day bus transit service between El Centro and Niland via Highway 111, Highway 86/78, Forrester Road, Gentry Road and Eddins Road, with stops along the route in the Cities of El Centro, Imperial, Brawley, Westmorland and Calipatria. Route 2 runs between 5:45 AM and 10:45 PM Monday through Friday with a frequency ranging from 60 minutes to 180 minutes (3 hours). Route 2 runs between 6:00 AM and 8:20 PM on Saturday with a frequency ranging from 70 minutes (1 hour and 10 minutes) to 100 minutes (1 hour and 40 minutes). Route 2 runs between 7:15 AM and 5:00 PM on Sunday with a frequency ranging from 135 minutes (2 hours and 15 minutes) to 140 minutes (2 hours and 20 minutes).

Imperial Valley Transit Route 22 (Imperial Valley Express) currently provides bus transit service Monday through Friday during the peak morning and afternoon peak periods only when Imperial Valley College is in session. Route 22 runs between Imperial Valley College and Niland via Highway 111, Highway 86/78, Forrester Road, Gentry Road and Eddins Road, with stops along the route in the Cities of Brawley, Westmorland and Calipatria. Southbound Route 22 runs between 6:20 AM and 9:50 AM with a frequency of 145 minutes (2 hours and 25 minutes). Northbound Route 22 runs between 2:00 PM and 5:11 PM with a frequency of 120 minutes (2 hours).

Imperial Valley Transit Route 51 currently provides bus transit service on Thursday only during the peak morning and afternoon peak periods between Brawley and Bombay Beach via Highway 111, with stops along the route in the City of Calipatria and the communities of Niland and Slab City. Southbound Route 51 runs one time on Thursday between 8:35 AM and 10:30 AM. Northbound Route 51 runs one time on Thursday between 4:28 PM and 6:35 PM.

The Imperial Valley Transit routes and schedules as described above are provided in Appendix B, Part 4.

Bus stops are currently provided at the following locations in the Study Area:

Community of Niland

- Northbound Highway 111 at 1st Street (southeast corner), for Imperial Valley Transit Routes 2, 22, and 51. Bench and shelter provided at bus stop.

City of Calipatria

- Eastbound West Main Street at Park Avenue (southwest corner), for Imperial Valley Transit Route 2. Bench, shelter and trash receptable provided at bus stop.
- Westbound West Main Street between Lake Avenue and Park Avenue, for Imperial Valley Transit Route 2. Bench, shelter and trash receptable provided at bus stop.
- Northbound Highway 111 at Main Street (northeast corner), for Imperial Valley Transit Routes 2, 22, and 51. No amenities or signage are provided at this bus stop; however, the bus stop is located next to a small park with two sheltered picnic tables.
- Southbound Highway 111 at Alexandria Street (southwest corner), for Imperial Valley Transit Routes 2, 22, and 51. A small bench is provided under the awning of a building where the bus stop is located, but no signage is provided to acknowledge the presence of the bus stop.

City of Westmorland

- Northbound Center Street approximately 150 feet north of Highway 78/86, for Imperial Valley Transit Routes 2 and 22. No amenities or signage are provided at this bus stop.
- Southbound Center Street approximately 70 feet north of Highway 78/86, for Imperial Valley Transit Routes 2 and 22. Two side-by-side shelters with benches are provided at the bus stop.

The Imperial County Short Range Transit Plan (2019) recommends the following transit improvements within the Study Area:

- Route 2: Expansion of Sunday bus service, increased frequency and operation on Federal holidays.
- Route 51: Provide bus service on one additional weekday.

Figure 8-1, Existing Pedestrian, Bicycle and Transit Facilities In Study Area, illustrates the locations of the key existing pedestrian facilities, existing bicycle facilities, and existing transit facilities in the Study Area.

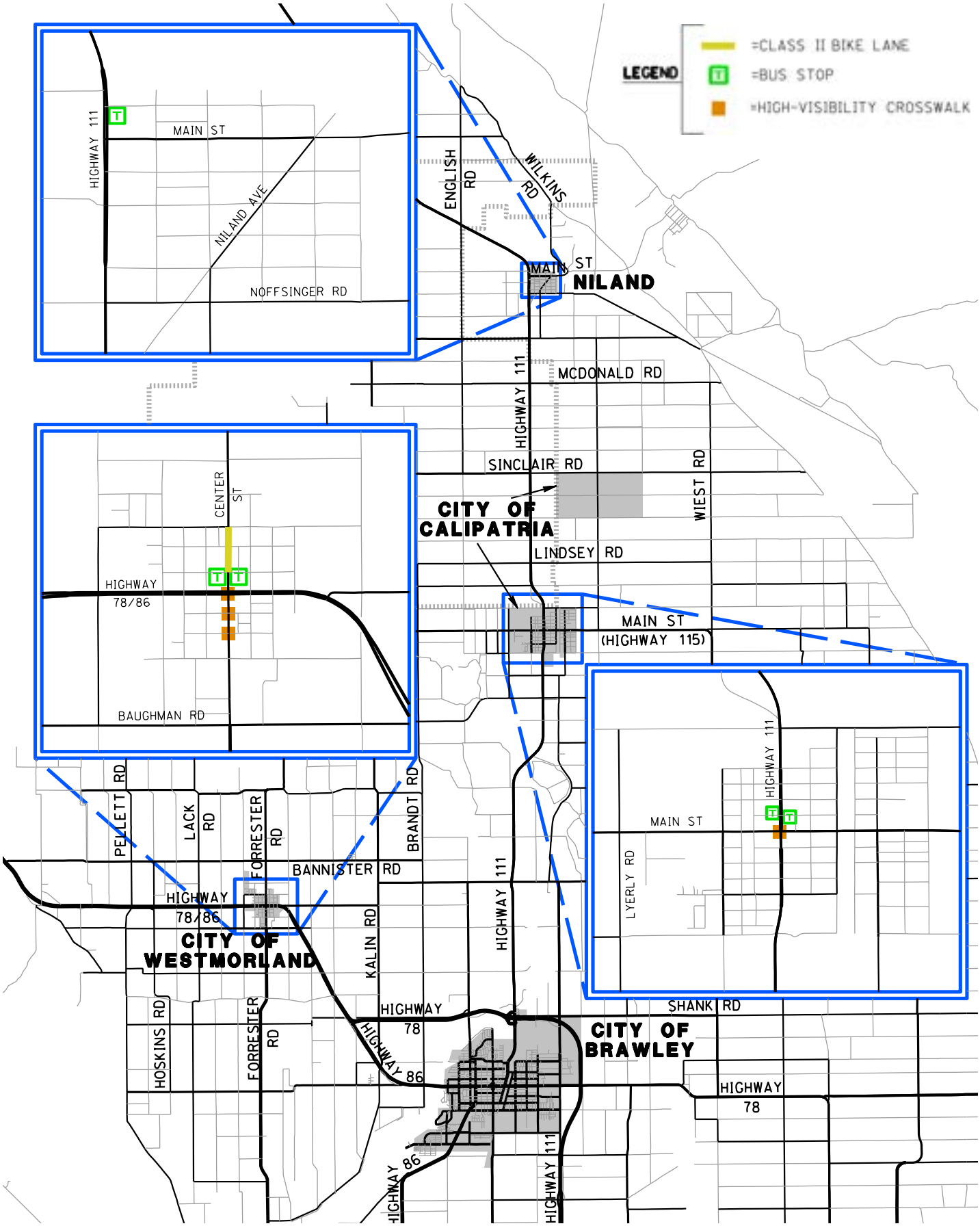


FIGURE 8-1, Existing Pedestrian, Bicycle and Transit Facilities in Study Area

8.1.5. Goods Movement

Air Transportation

Of the six airports in the County, Brawley Municipal Airport, Cliff Hatfield Memorial Airport, Calexico International Airport, Salton Sea Airport, El Centro Airport, the Naval Air Facility (NAF) and the Imperial County Airport (IPL), IPL is the only facility which contributes to regional goods movement of air cargo. Located partially in the City of Imperial, IPL is the largest of the six, featuring two runways and encompassing 429 acres. IPL is utilized primarily for general aviation but is also used as an air cargo hub for FedEx and UPS. The FedEx Ship Center is directly adjacent to IPL, where packages are sent and received daily, providing a convenient access point to transport air cargo. FedEx and UPS utilize small aircrafts to transport air cargo to larger air cargo hubs, like the one at the Los Angeles International Airport (ICTC 2021).

The Study Area is within a Military Operation Area (MOA) and is in proximity to the Chocolate Mountain Aerial Gunnery Range, a Restricted Military Special Use Airspace. California Government Code section 65352 requires Cities and Counties which are adopting or substantially amending a general plan to refer the proposed action to the branches of the United States Armed Forces when the proposed action is within 1,000 feet of a military installation, lies within special use airspace, or is beneath a low-level flight path, The intention of the law is to encourage cooperation between military installations and local communities to reduce land use conflicts between civilian development and military readiness activities. Due to the Study Area's location within a MOA, proposed development and land use changes may require formal military notification and permitting.

See Chapter 7 of the Lithium Valley Infrastructure Assessment for additional analysis of airport capacities and inventory.

Truck Routes

The County freight highway system facilitates goods movement from the US-Mexico border and transports $2 billion in agricultural products from Imperial County to Riverside County, connecting to the Port of Los Angeles, Port of Long Beach and other key distribution centers throughout California (SANDAG 2021). The vast majority of goods movement in Imperial County is serviced through commercial trucking services, comprising approximately 98% of all cross-border trade. The two main Ports of Entry (POEs) in Imperial County are Calexico West (downtown) and Calexico East. The third crossing near the Arizona border, the Andrade POE, accommodates pedestrian traffic only.

Of the three international POEs located in Imperial County, Calexico East is the only border crossing which accommodates commercial vehicles such as trucks or buses. The Calexico East Land Port of Entry is located on State Route 7 about 120 miles east of San Diego and about 50 miles west of Yuma, Arizona. This POE connects vehicles directly to SR-7, which crosses SR-98, I-8 and SR-115 up north. Border crossing entry data reports that, in 2021 435,253 commercial trucks entered the United States through the Calexico East POE, nearly a 12% increase from 2019 (USDOT 2021). The high volume of commercial trucks moving freight throughout Imperial County's highway and truck

route network affects roadway safety, bridge and pavement conditions, traffic and the quality of life for County residents. (2)

California and federal officials are partnering with the U.S. General Services Administration on a $32.5 million bridge expansion project to ease congestion of commercial vehicles. When the project is complete, there will be two new northbound passenger vehicle lanes at the border (to total five) and two additional northbound and southbound commercial vehicle lanes, raising the total to six, enabling "northbound traffic to flow more efficiently and reduce traffic wait times." The project is scheduled to be done by spring of 2024.

Highway freight, or "trucking" accounts for nearly 70% of the total weight of goods being transported in the US. This method of transport is dependent upon the quality of highway infrastructure, traffic efficiency, proximity to intermodal transport facilities and availability of truck parking facilities.

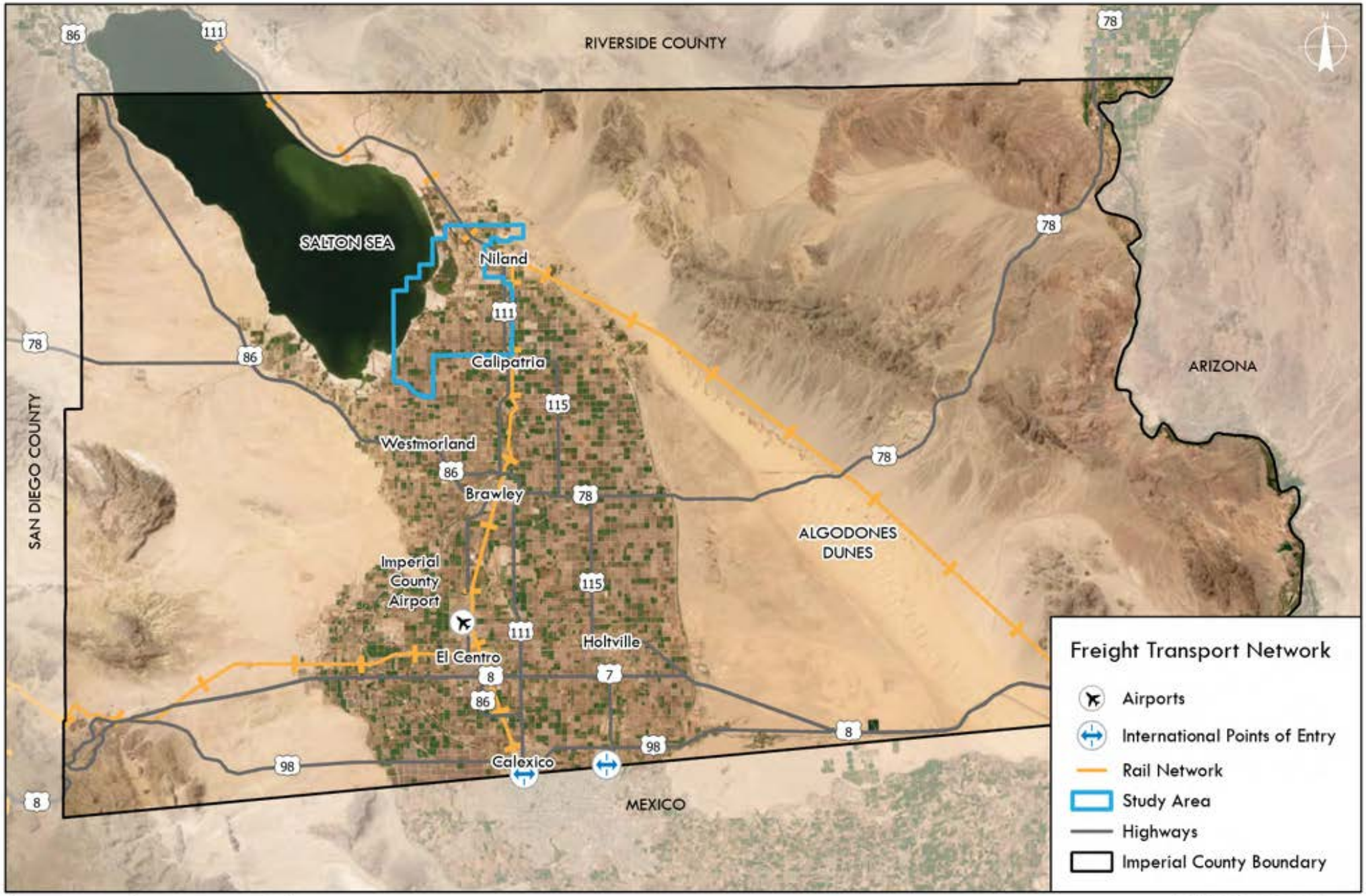
According to ICTC's LRTP, there are five major north-south corridors handling freight within Imperial County:

- Forrester Road, from Interstate 8 to State Route 78/86 in Westmorland;
- State Route 7 from the Calexico East Port of Entry to Interstate 8;
- State Route 111 from the Calexico West Port of Entry to State Route 86 in Riverside County;
- State Route 115 from SR-111 to SR-78 and connecting to I-8; and
- State Route 86, from State Route 111 to Riverside County where it connects with Interstate 10.
- Additionally, there are two major east-west corridors for trucks:
- Interstate 8 which originates in San Diego County and traverses through Imperial County to the California/Arizona Border; and
- State Route 98 which parallels I- 8 through most of the southern part of Imperial County.

Goods movement through highway freight are evaluated through travel time, reliability, bottlenecks and crash history. The operational capacity of the truck route network in the County can be determined through truck traffic AADT, the number of lanes available for trucks to operate, conflict with passenger vehicle traffic and road configuration.

As shown in Figure 8-2, Freight Network, the National Highway Freight Network (NHFN) designates highway facilities by how critical they are to national and global freight movement. Roads within the NHFN are assessed based on the following categories to determine their respective classifications:

- Origins and destinations for freight transport
- Weight and value of freight transport
- Annual Average Daily Traffic (AADT) of truck traffic
- Access to POEs, energy production facilities and population centers



BASELINE REPORT
FIGURE 8-2, Freight Network

The Primary Highway Freight System (PHFS) represents the network of highways most critical to freight transport. Non-PHFS Interstates represent the network of roads which provide continuity and access to freight transportation facilities. Critical Urban Freight Corridors (CUFCs) and Critical Rural Freight Corridors (CRFCs) are public roads which connect the PHFS to ports, public transportation facilities, or other intermodal freight facilities. No segments within Imperial County were designated as CUFCs or CRFCs (SANDAG 2021). A map of truck routes in Imperial County, represented by their NHFN designation are shown in Figure 8-2.

Roads originating from the Calexico East and West POEs ultimately lead to SR-111 and SR-86. Portions are these routes are designated as PHFS roads, critical for transporting freight from the US-Mexico border through Imperial County north toward Riverside County. SR-86 is located approximately four miles from the southern boundary of the Study Area and follows the southwestern boundary of the Salton Sea through Westmorland.

SR-111 starts at the US-Mexico Border and travels through El Centro, Brawley, Calipatria and ultimately through the eastern side of the Study Area toward Riverside County. The portion of SR-111 which is within the Study Area is designated as a California Truck Route and is not considered a PHFS asset.

Most of Interstate 8 within Imperial County is considered part of the Non-Primary Highway Freight System, responsible for transporting freight east and west from Arizona to San Diego County.

SR-98 is primarily a two-lane conventional highway which follows a similar east-west route as Interstate 8, but it further south. SR-98 alleviates traffic on Interstate 8 by providing an alternate route for truckers and cross-border traffic near the Calexico West and Calexico East POEs.

SR-78, another two-lane conventional highway, begins at the north junction of SR-86 and leads toward San Diego County. It provides a route for trucks through Imperial County toward markets in the Inland Empire and toward the Ports of Los Angeles and Long Beach. Recent infrastructure improvements like the “Brawley Bypass” recently expanded the highway capacity to four lanes to expedite truck traffic leaving the County. Finally, Forrester Road is a key north-south arterial route mainly utilized for transport of agricultural products between Interstate 8 and SR-86. Currently, Forrester Road is also a two-lane conventional highway, however the Imperial County Circulation Element plans for it to become a six-lane expressway in the future.

The network of truck routes which serve Imperial County are integral connection pathways between industrial, manufacturing, and agricultural production sites to transport facilities. Highway freight serves a critical role filling in the gaps in the transportation network, providing first/last mile connections where intermodal transportation facilities may fall short. The reliability in travel times is highest for highway freight, which aren’t laden by capacity of loading docks or disruptions in freight services. Commercial trucking not only drives the County’s economy, but also supports international trade and the worldwide supply chain.

Port of Los Angeles

In terms of cargo volume and tonnage, the Port of Los Angeles handles over 9 million TEUs (twenty-foot equivalent units) annually, making it the busiest container port in the United States. The port handles a significant volume of bulk and breakbulk cargo, including automobiles, steel, and other heavy industrial goods. The Port of Los Angeles has several infrastructure development plans in place to support its growth and meet the increasing demand for cargo handling.

One of the most significant plans is the Middle Harbor Redevelopment Project, which consolidates two ageing terminals into a new, state-of-the-art facility. This project is expected to double the port's capacity and improve efficiency by reducing truck turn times and increasing the use of on-dock rail. Additionally, the port is investing in new technologies such as automation and digitalization to improve cargo handling and reduce congestion. The port is also planning to expand its rail infrastructure, increase the use of on-dock rail, and improve intermodal connections to other transportation hubs.

Port of Long Beach

The Port of Long Beach is the second-busiest container port in the United States, after the Port of Los Angeles, which it adjoins. Dockworkers and terminal operators moved 731,033 TEUs last month, a 24.2% increase from November 2022. Imports rose 37% to 355,339 TEUs and exports declined 13% to 108,798 TEUs. Empty containers moved through the Port were up 30.6% to 266,896 TEUs. In the next 10 years, the Port is planning $2.2 billion in modernization projects to further prepare for the demands of global trade. Plans include investing $1.3 billion in on-dock rail projects, adding capacity, improving speed-to-market and allowing for the rapid movement of cargo throughout the harbor.

8.2. CONSTRAINTS

Based on the aforementioned traffic and circulation data, descriptions, and existing conditions analysis completed for the Lithium Valley Study Area, a number of issues and constraints related to mobility within the Study Area have been identified, and are as follows:

- The majority of existing roads within the Specific Plan boundary are currently unpaved, which limits the areas where access is readily available without significant improvement costs.
- Nearly all of the existing roadways in the northern half of the Study Area (north of Sinclair Road) are currently unpaved, and paved access in this area is generally not provided.
- With the exception of the State Highways (78, 86, 111 and 115), the current pavement conditions are fair to poor on the majority of paved roads in the Study Area. Pavement conditions are generally poor along Wilkins Road and Brandt Road.
- None of the Study Area roadways are built to General Plan Circulation Element standards based on their classification types.

- Many of the Study Area roadways may be too narrow for two-way heavy truck traffic, with pavement widths less than 24 feet along some roadway segments of English Road, Wilkins Road, Brandt Road, Kalin Road, Gentry Road, and Lack Road.
- Davis Road would appear to be one of the primary access roads into the Study Area, but the road is currently unpaved and terminates at Schrimpf Road, approximately 1.5 miles north of Sinclair Road.
- Bridges across the Alamo River are limited to Sinclair Road within the boundary of the Study Area. All other east-west roadways north of Sinclair Road and between Sinclair Road and Eddins Road are unpaved and there are no bridges crossing the Alamo River along these east-west roadways.
- Most of the existing bridges in the Study Area would need to be removed and rebuilt to improve the existing roadways to General Plan Circulation Element standards based on their classification types.
- The unincorporated community of Niland is generally lacking sidewalks except for a few street blocks, and no bicycle facilities are currently provided.
- The majority of streets within the City of Calipatria and City of Westmorland either lack sidewalks or have sidewalks provided along only one side of the street. There are numerous gaps in sidewalk connectivity in both of these cities.
- There are currently no bicycle facilities in the Study Area except for a two-block segment of Center Street in the City of Westmorland, where Class II bike lanes are provided.
- The current frequency of bus transit service in the Study Area typically exceeds one hour throughout the day on both weekdays and weekends, with service frequencies of up to 3 hours during non-peak times.
- Bus transit service in the Study Area is limited to two bus routes that operate on a daily basis, and a third bus route which operates only on Thursdays during the morning and afternoon peak hours.
- Bus stops are very limited within the Study Area, with only one stop provided in the community of Niland, 4 stops provided in the City of Calipatria, and 2 stops provided in the City of Westmorland.
- Some of the existing bus stops in the Study Area are lacking amenities such as a bench, shelter, trash receptable or signage.

While the existing transportation network for goods movement in Imperial County appear to meet the current demand, certain constraints have been identified which may impact the viability for renewable resource development and goods movement throughout the Study Area:

- Demand for freight transport is expected to increase by 50% by 2050. Increasing capacity of the transportation network to meet the projected demand will require coordinated

development within existing and planned land use constraints. Additionally, there is a lack of available land to accommodate expanding capacity of transportation infrastructure (FHWA 2022).

- Rail is generally considered to be inefficient and less reliable than highway freight services. Rail requires capacity at loading/off-loading docks and intermodal transportation facilities. Often, the combination of rail and trucks may increase travel time when compared to trucking services alone (ICTC 2022). Considering that rail only accounts for 3% of the total commodity flow in the County, the cost of rail infrastructure improvements must be assessed by their project return on investment.
- UPRR's Class I railroad interchanges that facilitates the County's north-south flow of goods is often congested at border crossings. This can impact the movement of goods in the Study Area to and from the US-Mexico border.
- Since UPRR owns and operates the railroads in the County, investments to rail infrastructure will require coordination between public and private companies to assess potential for capacity expansion or added rail services.
- Trucking generally provides more reliable travel times than rail, however with freight demands expected 50% increase, and highway freight being the primary method of transport, AADT of truck traffic may increase significantly with demand. Bottlenecks on the highway network can increase freight travel time, which affects the cost of transporting to the market (ICTC 2022).
- Air transport is the most costly method for movement of goods in the County. Cargo is also subject to TSA regulations which may increase travel time (ICTC 2022).
- Introduction of high volume of commercial trucks moving freight throughout Imperial County's highway and truck route network affects roadway safety, bridge and pavement conditions, traffic and affects the quality of life for County residents (SANDAG 2021).
- Mexico's current truck limit restrictions allow trucks with loads of up to 176,000 pounds and lengths exceeding 100 feet, exceeding what is allowed in California and the US. This necessitates additional transfers and logistic coordination as trucks cross the border (ICTC 2022).
- The SR-78/86 corridor between Brawley, Westmorland and the US Border Patrol Station, southwest of the Study Area, has poor daily truck travel time reliability. (1) North-south serving routes in the County (SR-7, SR-78, SR-86 and SR-111) also experience truck traffic congestion during peak travel periods (ICTC 2022).
- Rest areas and trucking parking facilities are critical components to the highway freight transportation network and limited spaces indicate that most facilities in the County typically experience greater demand than their capacity (ICTC 2022).

- Reliability on diesel-fueled equipment, such as trucks for the primary method of transport creates the most toxic air pollution and contributes to global warming. Additionally, communities of concern in the Study Area experience higher levels of air pollution from an increase in commercial trucking demand.

8.3. OPPORTUNITIES

Based on the aforementioned traffic and circulation data, descriptions, and existing conditions analysis completed for the Lithium Valley Study Area, a number of opportunities related to mobility within the Study Area have been identified, and are as follows:

- Although many existing roadways are unpaved, there is an extensive roadway network within the Specific Plan boundary and within the Study Area. In addition, most existing roads in the Study Area, whether paved or unpaved, are identified in the County's General Plan Circulation Element.
- Most of the roadway network is configured in a grid pattern, and the flat terrain provides less constraint for roadway improvements.
- Existing traffic volumes in the Study Area are relatively low, and there is sufficient capacity on the existing roadways to accommodate additional traffic from new development.
- All bridges in the Study Area can accommodate the legal load limits of Type 3, Type 3-S2 and Type 3-3 trucks.
- Forrester Road between SR-78/86 and I-8 is planned to be improved to a 4-lane Expressway, and construction is expected to be completed in 2024. Forrester Road provides the most direct north-south route between the Study Area and Interstate 8.
- Federal funding of up to $4 million is secured to replace the 72-year-old Brandt Road bridge over the Alamo River with a new single-span bridge.
- The Imperial County Pedestrian Master Plan (2021) recommended several pedestrian facility improvements in the unincorporated community of Niland that is located adjacent to the Study Area.
- Enhanced sidewalks have already been installed along several blocks of Highway 111 and Main Street in the City of Calipatria, and along Center Street in the City of Westmorland.
- Imperial County Regional Active Transportation Plan (2022) recommended pedestrian crossings along Highway 78/86 plus additional sidewalks in the City of Westmorland, which is located just south of the Study Area.
- The Imperial County Regional Active Transportation Plan (2022) recommends several Class II and Class IV bike lanes throughout the Study Area, which would establish a bicycle network in an area that is currently lacking such a network.

- Although the bus stops that serve Imperial Valley Transit Routes 2, 22 and 51 are limited to the community of Niland, City of Calipatria and City of Westmorland, there are opportunities to provide additional bus stops within the Study Area where new development may occur. Future bus stops could potentially be provided along Highway 111 between Niland and Calipatria, along Gentry Road and Forrester Road between Eddins Road and Highway 78/86, or along Eddins Road between Gentry Road and Calipatria.
- The Imperial County Short Range Transit Plan (2019) recommends expansion of bus services for Route 2 and Route 51, which run through the Study Area.
- The national economy and domestic supply chain benefits from the manufacturing and distribution of goods in the US. Renewable energy generation and lithium extraction performed domestically can reduce American reliance on foreign sources to support electrification of the transportation system which will require high volumes of lithium for vehicle battery storage. Federal and state grants to support these efforts can be used to invest in expanding capacity of the County's rail and highway freight transport system.
- Rail usage is forecasted to double, according to the 2018 CA State Rail Plan accommodating demand for transport of agricultural products, amongst other goods (ICTC 2022). Improving capacity for rail freight transport can support the County's agricultural industry in distribution of their crops, while also alleviating the demand of the highway freight network.
- Rail freight transportation is less emission-intensive than highway freight. Increased rail utilization could provide a better quality of life for residents in the Study Area, many of which are already experiencing increased levels of air pollution from other sources.
- Highway infrastructure improvements and expansions like the Brawley and Westmorland Bypass can make highway freight transportation efficient, and it can also improve traffic safety by reducing congestion on corridors used by commercial trucks and passenger vehicles.
- Trucks often facilitate critical first/last mile connections between rail lines, logistics centers, distribution facilities and loading/off-loading yards. The commercial trucking industry provides essential, well-paying and stable employment opportunities for communities of concern, benefiting the County's economy overall.
- Construction of additional rest areas and expansion of truck parking facilities can prevent unauthorized parking or overflow into other facilities, which are often safety hazards to the driver and the public.

8.4. RECOMMENDATIONS

Based on the findings of the existing conditions infrastructure and baseline assessments, including the constraints and opportunities described above, the following are recommended:

- The initial development phases of the Specific Plan should be located in the southern half of the Study Area where there is a higher number of existing paved roads and bridges crossing the rivers and canals.
- Davis Road should be paved and extended to Sinclair Road, where it would be aligned with Kalin Road to provide a continuous north-south roadway through the Study Area.
- Further studies need to be conducted of the future traffic volumes on the Circulation Element roadways within the Study Area to determine if any Circulation Element roadways should be reclassified with the buildout of the Specific Plan in the long-range future.
- Several key roadways such as English Road between Highway 111 and Sinclair Road, Lack Road between Lindsay Road and Bowles Road, Pound Road between Davis Road and Highway 111, McDonald Road between Davis Road and Highway 111, Lindsay Road between Gentry Road and Highway 111, and Vail Road between Lack Road and Ruegger Road, should be paved to improve access into the Study Area.
- Several of the existing paved roads that are not State Highways should be repaved within the Study Area, particularly Brandt Road between Sinclair Road and Highway 86, and Wilkins Road between Hobbs Road and Beal Road.
- Existing roadways with pavement widths less than 24 feet, such as English Road, Wilkins Road, Brandt Road, Kalin Road, Gentry Road, and Lack Road, should be widened with the development of the Specific Plan to accommodate two-way heavy truck traffic.
- The Circulation Element roadways that will provide direct access to the key development areas within the Specific Plan should be improved to either the current, or if applicable after future studies, reclassified Circulation Element standards prior to completion of these developments.
- Construct the pedestrian and bicycle facilities in the Study Area that were recommended in the Imperial County Pedestrian Master Plan and Imperial County Regional Active Transportation Plan.
- Implement the transit service improvements in the Study Area that were recommended in the Imperial County Short Range Transit Plan.
- Provide signage, benches, shelters, and trash receptables where these amenities are currently missing at the existing bus transit stops in the City of Westmorland, City of Calipatria, and the unincorporated community of Niland.
- Implement infrastructure improvements to address bottlenecks which are currently hindering travel time reliability for highway freight transportation in the County. Expansions like the Brawley and Westmorland Bypasses offer promising capacity expansions for addressing traffic congestion. These solutions should be emulated in areas which slow traffic and are considered public safety concerns.

- Assess the market potential for construction of a rail spur from UPRR's north-south Class I railroad into the Study Area. Development of rail infrastructure to support the expansion of the renewable energy industry in the Study Area can expedite goods movement and lessen dependence on emission-intensive diesel commercial trucks.
- Construct intermodal facilities to streamline cargo flow between rail, truck and air methods of transportation, ultimately increasing travel time reliability.
- Evaluate site selection for the construction of rest areas and expansion of truck parking facilities to increase parking availability for commercial truck vehicles.
- Apply for federal and state grants intended for renewable energy development to support capacity expansion of existing freight transport facilities in the County.
- Identify opportunities to integrate with and improve upon transportation systems currently being employed by the County's agricultural industry.
- Leverage the latest Intelligent Transportation Systems (ITS) to coordinate freight transfers from various modes of transportation and streamline traffic logistics

9. Other Environmental Resources

9.1. AESTHETICS

9.1.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for aesthetic resources in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project). This Aesthetics Resources Existing Conditions section will support development of the Specific Plan and associated environmental document.

9.1.2. Methodology and Sources

The existing conditions described in this section were developed from a combination of review of aerial photography and street view imagery and planning documents.

Review of Satellite and Street View Imagery

The visual landscape of the Project Area was reviewed and investigated through the use of the Google Earth computer program. Satellite imagery of the area was reviewed to better understand the land use and development pattern in the Project Area and street view imagery was utilized to inform three-dimensional aspects of structures, vegetation, and landforms.

Review of Planning Documents

Local planning documents (namely, the Conservation and Open Space Element of the Imperial County General Plan (Imperial County 2016) were reviewed to identify particular policies or regulations related to view/scenic preservation (or similar) that would inform the existing conditions

discussion. In addition, planning documents were reviewed to better understand local preferences and values pertaining to valued scenic resources and visual conditions.

9.1.3. Applicable Regulations

State

Caltrans State Scenic Highway System

In 1963, the California Legislature created the Scenic Highway Program to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in Section 260 et seq. of the Streets and Highways Code. A highway may be designated as scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the travelers' enjoyment of the view (Caltrans 2008). A state route must be included on the list of highways eligible for scenic highway designation in Streets and Highways Code Section 263 for it to be nominated for official designation (eligible state routes are those that have been listed in Section 263 by the State Legislature). The application to nominate eligible scenic highways for official designation requires the preparation of a visual assessment and a Scenic Highway Proposal. The proposal must include a letter of intent from the local governing body, topographic and zoning maps, and a narrative description of the scenic elements in the corridor that includes a discussion of any visual intrusions on scenic views (Caltrans 2008). In addition, the local governing body must also develop, adopt, and submit to the California Department of Transportation (Caltrans) for review and approval a corridor protection program composed of protection measures in the form of protective ordinances, zoning, and/or planning policies that apply to the area of land within the scenic corridor (Caltrans 2008).

While there are no officially designated state scenic highways in Imperial County, segments of three (3) routes in the western portion of the County are identified as eligible state scenic highways. Designated eligible segments of two of the routes, State Route 78 and State Route 111, are within twelve miles of the Specific Plan boundary. The designated eligible segment of the remaining route (Interstate 8) is located nearly 35 miles away from the Specific Plan boundary.

Local

Imperial County General Plan Circulation and Scenic Highways Element

In addition to providing a plan to accommodate a pattern of concentrated and coordinated growth, the Circulation and Scenic Highways Element is intended to provide a means of protecting and enhancing scenic resources within both rural and urban scenic highway corridors.

Goals and objectives of the Circulation and Scenic Highway Element are as follows:

Goal 4: The County shall make every effort to develop a circulation system that highlights and preserves the environmental and scenic amenities of the area.

- Objective 4.5 - Develop standards for aesthetically valuable sites. Design review may be required so that structures, facilities, and activities are properly merged with the surrounding environment.

Imperial County General Plan Conservation and Open Space Element

The Conservation and Open Space Element identifies goals and policies to ensure the managed use of environmental resources so as to prevent limiting the range of resources available to future generations.

Goals and objectives of the Conservation and Open Space Element are as follows:

Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.

- Objective 1.1 - Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.
- Objective 1.4 - Ensure the conservation and management of the County's natural and cultural resources.

Goal 5: The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial, recreational, and tourist activity.

- Objective 5.1 - Encourage the conservation and enhancement of the natural beauty of the desert and mountain landscape.

9.1.4. Existing Conditions

Scenic Vistas

No scenic vistas are identified or discussed in the Imperial County General Plan Conservation and Open Space Element (Imperial County 2016). While no known designated scenic vistas are identified in the General Plan, the presence of agricultural uses/fields and limited occurrence of multi-story vertical development in the Project Area regularly provides for long-distance, background views from local roads to scenic mountain topography. Specifically, views to the Chocolate Mountains to the east and Superstition Mountains (and Fish Creek Mountains) across agricultural fields are provided to local motorists and due to distance between the motorists in the Project Area and the nearest mountain ranges, visible mountains are generally low on the horizon. While mountainous terrain is occasionally obscured by electrical distribution line poles and mature trees on private property, such interruption is typically brief.

Scenic Highways

Highways included in the State Scenic Highway System are identified in Section 8.1, above. Due to distance between designated scenic segments of highways and the Project Area, the Project Area is either indistinct/not visible as viewed from southbound State Route 111 near Avenue A/Bombay Beach (i.e., the southerly segment of the eligible scenic portion of the state route), State Route 78,

and Interstate 8. While not a state scenic highway, an additional highway, County Highway S-22 ("Borrego-Salton Seaway") is a County-designated scenic highway between Salton City and Borrego Springs.

Visual Character

As reported by the Imperial County General Plan Conservation and Open Space Element, agricultural uses dominate the visual landscape in Imperial Valley and are characterized by square or rectangular fields, typically 40 to 80 acres in area, that are sometimes interspersed with scattered farmhouses and related agricultural structures, and mature trees functioning as windbreaks. Such uses and features dominate the Project Area with the exception of the westernmost portion that extends into the Salton Sea and encompasses adjacent shrub and exposed dirt covered shoreline (the Sonny Bono Salton Sea National Wildlife Refuge also occurs in this general area), the northern portion that includes scattered wetlands, and a small area in the central portion that consists of cleared/disturbed lands and geothermal facilities. The John L. Featherstone Geothermal Power Plant (and other geothermal facilities in the Project Area such as the CalEnergy plants)) are defined by multiple above ground tanks, structures, pipelines, turbine buildings, and outdoor reservoirs/plants for the treatment of brine. Agricultural fields (vegetable and field crops are common in the Project Area) are crossed by irrigation canals, and occasionally, electrical distribution lines supported by tall and narrow wood poles, that parallel or run perpendicular to unimproved dirt roads. A large cattle feed yard is located to the northwest of Calipatria. Several solar farms featuring ground-mounted solar panels on repeating rows of racks occur in the Project Area to the west of State Route 111 (south of Sinclair Road, east of Hatfield Road, and north of Young Road). Lastly, while no incorporated cities occur within the Project Area, primarily single-story residences on agricultural properties are scattered throughout the area.

Light and Glare

Light and glare may be created day or night from various residential, commercial, and industrial uses throughout the County. Potential fixed (i.e., non-mobile or vehicle-related) sources of daytime glare in the Project Area generally consist of surface water, paved surfaces, building windows, and photovoltaic panels at solar facilities. Nighttime lighting sources are generally limited and consist of accent and security lighting on buildings and structures (residential, commercial businesses, and industrial facilities).

9.1.5. Constraints

While unlikely due to the anticipated brief interruption of available mountain views, the concentrated development of new industrial, manufacturing, energy production, mineral extraction, and other projects featuring vertical, multi-story components of considerable bulk along the same corridor could result in noticeable impacts to existing mountain views. As such, future development should consider the proximity of existing and proposed development, development location, and building bulk and scale when locating specific project components on a given property. In a similar manner, the concentrated development of new uses implemented under the Project within close proximity could result in visible contrast with existing visual character if surrounding land uses are

predominantly agricultural or residential in nature. For example, under existing conditions, geothermal and solar facilities tend to be grouped but with the exception of geothermal facilities near the Salton Sea coastline near Crummer Road, individual facilities are buffered from one another so as to not dominate any particular area of the visual landscape. Through the ongoing government-to-government consultation process and public review of the Baseline Report, Land Use Alternatives, and Initial Study and Notice of Preparation of an Environmental Impact Report, Obsidian Butte has been identified as an important Tribal Cultural Resource that should be avoided and viewsheds inclusive of it should be considered.

In regards to light and glare, new development implemented under the Project on properties adjacent to or near scattered agricultural residences or in the southeast corner of the Project Area (e.g., near SR-111 and the City of Calipatria) shall implement appropriate design standards when planning the location, intensity, and controls for light sources. Absent design standards, new sources of substantial lighting associated with new development implemented under the Project may result in excessive nighttime lighting trespass or glare on occupied residential properties. In regards to intensity, lighting of appropriate intensity for the intended use should be selected on all exterior lighting sources should be directed downward and hooded to prevent/limit possibility of excessive sky glow, light trespass, and received glare.

9.1.6. Opportunities

New development implemented under the Project shall comply with design standards prepared in the Specific Plan to reduce adverse aesthetic effects. Additional aesthetic opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.1.7. Recommendations

Aesthetic recommendations shall be made in the form of objective design standards and design guidelines in the Project Specific Plan, as well as mitigation measures as a part of the PEIR.

9.2. AGRICULTURE / FORESTRY RESOURCES

9.2.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for agricultural resources in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project). This section supports development of the Specific Plan and associated environmental document.

9.2.2. Methodology and Sources

This Agricultural Resources section is a compilation of existing information about agricultural resources and implementation of the Specific Plan. The information in this section is largely based on publications and web resources from the California Department of Conservation, USDA Natural Resources Conservation Service, and the Imperial County General Plan.

9.2.3. Applicable Regulations

State

The Williamson Act

The Williamson Act (California Government Code § 51200), also known as the California Land Conservation Act of 1965, is the premier legislation for the protection of agricultural land in California. The act underscores the importance of preserving a maximum amount of the state's agricultural land as an economic asset that provides for the generation of adequate and nutritious food resources for the nation and state into the future. The Williamson Act operates through 10-year contracts with agricultural landowners that confirm that agricultural land is being preserved as the land's best use while providing a substantial property tax break for the landowner. The property's agricultural value is assessed and the landowner under contract is dismissed from property taxes according to the property's urban development potential.

After the 10-year contract period, the contract is automatically renewed unless the landowner submits a notice of nonrenewal with the County. Upon annexation to a city, lands tied to Williamson Act contracts have their contracts managed by the city until the contract is cancelled or expires. In 2010, the State stopped subvention payments (which helped make up the reduction in property tax from contracted lands to the counties) to participating counties as a result of the State budget shortfall. Imperial County subsequently withdrew from the Williamson Act program.

Farmland Mapping and Monitoring Program Designation

The Farmland Mapping and Monitoring Program (FMMP) is a non-regulatory program implemented by the California Department of Conversation, Division of Land Resource Protection. Government Code § 65570 mandates FMMP to biennially report to the Legislature on the conversion of farmland and grazing land, and to provide maps and data to local government and the public. FMMP produces Important Farmland Maps, which are a hybrid of resource quality (soils) and land use information, based on the prior federal Natural Resource Conservation Service program. Land is classified into eight categories. Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are considered "Important Farmland" for the purposes of CEQA (the conversion of which may be a significant impact).

Cortese Knox Herzberg Act

The Cortese-Knox-Hertzberg (CKH) Local Government Reorganization Act of 2000 (California Government Code § 56000 et seq.) establishes a local agency formation commissions (LAFCO), by county, and defines its jurisdiction and procedures. CKH gives the LAFCO the power to "approve or disapprove with or without amendment, wholly, partially or conditionally" proposals concerning the formation of cities and special districts, annexation or detachment of territory to cities and special districts, and other changes in jurisdiction or organization of local government agencies. One of the factors to be considered by the LAFCO is to direct urban development away from open space and prime agricultural lands when non-prime lands are available.

Local

Imperial County General Plan Agricultural Element

The Agricultural Element of the Imperial County General Plan contains goals and policies related to conserving agricultural lands while reducing or avoiding conflict with other land uses. This element of the General Plan includes the following goals and objectives.

Preservation of Important Farmland

Goal 1: All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by Federal and State agencies, should be reserved for agricultural uses.

- Objective 1.1 - Maintain existing agricultural land uses outside of urbanizing areas and allow only those land uses in agricultural areas that are compatible with agricultural activities.
- Objective 1.2 - Encourage the continuation of irrigation agriculture on Important Farmland.
- Objective 1.3 - Conserve Important Farmland for continued farm related (nonurban) use and development while ensuring its proper management and use.
- Objective 1.4 - Discourage the location of development adjacent to productive agricultural lands.
- Objective 1.5 - Direct development to less valuable farmland (i.e., Unique Farmland and Farmland of Local Importance rather than Prime Farmland or Farmland of Statewide Importance) when conversion of agricultural land is justified.
- Objective 1.6 - Recognize and preserve unincorporated areas of the County, outside of city sphere of influence areas, for irrigation agriculture, livestock production, aquaculture, and other special uses. Objective 1.7 Provide policies and/or incentives for continued use of farmland located just beyond the urban boundaries to ensure the stability that enables farmers to invest and reinvest in agricultural production on their land.
- Objective 1.8 - Allow conversion of agricultural land to non-agricultural uses including renewable energy only where a clear and immediate need can be demonstrated, based on economic benefits, population projections and lack of other available land (including land within incorporated cities) for such nonagricultural uses. Such conversion shall also be allowed only where such uses have been identified for non-agricultural use in a city general plan or the County General Plan, and are supported by a study to show a lack of alternative sites.
- Objective 1.9 - Preserve major areas of Class II and III soils which are currently non irrigated but which offer significant potential when water is made available.
- Objective 1.10 - Hazard-prone areas such as earthquake faults and aircraft impact zones should remain designated for agricultural uses.
- Objective 1.11 - Control and prevent soil erosion when possible.

- Objective 1.12 - Support conversion of State and Federal lands suitable for irrigation agriculture to private ownership and into agricultural production.

Development Patterns and Locations on Agricultural Land

Goal 2: Adopt policies that prohibit "leapfrogging" or "checkerboard" patterns of nonagricultural development in agricultural areas and confine future urbanization to adopted Sphere of Influence areas.

- Objective 2.1 - Do not allow the placement of new non-agricultural land uses such that agricultural fields or parcels become isolated or more difficult to economically and conveniently farm.
- Objective 2.2 - Encourage the infilling of development in urban areas as an alternative to expanding urban boundaries.
- Objective 2.3 - Maintain agricultural lands in parcel size configurations that help assure that viable farming units are retained.
- Objective 2.4 - Discourage the parcelization of large holdings.
- Objective 2.5 - Merge or revert to acreage substandard lots in "paper subdivisions" under the same ownership and not being used as separate parcels. Such merging should be done only for agricultural reasons, not to facilitate residential development.
- Objective 2.6 - Discourage the development of new residential or other nonagricultural areas outside of city "spheres of influence" unless designated for non-agricultural use on the County General Plan, or for necessary public facilities.
- Objective 2.7 - Allow agricultural employee housing on Important Farmland for permanent and seasonal employees and their families where it promotes efficiency in farming operations and has a minimal impact on agricultural production.

Agricultural and Non-Agricultural Land Use Relations

Goal 3: Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property.

- Objective 3.1 - The primary use of any parcel designated "Agriculture" on the Land Use Plan shall be agricultural production. Residential uses in such areas must recognize that this primary use of the land may create nuisances such as flies, odors, dust, noise, night light, and chemical spraying.
- Objective 3.2 - Enforce the provisions of the Imperial County Right-to-Farm Ordinance (No. 1031).
- Objective 3.3 - Enforce the provisions of the State nuisance law (California Code Sub-Section 3482).

- Objective 3.4 - Maintain for the benefit of agricultural transportation use, routes which are essential to facilitate the transportation of farm products and oversized farm equipment through agricultural and non-agricultural areas. Continue to allow the driving of farm animals along rural transportation routes.
- Objective 3.4a - Identify busy agricultural roads to create special crossings for farm equipment.
- Objective 3.5 - As a general rule, utilize transitional land uses around urban areas as buffers from agricultural uses. Such buffers may include rural residential uses, industrial uses, recreation areas, roads, canals, and open space areas.
- Objective 3.6 - Where a development permit is sought adjacent to agricultural land use, protect agricultural operations by requiring appropriate buffer zones between agricultural land and new developments, and then keep these zones aesthetically pleasing and free of pests by cleaning them of all garbage and noxious vegetation. Vegetation for the purpose of dust control shall be planted and maintained in an attractive manner. The buffer shall occur on the parcel for which the development permit is sought and shall favor protection of the maximum amount of farmland.
- Objective 3.7 - Land use decisions regarding property contiguous to agricultural operations shall give consideration to creation of large parcel sizes to minimize conflicts with such operations.
- Objective 3.8 - Renewable energy projects will be allowed within the RE Overlay Zone and mitigation for agricultural impacts have been identified and addressed.

Water Availability and Conservation

Goal 4: Maximize the inherent productivity of Imperial County's agricultural resources by ensuring future availability of adequate and affordable irrigation water and by managing water such that it is used effectively and not wasted.

- Objective 4.1 - The County must favor efforts to ensure adequate irrigation water for agricultural areas.
- Objective 4.2 - Coordinate with the appropriate agencies for the availability of water to meet future agricultural needs.
- Objective 4.3 - The County will participate and encourage multi-agency participation in water projects where such coordination can improve the likelihood of maintaining an adequate long-term supply of irrigation water throughout the County.
- Objective 4.4 - Protest any development of non-voluntary water conservation legislation, which would risk removing land from production and impacting the local economy.
- Objective 4.5 - Encourage farmers to use irrigation methods that conserve water.

- Objective 4.6 - The County should participate with cities and districts to establish programs for the agricultural re-use of treated wastewater in manners that would be economically beneficial to agriculture.

Irrigation Runoff and Environmental Issues

Goal 5: Improve the quality of irrigation water runoff and reduce the extensive use of pesticides and other chemicals to minimize impacts to downstream water bodies, wetland habitats, and the overall environment.

- Objective 5.1 - The County shall participate and encourage multi-agency participation in finding long-term solutions to reduce existing high levels of salt and selenium, originating from Colorado River water, in downstream drainage ditches and the Salton Sea
- Objective 5.2 - The County shall participate and encourage multi-agency participation in developing strategies to reduce the use of pesticides and other chemicals without negatively impacting agricultural production; and thereby reduce the drainage of toxic elements into downstream drainage ditches and the Salton Sea.
- Objective 5.3 - Ensure the continued availability of the Salton Sea as a depository for irrigation runoff.
- Objective 5.4 - The County shall continue to work closely with University of California Cooperative Extension personnel, college horticultural or entomological faculty, pest control advisers, and other pest management specialists to develop Integrated Pest Management (IPM) as a pest management strategy that focuses on long-term prevention or suppression of insects, plant pathogens, weeds, rodents, and other pests with minimum impact on human health, the environment, and nontarget organisms. Objective 5.5 Encourage uses of naturally occurring biological control; alternate plant species or varieties that resist pests; pesticides with a lower toxicity to humans or nontarget organisms; and irrigation, cultivation, and fertilizing practices that reduce pest problems.
- Objective 5.6 - Use broad spectrum pesticides only as a last resort when careful monitoring indicates they are needed according to preestablished guidelines. When treatments are necessary, the least toxic and most target-specific pesticides should be chosen.
- Objective 5.7 - The Agricultural Commissioner's Office shall continue to ensure that applicators of farm chemicals are educated regarding current pesticides and other chemicals, their hazards, and applications.

Agricultural Regulations

Goal 6: Strive to prevent the adoption of inappropriate, unnecessary, and restricting Federal, State, and local regulations that threaten the ability of farmers and livestock producers to profitably produce food and fiber for the nation.

- Objective 6.1 - The County shall not adopt regulations that impact agricultural production unless they are justified on the basis of sound environmental concerns.
- Objective 6.2 - Assist farmers and livestock producers in their efforts to understand and abide by regulations and to process applications for permits and licenses.
- Objective 6.3 - Oppose programs and regulations that seek to dictate animal husbandry practices based on religious beliefs, emotions, or misconceptions rather than on scientific evidence.

Public Relations and Education

Goal 7: Establish positive relations with the general public and inform the general public that the County's entire economy is intricately dependent upon agricultural production.

- Objective 7.1 - Develop and expand educational programs, such as the Farm Bureau's "Ag in the Classroom", to inform children and adults of the importance of protecting farmland.
- Objective 7.2 - Continue to make information accessible to the public regarding pesticides used and areas treated, as currently provided by the Agricultural Commissioner's Office.
- Objective 7.3 - Strive to minimize citizen complaints through public education.
- Objective 7.4 - Maintain existing procedures provided by the Agricultural Commissioner's Office and the Right To Farm Ordinance that allow for public input without disruption of agricultural operations.

Agricultural Production and Marketing Research

Goal 8: Improve the financial viability of the agricultural sector of Imperial County's economy through actions that have the potential to improve yields and reduce costs.

- Objective 8.1 - The County shall work closely with and promote the research of the University of California Cooperative Extension; the U.S.D.A Agricultural Research Service; the Animal, Plant Health and Inspection Service; pest management experts, water management experts, and others to continuously develop and implement efficient state-of-the-art farm and livestock production strategies.
- Objective 8.2 - Promote marketing research at the regional level to monitor trends in the demands for particular commodities such that Imperial County agriculturalists may adjust production strategies in timely manners and thereby maintain a competitive edge in the marketplace.
- Objective 8.3 - Promote the consumption of locally produced commodities, such as vegetables, beef and dairy products, fish, fruits, nuts, and honey.
- Objective 8.4 - Continue to promote agricultural research on the expected effects upon commodities under the North American Free Trade Agreement (NAFTA) to provide a competitive edge to Imperial County agriculturalists.

- Objective 8.5 - The County shall support and encourage the efforts of the Imperial County Whitefly Management Committee to develop the most effective means of controlling this pest. The County shall support and promote similar efforts to eradicate, and/or formulate control strategies for, other new pests that may impact local agricultural production in the future.
- Objective 8.6 - Encourage the production of labor-intensive crops such as vegetables.

Agricultural Packaging/Processing Operations

Goal 9: Increase the value of locally produced agricultural commodities and improve and stabilize the County's economy by promoting local agricultural packaging and processing operations.

- Objective 9.1 - Allow agriculturally related commercial and industrial uses to be located in agricultural areas that would package, process, or market agricultural commodities produced in the area, provided that the conversion of these facilities to non-agricultural related uses is prohibited.
- Objective 9.2 - Encourage agricultural packaging/processing facilities in agricultural areas that would employ large numbers of workers.
- Objective 9.3 - Utilize the following guidelines to analyze the suitability of a proposed agricultural service use:
    - it does not adversely affect agricultural production in the area;
    - it supports local agricultural production;
    - it is compatible with existing agricultural activities and residential uses in the area;
    - it does not require the extension of sewer or water lines.
- Objective 9.4 - Allow and encourage on-farm product handling and selling operations.
- Objective 9.5 - Allow agricultural produce stands at appropriate locations in agricultural land use areas and Farmer's Markets to promote and market those agricultural products grown or processed in Imperial County.

Special Cattle and Dairy Concerns

Goal 10: Encourage the continuation and expansion of cattle/dairy production on agricultural land.

- Objective 10.1 - Direct new residential and other urban development away from existing cattle and dairy operations.
- Objective 10.2 - Emphasize to the general public and to potential developers that the provisions of the Imperial County Right-to-Farm Ordinance (No. 1031) apply to livestock operations such as feed yards and dairies.

- Objective 10.3 - Allow cattle and dairy producers the ability to operate trucks and equipment, often oversized or overweight, on County roads that are increasingly impacted by more traffic.
- Objective 10.4 - Ensure the availability of clean, fresh water for cattle and dairy operations without unnecessary restrictions.
- Objective 10.5 - Support the existence and development of local beef processing operations.
- Objective 10.6 - Discourage the adoption of "nuisance" related regulation that restrict the ability of cattle and dairy operators to economically and conveniently produce these commodities.

Special Aquaculture Concerns

Goal 11: Encourage the continuation and expansion of aquacultural production.

- Objective 11.1 - County zoning regulations should define aquaculture as an agricultural use subject to the same rights, provisions, and regulations as other agricultural uses.
- Objective 11.2 - Emphasize to the general public and to potential developers that the provisions of the Imperial County Right-To-Farm Ordinance (No. 1031) apply to aquaculture facilities.
- Objective 11.3 - Encourage development by aquaculturalists of privately owned resources such as land, water, and geothermal energy and other underground resources.
- Objective 11.4 - Allow labor housing on property utilized for aquacultural purposes subject to the same provisions and regulations as farm labor housing on land utilized for other agricultural purposes.
- Objective 11.5 - Allow on-site processing, packing, and warehousing of aquatic plants and animals at aquaculture producing facilities subject to the same provisions and regulations as those on land utilized for other agricultural purposes.
- Objective 11.6 - Continue to gather statistics on aquaculture production in the County and report them under the general category "aquaculture products" until production is sufficient to justify separate categories for various products.

Right to Farm Ordinance

The right to farm ordinance explains that agricultural operations are commonly subjects of nuisance complaints from adjacent nonagricultural land uses which is a common reason why agricultural operations curtail or cease operations. The purpose of the ordinance it to reduce the number of agricultural resources that the county loses and support the economic viability of the agricultural industry. The measures in the ordinance that support this purpose include notifying adjacent nonagricultural land uses of the support from the county of a person's/ entities' right to farm and

advising purchasers of land adjacent or near agricultural operations of potential problems associated with agricultural operations (Imperial County, 2023).

Imperial County Local Agency Formation Commission

The Imperial County Local Agency Formation Commission (LAFCO) is charged with overseeing boundary changes between the County, cities, and special districts. The LAFCO must consider the conservation of agricultural land, preservation of open space, discourage urban sprawl when considering boundary changes (ICLAFCO, 2023).

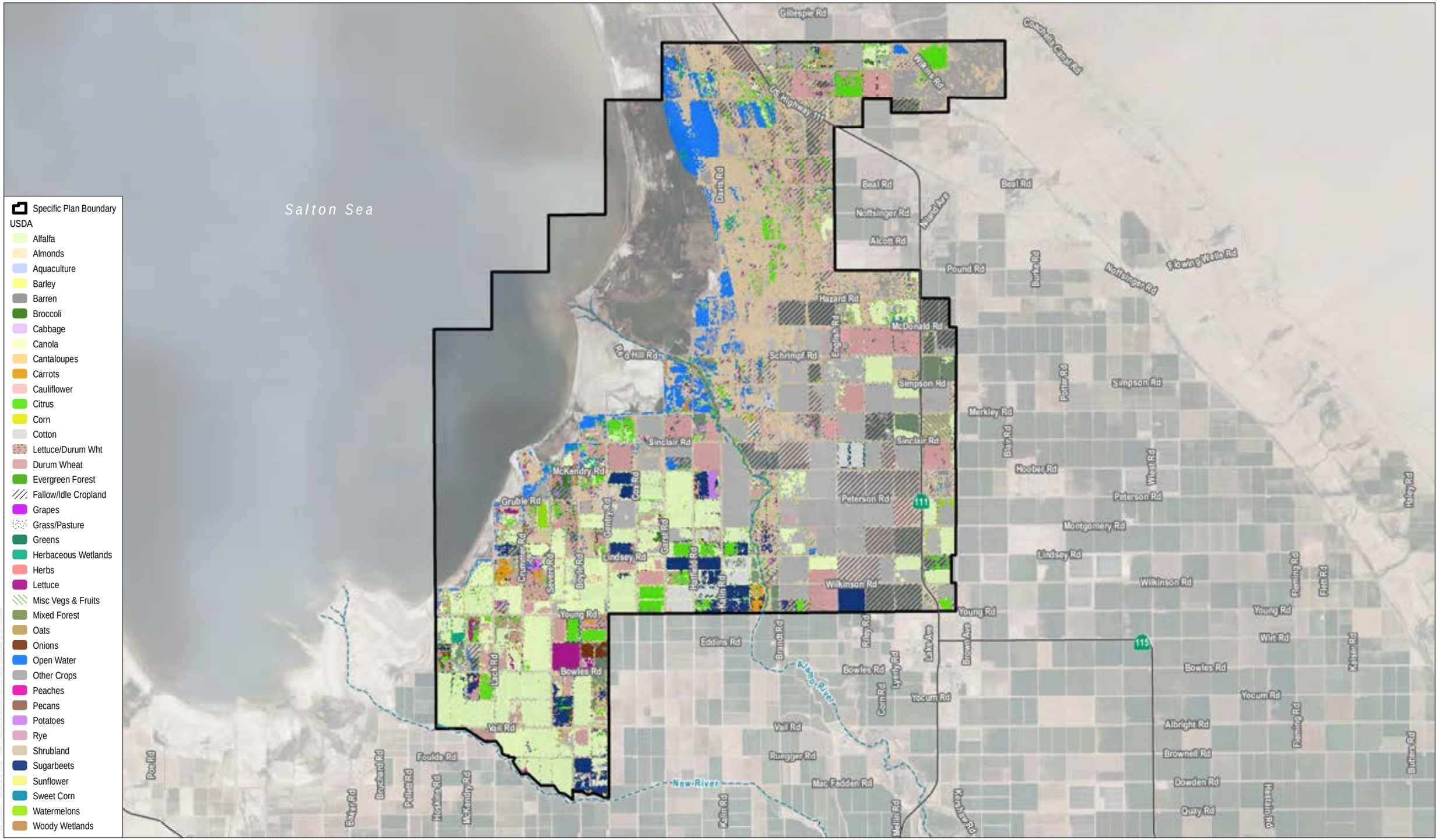
9.2.4. Existing Conditions

Agricultural Production

Agricultural resources are abundant throughout Imperial County and the Study Area. According to the Imperial County General Plan, agricultural production in Imperial County has been a major economic industry for the county. Favorable climate conditions, productive soils, and availability of water for irrigation contribute to ideal conditions for agricultural production (Imperial County 2015).

The majority of the Study Area has been classified by the Soil Conservation Service as Class III and Class IV soils when the soils are irrigated. Class I through IV soils are considered suitable for agricultural production within some limitations such as the types of plants that can be grown and the use of conservation practices. Without irrigation, Soils within the project area are Classified as Class VII and Class VIII, which are generally characterized as having very severe limitations that are unsuitable for cultivation (NRCS 2023). Please refer to Section 9.6.4 for more information about soils within the Study Area. Water for irrigation in the Study Area is supplied via Imperial Irrigation District (Imperial Irrigation District 2020). Water supplied to the IID is sourced from the Colorado River (surface water). Water from rainfall in the Imperial Valley is limited and groundwater in the Imperial Valley is generally unsuitable for irrigation purposes (IID 2023).

As shown in Figure 9-1, USDA Croplands, a variety of crops are grown throughout the Specific Study Area. Alfalfa, Durum Wheat, and Hay (non-alfalfa) are the most popular crops grown in this area. Crop production within the Study Area is primarily concentrated in the southwestern and northern portion of the Study Area. The southeastern and eastern portion of the Study Area contains the most barren and fallowed land.



SOURCE: USDA; Data Basin; County of Imperial; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-1

USDA Croplands

Salton Sea Lithium Specific Plan

Important Farmland

As described above agricultural land is rated by the DOC Farmland Mapping and Monitoring Program according to soil quality and irrigation status and sorted into 16 potential categories. More specifically, important farmland is categorized as Prime Farmland, Farmland of Statewide Importance, Unique Farmlands and Farmlands of Local Importance. Table 9.2-1 and Figure 9-2, Farmland Mapping and Monitoring Program Lands (FMMP), shows the Farmland Mapping and Monitoring Classification for land within the Study Area. The largest land classification type is other land, representing 46.6% of the Study Area, with Farmland of Statewide Importance representing 30.9% of the Study Area. Prime Farmland represents land that has been classified as having the best combination of physical and chemical properties for crop production.

Table 9.2-1. Farmland Mapping and Monitoring

Farmland Mapping and Monitoring Classification	Study Area Acreage	Percentage of Specific Study Area
Prime Farmland	7782.21	15.0
Farmland of Statewide Importance	16012.86	30.9
Unique Farmland	12.26	0.02
Farmland of Local Importance	2286.80	4.4
Other Land	24123.58	46.6
Urban and Built-Up Land	1342.02	2.6
Water Area	226.64	0.4

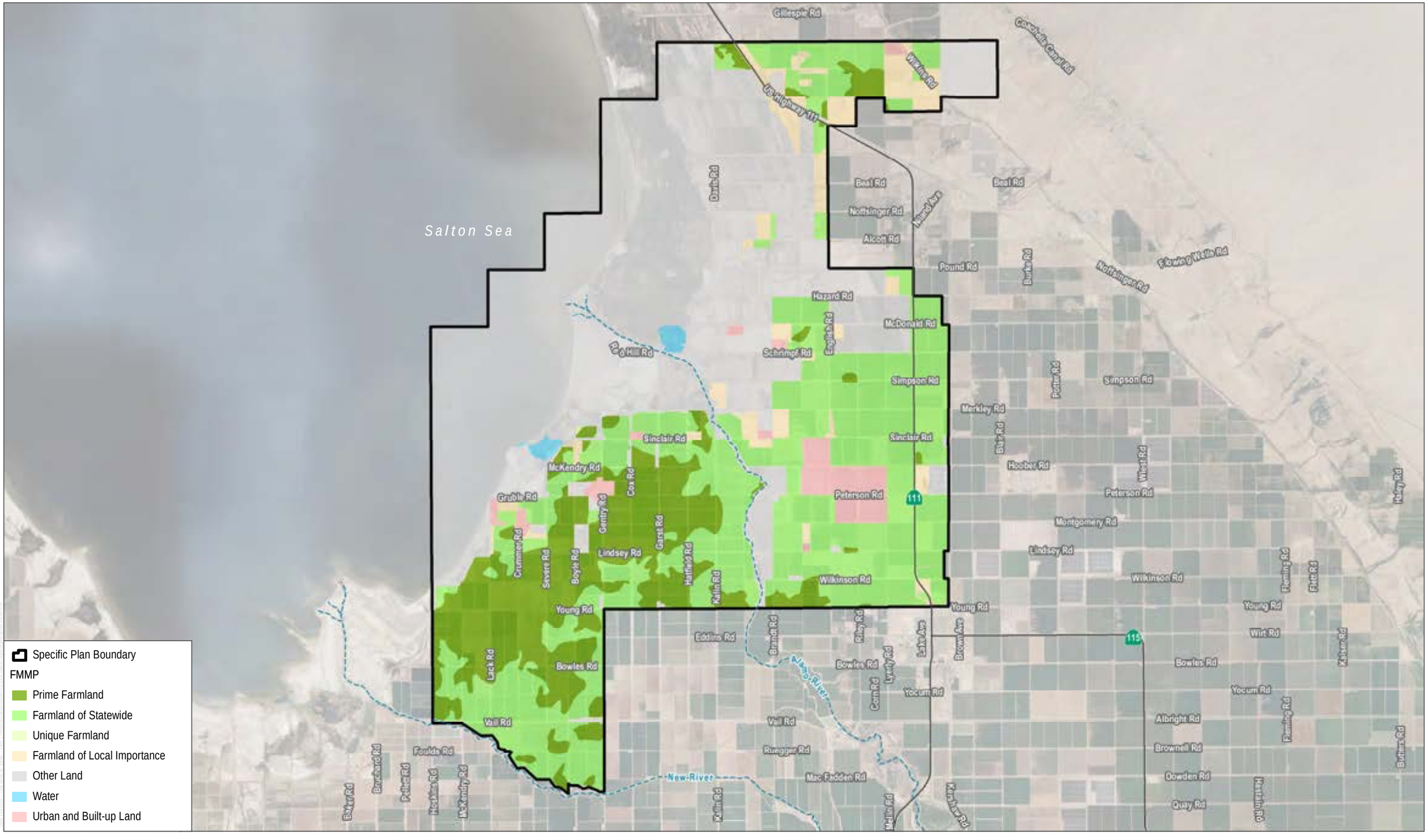
Source: DOC 2023

Williamson Act

As described above, The Williamson Act operates through 10-year contracts with agricultural landowners that confirm that agricultural land is being preserved. As discussed above, the County placed all Williamson Act contracts into nonrenewal in 2011. There are currently no contracted lands within the County. Figure 9.2-3 shows the former Williamson Act properties.

Forestland

No forestland is located within the study area.



SOURCE: CA Department of Conservation; County of Imperial; Bing Maps

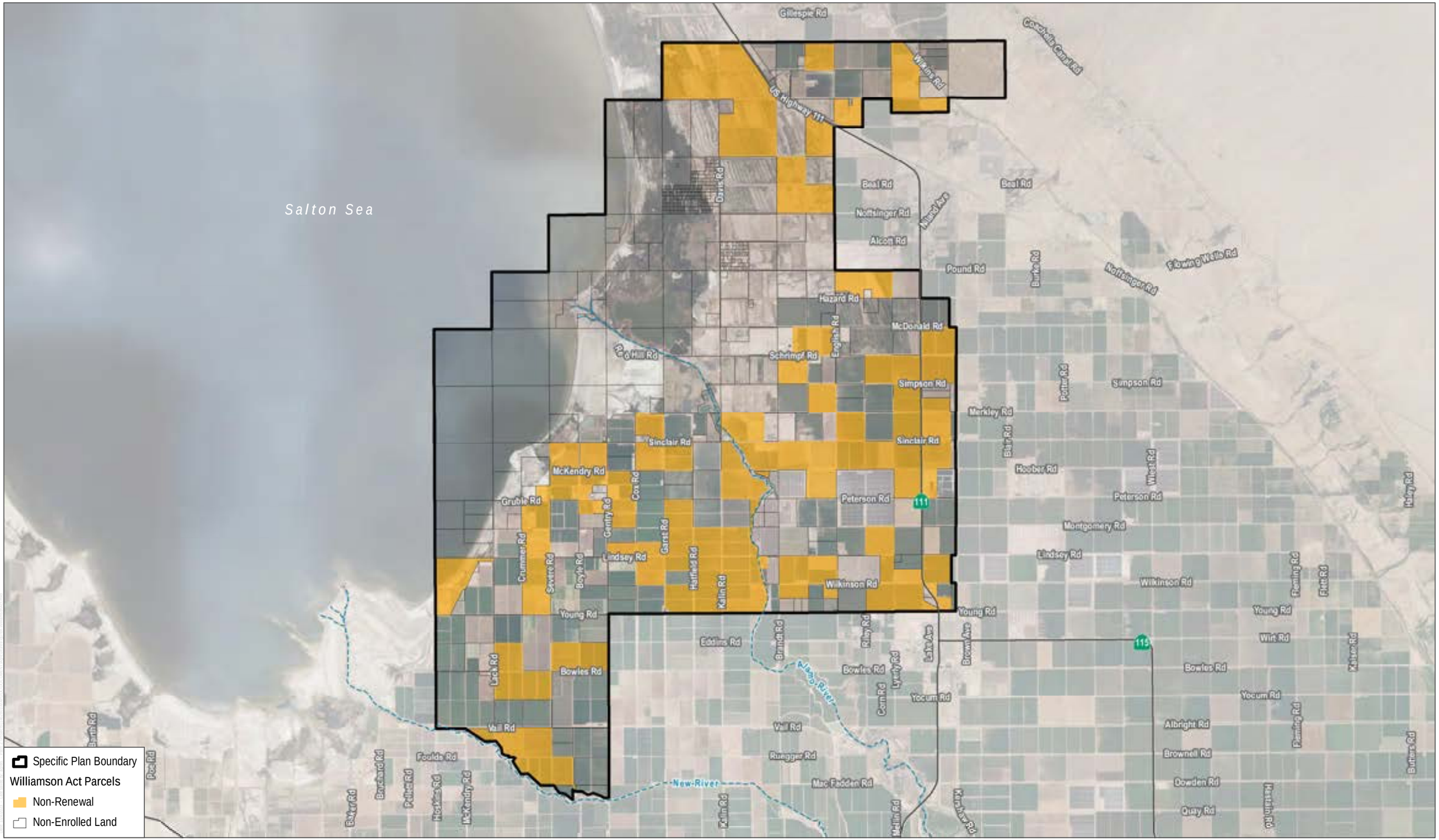
DUDEK

0 1 2 Miles

FIGURE 9-2

Farmland Mapping and Monitoring Program Lands (FMMP)

Salton Sea Lithium Specific Plan



SOURCE: CA Department of Conservation; County of Imperial; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-3

Williamson Act Lands

Salton Sea Lithium Specific Plan

9.2.5. Constraints

Development constraints within the Study Area from agricultural resources consist of important farmland, land that is under conservation easements, and land that would be adjacent to heavy agricultural uses. These constraints are described in more detail.

As shown in Figure 9-2, a large portion of the Study Area is classified as important farmland. Prime farmland represents land that has the best combination of physical and chemical properties for crop production. Prime farmland is generally more concentrated west of the Alamo River in the project area. West of the Alamo River contains more lower quality important farmland (Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance). Conversion of the lower classification land would still result in significant impacts to important farmland resources, but it would be less impactful than conversion of prime farmland.

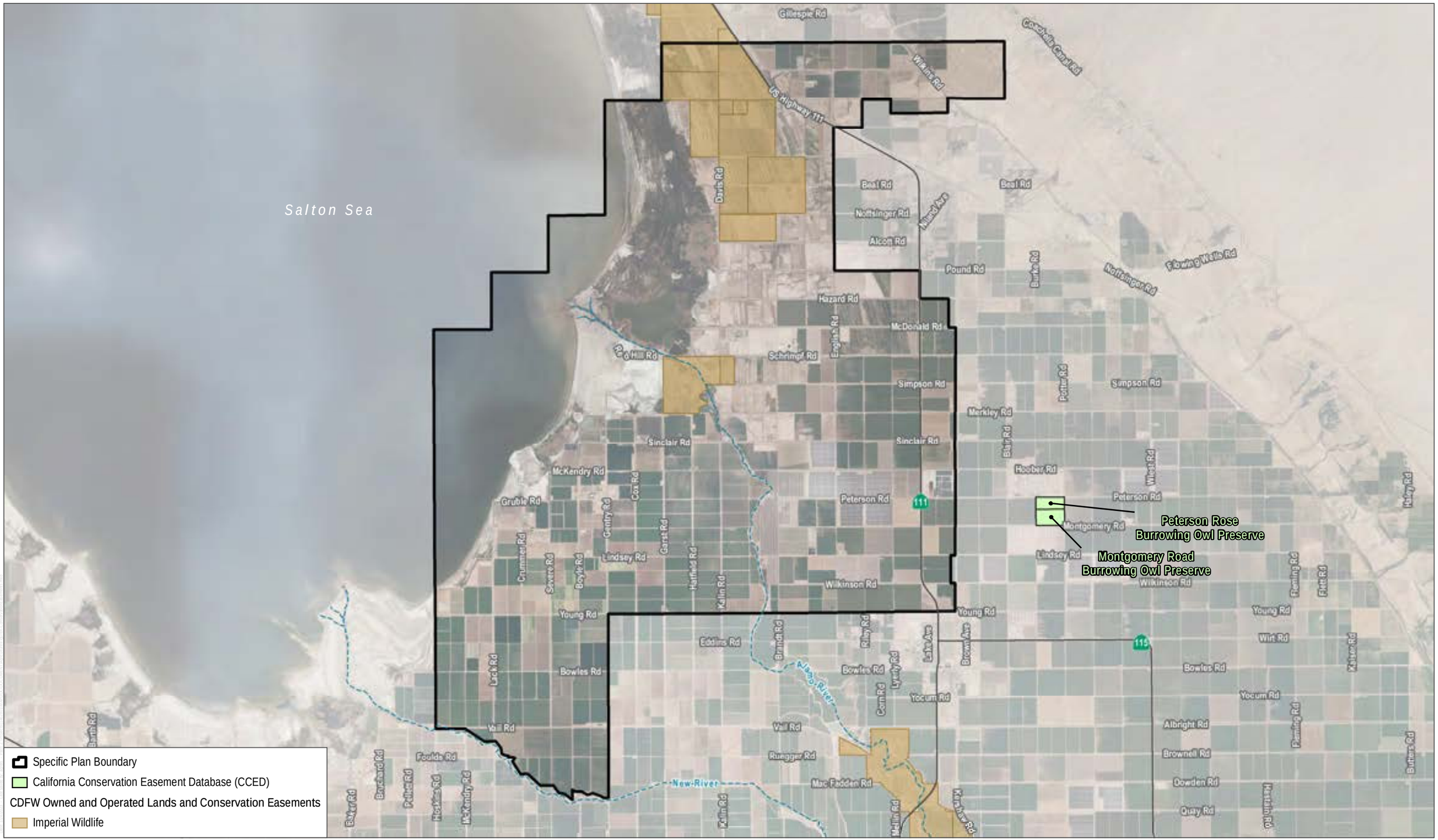
As identified in Figure 9-4, Conservation Easements, there are CDFW Imperial Wildlife conservation easements located in the center and northwestern portion of the Study Area. Development within these protected areas should be avoided.

Land uses adjacent to noisy and odorous agricultural operations should be avoided to conflicts with urbanized development to reduce potential indirect loss of agricultural uses due to nuisance complaints. Areas in proximity to cattle should be avoided for urbanized development until such time as those uses are phased out.

Given the constraints described above, development should generally be avoided in areas west of the Alamo River and in the northwestern quadrant of the Study Area.

9.2.6. Opportunities

Areas of opportunity for development include land that is designated as barren and fallow. As shown in Figure 9-1, USDA Croplands, the areas that consist of the most barren and fallow cropland are generally located in the eastern portion of the study area. New development implemented under the Project shall comply with a land use plan prepared in the Specific Plan to reduce adverse effects on prime farmland. Additional agricultural opportunities will be more accurately determined once a preferred land use alternative has been selected.



SOURCE: CDFW; County of Imperial; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-4

Conservation Easements

Salton Sea Lithium Specific Plan

9.2.7. Recommendations

The following discussion consists of recommendations to reduce the impacts on agricultural resources in the area.

- Cluster development to avoid agricultural uses adjacent to non- agricultural uses.
- Focus development in the eastern portion of the study area.

9.3. AIR QUALITY

9.3.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for air quality in the Study Area.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The national and California standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. These pollutants, as well as TACs, are discussed in the following paragraphs.[1]

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and ROGs. The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere ozone layer (stratospheric O_3) and at the Earth's surface in the troposphere (ground-level O_3).[1] The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern

changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013).

Inhalation of O_3 causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to O_3 can reduce the volume of air that the lungs breathe in, thereby causing shortness of breath. O_3 in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from O_3 exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O_3 exposure. While there are relatively few studies on the effects of O_3 on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O_3 and other pollutants. Children and teens spend nearly twice as much time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents, and adults who exercise or work outdoors, where O_3 concentrations are the highest, are at the greatest risk of harm from this pollutant (CARB 2023).

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. NO_x plays a major role, together with ROGs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers. NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016).

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their faster breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness

compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2023).

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the Project location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2023).

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with SO_2 exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of SO_2 (above 1 part per million [ppm]) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. Older people and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects (CARB 2023).

SO_2 is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter (NRC 2005). People with asthma are of

particular concern, both because they have increased baseline airflow resistance and because their SO_2-induced increase in airflow resistance is greater than in healthy people, and it increases with the severity of their asthma (NRC 2005). SO_2 is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways (NRC 2005).

Particulate Matter**.** Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. PM_{10} consists of particulate matter that is 10 microns or less in diameter, which is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ consists of particulate matter that is 2.5 microns or less in diameter, which is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and ROG.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the bloodstream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and PM_{10}. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide, based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to PM_{10} have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017).

Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The

effects of long-term exposure to PM_{10} are less clear, although several studies suggest a link between long-term PM_{10} exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB 2017a).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, lead-acid battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient (IQ) performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Sulfates. Sulfates are the fully oxidized form of sulfur and typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles. Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$.

Reactive Organic Gases. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as ROGs or VOCs. Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint.

The primary health effects of ROGs result from the formation of O_3 and its related health effects. High levels of ROGs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate ambient air quality standards for ROGs as a group.

Non-Criteria Air Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of (1) risk identification and (2) risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70 the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2019f). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2019f). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines, including trucks, buses, and cars, and off-road diesel engines, including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same noncancer health effects

as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2019f). Those most vulnerable to noncancer health effects are children, whose lungs are still developing, and older people, who often have chronic health problems.

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., a coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Valley Fever. Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. When fungal spores are present, any activity that disturbs the soil, such as digging, grading, or other earth-moving operations, can cause the spores to become airborne and thereby increase the risk of exposure. The ecologic factors that appear to be most conducive to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline sandy soils.

Valley Fever is not considered highly endemic to Imperial County, which is considered moderate incidence (2-9 cases per 100,000). In 2019, there were 17 cases, a rate of 8.9, reported for Imperial County (CDPH 2019). Even if present within the Study Area, earth-moving activities may not result in increased incidence of Valley Fever. Propagation of *Coccidioides immitis* is dependent on climatic conditions, with the potential for growth and surface exposure highest following early seasonal rains and long dry spells. *Coccidioides immitis* spores can be released when filaments are disturbed by earth-moving activities, although receptors must be exposed to and inhale the spores to be at increased risk of developing Valley Fever. Moreover, exposure to *Coccidioides immitis* does not guarantee that an individual will become ill—approximately 60% of people exposed to the fungal spores are asymptomatic and show no signs of an infection (USGS 2000).

[1] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

[1] The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's "Criteria Air Pollutants" (EPA 2022a), as well as the California Air Resources Board's "Glossary" (CARB 2019a) and CARB's "Common Air Pollutants" (CARB 2022a).

9.3.2. Methodology and Sources

The primary sources of information for the baseline report are from the key regulatory agencies of air quality including the U.S. EPA, CARB, and the ICAPCD. Additional information was derived from the appropriate agency and available public information.

The forthcoming analysis of potential air quality impacts under CEQA will employ different tools and methodology depending on the type of emission sources and availability of project-specific data. Project-generated construction emissions, and operational emissions to the extent relevant, may be estimated using the California Air Pollution Control Officers Association California Emissions Estimator Model (CalEEMod), which incorporates the CARB Mobile Source Emissions Inventory Model (EMFAC) and the CARB Off-Road Emissions Inventory Model (OFFROAD). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with construction activities and operation of a variety of land use projects, such as residential, commercial, and industrial facilities.

Alternatively, custom Excel spreadsheets may be developed to calculate emissions outside of models using industry-standard emission factors, such as the U.S. EPA Compilation of Air Pollutant Emission Factors (AP-42), EMFAC, and OFFROAD models. The spreadsheet approach allows the analysis to avoid overestimating emissions by evaluating activities on a daily (or further refined) level. Operational emissions will be estimated using the appropriate model and emission factors for each operational source of emissions. For example, emissions from railroad locomotive operations related to the Specific Plan may be estimated from anticipated activity data and locomotive's manufacturer data, and emission factors from USEPA's Office of Transportation and Air Quality, "Emission Factors for Locomotives". Estimated construction and operational emissions will take into account project design features or special conditions that would reduce emissions, such as use of equipment that meets higher-tier engine emission standards and dust control strategies, as well as compliance with applicable ICAPCD rules and regulations that would reduce emissions.

9.3.3. Applicable Regulations

Federal

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS

for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required EPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. HAPs include certain VOCs, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

Regional

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered in attainment if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 9.3-1.

Table 9.3-1. Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
O3	1 hour	0.09 ppm (180 mg/m3)	—	Same as primary standard[f]
	8 hours	0.070 ppm (137 mg/m3)	0.070 ppm (137 mg/m3)[f]	
NO2[g]	1 hour	0.18 ppm (339 mg/m3)	0.100 ppm (188 mg/m3)	Same as primary standard

	Annual arithmetic mean	0.030 ppm (57 mg/m3)	0.053 ppm (100 mg/m3)	
CO	1 hour	20 ppm (23 mg/m3)	35 ppm (40 mg/m3)	None
	8 hours	9.0 ppm (10 mg/m3)	9 ppm (10 mg/m3)	
SO2[h]	1 hour	0.25 ppm (655 mg/m3)	0.075 ppm (196 mg/m3)	—
	3 hours	—	—	0.5 ppm (1,300 mg/m3)
	24 hours	0.04 ppm (105 mg/m3)	0.14 ppm (for certain areas)g	—
	Annual	—	0.030 ppm (for certain areas)g	—
PM10[i]	24 hours	50 mg/m3	150 mg/m3	Same as primary standard
	Annual arithmetic mean	20 mg/m3	—	
PM2.5[i]	24 hours	—	35 mg/m3	Same as primary standard
	Annual arithmetic mean	12 mg/m3	12.0 mg/m3	15.0 mg/m3
Lead[j,k]	30-day average	1.5 mg/m3	—	—
	Calendar quarter	—	1.5 mg/m3 (for certain areas)k	Same as primary standard
	Rolling 3-month average	—	0.15 mg/m3	
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m3)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 µg/m3)	—	—
Sulfates	24 hours	25 µg/m3	—	—
Visibility reducing particles	8 hours (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of	—	—

		particles when the relative humidity is less than 70%		

Source: CARB 2016.

Notes: CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards; O3 = ozone; ppm = parts per million by volume; mg/m3 = micrograms per cubic meter; NO2 = nitrogen dioxide; CO = carbon monoxide; mg/m3= milligrams per cubic meter; SO2 = sulfur dioxide; PM10 = coarse particulate matter; PM2.5 = fine particulate matter; PST = Pacific Standard Time.

a. CAAQS for O3, CO, SO2 (1-hour and 24-hour), NO2, suspended particulate matter (PM10, PM2.5), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
b. NAAQS (other than O3, NO2, SO2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than 1. For PM2.5, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
c. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
d. National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
e. e National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
f. On October 1, 2015, the national 8-hour O3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.
g. g To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
h. h. On June 2, 2010, a new 1-hour SO2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
i. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 mg/m3 to 12.0 mg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 mg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 mg/m3 were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.
j. j. CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
k. k. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, for a subset of which carcinogenic and noncarcinogenic

toxicity criteria have been established pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the California State Legislature (Legislature) enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. High-priority facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation was anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the Southern California region and is the largest MPO in the nation. As the designated MPO, SCAG is mandated by the federal government to develop and implement regional plans that address transportation, growth management, hazardous waste management, and air quality issues. With

respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the Imperial County region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation components of the air quality management plans and are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the air quality plans.

In September 2020, SCAG adopted Connect SoCal, the 2020–2045 RTP/SCS, which is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. Connect SoCal charts a path toward a more mobile, sustainable, and prosperous region by making connections between transportation networks, planning strategies, and the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

Imperial County Air Pollution Control Management District

The ICAPCD has jurisdiction over air quality for the Project area. The ICAPCD has adopted air quality plans to establish a program of rules and regulations directed at attainment of the national and California air quality standards. The Imperial County air quality, or clean air, plans for compliance with applicable federal and state air quality standards include:

- 2017 Imperial County 2008 8-Hr Ozone State Implementation Plan, includes a certified Reasonably Available Control Technology State Implementation Plan analysis
- 2009 1997 8-Hour Ozone Modified Air Quality Management Plan
- 2018 Imperial County Redesignation Request and Maintenance Plan for Particulate Matter less than 10 Microns in Diameter
- 2009 Imperial County State Implementation Plan for Particulate Matter Less Than 10 Microns in Aerodynamic Diameter
- 2018 Imperial County Annual Particulate Matter Less than 2.5 Microns in Diameter State Implementation Plan
- 2009 Reasonably Available Control Technology State Implementation Plan

Note that the Clean Air Act requires State Implementation Plans for nonattainment areas to require emission controls that are economically and technologically feasible. Emissions control technologies that meet these criteria are known as Reasonably Available Control Technology or "RACT".

The ICAPCD CEQA Air Quality Handbook (2017) states the following:

"Within the CEQA guidelines, Section 15125 (d) requires that an EIR discuss consistency between the proposed project and the applicable regional plans. Section 6 of this handbook, similarly, requires that a Comprehensive Air Quality Analysis Report discuss the consistency between the proposed project and the most recent regional plans. A consistency analysis with the Clean Air Plans is required for large residential developments and large commercial developments which are required to develop an EIR and/or a Comprehensive Air Quality Analysis Report. The EIR and/or a

Comprehensive Air Quality Analysis Report of a proposed project should demonstrate compliance with the most recent ozone Air Quality Attainment Plan (AQAP) and PM_{10} State Implementation Plan. The EIR and/or a Comprehensive Air Quality Analysis Report of a proposed project should also demonstrate compliance not only with the Imperial County Rules and Regulations but also those of the State and Federal Regulations."

The air quality plans control measures and related emission reduction estimates are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. Accordingly, conformance with the air quality plans for development projects is generally determined by demonstrating compliance with local land use plans and/or population projections, meeting the land use designation set forth in the local General Plan.

All development projects within the ICAPCD are required to comply with existing ICAPCD rules as they apply to each specific project. Local provisions applicable to the Study Area include ICAPCD Regulation VIII. Reasonably Available Control Measures (RACMs) are required by Rule 800 during construction and operation activities to help reduce the amount of particulate matter. Some examples of RACMs include the application of water or chemical soil stabilizers to disturbed soils, the reduction of construction vehicle speed, the covering of haul vehicles, and some form of approved Track-Out Prevention device at access points where unpaved surface adjoins a paved surface.

Other local provisions include ICAPCD Rule 401 (Opacity of Emissions), which applies to any discharge of air pollutants, and prohibits emissions in excess of specified opacity limits. ICAPCD Rule 407 (Nuisances), which prohibits the discharge from any source of any air contaminant that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers such persons or public, or which may cause injury or damage to business or property, would also apply. Implementation of ICAPCD Rule 426 (Cutback Asphalt and Emulsified Materials) would reduce air emissions by applying requirements and limits to the manufacture, mixing, storage, use, and application of cutback asphalt and emulsified asphalt paving materials. ICAPCD Rule 424 regulates the sale of architectural coatings and limits the VOC content in paints.

ICAPCD Rule 310 (Operational Development Fee) was adopted November 6, 2007, and the purpose of this rule is to provide the ICAPCD with a sound method for mitigating the emissions produced from the operation of new commercial and residential development to less than significant levels. All project proponents have the option to provide off-site mitigation, pay an operational development fee, or do a combination of both. This rule will assist the ICAPCD in attaining the state and federal ambient air quality standards for PM_{10} and O_3. All project development proponents have the option to develop and implement an Alternative Emission Reduction Plan to provide mitigation of emissions associated with on-site and off-site emissions impacts. The developer has the option to provide full or partial mitigation of emissions; on each instance, the applicable fee will be reduced on a proportional rate to the reduction.

The County could potentially impose development impact fees pursuant to Ordinance 908 §1. These fees may be used in conjunction with the collection of development impact fees from other

area developments to fund the needed traffic-related improvements in order to maintain acceptable traffic flow on area intersections and roadway segments. Improving the flow of traffic will help reduce the amount of pollution caused by idling automobiles. In addition, the ICAPCD has published a handbook (*CEQA Air Quality Handbook for Imperial County*) that is intended to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts.

Detailed ICAPCD requirements for fugitive dust control and combustion exhaust measures are outlined below.

Regulation VIII – Fugitive Dust Control Measures

All construction sites, regardless of size, must comply with the requirements contained within Regulation VIII. Although compliance with Regulation VIII does not constitute mitigation under the reductions attributed to environmental impacts its main purpose is to reduce the amount of PM_{10} entrained into the atmosphere as a result of anthropogenic (man-made) fugitive dust sources. Therefore, under all preliminary modeling a presumption is made that all projects are in compliance with Regulation VIII.

Standard Mitigation Measures for Fugitive PM10 Control

A. All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.
B. All on-site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
C. All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
D. The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.
E. All Track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an Urban area.
F. Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.
G. The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

To provide a greater degree of PM_{10} reductions, above that required by Regulation VIII, the ICAPCD recommends the following:

Discretionary Mitigation Measures for Fugitive PM_{10} Control

A. Water exposed soil with adequate frequency for continued moist soil.
B. Replace ground cover in disturbed areas as quickly as possible
C. Automatic sprinkler system installed on all soil piles
D. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
E. Develop a trip reduction plan to achieve a 1.5 AVR for construction employees
F. Implement a shuttle service to and from retail services and food establishments during lunch hours

Construction Equipment Exhaust

Although the preceding discussion of construction impacts and mitigation measures are primarily focused on PM_{10} emissions from fugitive dust sources, the ICAPCD states that lead agencies should also seek to reduce emissions from construction equipment exhaust (ICAPCD 2017). Because of the availability of new control devices, required in the manufacturing of PM oxidation catalysts and NO_x absorbers, substantial reductions in PM and NO_x emissions from diesel engines is achievable. These new retrofit kits and in some cases new original equipment require the use of ultra-low sulfur diesel to be effective.

Standard Mitigation Measures for Construction Combustion Equipment

A. Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.
B. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
C. Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use
D. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set)

To help provide a greater degree of reduction of PM emissions from construction combustion equipment the ICAPCD recommends the following enhanced measures.

Enhanced Mitigation Measures for Construction Equipment

A. Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways

Implement activity management (e.g., rescheduling activities to reduce short-term impacts)

9.3.4. Existing Conditions Meteorological and Topographical Air Basin Conditions

The Specific Plan Project is located in Imperial County, within the Salton Sea Air Basin (SSAB).[1] The SSAB includes all of Imperial County and the central portion of Riverside County (Coachella Valley). The Imperial County portion is under the jurisdiction of the ICAPCD. The SSAB is generally very flat and bordered to the west by the Peninsular Mountain range and to the east by the Chocolate, Orocopia, and Cargo Muchacho Mountains.

Imperial County extends over 4,482 square miles in the southeastern corner of California. It is bordered on the north by Riverside County, on the south by Mexico, on the east by Arizona, and on the west by the Coyote and Fish Creek Mountains, which are in San Diego County. The Salton Trough runs approximately northwest–southeast through the center of the county and extends into Mexico. The elevation in Imperial County ranges from approximately 230 feet below sea level in the Salton Sea to the north, to more than 2,800 feet on the mountain summits to the east.

The climate of Imperial County is a desert climate, characterized by low precipitation, hot summers, mild winters, low humidity, and strong inversions. Winters are mild and dry with daily average temperature ranges between 65°F and 75°F (18°C–24°C); however, it is not uncommon during winter months to record maximum temperatures of up to 80°F. Summers are extremely hot with daily average temperature ranges between 104°F and 115°F (40°C–46°C), with maximum temperatures of 120°F. The annual rainfall is just over 3 inches (7.5 centimeters) with most of it coming in late summer or mid-winter.

Climatic conditions in the Imperial County are strongly influenced by the large-scale sinking and warming of air in the semi-permanent tropical high-pressure center of the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms except in winter when the high is weakest and farthest south. The coastal mountains also have a major influence on climatic conditions by preventing the intrusion of any cool, damp air found in California coastal environs. Because of the weakened storms and barrier, Imperial County experiences clear skies, extremely hot summers, mild winters, and little rainfall. The flat terrain of the Imperial Valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection. The combination of subsiding air, protective mountains, and distance from the ocean all combine to severely limit precipitation. Rainfall is highly variable with precipitation from a single heavy storm exceeding the entire annual total during a later drought condition.

The prevailing winds in Imperial County are from the west and northwest seasonally from fall through spring. These originating prevailing winds are known to be from the Los Angeles area. Occasionally, Imperial County experiences periods of extremely high winds speeds, with wind speeds exceeding 31 miles per hour, occurring most frequently during the months of April and May. However, speeds of less than 6.8 miles per hour account for more than half of the observed wind measurements. Wind statistics indicate prevailing winds are from the west–northwest through southwest; a secondary flow maximum from the southeast is also evident.

Air pollutant concentrations are primarily determined by the amount of pollutant emissions in an area and the degree to which these pollutants are dispersed in the atmosphere. The stability of the atmosphere is one of the key factors affecting pollutant dispersion. Vertical dispersion can be limited by the presence of a temperature inversion, a condition defined by a warm layer of air above a layer of cooler air. Imperial County frequently experiences surface inversions. Due to strong surface heating, these inversions are usually broken, allowing pollutants to be more easily dispersed. Weak surface inversions are caused by radiational cooling of air in contact with the cold surface of the earth at night. In valleys and low-lying areas, this condition is intensified by the addition of cold air flowing downslope from the hills and pooling on the valley floor.

The presence of the Pacific high-pressure cell can cause the air to warm to a temperature higher than the air below. This highly stable atmospheric condition, termed a subsidence inversion, can act as a nearly impenetrable lid to the vertical mixing of pollutants. As the strength of these inversions makes them difficult to disrupt, they can persist for 1 or more days, causing air stagnation and the buildup of pollutants. Highest or worst-case O_3 levels are often associated with the presence of subsidence inversions. In Imperial County, subsidence inversions are common from November through June, and less likely to occur during the remainder of the year.

Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. ICAPCD monitors local ambient air quality within the SSAB. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2019 to 2021 are presented in Table 3. Data is provided from multiple ICAPCD's monitoring stations based on priority of closest monitoring station and availability. For O_3 and PM_{10}, data from both Westmorland and Niland are provided. The data collected at this station is considered generally representative of the air quality experienced in the Project vicinity. The number of days exceeding the ambient air quality standards is also shown in Table 9.3-2.

Table 9.3-2. Local Ambient Air Quality Data

Averaging Time	Unit	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
				2019	2020	2021	2019	2020	2021
Ozone (O_3) – Westmorland First Street									
Maximum 1-hour concentration	ppm	California	0.12	0.071	0.067	0.081	0	0	0
Maximum 8-hour concentration	ppm	California	0.070	0.061	0.059	0.073	0	0	1
		National	0.070	0.060	0.059	0.072	0	0	1
Ozone (O_3) – Niland English Road									
Maximum 1-hour concentration	ppm	California	0.12	0.060	0.054	0.065	0	0	0

Maximum 8-hour concentration	ppm	California	0.070	0.055	0.046	0.055	0	0	0
		National	0.070	0.054	0.045	0.055	0	0	0
Nitrogen Dioxide (NO_2) – El Centro 9th Street									
Maximum 1-hour concentration	ppm	California	0.18	0.036	0.044	0.055	0	0	0
		National	0.100	0.0367	0.0448	0.0558	0	0	0
Annual concentration	ppm	California	0.030	—	—	—	—	—	—
		National	0.053	—	0.008	0.007	—	—	—
Carbon Monoxide (CO) – Calexico Ethel									
Maximum 1-hour concentration	ppm	California	20	4.4	4.7	4.2	0	0	0
		National	35	4.4	4.7	4.2	0	0	0
Maximum 8-hour concentration	ppm	California	9.0	3.7	3.3	3.4	0	0	0
		National	9	3.7	3.3	3.4	0	0	0
Coarse Particulate Matter (PM_{10})[a] – Westmorland First Street									
Maximum 24-hour concentration	mg/m^3	California	50	187.8	297.2	543.1	56.5 (56)	91.3 (89)	105.5 (104)
		National	150	188.3	286.8	547.1	1.0 (1)	2.0 (2)	3.0 (3)
Annual concentration	mg/m^3	California	20	34.9	40.2	44.7	—	—	—
Coarse Particulate Matter (PM_{10})[a] – Niland English Road									
Maximum 24-hour concentration	mg/m^3	California	50	156.3	241.3	218.2	49.3 (49)	68.9 (66)	86.0 (86)
		National	150	155.7	239.8	211.2	1.0 (1)	2.0 (2)	4.0 (4)
Annual concentration	mg/m^3	California	20	32.7	25.9	39.8	—	—	—
Fine Particulate Matter ($PM_{2.5}$)[a] – Brawley Main Street									
Maximum 24-hour concentration	mg/m^3	National	35	28.9	23.7	24.4	0.0 (0)	0.0 (0)	ND (0)
Annual concentration	mg/m^3	California	12	8.3	9.4	ND	—	—	—
		National	12.0	8.3	9.4	ND	—	—	—

Sources: CARB 2023; EPA 2023.

Notes:
ppm = parts per million by volume; — = not available; mg/m^3 = micrograms per cubic meter; ND = mean does not satisfy minimum data completeness criteria/insufficient data available to determine the value.
Westmorland First Street: 202 W First Street, Westmorland, California
Niland English Road: 7711 English Road, Niland, California
Brawley Main Street: 220 Main St., Ste 204, Brawley, California
El Centro 9th Street: 150 9th St., El Centro, California
Calexico Ethel: 1029 Ethel St, Calexico High School, Calexico, California
Data taken from CARB iADAM (CARB 2023) and EPA AirData (EPA 2023) represent the highest concentrations experienced over a given year.
No SO_2 values are available for Imperial County because SO_2 concentrations are historically low and not commonly monitored.
Exceedances of national and California standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did

not exceed national or California standards during the years shown. There is no national standard for 1-hour O_3, annual PM_{10}, or 24-hour SO_2, nor is there a California 24-hour standard for $PM_{2.5}$.
[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Salton Sea Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as in attainment for that pollutant. If an area exceeds the standard, the area is classified as in nonattainment for that pollutant. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated as unclassified or unclassifiable. The designation of unclassifiable/attainment means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as in attainment or nonattainment, but based on CAAQS rather than the NAAQS. Table 9.3-3 depicts the current attainment status of the SSAB with respect to the NAAQS and CAAQS.

Table 9.3-3. Salton Sea Air Basin Attainment Classification

Pollutant	Designation/Classification	
	NAAQS	CAAQS
Ozone (O_3), 1-hour	No NAAQS	**Nonattainment**
Ozone (O_3), 8-hour	**Nonattainment– marginal**	**Nonattainment**
Nitrogen dioxide (NO_2)	Unclassifiable/attainment	Attainment
Carbon monoxide (CO)	Unclassifiable/attainment	Attainment
Sulfur dioxide (SO_2)	Unclassifiable/attainment	Attainment
Coarse particulate matter (PM_{10})	**Nonattainment - serious**	**Nonattainment**
Fine particulate matter ($PM_{2.5}$)	Unclassifiable/attainment[a]	Attainment
Lead	Unclassifiable/attainment	Attainment
Hydrogen sulfide	No NAAQS	Unclassified
Sulfates	No NAAQS	Attainment
Visibility-reducing particles	No NAAQS	Unclassified
Vinyl chloride	No NAAQS	No designation

Sources: EPA 2023 (NAAQS); CARB 2020 (CAAQS).

Table notes:
NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; bold text = not in attainment; attainment = meets the standards; attainment/maintenance = achieves the standards after a nonattainment designation; nonattainment = does not meet the standards; unclassified or unclassifiable = insufficient data to classify; unclassifiable/attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data.

1. A portion of the SSAB is designated as a nonattainment area (moderate) for national $PM_{2.5}$ standards; however, that does not include the Study Area.

In summary, the SSAB is designated as a nonattainment area for national and California O_3 and PM_{10} standards. The SSAB is designated as unclassified or in attainment for all other criteria air pollutants.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air-pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air-pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). The ICAPCD defines a "sensitive receptor" as a land use or facility such as residences, schools, childcare centers, athletic facilities, playgrounds, retirement homes, and convalescent homes (ICAPCD 2017). Sensitive receptors exist within the Study Area and will be identified during the environmental evaluation process.

ICAPCD Thresholds of Significance

The ICAPCD has established numeric significance thresholds to assist lead agencies in determining whether a proposed project may have a significant air quality impact. A project would result in a substantial contribution to an existing air quality violation of the NAAQS or CAAQS for O_3, which is a nonattainment pollutant, if the project's construction or operational emissions would exceed ICAPCD's ROG or NOx significance thresholds shown in Table 9.3-4. These emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur) because O_3 itself is not emitted directly, and the effects of an individual project's emissions of O_3 precursors (ROG and NO_x) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods.

Table 9.3-4. ICAPCD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	Construction (Pounds per Day)	Operation (Pounds per Day)
ROGs	75	137
NO_x	100	137
CO	550	550
SO_x	N/A	150
PM_{10}	150	150
$PM_{2.5}$	N/A	550
TACs and Odor Thresholds		
TACs[a]	Maximum incremental cancer risk ≥ 10 in 1 million Chronic and acute hazard index ≥ 1.0 (project increment)	

Odor	Project creates an odor nuisance pursuant to ICAPCD Rule 407

Source: ICAPCD 2017

Notes: ICAPCD = Imperial County Air Pollution Control District; ROGs = reactive organic gases; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxides; N/A = not applicable; PM10 = coarse particulate matter; PM2.5 = fine particulate matter; TAC = toxic air contaminant.

a. TACs include carcinogens and non-carcinogens.

Pursuant to the ICAPCD CEQA Air Quality Handbook, regardless of the size of the project, standard mitigation measures for construction equipment and fugitive PM_{10} must be implemented at all construction sites. The implementation of discretionary mitigation measures, as listed in Section 7.1 of the CEQA Air Quality Handbook and provided in Section 9.3.3 herein, apply to those construction sites that are 5 acres or more for non-residential developments, or 10 acres or more in size for residential developments (ICAPCD 2017).

The ICAPCD has identified screening distances to assist in evaluating and addresses potential odor impact. If a project is proposed within the screening level distances, the ICAPCD should be contacted for information regarding potential odor problems. For projects that involve new receptors located near an existing odor source(s), a public information reviewing request should be submitted to the ICAPCD for a review of any existing odor complaints and for the nearest odor emitting facility(ies). The ICAPCD project screening distance is 1 mile for the following types of operation: wastewater treatment plant, sanitary landfill, composting station, feedlot, asphalt plant, painting/coating operations, and rendering plant (ICAPCD 2017).

9.3.5. Constraints

Air pollution by nature is generally a regional impact and is highly dependent on the source and magnitude of emissions rather than the specific location of emissions. The key exception is localized criteria air pollutant and TAC exposure of sensitive receptors. For TACs, cancer and non-cancer risks are highly likely to be greater at sensitive receptors near the source location; however, there are multiple variables in evaluating actual risk (source characteristics, predominant wind direction, topography, etc.). Nonetheless, sources of TACs shall be cited as far away from sensitive receptors, especially for downwind receptors. An example distance is 1,000 feet from the TAC source, such as the CARB recommendation for distribution centers (CARB 2005). Another planning consideration is to limit construction and potential earth-moving operational activities within or nearby the dry Salton Sea lakebed to reduce contribution to cumulative fugitive dust and other toxics related to dust at la playa. Because the portion of the SSAB where the Project is located is a nonattainment area for O3 and PM10, planning practices that would reduce emission sources of O3 precursors and primary PM10 and secondary PM10 precursors are encouraged. For example, developing a Specific Plan that encourages or incentivizes trips and vehicle miles traveled (VMT) reduction and renewable energy production and consumption would contribute to reducing regional nonattainment criteria air pollutants. Additional constraints will be identified and tailored pending identification of permitted land uses for the Specific Plan.

Anticipated air quality analysis-related constraints for the Specific Plan include potentially exceeding the ICAPCD numeric thresholds for construction and/or operation because the ICAPCD thresholds are established for a project-level analysis and the Project is a large plan. Based on the types of land

uses permitted and anticipated to be developed under the plan, there is also a potential for TAC emissions to result in a health risk impact, specifically a cancer risk impact. While Project-generated criteria air pollutant and TAC emissions will be estimated based on the best available information, there are modeling limitations due to the potential lack of standardized methods, available emission factors, and typical activity data for the unique components of the Project that reflect evolving science and technology. In addition, the environmental analysis will strive to evaluate maximum development allowed under the Specific Plan versus what may actually be built out, which is speculative, which may result in an overestimation of potential emissions and associated impacts. While the environmental evaluation will strive to evaluate a conservative analysis, there are unknowns based on the reality of Specific Plan development such as the location of development and emission sources compared to nearby sensitive receptors. It is very common for plan-level analyses to result in air quality impacts requiring mitigation measures. Identifying the appropriate types of mitigation measures that are both feasible and reflect best available control technology which evolves overtime is a constraint based on the unique character of the Project's anticipated land uses.

9.3.6. Opportunities

New development implemented under the Project shall comply with the policies of the Imperial County Regional Climate Action Plan, as well as any air quality policies included in the Specific Plan. Additional air quality opportunities will be more accurately determined once a preferred land use alternative has been selected. Air quality requirements shall be made in the form mitigation measures as a part of the PEIR.

9.3.7. Recommendations

The following are recommendations to better inform the standards, policies, and mitigation measures included in the Lithium Valley Specific Plan and PEIR.

- Preparation of an Air Quality Technical Report (assessing potential pollutant emission levels against standardized thresholds).
- Preparation of a Health Impact Assessment (assesses potential health effects qualitatively or quantitively).
- Preparation of a Health Risk Assessment (quantitively assess potential risks of health effects for air toxins emissions to closest sensitive receptor).

Additional air quality recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.4. BIOLOGICAL RESOURCES

9.4.1. Introduction

Purpose

The purpose of this section is to provide information to establish the existing conditions for biological resources in the Study Area of the County of Imperial (County) Lithium Valley Specific

Plan (Specific Plan; Project). This Biological Resources Existing Conditions Technical Report will support development of the Specific Plan and associated environmental document.

Background

The County is developing the Specific Plan to support existing and expansion of renewable energy (i.e., geothermal and solar) development, lithium extraction, and associated infrastructure and industrial uses. Federal and state renewable energy and greenhouse gas reduction goals are driving the need to find additional utility-scale renewable energy sources as well as the raw materials for battery-powered vehicles, and this area of Imperial County is poised to provide these resources provided that sufficient facilities and infrastructure is developed. The Specific Plan and associated environmental document are being developed to frame and guide this development.

Study Area

The 51,786-acre Study Area spans from the Imperial Wildlife Area Wister Unit northwest of Niland, California in the north to Calipatria, California in the south. On the southwest, the Study Area is bounded by the New River and includes the shoreline and open water portions of the Salton Sea from Vail Seven Drain north past the mouth of the Alamo River to Beach Road. The Study Area is located in a portion of the following USGS quadrangles: Iris Wash, Niland, Obsidian Butte, Westmorland West, Westmorland East, and Wister.

9.4.2. Methodology and Sources

The biological resources of the Salton Sea and Imperial Valley region have been studied extensively resulting in a wealth of existing public documentation and data available for use in preparing this report. As such, the existing conditions described in this report were developed primarily from existing sources and verified through limited field reconnaissance. An extensive review of existing documents, literature, and regional data was conducted for this report, including peer-reviewed scientific papers; resource agency documents and data; national, state, regional, and local geographic information system (GIS) datasets, and all other relevant information and data on physical conditions, vegetation communities, aquatic resources, botanical resources, wildlife resources, and landscape-scale processes. Specific sources used are cited throughout this report with references provided in Chapter 10, References. Field reconnaissance was conducted primarily to verify information gathered from existing sources and identify any major changes to current on-the-ground conditions relative to the existing information and data. Field reconnaissance was conducted by Dudek biologists Mike Howard and Callie Amoaku on November 2, 2022, from 8:30 am to 2:30 pm by driving public roadways throughout the study area. Observations were recorded using an aerial-based project map displayed through the ESRI Collector Application on a hand-held iOS device and representative photos were taken of habitat types, key features, and conditions of the Study Area. The approach used in this report provides a robust description and evaluation of the biological resources existing conditions in the study area suitable for supporting development of the Specific Plan and the associated PEIR; however, it was not based on site-specific mapping or focused surveys that may be required for project-level approvals or agency permits.

9.4.3. Applicable Regulations

Federal

Endangered Species Act

The Federal Endangered Species Act (Federal ESA) protects federally listed threatened and endangered species and their habitats from unlawful take and ensures that federal actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Under the Federal ESA, "take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. USFWS regulations define harm to mean "an act which actually kills or injures wildlife" (50 CFR 17.3)

Clean Water Act

The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 402 of the CWA prohibits the discharge of pollutants to waters of the U.S. from any point source unless the discharge is in compliance with a National Pollutant Discharge Elimination System Permit. CWA Section 402 requires such a permit for the discharge of stormwater from construction sites that disturb 1 acre or more, and from industrial facilities, among others. The applicable Regional Water Quality Control Board (RWQCB) administers these permits with oversight provided by the State Water Resources Control Board and the Environmental Protection Agency. Section 404 of the CWA prohibits the discharge of dredge and fill material into waters of the U.S., including wetlands, without a permit from the U.S. Army Corps of Engineers (USACE). Activities regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. Section 401 of the CWA requires that an applicant for a federal license or permit that discharges into navigable waters provide the federal agency with a water quality certification declaring that the discharge will comply with the water quality standard requirements of the CWA. The USACE is prohibited from issuing a CWA permit until the applicant receives a CWA Section 401 water quality certification or waiver from the applicable RWCQB.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act protects bald eagle (Haliaeetus leucocephalus) and golden eagle (Aquila chrysaetos) by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act. 'Take' is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." 'Disturb' is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (72 Federal Register [FR] 31132; 50 CFR 22.3). All activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity must be permitted by the USFWS under this Act.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the U.S. and Great Britain, the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MBTA. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR Part 13 General Permit Procedures and 50 CFR Part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

State

California Endangered Species Act

Provisions of the California ESA protect state-listed threatened and endangered species and species that are candidates for state listing. California Department of Fish and Wildlife (CDFW) regulates activities that may result in "take" of individuals ("take" means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California ESA. California Fish and Game Code (CFGC) Sections 2080 through 2085 address the taking of state threatened, endangered, and candidate species and the conditions that must be met for CDFW to authorize take. In addition to state-listed species, CDFW has also produced a list of Species of Special Concern to serve as a "watch list." Species on this list are of limited distribution or the extent of their habitats has been reduced substantially such that threats to their populations may be imminent. Species of Special Concern may receive special attention during environmental review, but they do not have statutory protection.

California Fully Protected Species

CFGC contains lists of vertebrate species designated as "fully protected" (California FGC Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], and 5515 [fish]). Fully protected species may not be taken or possessed, unless addressed as covered species in a Natural Community Conservation Plan or otherwise authorized in the CFGC.

California Fish and Game Code Section1600 et. seq (as amended)

The California FGC Section 1600 et. seq. requires that a Notification of Lake or Streambed Alteration be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions and, if necessary, submits to the Applicant a proposal for measures to

protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the Applicant is the Lake or Streambed Alteration Agreement (LSAA). Often, projects that require an SAA also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the LSAA may overlap.

California Fish and Game Code Sections 3503, 3503.5, and 3513

Under Sections 3503, 3503.5, and 3513 of the California FGC, activities that would result in the taking, possessing, or destroying of any birds-of-prey, taking or possessing of any migratory nongame bird as designated by the MBTA, or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the MBTA, or the taking of any non-game bird pursuant to FGC Section 3800 are prohibited.

California Fish and Game Code Sections 1900-1913 (Native Plant Protection Act)

California's Native Plant Protection Act prohibits the taking, possessing, or sale within the state of any plant listed by CDFW as rare, threatened, or endangered. This allows CDFW to salvage listed plant species that would otherwise be destroyed.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, all projects proposing to discharge waste that could affect waters of the State must file a waste discharge report with the appropriate Regional Water Quality Control Board (RWQCB). The project falls under the jurisdiction of the Colorado River RWQCB.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires a public agency that proposes to carry out, approve, or fund a project to analyze the project's impacts on the environment and, if significant environmental effects are identified, to adopt feasible mitigation measures or project alternatives that would avoid or substantially lessen the project's significant impacts. If a project's environmental impacts cannot be feasibly avoided or mitigated to a less-than–significant level, then CEQA prohibits the agency from approving, carrying out, or funding the project unless the agency determines in a statement of overriding considerations that the project's specific economic, legal, social, technological, or other benefits outweigh its significant environmental consequences.

The significance criteria used to evaluate the project impacts to biological resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to biological resources would occur if the proposed project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Local

Imperial County General Plan

The Conservation and Open Space Element of the Imperial County General Plan (County of Imperial 2016) provides detailed plans and measures for the preservation and management of biological resources. The purpose of this element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public and to protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety. In addition, the purpose of this element is to promote the protection, maintenance, and use of the County's natural resources with particular emphasis on scarce resources, and to prevent wasteful exploitation, destruction, and neglect of the state's natural resources. The planning goals and objectives related to biological resources are described below.

Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.

> Objective 1.1: Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.
>
> Objective 1.2: Coordinate the acquisition, designation, and management of important natural and cultural resource areas in Imperial County with other governmental agencies as appropriate.
>
> Objective 1.3: Develop standards to protect significant natural and cultural resource areas for the purpose of enhancing both the planning and decision-making process.
>
> Objective 1.4: Ensure the conservation and management of the County's natural and cultural resources.

Objective 1.5: Provide opportunities for enjoyment of a quality natural experience to present and future generations.

Objective 1.6: Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.

Goal 2: The County will integrate programmatic strategies for the conservation of critical habitats to manage their integrity, function, productivity, and long-term viability.

Objective 2.1: Designate critical habitats for Federally and State-listed species.

Objective 2.2: Develop management programs, including preservation of habitat for flattailed horned lizard, desert pupfish, and burrowing owl.

Objective 2.3: Support investigation of long-term climate change effects on biological resources.

Objective 2.4: Use the CEQA and NEPA process to identify, conserve and restore sensitive vegetation and wildlife resources.

Objective 2.5: Give conservation of sensitive species and habitat a high priority in County park acquisition and development programs.

Objective 2.6: Attempt to identify, reduce, and eliminate all forms of pollution; including air, noise, soil, and water.

Goal 9: The County shall work towards comprehensive restoration of the Salton Sea in order to provide recreation, healthy habitat for wildlife, and economic revitalization in the region.

Objective 9.1: Develop programs in association with County, State, and Federal agencies and the Salton Sea Joint Powers Authority (JPA) to restore the Salton Sea.

Objective 9.2: Encourage renewable energy developments that include Salton Sea restoration components.

Objective 9.3: Coordinate with US Fish and Wildlife Service, California Department of Fish and Wildlife, and the Salton Sea JPA in developing programs to protect and restore migratory bird habitat, desert pup fish, and other sensitive or endangered species associated with the Salton Sea.

Objective 9.4: Develop educational programs to promote a greater understanding of the value and importance of the Salton Sea habitat management areas among County residents.

9.4.4. Existing Conditions

Physical Conditions

Ecoregions and Watersheds

The U.S. Department of Agriculture (USDA) has identified ecoregions throughout the U.S. The USDA ecoregion system includes four hierarchical levels: domains, divisions, provinces, and sections/subsections. The broader domain and division ecoregion levels are defined by climate, precipitation, and temperature and the finer grained divisions and sections/subsections are differentiated based on vegetation and terrain (USDA 2022). The Study Area occurs in the Dry domain, Tropical/Subtropical Desert division, American Semi-Desert and Desert province, and Colorado Desert section. Ecoregion subsections in the Study Area include the Imperial Valley, Coachella Valley, and East Mesa-Sand Hills

The Study Area occurs within the Salton Sea subbasin (hydrologic unit code (HUC) 8) and includes a portion of the Salton Sea itself and the lower portions of four watersheds (HUC 10): Alamo River, Imperial Valley-Frontal Salton Sea, New River, and Superstition Hills-Frontal Salton Sea (USGS 2022).

Climate

The Imperial Valley has an arid low latitude desert (hot) climate, characterized by extremely hot and dry summers and moderately cold winters (CDFG 2003; PEC 2006). The average annual high temperature is 88 degrees Fahrenheit and average annual low temperature is 57 degrees Fahrenheit, which is much higher than other regions of California (U.S. Climate Data 2022; PEC 2006). The average annual precipitation is approximately 2.9 inches with most rainfall occurring December to February (U.S. Climate Data 2022).

Geomorphology and Topography

Geomorphology refers to the landforms and relief patterns of the Earth's surface. The Study Area occurs within the basin of the Salton Sea (i.e., the Salton Trough) in the Imperial Valley, which is the dominant geomorphological feature. The Alamo River channel runs roughly through the center of the Study Area from the south to the northwest draining in the Salton Sea. Obsidian Buttes, Rock Hill, and Red Hill are volcanic domes/deposits that provide topographic relief along the shoreline of the Salton Sea. The very northeast corner of the Study Area extends just out of the valley floor into the alluvial fans at the base of the Chocolate Mountains.

Nearly the entire Study Area is below sea level and the topography is flat but sloping generally from east to west towards the Salton Sea. Elevations range from 60 feet above mean sea level (msl) to approximately -240 feet above msl at the edge of the Salton Sea[7].

Soils

Soil types mapped within the Study Area include the following the following soil surface textures: clay loam, gravelly sand, loam, silty clay, silty clay loam, very fine sandy loam, and undesignated/unmapped areas (USDA 2022). Table 9.4-1, Soil Surface Texture Types, summarizes the soil surface textures in the study area.

[7] Water surface edge of the Salton Sea based on current U.S. Geological Survey gauging station 10254005 at Salton Sea NR Westmorland (NAVD 1988)

Table 9.4-1, Soil Surface Texture Types	
Soil Surface Texture[1]	Study Area Acreage
clay loam	513
gravelly sand	1,825
loam	779
silty clay	22,453
silty clay loam	11,490
very fine sandy loam	1,199
undesignated/unmapped	13,529
Total	51,786

Source: USDA Soil Survey Geographic Database (SSURGO)

[1] Mapped soil types summarized by soil surface texture. In the Study Area, clay loam includes Glenbar Clay Loam; gravelly sand includes Niland Gravelly Sand and Niland-Imperial Complex; loam includes Glenbar Complex, Indio Loam, Indio-Vint Complex, and Meloland and Holtville Loams; silty clay includes Holtville Silty Clay and Imperial Silty Clay; silty clay loam includes Imperial-Glenbar Silty Clay Loams; very fine sandy loam includes Meloland Very Fine Sandy Loam and Vint and Indio Very Fina Sandy Loams; and undesignated/unmapped includes Badlands, Fluvaquents Saline, Torriorthents-Rock Outcrop Complex, Water, and unmapped areas including those within the Salton Sea.

Land Ownership and Use

The majority of the agricultural lands and the other undeveloped areas of the Study Area are private lands. Public lands include Imperial Irrigation District (IID) lands, state lands (CDFW Imperial Wildlife Area, Wister Unit), USFWS lands (Salton Sea Sonny Bono Wildlife Refuge), and U.S. Bureau of Land Management lands. The majority of the private lands are in agricultural uses but also include renewable energy, industrial, commercial, residential, and transportation uses. The public lands are generally open space, including the Salton Sea itself and associated lands.

Vegetation Communities and Land Cover Types

The study area is characterized by a highly modified landscape influenced by human activities and disturbance. The Salton Sea itself, surrounding agricultural uses and associated irrigation system, and the other extensive land uses, including geothermal facilities, solar fields, and roads and urban areas have transformed the vegetation communities and land cover of the Study Area. As such for the purposes of this planning-level description of existing conditions, vegetation communities and land cover types are described using broad, general categories suited best for planning purposes. The vegetation community and land cover mapping and type descriptions are based primarily on the best available existing sources and field reconnaissance[8]. Field-based mapping of vegetation types

[8] Based on a review of available existing data sources for vegetation communities and land cover mapping, there was no single data source that provided detailed, comprehensive coverage of the Study Area suitable for this planning effort. Therefore, the land cover mapping for the Study Area was developed from the assembly of the best available existing data from multiple sources, including USFWS National Wetland Inventory dataset (USFWS 2022) for the wetland and riparian areas, Department of Water Resources Statewide Crop mapping dataset (DWR 2018) for agricultural lands, the IID canals and drains dataset (IID 2014), and existing site-specific biological resources reports. These existing data

pursuant to project-level standards[9] was not conducted or considered necessary to support this planning effort, particularly given the nature of the Study Area. Figure 9-5, Vegetation Communities and Other Land Cover, provides mapping of the vegetation communities and land cover types in the Study Area, and Table 9.4-2 provides an acreage summary of the general vegetation communities and land cover types in the study area.

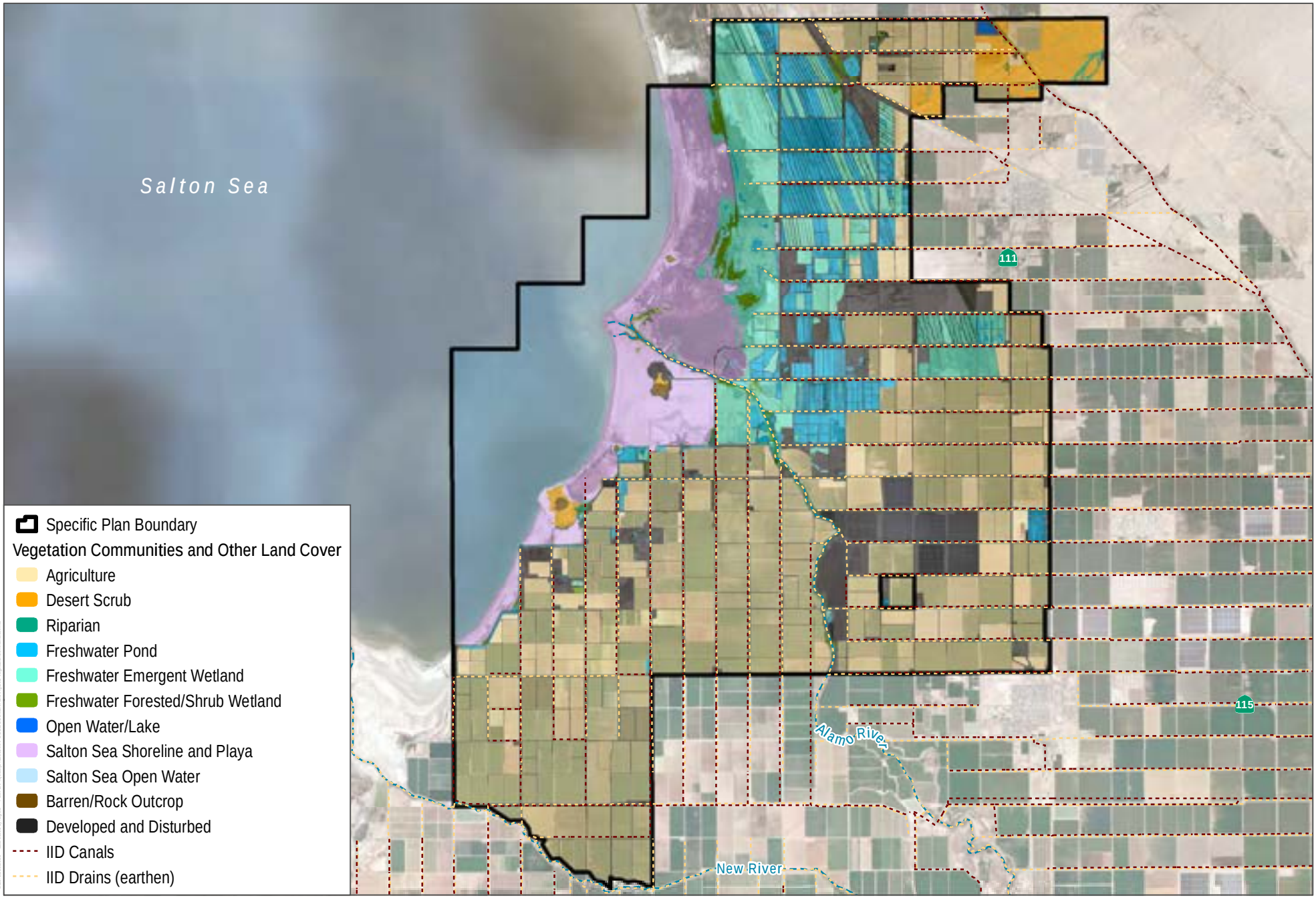
Table 9.4-2, Vegetation Communities and Land Cover Types

General Vegetation Community/Land Cover Type	Study Area Acreage
Salton Sea open water	6,480
Salton Sea shoreline and playa	4,920
Wetland communities – freshwater emergent wetland	4,639
Wetland communities – freshwater forested/shrub wetland	436
Wetland communities – freshwater pond	3,017
Wetland communities – open water/lake	26
Riparian communities	480
Desert scrub communities	1,295
Barren/rock outcrop	60
Agricultural lands	21,978
Developed and disturbed areas	8,456
Total	51,786

Source: USFWS National Wetland Inventory dataset for California wetlands (USFWS 2022), Department of Water Resources Statewide Crop mapping dataset (DWR 2018), the IID canals and drains dataset (IID 2014), existing site-specific biological resources reports, and refinements using aerial imagery from Bing, Google, and USDA National Agriculture Imagery Program (NAIP) from 2020 for Salton Sea open water and Salton Sea shoreline and playa areas (to account for land cover changes due to the receding Sea level) and for areas of desert scrub, barren/rock outcrop, and developed/disturbed. IID canals/drains are linear features that occur within developed and disturbed areas and along riparian areas.

sources were supplemented by using aerial imagery from Bing, Google, and USDA National Agriculture Imagery Program (NAIP) from 2020 to make land cover refinements for Salton Sea open water and Salton Sea shoreline and playa areas (to account for land cover changes due to the receding Sea level) and to map areas of desert scrub, barren/rock outcrop, and developed/disturbed.

[9] Project-level standards typically entails field-based mapping using the California Natural Community List (CDFW 2022a) and descriptions from the Manual of California Vegetation Online (CNPS 2021) per the Survey of California Vegetation Classification and Mapping Standards (CDFW 2020).



SOURCE: USWFS NWI; CA Dept. Water Resources 2018; Open Street Map; Bing Maps (2022-12-06)

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FIGURE **9-5**

Vegetation Communities and Other Land Cover

Salton Sea Lithium Specific Plan

Salton Sea Open Water, Shoreline, and Playa

The Study Area includes a portion of the open water of the Salton Sea. Additionally, the shallow shoreline areas and exposed playa that extend around the perimeter of the Salton Sea support an invertebrate community that serves as the forage base for numerous migratory and breeding shorebirds. This area contains unvegetated mud flats, playa, and shoreline, as well as vegetated shoreline areas dominated by tamarisk (*Tamarix ramosissima*), iodine bush (*Allenrolfea occidentalis*), and/or salt grass (*Distichilis spicata*) (DWR and CDFG 2007). South of the Alamo River and around the Rock Hill outcrop, dust suppression activities (i.e., surface roughening by grading of linear ditches) have been implemented in the open playa and these areas could also be characterized as disturbed.

Wetland Communities

Areas of managed and unmanaged vegetation, including diked wetlands, are located above and along the shoreline of the Salton Sea in the Study Area where water associated with irrigation runoff and other sources provide adequate soil moisture. Tamarisk and iodine bush are the most common species in these wetlands, along with cattail (*Typha latifolia*), bulrush (*Schoenoplectus americanus*), and other wetland plant species (DWR and CDFG 2007). USFWS National Wetland Inventory (NWI) data classifies the wetlands in the Study Area as: freshwater emergent wetlands, freshwater forested/shrub wetlands, freshwater ponds, and lakes. Wetland communities may be subject to the jurisdiction of state and/or federal regulatory agencies (see Section 9.4.4.6). In the Study Area, managed and unmanaged wetlands occur both north and south of the Alamo River around the CDFW Imperial Wildlife Area Wister Unit and the Sonny Bono Salton Sea National Wildlife Refuge.

Riparian Communities

Riparian vegetation in the Study Area is primarily associated with the Alamo River and immediate tributaries and drains. These communities occur along the banks of these features are primarily dominated by non-native species such as tamarisk, athel tree (*Tamarix aphylla*), quail bush (*Atriplex lentiformis*) but also supports narrowleaf willow (*Salix exigua*), salt grass, and arrowweed (*Pluchea sericea*) (Dudek 2010). In the remnant patches of desert scrub communities (see below) that occur in the higher elevation areas in the northeastern portion of the Study Area, desert riparian communities occur along ephemeral washes, which are characterized by scattered desert ironwood (*Olneya tesota*), mesquite (*Prosopis* spp.), and palo verde (*Parkinsonia* spp.). USFWS NWI data classifies the riparian areas in the Study Area as riverine. Riparian communities may be subject to the jurisdiction of state and/or federal regulatory agencies (see Section 9.4.4.6).

Desert Scrub Communities

The study area supports isolated parcels and patches of remnant desert scrub vegetation not previously converted by land use changes, primarily located in the northeastern corner of the Study Area and around the rock outcrops associated with Obsidian Butte and Red Hill. Desert scrub communities include widely scattered creosote bush (*Larrea tridentada*), saltbush species (e.g.,

Atriplex canescens), white bur-sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and boxthorn (*Lycium andersonii*) among other species (USACE and CNRA 2022).

Barren/Rock Outcrop

Barren areas largely devoid of vegetation and characterized by rock outcrops occur in three locations in the Study Area: Obsidian Buttes, Rock Hill, and Red Hill. As noted in Section 9.4.4.1, these features are volcanic domes/deposits that occur along or near the edge of the Salton Sea.

Agricultural Lands

Most of the Study Area is characterized by agricultural lands, including row crops, fallowed fields, dairy feedlots, and other agricultural uses.

Canals and Drains

A system of irrigation canals and drains occurs generally along roadway shoulders throughout the Study Area. Canals are largely devoid of vegetation. Drains can be unvegetated or support sparse to thick vegetation cover with species such as tamarisk and arrowweed.

Developed and Disturbed Areas

Developed and disturbed areas, including geothermal energy facilities, solar energy facilities, roads, road shoulders, irrigation facilities, and other developed and disturbed areas, exist throughout the Study Area. These areas are devoid or vegetation or support largely non-native or ornamental plantings.

Hydrology

The primary surface water features in the Study Area are the Salton Sea, the Alamo River, the IID distribution system of canals, and the IID drainage system. The IID distribution system delivers water from the Colorado River to the agricultural fields of the Imperial Valley, and drainage water flows to the Salton Sea via the Alamo River or flows through agricultural drains to the playa surrounding the Sea (IID 2002). The majority of inflows to the Salton Sea are agricultural return flows, but groundwater, direct precipitation, and surface runoff also provide water to the Salton Sea. As a result of surface application of irrigation water and the low permeability of soils throughout the IID water service area, a perched water table exists throughout portions of the Imperial Valley (IID and Reclamation 2002). Groundwater originating as precipitation in the mountains on the east and west side of the Salton Sea also enters the Sea. See Section 9.4.4.2 for the vegetation communities and land cover types associated with the surface water features in the study area, including the Salton Sea shoreline and shallow water areas, wetland communities, riparian communities, and canals and drains.

Plant Diversity

Section 9.4.4.2, Vegetation Communities and Land Cover Types, describes common plant species found in the various vegetation and land cover types in the Study Area. As noted, the Study Area is

highly modified by human activities and disturbance including a substantial portion of the acreage in agricultural uses or developed or disturbed through energy development, irrigation facilities, roadways, and other development, which reduces the overall native plant diversity in these areas. Riparian, wetland, and remnant desert scrub vegetation communities in the Study Area support some diversity of native plant species, but these areas have also been influenced by surrounding disturbance effects, such as non-native invasive species, water quality, and fragmentation. Section 9.4.4.6 describes special-status plant species that occur or potentially occur in the Study Area.

Wildlife Diversity

As described above in Section 9.4.4.2, Vegetation Communities and Land Cover Types, the Study Area supports habitat for a variety of wildlife species. The Salton Sea and associated shoreline and wetland habitats support a diverse assemblage of bird species, as well as aquatic invertebrates and fish. The surrounding agricultural fields, riparian habitat along the Alamo River, and the remaining desert scrub habitats in the Study Area also support wildlife. The following provides a summary of the wildlife diversity of aquatic species, birds species, and other terrestrial species. Section 9.4.4.6 describes special-status wildlife species that occur or potentially occur in the Study Area.

Aquatic Species

The shoreline and shallow and open water areas of the Salton Sea as well as the river mouth and delta of the Alamo River, the Alamo River and agricultural drains, and other wetland areas provide habitat for aquatic invertebrates and fish. Aquatic invertebrates associated with these habitats include species of worms, crustaceans, snails, mollusks, and insects (Miles et al. 2009; Kuperman et al. 2000).

In previous decades, the Salton Sea was a productive fishery; however, the richness of fish species has declined dramatically in the open water and other associated aquatic habitats as a result of the Sea's hypersaline conditions (CDFG 1961, CDFW 2007, Hurlbert et al. 2007). The most abundant fish species in the Salton Sea is a California Mozambique hybrid tilapia, which is thought to be a hybrid between the Mozambique tilapia (*Oreochromis mossambicus*) and Wami River tilapia (*O. urolepis hornorum*) (Costa-Pierce 2001, Hurlbert et al. 2007). Although now largely or completely absent from the open water areas of the Sea, bairdiella (*Bairdiella icistia*), sargo (*Anisotremus davidsoni*) and orangemouth corvina (*Cynoscion xanthulus*) may occur in the river mouth and delta or near shore areas with lower salinity levels (Hurlbert et al. 2007). Sailfin and shortfin mollies (*Poecilia latipinna*, *P. Mexicana*) and mosquitofish (*Gambusia affinis*) are known from the Alamo River and agricultural drains (CDFG 1991). Desert pupfish (*Cyprinodon macularius*), which is discussed further in Section 9.4.4.6, Special-Status Wildlife, also occurs along the shoreline of the Salton Sea and in the lower portions of the agricultural drains (USFWS 2010).

Bird Species

The Salton Sea and its shorelines and the wetlands, riparian areas, and agricultural fields of the Imperial Valley area support substantial populations of wintering, migratory, and breeding waterbirds, wading birds, shorebirds, and songbirds, and is a critical North American stopover

location along the Pacific flyway (Shuford et al. 2000). Over 400 species of resident and migratory birds, including special-status bird species, have been recorded in the region with the number of wintering and migratory birds in the hundreds of thousands (DWR and CDFW 2011; USACE and CNRA 2022).

Numerous shorebird, wading bird, and waterfowl species occur in and around the Salton Sea including numerous species of gulls and terns, numerous species of herons, egrets, and night-herons, American white pelican (*Pelecanus erythrorhynchos*), California brown pelican (*Pelecanus occidentalis*), willet (*Tringa semipalmata*), grebes (*Aechmophorus* and *Podiceps* spp.), plovers (*Charadrius* spp.), geese (*Chen* spp.), black-necked stilt (*Himantopus mexicanus*), ruddy duck (*Oxyura jamaicensis*), American coot *(Fulica americana*), northern shoveler (*Spatula clypeata*), northern pintail (*Anas acuta*), double-crested cormorants (*Phalacrocorax auritus*), and white-faced ibis (*Pledgadis chihi*) (Shuford et al. 2000; DWR and CDFG 2007; USACE and CNRA 2022). Black-necked stilts, whimbrels (*Numenius phaeopus*), small sandpipers (*Calidris* spp.), dowitchers (*Limnodramus* spp.), willets, and long-billed curlews (*Numenius americanus*) are abundant. The area is a major wintering ground for over more than 100,000 waterfowl (DWR and CDFG 2007).

Common bird species in and around the riparian habitat of the Study Area include common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), Abert's towhee (*Melozone aberti*), verdin (*Auriparus flaviceps*), house finch (*Carpodacus mexicanus*), black phoebe (*Sayornis nigricans*), red-winged blackbird (*Agelaius phoeniceus*), and marsh wren (*Cistothorus palustris*). Northern harrier (*Circus hudsonius*), red-tailed hawk (Buteo jamaicensis), and turkey vulture (*Cathartes aura*) are commonly seen throughout the Study Area over the marshes, agricultural fields, and desert scrub habitats (Dudek 2010). Numerous special-status bird species are known from the Study Area (see Section 9.4.4.6).

Other Terrestrial Species

Other terrestrial species include common reptile and mammal species that use the upland habitats in the Study Area. Common reptile species in the region include desert spiny lizard (*Sceloporus magister*), gopher snake (*Pituophis catenifer*), side-blotched lizard (*Uta stansburiana*), and western diamond-backed rattlesnake (*Crotalus atrox*). Common mammal species in the region include coyote (*Canis latrans*), desert cottontail (*Sylvilagus audobonii*), raccoon (*Procyon lotor*), round-tailed ground squirrel (*Spermophilus tereticaudus*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), and western pocket gopher (*Thomomys bottae*) (USACE and CNRA 2022). See Section 9.4.4.6, Special Status Wildlife Species, for a discussion of special-status terrestrial species.

Special-Status Biological Resources

Special-status biological resources include sensitive or regulated habitats, special-status plant species, and special-status wildlife species. Sensitive or regulated habitats include aquatic resources (i.e., wetlands and non-wetland waters) potentially subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Wildlife (CDFW), natural communities considered sensitive by CDFW, and U.S. Fish and Wildlife Service (USFWS)-designated critical habitat for federally listed species.

Special-status plant and wildlife species were considered to include those species that are listed as endangered, threatened, or candidate under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA), CDFW Fully Protected (FP) species, CDFW Species of Special Concern (SSC), and California Rare Plant Rank (CRPR) List 1 or 2 species. Special-status species potentially occurring in the Study Area were identified based on an evaluation of species records from the USFWS Carlsbad Field Office species occurrence dataset and the CDFW California Natural Diversity Database (CNDDB) located within the Study Area and a 5-mile buffer of the Study Area. Additionally, special-status species evaluated for the potential to occur in the Salton Sea Management Program Phase 1: 10-Year Plan Environmental Assessment (USACE and CNRA 2022) and Salton Sea Species Conservation Habitat Project Draft Environmental Impact Statement/Environmental Impact Report (DWR and CDFW 2011) were also considered.

Sensitive or Regulated Habitats

Potential Jurisdictional Aquatic Resources

Potential jurisdictional aquatic resources include wetlands, riparian area, and non-wetland water features potentially subject to the jurisdiction of the USACE under Clean Water Act (CWA) Section 404, RWQCB under CWA Section 401 and the California Porter-Cologne Water Quality Control Act, and/or CDFW under California Fish and Game Code Section 1600 et seq. Additionally, the IID drains are hydrologic features that carry flows from the agricultural fields in the Study Area into the Alamo River and also directly into the Salton Sea that may be to subject to agency jurisdiction.

Planning-level mapping of potentially jurisdictional aquatic resources was based primarily on USFWS National Wetland Inventory (NWI) data with adjustments made along the Salton Sea shoreline based on aerial imagery and centerlines for the IID drain system (see Section 9.4.4.2). The extent of aquatic resources for the purposes of regulatory agency permitting at a project level would require a formal jurisdictional aquatic resources delineation, which was not conducted or considered necessary for this planning-level project. The mapped wetlands and riparian areas, as well as the Salton Sea itself, are likely to be subject to regulatory agency jurisdiction. Shoreline features, IID drains, and other unmapped wetland and non-wetland features may or may not be subject to regulatory agency jurisdiction.

Sensitive Natural Communities

CDFW has identified sensitive natural communities throughout the state (CDFW 2022b), which are identified at the vegetation alliance level according to the classification system of the California Natural Community List (CDFW 2022a) and descriptions from the Manual of California Vegetation Online (CNPS 2021). As noted above in Section 9.4.4.2, Vegetation Communities and Land Cover Types, the vegetation communities in the Study Area are described at a planning level suitable for the purpose of this project and project-specific, alliance-level mapping of vegetation communities was not available or conducted. Despite the lack of alliance-level mapping, CDFW 2022b was reviewed to identify the potential for sensitive natural communities to occur in the Study Area.

Desert riparian vegetation was observed along the ephemeral washes within the desert scrub vegetation in the northeastern portion of the Study Area. These desert riparian washes support palo verde and ironwood, which would likely be mapped at the project level as palo verde-ironwood woodland (*Parkinsonia florida – Olneya tesota* alliance), which is a CDFW sensitive natural community.

Areas of exposed playa, drier/saltier basins, berms, and other areas within the Study Areas support areas dominated by iodine bush and/or saltgrass. Although these areas are generally highly modified, this vegetation would likely be mapped at the project level as iodine bush scrub (*Allenrolfea occidentalis* alliance) or saltgrass flat (*Distichlis spicata* alliance), which are CDFW sensitive natural communities.

Areas along IID drains and edges of riparian areas, wetlands and drainages support arrowweed. Although these areas are generally highly modified, this vegetation would likely be mapped at the project level as arrow weed thickets (*Pluchea sericea* alliance), which is a CDFW sensitive natural community.

Unmanaged and managed wetlands in the Study Area support areas dominated by cattail and bulrush. Bulrush-dominated wetlands would likely be mapped at the project level as common three-square marsh (*Schoenoplectus americanus* alliance), which is a CDFW sensitive natural community.

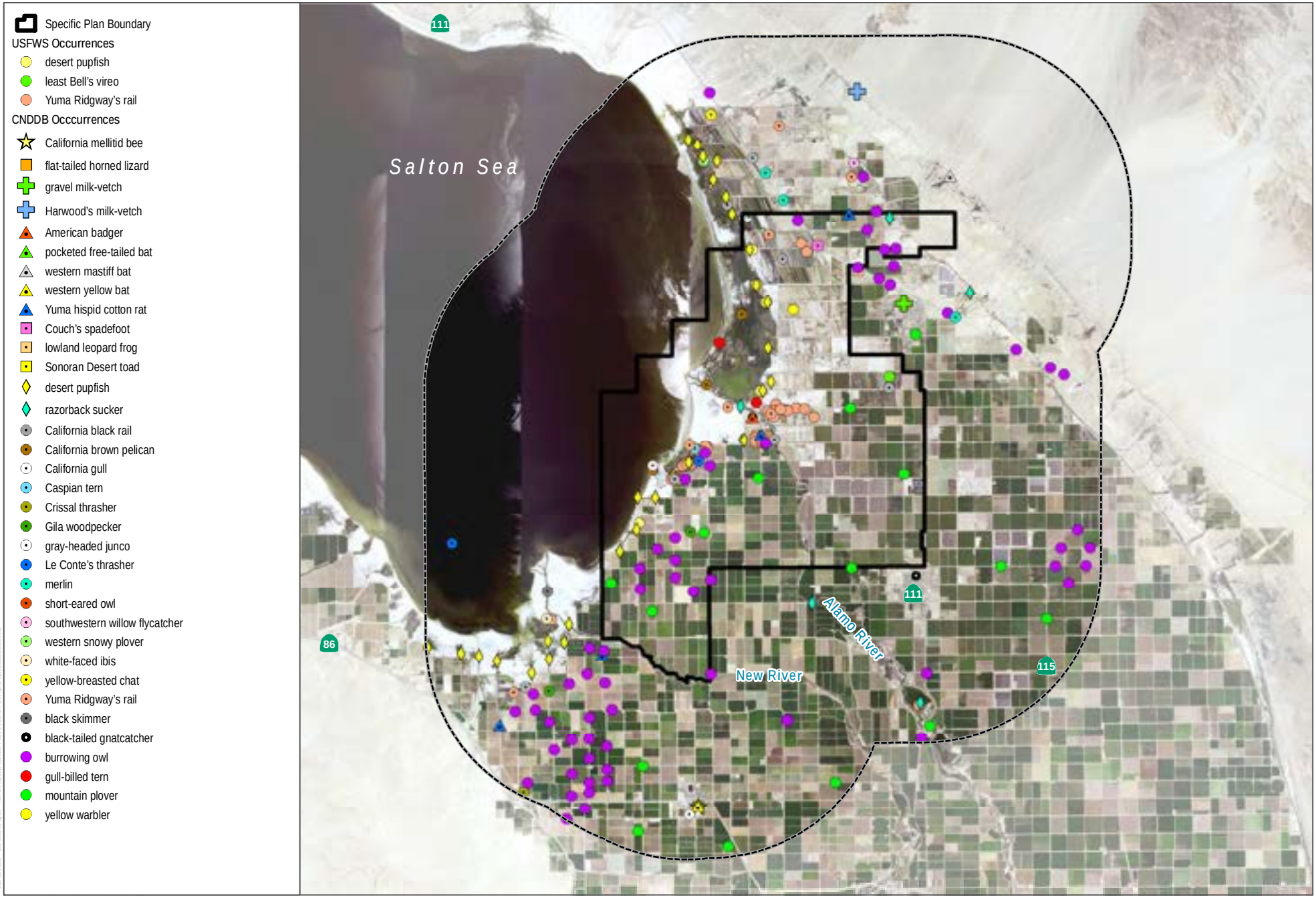
Although not specifically observed or mapped in the Study Area, remnant patches of mesquite thickets (*Prosopis glandulosa – Prosopis velutina – Prosopis pubescens* alliance) have the potential to occur in the Study Area, which is a CDFW sensitive natural community.

Critical Habitat

No USFWS-designated critical habitat for federally-listed species occurs within the Study Area or 5-mile buffer of the Study Area. Designated critical habitat for desert tortoise (*Gopherus agassizii*) occurs approximately 10 miles northeast of the Study Area east of the Chocolate Mountains. Designated critical habitat for Peirson's milk-vetch (*Astragalus magdalenae* var. *peirsonii*) occurs approximately 11 miles east of the Study Area in the Algodones Dunes. Designated critical habitat desert pupfish (*Cyprinodon macularius*) approximately 10 miles west of the Study Area west of the Salton Sea in the San Felipe Wash area.

Special-Status Plant Species

A total of 16 special-status plant species were evaluated for potential to occur in the Study Area based on species with CNDDB occurrence records within the Study Area and 5-mile buffer of the Study Area and species evaluated in USACE and CNRA 2022 and DWR and CDFW 2011. Special-status plant species potential to occur evaluation is provided in Appendix C, Biological Studies, Part 1. Figure 9-6, Special Status Plant and Wildlife Occurrences, shows the species occurrence records within the Study Area and within 5 miles of the Study Area.



SOURCE: USWFS NWI; CA Dept. Water Resources 2018; Open Street Map; NAIP 2020

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FIGURE 9-6

Special-Status Plant and Wildlife Occurrences

Salton Sea Lithium Specific Plan

One special-status plant species, Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*; CRPR 2B.2) was determined to have a high potential to occur in the northeastern portion of the Study Area and low potential to occur elsewhere in the Study Area. The remaining 15 special-status plant species evaluated for potential to occur were determined to have a low potential to occur or are not expected to occur in the Study Area.

Special-Status Wildlife Species

A total of 44 special-status wildlife species were evaluated for potential to occur in the Study Area based on species with USFWS and CNDDB occurrence records within the Study Area and 5-mile buffer of the Study Area and species evaluated in USACE and CNRA 2022 and DWR and CDFW 2011. Special-status wildlife species potential to occur evaluation is provided in Appendix C, Biological Studies, Part 2. Figure 9-6 shows the species occurrence records within the Study Area and within 5 miles of the Study Area.

A total of 13 special-status wildlife species occur or have a high potential to occur in the Study Area, including:

- Burrowing owl (Athene cunicularia), CDFW SSC
- Redhead (Aythya americana), CDFW SSC
- Mountain plover (Charadrius montanus), CDFW SSC
- Western snowy plover, interior population (Charadrius nivosus nivosus), CDFW SSC
- Gull-billed tern (Gelochelidon nilotica), CDFW SSC
- Least bittern (Ixobrychus exilis), CDFW SSC
- Loggerhead shrike (Lanius ludovicianus), CDFW SSC
- California black rail (Laterallus jamaicensis coturniculus), CDFW FP, SSC
- Large-billed savannah sparrow (Passerculus sandwichensis rostratus), CDFW SSC
- American white pelican (Pelecanus erythrorhynchos), CDFW SSC
- Yuma Ridgway's rail (Rallus obsoletus yumanensis), federal endangered, state threatened, CDFW FP
- Black skimmer (Rynchops niger), CDFW SSC
- Desert pupfish, federal endangered, state endangered

A total of 17 special-status wildlife species have a moderate potential to occur in the Study Area, including:

- Couch's spadefoot (Scaphiopus couchii), CDFW SSC
- Lesser sandhill crane (Antigone canadensis canadensis), CDFW SSC
- Greater sandhill crane (Antigone canadensis tabida), state threatened, CDFW FP
- Fulvous whistling-duck (Dendrocygna bicolor), CDFW SSC
- White-tailed kite (Elanus leucurus), CDFW FP
- Southwestern willow flycatcher (Empidonax traillii extimus), federal endangered, state endangered
- Bald eagle (Haliaeetus leucocephalus), state endangered, CDFW FP
- Yellow breasted chat (Icteria virens), CDFW SSC

- Wood stork (Mycteria americana), CDFW SSC
- California brown pelican (Pelecanus occidentalis californicus), CDFW FP
- Yellow warbler (Setophaga petechia), CDFW SSC
- Crissal thrasher (Toxostoma crissale), CDFW SSC
- LeConte's thrasher (Toxostoma lecontei), CDFW SSC
- Least Bell's vireo (Vireo bellii pusillus), federal endangered, state endangered
- Yellow-headed blackbird (Xanthocephalus xanthocephalus), CDFW SSC
- Western yellow bat (Dasypterus xanthinus), CDFW SSC
- Yuma hispid cotton rat (Sigmodon hispidus eremicus), CDFW SSC

The remaining 14 special-status wildlife species evaluated for potential to occur were determined to have a low potential to occur or are not expected to occur in the Study Area during the life stage associated with their status (e.g., nesting, nesting colony, or wintering).

Landscape Habitat Linkages and Wildlife Movement

Wildlife species generally inhabit suitable habitat patches distributed across a landscape. These habitat blocks, which may make up the species' home range or breeding territory, support most, if not all, of the species' life history needs (e.g., food resource, mates, refuge). Wildlife corridors contribute to population viability by (1) ensuring the continual exchange of genes between populations, which helps maintain genetic diversity; (2) providing access to adjacent habitat areas, representing additional territory for foraging and mating; (3) allowing for a greater carrying capacity; and (4) providing routes for colonization of habitat lands following local population extinctions or habitat recovery from catastrophic events. Habitat linkages are patches of habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation.

California Essential Habitat Connectivity Project (CEHC) was a statewide habitat linkage modeling effort that used indices of environmental integrity and other biological inputs to identify large "Natural Landscape Blocks" and "Essential Connectivity Areas" throughout California (Spencer et al. 2010). No Natural Landscape Blocks or Essential Connectivity Areas occur in the Study Area; however, CEHC mapped potential riparian connections along the Alamo River through the Study Area and along the New River along the edge of the Study Area (Figure 9-7, Landscape Habitat Linkages). The Chocolate Mountains east of the Study Area is identified as Natural Landscape Block. The California Desert Connectivity Project (Penrod et al. 2012) was another habitat connectivity analysis prepared for the California deserts, including the Study Area, that used least-cost corridor habitat permeability models for four focal species and identified of a Desert Linkage Network using "land facet" methods based on the approach described by Beier and Brost (2010). No Desert Linkage Network connections occur in the Study Area.



SOURCE: CDFW; Open Street Map; Bing Maps

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0 2 4 Miles

FIGURE **9-7**

Landscape Habitat Linkages

Salton Sea Lithium Specific Plan

The Study Area consists primarily of agricultural lands, developed and disturbed areas (e.g., roads, road shoulders, development), irrigation canals and drains. Unmanaged and managed wetland habitat occurs in the northern portion of the Study Area, and the Salton Sea and associated shoreline habitats occur along the entire northwestern portion of the Study Area. Small areas of desert scrub habitat occur primarily in the northeastern portion of the Study Area. The Alamo River crosses through the middle of the Study Area, and the New River is located along the southwestern edge of the Study Area.

While the network of roadways and irrigation canals and drains are generally not considered habitat for most wildlife species, the roadways generally carry low traffic volumes and human presence is generally light in the Study Area, which likely allows for movement of common terrestrial wildlife relatively freely through the Study Area using the roadways and associated shoulders and berms. The wetland habitats, agricultural lands, and Salton Sea and associated shoreline habitats provide nesting, roosting, and foraging habitat for resident, wintering, and migratory birds. The Alamo River and New River provide movement corridors through the Study Area for terrestrial wildlife as well as birds.

9.4.5. Constraints

Wetland and riparian communities in the Study Area are resources potentially regulated by federal and state resource agencies and provide potential habitat for special-status wildlife species that occur or potentially occur in the Study Area. The New River and Alamo River, as well as wetlands and playa areas around the Salton Sea are potential biological constraints in the Study Area. The river corridors also provide habitat linkages for wildlife movement. The wetland and riparian communities as well as the remnant desert scrub communities in the Study Area support natural communities considered sensitive by CDFW and are a Study Area constraint.

9.4.6. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding listed species, habitat conservation plans, and restoration plans and programs. Policies and programs may be included in the Specific Plan that apply to sensitive biological resources. Biological requirements shall be made in the form mitigation measures as a part of the PEIR. Additional biological opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.4.7. Recommendations

Preparation of a biological technical report for the Project is recommended. Further biological recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.5. CULTURAL RESOURCES

9.5.1. Introduction

Cultural Resources generally fall into two categories: archaeological and built environment. Archaeological resources are places that contain the remnants or traces left by past prehistoric and

historic-era human activity. Archaeological resources are typically tangible and spatially bound, although there may also be intangible attributes related to these places and the surrounding landscape. Common types of archaeological resources include prehistoric and historic-era artifact scatters, deposits, features, ruins, shipwrecks, sites, and districts. Built environment resources are largely considered buildings, structures, landscapes, and districts that comprise what is considered the built environment. Built environment resources include but are not limited to water management structures (levees, canals, dams, ditches), buildings (residential, industrial, and commercial), and linear structures (railroad alignments, roads, and bridges).

This section describes the existing cultural resources conditions of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project), identifies associated regulatory requirements, and presents potential constraints based on currently available information and next steps related to the proposed project.

9.5.2. Methodology and Sources

To identify the presence of known, previously identified, and potential cultural resources located within the Study Area Dudek cultural resources staff conducted the following background research and desktop analysis. Staff at the South Coastal Information Center (SCIC) at San Diego State University (SDSU) conducted a records search for the Study Area and delivered those results to Dudek on November 2, 2022, and January 4, 2023. The search encompassed the Study Area and a one-mile search buffer. The purpose of the records search was to identify whether any previously recorded archaeological or built environment resources are located in, or adjacent to, the Study Area and to identify previous studies in the Specific Plan vicinity. In addition to a review of previously prepared site records and reports, the records search also reviewed historical maps of the Study Area, ethnographies, the NRHP, the CRHR, the California Historic Property Data File, the OHP Built Environment Resource Directory (BERD), and registries of California State Historical Landmarks, California Points of Historical Interest, and Archaeological Determinations of Eligibility. Dudek cultural resources staff also reviewed historic aerials, topographic maps, ParcelQuest, and the Caltrans Historic Bridge Inventory data to identify historic era (45 years of age or older as of 2023) in order to identify built environment buildings or structures that may require additional study as part of project development, planning, and preparation of support environmental documentation.

9.5.3. Applicable Regulations

State

California Register of Historic Resources (Public Resources Code section 5020 et seq.)

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code section 5020.1(j)). In 1992, the California legislature established CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change"

(California Public Resources Code section 5024.1(a)). A resource is eligible for listing in the CRHR if the State Historical Resources Commission determines that it is a significant resource and that it meets any of the following National Register of Historic Places (NRHP) criteria:

- Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Associated with the lives of persons important in our past.
- 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.
- Has yielded, or may be likely to yield, information important in prehistory or history.

(California Public Resources Code section 5024.1(c).) Resources less than 50 years old are not considered for listing in the CRHR, but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resource (see 14 CCR, section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys. The State Historic Preservation Officer maintains the CRHR.

California Environmental Quality Act (CEQA)

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological and historic resources:

1. California Public Resources Code section 21083.2(g): Defines "unique archaeological resource."
2. California Public Resources Code section 21084.1 and CEQA Guidelines section 15064.5(a): Define historical resources. In addition, CEQA Guidelines section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource;" it also defines the circumstances when a project would materially impair the significance of a historical resource.
3. California Public Resources Code section 5097.98 and CEQA Guidelines section 15064.5(e): Set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated cemetery.
4. California Public Resources Code sections 21083.2(b)-(c) and CEQA Guidelines section 15126.4: Provide information regarding the mitigation framework for archaeological and historic resources, including options of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant

archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(b)). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines section 15064.5(b)(1); California Public Resources Code section 5020.1(q)). In turn, the significance of a historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or

2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

California Health and Safety Code section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (section 7050.5b). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (section 7050.5c). The NAHC will notify the Most Likely Descendant. With the permission of the

landowner, the Most Likely Descendant may inspect the site of discovery and/or provide recommended next steps within 24 hours of notification of the Most Likely Descendant. The Most Likely Descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains, and items associated with Native Americans.

Local

Imperial County Conservation and Open Space Element

Section III(B) of the Imperial County Conservation and Open Space Element describes the cultural resources, goals and objectives to protect such resources (County of Imperial 2016). The planning goals and objectives are described below.

Goal 3 of the goals and objectives section of the Imperial County Conservation and Open Space Element addresses the preservation of cultural resources. Goal 3 states that the County will "preserve the spiritual and cultural heritage of the diverse communities of Imperial County." (County of Imperial 2016). Three objectives are enumerated to assist in implementation of the goal:

- Objective 3.1 - Project and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.
- Objective 3.2 - Develop management strategies to preserve the memory of important historic periods, including Spanish, Mexican, and early American settlements of Imperial County.
- Objective 3.3 - Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burials sites.

9.5.4. Existing Conditions

The following Section provides a summary of known, previously identified, and potential cultural resources located within the Specific Study Area.

South Coastal Information Center Records Search

Staff at the South Coastal Information Center (SCIC) at San Diego State University (SDSU) conducted a records search for the Study Area on November 2, 2022, and January 4, 2023. Confidential Appendix D, Cultural Report, provides the records search results maps and a complete bibliography of all prior cultural resource studies occurring within one 1-mile of the Project area.

Previously Conducted Cultural Resources Studies

Ninety-nine (99) previous cultural resources studies have been previously conducted within one mile of the Study Area. Sixty-five (65) of these studies intersect the Study Area (Table 9.5.1). These 65 studies were conducted between 1974 and 2021. Approximately 94% of the Study Area has been previously studied. Previous studies that do not intersect the Study Area are included as part of Confidential Appendix D.

Table 9.5.1 Previous Cultural Resources Studies within the Study Area

SCIC Report ID	Year	Author	Report Title
IM-00089	1977	Von Werlhof, Jay and Sherilee Von Werlhof	Archaeological Examinations of Ten Proposed Geothermal Drill Test Sites Near Salton Sea
IM-00104	1977	Von Werlhof, Jay and Sherilee Von Werlhof	Archaeological Examinations of a Waste-Water Treatment System for the City Of Calipatria
IM-00109	1977	Von Werlhof, Jay, Sherilee Von Werlhof, and Morlin Childers	Archaeological Examinations of the Obsidian Butte Quarry Site, Imperial County
IM-00136	1978	Von Werlhof, Jay and Sherilee Von Werlhof	Archaeological Examinations of Two Geothermal Test Hole Sites, Westmorland, Imperial County
IM-00140	1978	Von Werlhof, Jay and Sherilee Von Werlhof	Archaeological Examinations of Ten Geothermal Test Sites Near Salton Sea
IM-00160	1978	Von Werlhof, Jay	Archaeological Examinations of Republic Geothermal Sweetwater Drill Sites
IM-00163	1978	Imperial County Planning Department	Final Environmental Impact Report for Geothermal Exploratory Operations in the Salton Sea Prospect
IM-00183	1979	Imperial County Planning Department	Environmental Impact Report #211-78 For Forty Nine Megawatt Geothermal Power Plant & Facilities Niland Area

IM-00187	1979	Eckhardt, William T.	Cultural Resource Inventory of Areas Affected by Reject Stream Replacement Projects
IM-00189	1979	Eckhardt, William	Cultural Resource Inventory of Areas Affected by Reject Stream Replacement Projects
IM-00225	1980	Westec Services, Inc.	Appendix A - History of Local Development
IM-00230	1981	Westec Services, Inc.	Salton Sea Anomaly Cultural Resource Review Data - Support Package
IM-00234	1981	Westec Services, Inc.	Salton Sea Anomaly - Master Environmental Impact Report
IM-00236	1981	Westec Services, Inc.	Volume II - Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Appendices
IM-00237	1981	Westec Services, Inc.	Volume I - Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Draft
IM-00254	1981	Westec Services, Inc.	Final Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report

			Comments and Responses
IM-00255	1981	Westec Services, Inc.	Final Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Volume I
IM-00291	1983	Von Werlhof, Jay	Archaeological Examinations of the Republic Geothermal, Inc., 49 MW Plant Site Near the Salton Sea
IM-00293	1983	Von Werlhof, Jay	Bear Creek Mining Company
IM-00320	1984	County of Imperial Planning Department	Draft Environmental Impact Report for the Niland Geothermal Energy Program
IM-00408	1988	Pigniolo, Andrew	Cultural Resource Study of the Imperial County Prison Alternatives Imperial County, California
IM-00509	1994	RTP Environmental Associates Inc.	Salton Sea Mineral Recovery Pilot Demonstration Project
IM-00512	1994	RTP Environmental Associates Inc.	Conditional Use Permit and Environmental Information for the Hazard Area Exploration Wells
IM-00513	1994	Ogden Environmental and Energy Services	Biological Technical Report in Support of An Environmental Assessment for the Hazard Area

			Geothermal Exploration Project
IM-00636	1980	Von Werlhof, Jay	Imperial Valley College Foundation Environmental Studies for Ten Geothermal Exploratory Wells
IM-00637	1974	Weaver, Richard A.	Environmental Impact Evaluation: Archaeology of the Proposed Sewage Treatment Plant for the City of Calipatria
IM-00674	1994	Bureau of Land Management	Southern Arizona Transmission Project Preliminary Draft Environmental Impact Statement, Draft Environmental Impact Report, Draft Plan Amendment, DEIS/DEIR/DPA
IM-00677	1993	Dames & Moore	Southern Arizona Transmission Project EIS/EIR, Cultural Resources Inventory Report, Draft
IM-00975	2004	Perry, Laureen M.	Negative Cultural Resources Survey Calipatria Proposed Pilot Wetlands Brawley Wetlands Project, Imperial County, California
IM-00985	2005	Sowell, Chris	SCG Class II Project: Pipeline Erosion Repair, Niland, Imperial County
IM-01042	1999	Jones & Stokes Associates, Inc.	Cultural Resources Inventory Report for Williams

			Communications, Inc. Fiber Optic Cable System Installation Project Riverside, California to the California/Arizona Border, Riverside, San Bernardino, and Imperial County, California
IM-01043	2000	Jones & Stokes	Final Cultural Resources Inventory for Williams Communications, Inc. Fiber Optic Cable System Installation Project, Riverside, California to the California/Arizona Border, Riverside, San Bernardino, and Imperial Counties, California
IM-01096	2007	ASM Affiliates	Cultural Resources Survey of the Hudson Ranch I Geothermal Project, Imperial County, California
IM-01158	1996	Archaeological Consulting Services, Ltd.	An Archaeological Assessment of the Niland-Imperial Pipeline Expansion Corridor, Imperial County, California
IM-01181	2000	Tetra Tech, Inc.	Draft Salton Sea Restoration Project Environmental Impact Statement/Environmental Impact Report
IM-01251	2007	Sander, Jay and Patrick, Maxon	Phase I Cultural Resources Reconnaissance for

			the Union Pacific Railroad, Yuma Subdivision Capacity Project, Riverside and Imperial Counties, California - Revised Draft
IM-01255	2001	Mcgown, Lucille Ronan, Gordon A. Clopine, Doris Hoover Bowers, Jay Von Werlhof, Ruth Deette Simpson, Ronald V. May, and Pat King	The Archaeological Survey Association of Southern California's Lake Le Conte Survey
IM-01306	1980	Wirth Associates, Inc	APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies - Native American Cultural Resources Appendices
IM-01385	2008	Laylander, Don, Sarah Stringer-Bowsher, and Jerry Schaefer	Cultural Resources Review for the Sonny Bono Salton Sea National Wildlife Refuge Complex, Imperial and Riverside Counties, California
IM-01461	2011	ESA Associates	Cluster I Solar Power Project
IM-01470	2010	Schaefer, Jerry, Shelby Gunderman, and Don Laylander	Cultural Resource Study for the Hudson Ranch II Project, Imperial County, California
IM-01484	2010	Imperial County Planning Department	Simbol Calipatria I Plant Project
IM-01493	2012	ESA Community Development	Revised Cluster I Solar Power Project Final Environmental Impact Report/

			Response to Comments
IM-01494	2012	Ecology and Environment, Inc.	County of Imperial Hudson Ranch Power II Cup #G10-0002/ Simbol II Cup #12-0005 Draft Environmental Impact Report
IM-01498	2011	Glenny, Wayne	Draft Archaeological Survey Investigation for the San Diego County Water Authority Fish Pond Imperial County, California
IM-01505	2012	Ecology and Environment, Inc.	County of Imperial Simbol Calipatria Plant I Cup #12-0004 Draft Environmental Impact Report Volume 1
IM-01510	2011	Bureau of Land Management	Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the West Chocolate Mountains Renewable Energy Evaluation Area
IM-01520	2013	Imperial Wells Power LLC	Imperial Wells Geothermal Exploration Project, Project Description
IM-01525	2012	Cardno. Entrix	Salton Sea Species Conservation Habitat Project Cultural Resources Survey Report
IM-01559	2011	Giacinto, Adam	Cultural Resource Study for the Simbol SM Calipatria Plant I,

			Imperial County, California
IM-01603	2009	Wahoff, Tanya and Jow, Stephanie	Archaeological Survey and National Register Evaluation for a Supplemental Magazine Project Camp Billy Machen, Imperial County, California
IM-01640	2016	Stanford, J. Todd and Lachman, Daniel	Phase I Environmental Site Assessment Hell's Kitchen Power Plant West of Wister Road, Between Noffsinger Road and Pound Road Calipatria, California 90291
IM-01642	2012	-	County of Imperial - Hudson Ranch Power II Cup #G10-002/Simbol II Cup #12-0005 Final Environmental Impact Report, Volumes I and II
IM-01643	2016	-	Geo-Genco Geothermal Project, Imperial County, California
IM-01654	2016	Morehouse, Jana	Archaeological & Historic Architecture Records Review for the Union Pacific Railroad Yuma Subdivision Positive Train Control Mile Posts 659.95 Through 691.12
IM-01657	2016	Morehouse, Jana	Archaeological & Historic Architecture Records Review for

			the Union Pacific Railroad Yuma Subdivision Positive Train Control Mile Posts 665.7, 668.06, & 676.1
IM-01675	2016	Minnick, Jim	Initial Study & Environmental Analysis for: Geothermal #16-0002 San Piper Geothermal Exploratory Well
IM-01692	2017	Castells, Shelby Gunderman, Douglas Drake, And Joel Lennen	Cultural Resource Study for the Hell's Kitchen Exploratory Well Project, Imperial County, California
IM-01693	2016	Castells, Shelby Gunderman and Joel Lennen	Cultural Resource Study for the Sand Piper Geothermal Project, Imperial County, California
IM-01695	2016	Castells, Shelby Gunderman	Cultural Resource Study for the Geo-Genco Geothermal Project, Imperial County, California
IM-01697	2017	BRG Consulting, Inc.	Addendum to PEIR and Initial Study/Environmental Analysis for: Controlled Thermal Resources Hell's Kitchen Exploratory Wells Project
IM-01710	2011	Ehringer, Candace	Cluster I Solar Project - Cultural Resources and Paleontological Studies
IM-01721	2019	Smith, Garnett and Joseph Howell	Archaeological Monitoring in Support

			Of the P-771 Power Utility Upgrade Project, Near the Chocolate Mountain Aerial Gunnery Range, Imperial County, California
IM-01797	2020	Gilbert, Rebecca and Amber Lopez-Johnson	Cultural Resources Survey Report for the Lack Road Bridge Replacement, Imperial County, California
IM-01818	2021	Pentney, Sandra, Kellie Kandybowicz, Niranjala Kottachchi, and Eduvijes Davis-Mullens	Archaeological and Paleontological Assessment Report for the Energy Source Mineral, LLC Project, Calipatria, Imperial County, California

Previously Recorded Cultural Resources

Archaeology

The SCIC records indicate that 55 previously recorded archaeological resources are located within one-mile of the Study Area; 30 of which intersect the Study Area (Table 9.5.2). The prehistoric sites within the Study Area include two habitation debris scatter, a lithic scatter, seven possible trail segments, two toolstone quarries, and eight isolates. The historic-period sites include four isolates and five refuse scatters, two of which are associated with manufactured duck ponds. The one multicomponent resource consists of the remains of a prehistoric village site with an artifact scatter and evidence of human cremation. The historic component consists of a refuse scatter. None of the resources within the Study Area have been previously evaluated for listing on the CRHR, NRHP, or local listing or significant under CEQA, though the 12 isolates are not eligible. Site records for all 55 recorded resources previously recorded within the 1-mile of the Study Area are included in Confidential Appendix D.

Table 9-5.2 Previously Recorded Cultural Resources within the Study Area

Primary Number	Trinomial	Resource Type	Description	Evaluation Status
P-13-000068	CA-IMP-000068	Multicomponent	Prehistoric village site; prehistoric scatter;	Unevaluated

			human cremation; historic refuse scatter	
P-13-000452	CA-IMP-000452	Prehistoric	Obsidian Quarry	Unevaluated; partially damaged
P-13-000900	CA-IMP-000900	Prehistoric	Indian Trail course	Unlikely to still exist; need confirmation
P-13-000901	CA-IMP-000901	Prehistoric	Indian Trail course	Unlikely to still exist; need confirmation
P-13-000902	CA-IMP-000902	Prehistoric	Indian Trail course	Unlikely to still exist; need confirmation
P-13-000903	CA-IMP-000903	Prehistoric	Indian Trail course	Unlikely to still exist; need confirmation
P-13-000904	CA-IMP-000904	Prehistoric	Indian Trail course	Unlikely to still exist; need confirmation
P-13-005951	CA-IMP-005951	Historic	Water tank and artifact scatter	Unevaluated
P-13-006638	CA-IMP-006638	Prehistoric	Lithic scatter	Unevaluated
P-13-008176	-	Prehistoric	Quarry	Unevaluated
P-13-009610	-	Prehistoric	Isolate: Trash	Not eligible
P-13-012745	-	Prehistoric	Isolate: Lithic	Not eligible
P-13-012746	-	Historic	Isolate: Trash	Not eligible
P-13-012747	-	Historic	Isolate: Trash	Not eligible
P-13-012748	-	Prehistoric	Isolate: Lithic	Not eligible
P-13-012930	-	Prehistoric	Isolate: Lithic	Not eligible
P-13-012931	-	Prehistoric	Isolate: Ceramic	Not eligible
P-13-012932	-	Prehistoric	Isolate: Lithic	Not eligible

P-13-012933	CA-IMP-011347	Prehistoric	Trail	Unevaluated
P-13-012934	-	Prehistoric	Isolate: Ceramic	Not eligible
P-13-012935	CA-IMP-011348	Historic	Trash	Unevaluated
P-13-012936	CA-IMP-011349	Prehistoric	Trail	Unevaluated
P-13-012937	-	Prehistoric	Isolate: Lithic	Not eligible
P-13-012938	-	Prehistoric	Isolate: Lithic	Not eligible
P-13-012939	CA-IMP-011350	Prehistoric	Habitation debris	Unevaluated
P-13-012940	CA-IMP-011351	Prehistoric	Habitation debris	Unevaluated
P-13-014277	CA-IMP-012061	Historic	Trash	Destroyed
P-13-016860	-	Historic	Isolate: Trash	Not eligible
P-13-018705	CA-IMP-013448	Historic	Trash scatter and duck ponds	Not eligible
P-13-018706	CA-IMP-013449	Historic	Trash scatter and duck ponds	Unevaluated

Previously Identified Built Environment Resources – Evaluated/Recommended NRHP/CRHR Eligible

P-34-003424 – Southern Pacific Railroad

A segment of P-34-003424 (CA-IMP-008333) (designated SRI 116) of a historic-era Southern Pacific railway that was constructed in 1877 is located in the Study Area. The oldest documentation returned in the records search, an update form for P-34-003424, was completed in 1997 and did not evaluate the resource. In 1999, A. Ashkar, M. Avina, E. Prendergast, and J. Doty evaluated the railroad segment and recommended it eligible under Criteria NRHP A/CRHR 1, for important historical associations, and Criteria NRHP B/2, for the road's association with Leland Stanford, Collis Potter Huntington, Mark Hopkins Jr., and Charles Crocker. Between 1999 and 2016, there were several DPR 523 form set description updates, but they did not evaluate the segment for significance. In 2016, C. Rayle concurred that the railroad segment was eligible under criteria a/1 but did not agree that it be found eligible under criteria 2/b. The most recent update, written by H. Miljour in 2020, agreed that, although the segment appears to have important historical associations, recent construction has diminished the resource's integrity. Miljour determined that the segment

was a non-contributing component to the larger and railroad, therefore, not eligible for inclusion in the NRHP (Huber and Cachora 1997: p. 1; Rayle 2016: p. 1; Ashkar, Avina, Prendergast, and Doty 1999: p 4; Miljour 2020: p. 3).

P-13-008333 – Highline Canal

A segment of P-13-008333 (CA-IMP-007835) a historic-era water conveyance structure called the Highline Canal, constructed in 1914 is located in the Study Area. C. Dolan and C. Bowden-Renna documented the segment in 1998 and, although they did not evaluate the resource, noted that it had diminished due to recent construction. In 2000, N. Harris and M. Oberndorf found the segment eligible under criteria 1/A but did not provide an integrity assessment. In the most recent recordation, which dates to 2016, M. Novell recommended that the canal segment appeared eligible under Criteria A /1 and C/3, as an example of early engineering design of canal systems in Imperial County (Dolan and Bowden-Renna 1998: p.4; Harris and Oberndorf 2000: p. 2; Novell 2016: p. 2).

Additional Research on Built Environment Cultural Resources

Dudek cultural resources staff conducted additional research through online sources and tools to identify other previously identified and potential cultural resources that were not identified through the records search. The purpose of this additional research is to identify properties that contain buildings and structures that may require further study including recordation and evaluation should Project planning result in potential impacts to historical resources.

The Study Area includes 681 parcels, 10 bridges previously administered through the Caltrans Historic Bridge Inventory are listed below (Table 9.5.5), as well as water conveyance structures, and residential farm complexes that may require additional study. For location information on the built environment properties identified in this section see Appendix D, Part 1: Built Environment Resources Sensitivity.

The following 10 CalTrans bridges include four local and six state bridges:

Table 9.5.5 CalTrans Bridges Located Within the Specific Study Area

Type	Bridge Number	Name	Year Built	Year Reconstructed	Caltrans Historic Code
State	58 0145	Kuehn Draw Bridge	1950	1986	5: Bridge is not eligible for the NRHP.
State	58 0146	Chico Wash Bridge	1950	1986	5: Bridge is not eligible for the NRHP.
State	58 0147	Brawley Wash Bridge	1950	1986	5: Bridge is not eligible for the NRHP.
State	58 0148	Phil Wash Bridge	1950	1986	5: Bridge is not eligible for the NRHP.
State	58 0152	Cattail Wash Bridge	1950	1986	5: Bridge is not eligible for the NRHP.

State	58C 0352	Z Drain Bridge	2012	n/a	5: Bridge is not eligible for the NRHP.
Local	58C0101	New River Bridge	1940	n/a	5: Bridge is not eligible for the NRHP.
Local	58C0006	Vail Canal Bridge	1936	n/a	5: Bridge is not eligible for the NRHP.
Local	58C0216	Alamo River Bridge	1994	n/a	5: Bridge is not eligible for the NRHP.
Local	58C0006	New River Bridge	1978	n/a	This bridge has not been evaluated.

Water Conveyance Structures

There are 46 water resources contained within the Study Area including the Salton Sea (1905-1907), its two associated rivers (1905-1907), two canals, and 41 irrigation spill drains maintained as part of the Imperial Irrigation District (IID). Table 9.5-6 below provides a list of water conveyance structures that may be over 45 years of age located in the Study Area.

Table 9.5-6 Water Conveyance Structures Within the Study Area

Resource Type	Resource Name	Age, date developed
Lake	Salton Sea	116, 1905-1907
River	Alamo River	116, 1905-1907
River	New River	116, 1905-1907
Canal	Niland Canal	More Research Required
Canal	Vail Canal	More Research Required
Irrigation System	E Spill Drain	More Research Required
Irrigation System	F Spill Drain	More Research Required
Irrigation System	G Spill Drain	More Research Required
Irrigation System	H Spill Drain	More Research Required
Irrigation System	I Spill Drain	More Research Required
Irrigation System	J Spill Drain	More Research Required
Irrigation System	K Spill Drain	More Research Required
Irrigation System	L Spill Drain	More Research Required
Irrigation System	M Spill Drain	More Research Required
Irrigation System	N Spill Drain	More Research Required
Irrigation System	O Spill Drain	More Research Required
Irrigation System	P Spill Drain	More Research Required
Irrigation System	Q Spill Drain	More Research Required
Irrigation System	R Spill Drain	More Research Required
Irrigation System	S Spill Drain	More Research Required
Irrigation System	T Spill Drain	More Research Required

Irrigation System	U Spill Drain	More Research Required
Irrigation System	W Spill Drain	More Research Required
Irrigation System	Y Spill Drain 1	More Research Required
Irrigation System	Y Spill Drain 2	More Research Required
Irrigation System	Z Spill Drain	More Research Required
Irrigation System	O'Brien Spill Drain 1	More Research Required
Irrigation System	O'Brien Spill Drain 2	More Research Required
Irrigation System	Thompson Spill Drain	More Research Required
Irrigation System	Unnamed Connector between 2 and 3 Spill Drain	More Research Required
Irrigation System	Unnamed Spill Drain 1	More Research Required
Irrigation System	Unnamed Spill Drain 2	More Research Required
Irrigation System	Vail Cutoff Spill Drain	More Research Required
Irrigation System	Vail 2 Spill Drain	More Research Required
Irrigation System	Vail 2A Spill Drain	More Research Required
Irrigation System	Vail 2B Spill Drain	More Research Required
Irrigation System	Vail 3 Spill Drain	More Research Required
Irrigation System	Vail 3A Spill Drain	More Research Required
Irrigation System	Vail 4 Spill Drain	More Research Required
Irrigation System	Vail 4A Spill Drain	More Research Required
Irrigation System	Vail 4B Spill Drain	More Research Required
Irrigation System	Vail 5 Spill Drain	More Research Required
Irrigation System	Vail 5A Spill Drain	More Research Required
Irrigation System	Vail 6 Spill Drain	More Research Required
Irrigation System	Vail 6A Spill Drain	More Research Required
Irrigation System	Vail 7 Spill Drain	More Research Required

Additional Built Environment Properties within the Specific Study Area

The Specific Study Area also includes 74 residential farm complexes, described below (NETR 2023). Desktop analysis indicates that the following 21 parcels located in the Study Area contain residential farm complexes that contain buildings or over the age of 45 as of 2023 (NETR 2023).

- APN: 003-230-004
- APN: 020-050-078
- APN: 020-090-005
- APN: 020-120019
- APN: 020-140-002
- APN: 020-140-023
- APN: 020-150-037
- APN: 022-020-020
- APN: 022-050-077
- APN: 022-050-078
- APN: 022-110-003
- APN: 022-110-013
- APN: 022-140-006
- APN: 022-160-010
- APN: 023-010-005
- APN: 023-010-019
- APN: 023-020-005
- APN: 023-020-013

- APN: 023-020-019
- APN: 023-020-020
- APN: 023-020-024

Desktop analysis indicates that the following 28 parcels located in the Study Area contain residential farm complexes that may contain buildings or over the age of 45 as of 2023. More in depth research of field survey would be required to attain year-built information (NETR 2023).

- APN: 003-230-015
- APN: 003-230-027
- APN: 003-230-029
- APN: 003-230-065
- APN: 003-230-066
- APN: 003-230-074
- APN: 020-010-010
- APN: 020-010-031
- APN: 020-110-019
- APN: 020-110-042
- APN: 020-120-006
- APN: 020-120-010
- APN: 020-120-017
- APN: 020-120-030
- APN: 020-120-031
- APN: 020-120-032
- APN: 020-120-035
- APN: 020-120-037
- APN: 020-120-043
- APN: 020-120-044
- APN: 020-140-030
- APN: 020-150-040
- APN: 021-010-008
- APN: 021-140-051
- APN: 022-010-011
- APN: 021-200-010
- APN: 022-140-015
- APN: 022-160-004

Desktop research indicates that the following 25 parcels located in the Specific Study Area with built environment components appear to have been constructed after 1978. As of 2023, these properties would not require any additional study as potential historical resources. These properties are not mapped in Appendix D.

- APN: 020-110-040
- APN: 022-020-012
- APN: 021-010-007
- APN: 020-110-038
- APN: 020-100-043
- APN: 003-230-075
- APN: 020-110-039
- APN: 020-120-005
- APN: 020-100-040
- APN: 020-100-014
- APN: 003-230-012
- APN: 003-230-007
- APN: 020-100-039
- APN: 020-110-043
- APN: 020-140-052
- APN: 020-120-059
- APN: 020-110-049
- APN: 020-110-047
- APN: 003-230-005
- APN: 020-150-026
- APN: 003-230-016
- APN: 003-240-001
- APN: 020-100-044
- APN: 003-230-017
- APN: 020-100-038

9.5.5. Constraints

The previously provided summary of archaeological and built environment resources provides a baseline understanding of existing constraints. Resources that have been evaluated for CRHR and local register listing are unlikely to provide additional constraints. Resources that are pending evaluation and/or are unevaluated are assumed to be CRHR eligible under CEQA. As such, additional

cultural resources assessment would be required of these resources to gain a full understanding of impacts related to these resources.

Based on the archival review, there are a number of built environment and archaeological resources within the Study Area. The SCIC records indicate that nine previously recorded built environment resources over 45 years in age intersect the Study Area. Seven components were found ineligible for the NR, CR, or local designation through survey evaluation. There are 46 water resources contained within the Study Area including the Salton Sea. The Specific Study Area also includes 74 residential farm complexes.

Of the 30 previously recorded archaeological sites are located within the proposed Study Area, 12 of these resources are isolated finds, and are not eligible for listing on the CRHR, or the local register. Likewise, another site has been previously destroyed by development and will not constrain the Specific Plan.

The remaining 17 previously recorded archaeological sites within the Study Area have not been evaluated for eligibility for listing in the NRHP, the CRHR, or local registers. All 17 of these resources will require an additional evaluation before the certification of the Specific Plan. Alternatively, these resources can be avoided by future activities or excluded from the Study Area.

It should be further noted that the Study Area falls within and along the Ancient Lake Cahuilla shoreline. This prehistoric resource was of importance to indigenous people. Areas along the shoreline of this lake, running along roughly the 12 meter elevation contour, would have the highest potential for intact prehistoric resources to be present and persist, although there are a number of areas throughout the Study Area where additional buried deposits may be present. Archaeological deposits have been substantially disturbed through historic-era and modern uses.

This analysis reveals the location of known archaeological resources within the Specific Area only. This does not preclude the existence of additional resources within the Study Area nor does it constitute a predictive model of where resources may be. Additional analysis, pedestrian survey, and archaeological evaluation are required to determine the significance of the known resources and determine the archaeological sensitivity of the greater Study Area and the possible impact of activities under the Specific Plan.

9.5.6. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding cultural resources. Policies and programs may be included in the Specific Plan that apply to sensitive cultural resources. Cultural resource requirements shall be made in the form mitigation measures as a part of the PEIR. Additional cultural resource opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.5.7. Recommendations

Preparation of a cultural resources technical report for the Project is recommended. Further cultural resource recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.6. GEOLOGY/SOILS

9.6.1. Introduction

This section describes the existing geology and soils conditions of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project), identifies associated regulatory requirements, and presents potential constraints based on currently available information and next steps related to the proposed project. This Geology and Soils Existing Conditions section will support development of the Specific Plan and associated environmental document.

9.6.2. Methodology and Sources

The geology and soils environmental setting of the Specific Study Area (SPA) has been prepared using existing geologic, soils, and other studies available for the area, including documents and maps available from the California Geological Survey, Southern California Earthquake Data Center, California Department of Conservation Geologic Energy Management Division (CalGEM), California Department of Water Resources, U.S. Geological Survey (USGS), U.S. Department of Agriculture, Imperial County General Plan (Seismic and Public Safety Element and Renewable Energy and Transmission Element), and Imperial County General Plan EIR.

9.6.3. Applicable Regulations

Federal Regulations

Earthquake Hazards Reduction Act

The United States Congress passed the Earthquake Hazards Reduction Act in 1977 to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program. This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act, which refined the description of agency responsibilities, program goals, and objectives.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction operations. OSHA Excavation and Trenching Standard, Title 29 of the Code of Federal Regulations, Part 1926, Subpart P, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of Holocene-active faults and has published maps showing these zones. Earthquake fault zones are designated by the California Geological Survey and are delineated along traces of well-defined faults where mapping demonstrates surface fault rupture has occurred within the past 11,700 years. Construction within these zones cannot be permitted until a geologic investigation has been conducted to prove that a building planned for human occupancy would not be constructed across an active fault (CGS 2018). These types of site evaluations address the precise location and recency of rupture along traces of the faults and are typically based on observations made in trenches excavated across fault traces. The SPA is not traversed by an Alquist-Priolo Earthquake Fault Zone.

The fact that a project lies outside a mapped earthquake fault zone does not necessarily mean that the site is free from seismic or other geologic hazards, nor does it preclude lead agencies from adopting regulations or procedures that require site-specific fault and/or geologic investigations and mitigation of seismic or other geologic hazards. It is not always possible for CGS geologists mapping at a regional scale to identify all Holocene-active faults, as not all faults, including Holocene-active faults, meet the criteria of well-defined. Furthermore, in California there have been examples of faults that were understood to be pre-Holocene that have ruptured in historical time. These instances of faulting underscore the importance of considering the surface fault rupture hazard to projects, even when they are not regulated by the Alquist-Priolo Earthquake Fault Zoning Act. It is the responsibility of the project geologist to inform his or her client and the lead agency of the presence of a Holocene-active fault on a site and it is the responsibility of the lead agency to prohibit structures for human occupancy across the trace of Holocene-active faults, whether that fault is found inside or outside of an earthquake fault zone (CGS 2018).

California Building Code

The state regulations protecting structures from geo-seismic hazards are contained in the California Building Code (CBC) (24 CCR Part 2), which is updated on a triennial basis. These regulations apply to public and private buildings in the state. Until January 1, 2008, the CBC was based on the then-current Uniform Building Code and contained additions, amendments, and repeals specific to building conditions and structural requirements of the State of California. The 2019 CBC, effective January 1, 2020, is based on the 2018 International Building Code and enhances the sections dealing with existing structures. Seismic-resistant construction design is required to meet more stringent technical standards than those set by previous versions of the CBC.

Chapters 16 and 16A of the 2019 CBC include structural design requirements governing seismically resistant construction, including (but not limited to) factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design. Chapters 18 and 18A include the requirements for foundation and soil

investigations (Sections 1803 and 1803A); excavation, grading, and fill (Sections 1804 and 1804A); damp-proofing and water-proofing (Sections 1805 and 1805A); allowable load-bearing values of soils (Sections 1806 and 1806A); the design of foundation walls, retaining walls, embedded posts and poles (Sections 1807 and 1807A), and foundations (Sections 1808 and 1808A); and design of shallow foundations (Sections 1809 and 1809A) and deep foundations (Sections 1810 and 1810A). Chapter 33 of the 2019 CBC includes requirements for safeguards at work sites to ensure stable excavations and cut or fill slopes (Section 3304).

California Occupational Safety and Health Administration Regulations

In California, the California Occupational Safety and Health Administration (Cal/OSHA) has responsibility for implementing federal rules relevant to worker safety, including slope protection during construction excavations. Cal/OSHA's requirements are more restrictive and protective than federal OSHA standards. Title 8 of the California Code of Regulations (CCR), Chapter 4, Division of Industrial Safety, covers requirements for excavation and trenching operations, as well as safety standards whenever employment exists in connection with the construction, alteration, painting, repairing, construction maintenance, renovation, removal, or wrecking of any fixed structure or its part.

California Health and Safety Code

Sections 17922 and 17951–17958.7 of the California Health and Safety Code require cities and counties to adopt and enforce the current edition (2019) of the CBC, including a grading section. Sections of Volume II of the CBC specifically apply to select geologic hazards.

California Department of Conservation Geologic Energy Management Division

Geothermal resources extraction are regulated by CalGEM Statutes and Regulations (CalGem 2022). Public Resources Code Chapter 4, Geothermal Resources, Section 3714, requires the State Oil and Gas Supervisor to supervise the drilling, operation, maintenance, and abandonment of geothermal resources wells, as to encourage the greatest ultimate economic recovery of geothermal resources, to prevent damage to life, health, property, and natural resources by reason of the drilling, operation, maintenance, and abandonment of geothermal resources wells.

CCR Chapter 4, Development, Regulation, and Conservation of Oil and Gas Resources, Subchapter 4, State-wide Geothermal Regulations

Article 3, Drilling, Section 1931.5, Unstable Terrain, specifies that if the construction of drilling sites, roads, sumps, steam transmission lines, and other construction attendant to geothermal operations could cause or could be affected by slumping, landslides, or unstable earth conditions, the Supervisor shall require that the operator submit a written analysis of the proposed work prior to the commencement of any construction and prior to approving a permit to drill. At the request of the Supervisor, the report shall be prepared by a civil engineer, licensed in the state and experienced in soils engineering; and if slumping or landsliding could be involved, the requested report shall also be prepared by an engineering geologist, certified in the state and experienced in slope stability and

related problems. No permit to drill shall be approved unless the report indicates that the work is planned in such a manner as to reasonably mitigate the problem throughout the life of the project.

Article 6, Injection, Section 1960, Definitions, indicates that CalGEM regulates well injection for the disposal of waste fluids, the augmentation of reservoir fluids, pressure maintenance of reservoirs, or for any other purpose authorized by the Supervisor. Section 1961, Projects, outlines the requirements for initiating an injection project, including descriptions of reservoir conditions, method of injection, source of injection fluid, estimates of daily injection, geologic cross section showing zone of injection, and analyses of fluids to be injected. Section 1963 requires that the appropriate notices be approved by CalGEM prior to the operator initiating work on the well. Section 1966(e), Surveillance, requires injection pressures to be recorded and compared with the pressures reported on the monthly injection reports. Any discrepancies shall be rectified immediately by the operator. A graph of pressures and rates versus time shall be maintained by the operator.

Article 7, Subsidence, Section 1970, Responsibility, specifies that the prime responsibility for subsidence detection and abatement in geothermal areas in California lies with CalGEM. Section 1971(a), Imperial Valley Subsidence Regulations, Surveys and Bench Marks, specifies surveys and bench mark requirements for all well sites, including coordination with the County Surveyor, and direct supervision of work by a Registered Civil Engineer or Licensed Land Surveyor. Section 1971(b), Imperial Valley Subsidence Regulations, Reservoir Engineering, specifies reservoir engineering requirements, including submittal of initial bottom hole pressures and temperatures to CalGEM within 30 days of completion of work; and submittal to CalGEM of monthly surface recordings of production, injection, temperature, and pressure.

Regional and Local

County Land Use Ordinance

Title 9, Division 15, Geologic Hazards, of the County Land Use Ordinance has established procedures and standards for development within earthquake fault zones. Per County regulations, the construction of buildings intended for human occupancy, which are located across the trace of an active fault, are prohibited. An exception exists when such buildings located near the fault or within a designated Special Studies Zone are demonstrated through a geotechnical analysis that the fault would not expose a person to undue hazard as a result of construction.

Imperial County General Plan, Seismic and Public Safety Element

The Seismic and Public Safety Element of the Imperial County General Plan contains goals and policies to minimize the risks associated with natural and human-made hazards, including seismic/geological hazards, flood hazards, and Imperial Irrigation District Lifelines. This element of the General Plan includes the following goals and objectives.

Land Use Planning and Public Safety

Goal 1: Include public health and safety considerations in land use planning.

- Objective 1.1 - Ensure that data on geological hazards is incorporated into the land use review process, and future development process.
- Objective 1.3 - Regulate development adjacent to or near all mineral deposits and geothermal operations.
- Objective 1.4 - Require, where possessing the authority, that avoidable seismic risks be avoided; and that measures, commensurate with risks, be taken to reduce injury, loss of life, destruction of property, and disruption of service.
- Objective 1.5 - Encourage other governmental agencies and the private sector to pursue an objective similar to Objective 1.4.
- Objective 1.6 - Ensure environmental hazards are considered when siting facilities.
- Objective 1.7 - Require developers to provide information related to geologic and seismic hazards when siting a proposed project.

Emergency Preparedness

Goal 2: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.

- Objective 2.2 - Reduce risk and damage due to seismic hazards by appropriate regulation.
- Objective 2.4- Support and assist in informing the public and other agencies of the hazards and risks of earthquakes and of techniques to employ to reduce those hazards.
- Objective 2.5 - Minimize injury, loss of life, and damage to property by implementing all sate codes where applicable.
- Objective 2.6 - Maintain, utilize, and provide geologic and seismic information as furnished by the State Geologist as required.
- Objective 2.8 - Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards, including flooding, land subsidence, earthquakes, other geologic phenomena, levee or dam failure, urban and wildland fires, and building collapse, by appropriate planning and emergency measures.
- Objective 2.10 - Reduce the risk of damage due to subsidence resulting from extraction of groundwater and geothermal resources by appropriate regulation.

The following includes implementation programs and policies to reduce the threat of seismic and public safety hazards within the unincorporated areas of the County.

Seismic and Geologic Hazards

1. Implement codified ordinances and procedures which require the review and restriction of land use due to possible natural hazards.
2. Monitor, evaluate, and analyze existing seismic and geological data as it pertains to Imperial County to determine future regulations and programs.
3. Implement the geologic hazards section of the County's Codified Ordinances pursuant to the requirements of the Alquist - Priolo Geologic Hazards Zone Act.
4. Ensure that no structure for human occupancy, other than one-story wood frame structures, shall be permitted within fifty feet of an active fault trace as designated on maps compiled by the State Geologist under the Alquist - Priolo Earthquake Fault Zone Act.
5. The County should require suppliers of all existing utilities which cross active faults to file with the County an operation plan describing the probable effects of failures at the fault and the various emergency facilities and procedures which exist to assure that failure does not threaten public safety.
6. Periodically update maps of existing faults, slide areas, and other geographically unstable areas in the unincorporated area of the County.
7. Continue to implement the Alquist - Priolo requirements in designated special study zones in the Imperial County Ordinance.

Imperial County General Plan, Renewable Energy and Transmission Element

The Renewable Energy and Transmission Element of the Imperial County General Plan contains goals and policies for geothermal and other renewable energy land uses in the unincorporated areas of Imperial County. These goals and policies are important guidelines for renewable energy projects and related land use decision making. This element of the General Plan includes the following goals and objectives.

Goal 1: Support the safe and orderly development of renewable energy while providing for the protection of environmental resources.

- Objective 1.5 - Require appropriate mitigation and monitoring for environmental issues associated with developing renewable energy facilities.

Goal 7: Actively minimize the potential for land subsidence to occur as a result of renewable energy operations.

- Objective 7.1 - Require that all renewable energy facilities, where deemed appropriate, include design features that will prevent subsidence and other surface conditions from impacting existing land uses.
- Objective 7.2 - For geothermal energy development facilities, establish injection standards consistent with the requirements of the California Division of Draft Renewable Energy and Transmission Element (Revised October 6, 2015) Page 26 Oil, Gas, and Geothermal

Resources (CDOGGR). Request a CDOGGR subsidence review, if necessary, for consideration prior to setting injection standards.

- Objective 7.3 - Require renewable energy facility permittees to establish and monitor subsidence detection networks in areas affected by permitted project activities.
- Objective 7.4 - Require monitoring programs for determining the possibility or extent of induced subsidence.
- Objective 7.5 - Require corrective measures, in proportion to each developer's activities, if evidence indicates that operation of geothermal energy facilities have caused, or will cause, surface impacts. In determining monitoring or mitigation requirements, the County shall consult with informed parties such as CDOGGR, County Department of Public Works, the IID, the permittee, other developers, and other experts as appropriate.
- Objective 7.6 - Where geothermal fields have been divided into units or developers have established a cooperative agreement for reservoir management, specific production and injection requirements of individually permitted projects may be modified in accordance with both Federal and State requirements.
- Objective 7.7 - Require seismic monitoring be performed in conjunction with major geothermal projects.
- Objective 7.8 - Require operators of geothermal facilities analyze seismic data to determine the effects of geothermal production and injection on seismic activities within the development area.
- Objective 7.9 - Consult with experts, such as CDOGGR, U.S. Geological Survey, geothermal industry representatives, permittees, and other developers to determine appropriate monitoring and mitigation requirements.

9.6.4. Existing Conditions

Regional Geology

Imperial County can generally be divided into three geomorphic provinces, including the Peninsular Range, the Salton Trough, and the Mojave Desert. The SPA is located within the Salton Trough, which underlies the majority of the County. Variously described as the Salton Sink, Cahuilla Basin, and Salton Basin, the Salton Trough is a northwestern landward continuation of the Gulf of California rift zone, which was formed by gradual settling in association with the uplift of the surrounding mountains during the Miocene, Pliocene, and Pleistocene epochs. The formation of the Colorado River Delta perpendicular to the Salton Trough created a subsiding basin to the north that contains the Salton Sea and Imperial Valley. This broad basin has a total area of approximately 8,000 square miles, of which approximately 2,000 square miles lie below sea level. The Imperial Valley is separated from the Gulf of California by the ridge of the Colorado River Delta, which is about 30 feet above sea level at its lowest point. The lowest part of the basin is the bed of the prehistoric Lake Cahuilla, where the ancient beach line is about 35 feet above mean sea level. The deepest part

of the lakebed, now filled by the Salton Sea, is about 277 feet below mean sea level. The Salton Trough is bounded on the northeast and east by the Chocolate and Cargo Muchacho Mountains, and on the southwest and west by the Jacumba, Coyote, Fish Creek, and Santa Rosa Mountains (Imperial County Planning and Development Services 1993a, 2015).

The Salton Trough is nearly surrounded by ancient shoreline deposits. A large break in the shoreline, approximately 14 miles wide, occurs at the southeast end of the province, where waters and sedimentary materials of the Colorado River have entered the Salton Trough, diverted from their historical normal flows south into the Gulf of California. The Salton Trough is underlain by thick, clay-dominated alluvial and lake bottom sediments, to a depth of 1,000 to 3,000 feet. An unexposed succession of Tertiary- and Quaternary-age sedimentary rocks lie below the alluvial and lake bottom sediments of the Salton Trough, reaching depths of up to 15,000 feet along the western and eastern basin margins, and over 20,000 feet in the central portions of the Salton Trough province (Imperial County Planning and Development Services 1993a, 2015).

The three major fault zones that bound the Salton Trough and Imperial Valley are the San Andreas on the northeast, the San Jacinto on the northwest, and the Elsinore on the southwest. These northwest trending fault zones are extensive and are a major factor in shaping the physiography of the region (Imperial County Planning and Development Services 1993a). See below for additional details regarding faulting and seismicity.

Regional Geothermal Conditions

The California Geological Survey recognizes the Salton Trough as an area underlain at shallow depths by thermal water of sufficient temperature for direct heat application. Separate geothermal anomalies, including heated fluids suitable for generation, are distributed throughout the Salton Trough. Hypersaline brines are also present in the north-central portion of the basin, where ancient salt and evaporite deposits are present. These hypersaline brines are not present in the southern and central portions of the basin. The USGS has identified nine known geothermal resource areas in Imperial County. Each area varies in temperature, pressure, and chemical composition of brine solutions. The SPA is located within the northern-most geothermal resource area in the County (Imperial County Planning and Development Services 2015; USGS 2022a).

Heated groundwater in the Salton Trough has concentrated lithium over millions of years. Potential sources of lithium in the groundwater include older bedrock, primary magmatic-hydrothermal fluids, volcanic ash, loess (i.e., windblown sediment), exhumed basin deposits (recycled lithium), and groundwater leaks from adjacent basins. The mechanisms in which lithium has been concentrated in hydrothermal brines include evaporation and hydrothermal fluids reacting with aquifers, which can liberate lithium from the groundwater (USGS 2022a).

Specific Study Area Geology

The SPA is underlain predominantly by Holocene (past 11,700 years) to Pleistocene (past 1.6 million years) lake deposits, with localized outcrops of Holocene to Pleistocene volcanic outcrops along the Salton Sea shoreline. The lake deposits consist of ancient Lake Cahuilla and playa lake sediments,

which are generally tan and gray, fossiliferous clay, silt, sand, and gravel, with areas of Holocene alluvium. The latter consists of unconsolidated clay, silt, sand, and gravel, occurring primarily as valley fill and streamwash deposits. The volcanic rocks consist of rhyolite, pumice, and obsidian, occurring at and adjacent to volcanic domes (CDMG 1966, 1967). These volcanic dome outcrops are known as (from south to north) Obsidian Butte, Rock Hill, South Red Hill, North Red Hill, and Mullett Island, which have historically been mined for pumice and include outcrops of obsidian, pyroclastic flows, and basalt. Pumice mining on Obsidian Butte occurred primarily from interbedded pumice conglomerate, pumice breccia, sand, and gravel, on a low wave-cut butte (Robinson, et al., 1976; Wilkerson 2018).

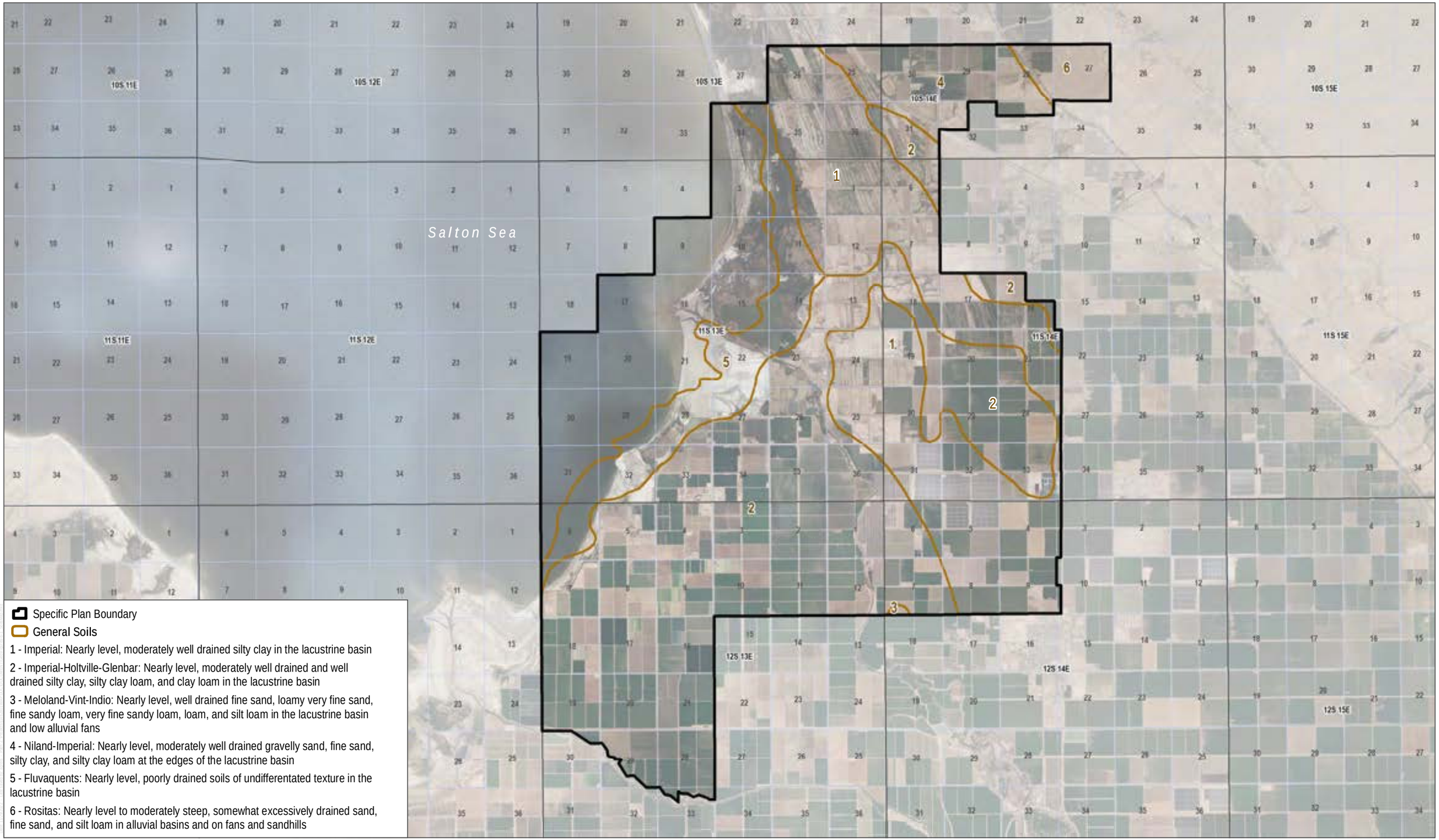
Specific Study Area Soils

On the surface, the Salton Trough province exhibits at least three geomorphic areas, including ancient lakebed sediments, alluvial channels, and dune sands. The central portion of this province, consisting of the Imperial and Coachella Valleys (or the Salton Sink) is covered by clay and silt deposits from prehistoric lakestands. Shoreline deposits circumscribe the central lakebed deposits and consist predominantly of unconsolidated sand and gravel, grading into the previously described silts and clays, further from the shoreline (Imperial County Planning and Development Services 1993a).

- As illustrated in Figure 9-8, Soils Map, the SPA is predominantly underlain by Imperial and Imperial-Holtville-Glenbar series soils, with lesser amounts of Niland-Imperial and Meloland-Vint-Indio series soils. Luvaquents are located within the SPA along the shoreline of the Salton Sea. The following is a summary of these soils types, based on the U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey (USDA NRCS 2022), National Cooperative Soil Survey (USDA NRCS 2015), and the Imperial County General Plan EIR (Imperial County Planning and Development Services 1993a).

Imperial series soils occur over much of the SPA and consist of moderately well-drained, silty clay, which have slow to very slow runoff, except on low scarps, and slow permeability. These soils, which occur within the lacustrine basin (i.e., lake deposits), are slightly hard to hard in the upper 12 inches and extremely hard from 12 to 60 inches.

- Imperial-Holtville soils occur over much of the SPA and consist of nearly level, moderately well-drained to well-drained, silty clay, silty clay loam, and clay loam, which have low runoff and slow permeability. These soils, which occur within the lacustrine basin, are hard in the upper 24 inches and soft and sandy from 24 to 60 inches. The soil includes vertical tongues or cracks, 0.5 to 2 inches wide, filled with sandy or coarser soil.
- Meloland-Vint-Indio soils are present in the southern portion of the SPA and consist of nearly level, moderately well-drained to well-drained, fine sand, loamy very fine sand, fine sandy loam, loam, and silt. These soils occur within the lacustrine basin and on low alluvial fans, and have low runoff and slow permeability. The upper 18 inches consist of soft to slightly hard, very fine sandy loam and loamy fine sand, and hard silty clay from 18 to 71 inches.
- Niland-Imperial soils are present in the northern portion of the SPA and consist of nearly level, moderately well-drained gravelly sand, fine sand, silty clay, and silty clay loam. These soils, which are slightly hard to a depth of 23 inches and extremely hard from 23 to 48 inches, typically occur along the edges of the lacustrine basin.
- Luvaquents are located within the SPA along the shoreline of the Salton Sea and consist of nearly level, poorly-drained soils of undifferentiated texture,. These soils have a variable profile to a depth of 60 inches, are poorly-drained, have low runoff, and are frequently flooded.



SOURCE: Imperial County Planning & Development Services (1993a); County of Imperial; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-8

Soils Map

Salton Sea Lithium Specific Plan

Geologic Hazards

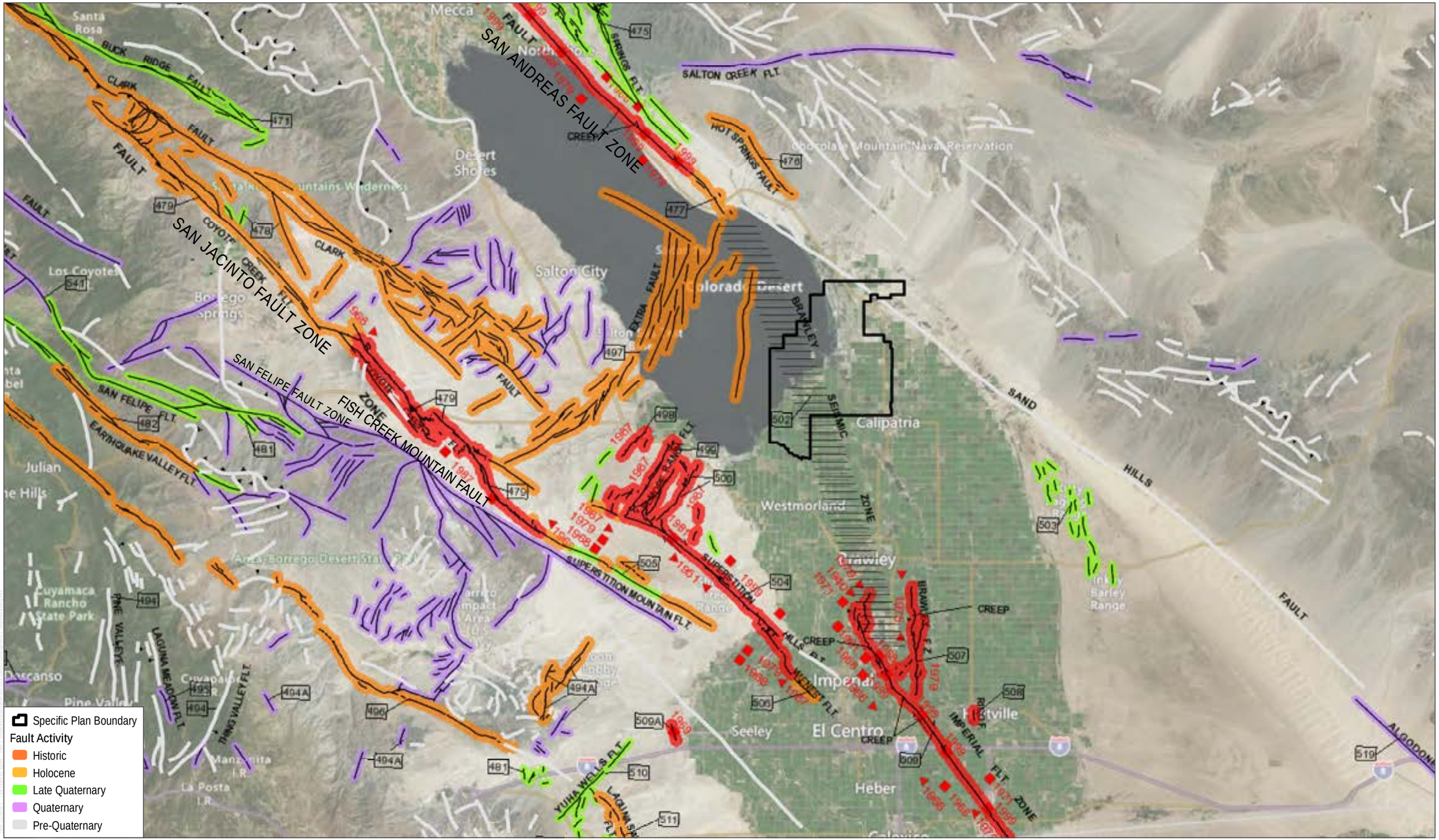
Surface Fault Rupture

Surface fault rupture is the displacement of ground surface that occurs along a fault line during an earthquake event. Based on criteria established by the California Geological Survey, faults are classified as either Holocene-active, pre-Holocene, or age-undetermined. Faults are considered active when they have shown evidence of movement within the past 11,700 years (i.e., Holocene epoch). Pre-Holocene faults, also known as potentially active faults, are those that have shown evidence of movement more than 11,700 years ago and generally before 1.6 million years (Quaternary age). Faults whose age of most recent movement is not known or is unconstrained by dating methods or by limitations in stratigraphic resolution are considered age-undetermined and inactive (CGS 2018).

Blind thrust faults are defined as faults that are deeper and do not exhibit surface expression or displacement but that nonetheless can become a potential significant source of seismic activity. Since they are essentially buried, their precise location is usually not well known until they produce an earthquake.

The Alquist-Priolo Earthquake Fault Zoning Act (formerly known as the Alquist-Priolo Special Studies Zones Act) established state policy to identify active faults and determine a boundary zone on either side of a known fault trace, called the Alquist-Priolo Earthquake Fault Zone. The delineated width of an Alquist-Priolo Earthquake Fault is based on the location, precision, complexity, or regional significance of the fault and can be between 200 and 500 feet in width on either side of the fault trace. If a site lies within a designated Alquist-Priolo Earthquake Fault Zone, a geologic fault rupture investigation must be performed to demonstrate that a proposed building site is not threatened by surface displacement from the fault, before development permits may be issued (CGS 2018).

No Alquist-Priolo Earthquake Fault Zones traverse the SPA (CGS 2022). However, as illustrated on Figure 9-9, Regional Faults, the northwest-southeast-trending Brawley Seismic Zone traverses the southwest portion of the SPA. The Brawley Seismic Zone extends southeast 30 kilometers (km) across the Salton Trough, from the southern-most tip of the San Andreas Fault to the Imperial Fault in the south. This seismic zone accommodates continental plate motion and rifting along the Pacific-North American plate boundary, at rates up to 17 millimeters per year, transferring slip from the San Andreas Fault to the Imperial Fault. The southern segment of the Brawley Seismic Zone extends through the SPA, from the south shore of the Salton Sea south to the Imperial Fault Zone. Seismicity along this seismic zone consists mostly of short-duration earthquake sequences of up to 10 days duration, and consist of foreshocks, mainshocks, and aftershocks. Approximately 4 to 6 kilometers of right lateral offset along the seismic zone and the presence of the volcanic Salton Buttes within the SPA reflect rift tectonics of crustal thinning, as well as recent volcanics at the south shore of the Salton Sea. (Hauksson et al. 2021, USGS 2002).



SOURCE: USGS 2022; CGS 2022; County of Imperial; Bing Maps

DUDEK

0 5 10 Miles

FIGURE 9-9

Regional Faulting

Salton Sea Lithium Specific Plan

As illustrated on Figure 9-9, Regional Faults, numerous Holocene active and pre-Holocene (i.e., Quaternary) faults are present in the SPA region. The majority of these faults are related to the Coachella section of the San Andreas Fault Zone, located northwest of the SPA, and the San Jacinto Fault Zone, located west and northwest of the SPA. The Coachella section of the San Andreas Fault has a slip rate of 5.0 millimeters/year, a recurrence interval of 150 to 300 years, and documented evidence of 700 meters of offset over the past 20,000 to 30,000 years. The San Jacinto Fault Zone, comprised of the Coyote Creek, Clark, Superstition Hills, and San Felipe Faults west and southwest of the Salton Sea, has a slip rate of 7 to 17 millimeters/year, a recurrence interval of about 100 to 300 years, and documented evidence of 25 kilometers of offset in during the past 1.5 to 2.0 million years. The potential for future large earthquakes on these two fault zones is based on potential rupture scenarios associated with both fault zones, as movement on the San Jacinto Fault is dependent on movement of the southern San Andreas Fault Zone. Based on historic and pre-historic fault ruptures, the maximum worst-case earthquake on these two interrelated fault zones would be Mw 8.0. However, the probable maximum magnitude of is Mw 6.5 to Mw 7.5 for the San Jacinto Fault and Mw 6.8 to Mw 8.0 for the San Andreas Fault (Sanders 1993, Dorsey 2002, USGS 2002, 2011a, Scharer and Yule 2020, SCEDC 2022).

The Imperial Fault Zone, which is the principal element of the San Andreas Fault System within the Salton Trough, lies south of the SPA (Figure 9-9, Regional Faults). Ground surface rupture has occurred twice during historic times, including 1940 and 1979 (and possibly in 1915), as evidence by offset of historic alluvium, lacustrine deposits, and cultural features. Data from these earthquake events suggest a slip rate of 15 to 20 millimeters/year for the Holocene epoch (past 11,700 years). As previously discussed, slip is transferred north through the Brawley Seismic Zone, and some slip may be transferred to the San Jacinto Fault Zone. The recurrence interval is 30 to 40 years for a 1979-style earthquake event and 270 to 700 years for a 1940-style earthquake. Others have postulated recurrence intervals of 40 years, 137 years, and 37 years, respectively, for the northern, central, and southern segments of the fault. In addition, the maximum probable earthquake magnitude for the Imperial Fault is Mw 6.5 to Mw 7.0 (Treiman 1999, SCEDC 2022, USGS 2022a).

Ground Shaking

As discussed above, the SPA is located in a seismically active region of Southern California where there are numerous Holocene-active faults that are capable of producing substantive seismic events (i.e., earthquakes). The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions. The type of construction also affects how particular structures and improvements perform during ground shaking. A common measure of ground motion is the peak ground acceleration (PGA). It is not a measure of total energy of an earthquake, such as the Richter and moment magnitude scales, but rather of how hard the ground shakes in a given geographic area (CGS 2002). PGA is expressed as the percentage of the acceleration due to gravity, or ground motion (g), which is approximately 980 centimeters per second squared. As an example, PGAs up to 0.36g were recorded during the November 1987 magnitude 6.6 Superstition Hills Earthquake (Imperial Valley) and PGAs up to 0.50g (0.8g vertical) were recorded at the same location during a 1981 magnitude 5.7 earthquake (California Geology 1988).

One of the largest recorded earthquakes in Imperial County occurred on the Imperial Fault in May 1940. This Richter magnitude 6.9 earthquake was centered on the international border, east of Calexico, and could be traced for approximately 50 miles, from the Volcano Lake in Mexico, north through the Imperial Valley, just north of Brawley. The newly completed All-American Canal was offset approximately 14 feet by movement on the fault and 9 people died from the earthquake. In addition, a magnitude 6.6 earthquake occurred along the Imperial Fault in October 1979. The epicenter was 7 miles east of Calexico. No lives were lost but numerous structures and canals were damaged, including settlement of the All-American Canal up to 4 feet. Earthquake damage was estimated at $30 million. In addition, a magnitude 7.2 earthquake occurred near Calexico in April 2010. Other substantial earthquakes in Imperial County include those occurring in 1892 (M7.1), 1915 (M6.3 and 7.1), 1930 (M5.7), 1950 (M5.4), 1957 (M5.2), 1968 (M6.5), 1980 (M6.1), 1981 (M5.8), and 1987 (M6.2 and 6.8). Currently, portions of the County are effected by a minor earthquake with a magnitude of 4.5 or less every few months. The County may experience an earthquake with a magnitude of 5.5 or greater every five years and dozens of micro-seismic events, with magnitudes of 2.0 or less, on a daily basis (CGS 2019, Imperial County Planning and Development Services 1993a, USGS 2011b).

Silent slip, or fault creep, may also play a role in controlling the location and duration of earthquake swarms. The processes behind silent or aseismic slip at geothermal fields are not well understood, largely because they are difficult to measure (Materna et al. 2022).

A study in 2022 researched fluid injection and geothermal energy extraction in the North Brawley Geothermal Field to understand possible seismic hazards.. After a few years of geothermal operations at the North Brawley Geothermal Field, located within the Brawley Seismic Zone, several magnitude 4 to 5 earthquakes occurred in 2012, followed by a long period of few earthquakes. Ground deformation was analyzed in the area, combining radar images, GPS, and leveling to reveal how the ground moved before, during, and after the 2012 events, with centimeter-scale accuracy (Materna et al. 2022).

In addition, these analyses indicate that aseismic slip (i.e., fault movement not caused by an earthquake) occurred from 2009 to 2013, coinciding with underground pressure changes from 2014 to 2019. The patterns preceding the earthquakes did not continue afterward, suggesting that aseismic slip controlled the timing and location of the 2012 seismic events, and that the seismic and aseismic slip released tectonically accumulated strain. Modeling based on these techniques provided evidence for 80% more pre-swarm aseismic slip than previously recognized from 2009 to 2012, as well as a cessation of fault-related slip during the approximate 7 years after the 2012 earthquake swarm (Materna et al. 2022).

Liquefaction and Lateral Spreading

Liquefaction involves a sudden loss in strength of saturated, cohesionless soils that are subject to ground shaking during an earthquake and results in temporary transformation of the soil to behave more like a fluid mass. The densification results in increased pore water pressures if the soils are not sufficiently permeable to dissipate these pressures during, and immediately following, an earthquake. When the pore water pressure is equal to or exceeds the overburden pressure,

liquefaction of the affected soil layer occurs. For liquefaction to occur, three conditions are required: (1) ground shaking of sufficient magnitude and duration; (2) a groundwater level at or above the level of susceptible soils during the ground shaking (i.e., generally at depths less than 35 feet); and (3) soils that are susceptible to liquefaction. Similarly, lateral spreading can result in ground cracking and may occur when a site is sloped or near a free-face and there is a sufficiently continuous liquefiable layer on which the overlying soils can move laterally. Ground settlement may occur during seismic shaking of an area. The settlement can be caused by liquefaction of loose granular soils and by compaction of loose, but not necessarily liquefiable, soils.

The SPA has not been included in regional liquefaction analyses by the California Geological Survey (CGS 2022). However, well data indicates that shallow groundwater is prevalent in the SPA (California DWR 2022a) and the unconsolidated sediments of the Salton Trough, especially in saturated areas such as irrigated lands, are subject to failure during earthquakes as a result of liquefaction (Imperial County Planning and Development Services 1993a). Liquefaction caused by the M7.2 El Mayor-Cucapah earthquake was widespread throughout the southern Imperial Valley. Ground motions of 0.3g to 0.6g were recorded in the majority of liquefaction areas (USGS 2011b).

Seiches

A seiche is an oscillation (or sloshing) of water in an enclosed body of water as result of a seismic event. While there have been numerous seismic events since the formation of the Salton Sea, which borders the SPA, to-date, seiches have not occurred to any significant recorded magnitude (Imperial County Planning and Development Services 1993b).

Landslides/Slope Stability

The topography of the SPA is predominantly flat to gently sloping, resulting in no potential for landslides and slope instability across the SPA. An exception would be Obsidian Butte and Rock Hill (also known as Red Hill), which have historically been mined for pumice and include outcrops of obsidian, pyroclastic flows, and basalt. Steep natural and manmade slopes (for mining) are present within these areas, which are located adjacent to the Salton Sea. Oversteepened slopes may be susceptible to landslide and slope instability.

Subsidence

Subsidence is the permanent collapse of the pore space within a soil or rock and downward settling of the earth's surface relative to its surrounding area. Subsidence can result from the extraction of water, oil, or geothermal resources, and the addition of water to the land surface—a condition called "hydrocompaction," or peat loss. The compaction of subsurface sediment caused by the withdrawal or addition of fluids can cause subsidence. Land subsidence can disrupt surface drainage; reduce aquifer storage; cause earth fissures; damage buildings and structures; and damage wells, roads, and utility infrastructure.

According to the USGS Survey Areas of Land Subsidence in California map, there have been no recorded instances of subsidence in the SPA associated with groundwater pumping, peat loss, or oil extraction (USGS 2022). However, natural subsidence has been occurring within the Salton Trough,

averaging nearly two inches per year at the center of the Salton Sea, and decreasing to zero near the Mexican border. The subsidence is generally uniform, but local depressions have formed, such as the Mesquite Sink, located along Highway 86, between Imperial and Brawley (Imperial County Planning and Development Services 1993b).

In addition, subsidence in geothermal fields can occur when large fluid volume production leads to the decrease of pore pressure inside reservoirs. This decline disturbs the pressure stability and overburden pressure compresses the pores, resulting in a drop in the ground surface. The decrease in ground surface elevation can not only result in damage to buildings, pipelines, and canals, but may interrupt the balance in the nearby ecosystem (Sektiawan et al. 2016). Although historically not the case in the Imperial Valley, ground movement, in the form of ground subsidence and horizontal movement, is possible with geothermal development. Regional and local survey nets are being monitored to detect and measure possible ground movement caused by future geothermal developments. Precise measurement of surface and subsurface changes are required to differentiate man-induced changes from natural processes (USGS 2013).

Satellite geodetic measurements from 2003 to 2010 indicate that subsidence rates near the southeastern shoreline of the Salton Sea (i.e., the northwestern SPA) are up to 52 mm/yr greater than the far-field background rate. By comparing these measurements with model predictions, it was determined that subsidence appears to be dominated by poroeleastic (i.e., interaction between fluids and solids within a porous medium) contraction associated with ongoing geothermal fluid production, rather than the purely fault-related subsidence proposed previously. Modeling indicates that the source of subsidence is at a depth of 1.0 to 2.4 kilometers, comparable to the generalized boundaries of the Salton Sea geothermal reservoir. This model that the previous model predicted by fault slip within the Brawley Seismic Zone are incompatible with the observations (Barbour et al. 2016).

Consistent with these geodetic measurements, GPS Station ID:P507, which monitors subsidence along the southeast shore of the Salton Sea, within the SPA, indicates that 0.675 feet of subsidence occurred from October 2005 to September 2022. The rate of subsidence at this location has been relatively constant during this time period (DWR 2022b).

Satellite radar interferometry (InSAR) was applied to detect surface deformation associated with geothermal development and concluded that distinct areas of subsidence are present in three geothermal fields in the Imperial Valley, including the Salton Sea (within the SPA), Heber, and East Mesa geothermal fields. In addition, ground uplift was observed at the Heber geothermal field (Eneva et al. 2012).

Land subsidence can be avoided by re-injecting all production water back into the aquifer it was withdrawn from so that pressure changes are minimized. Subsidence can be reduced through monitoring combined with aquifer management. Aquifers must be managed to balance groundwater recharge and groundwater discharge at both local and basin-wide scales. Management tools include 1) ensuring all water used for geothermal heat extraction is pumped back into the aquifer, 2) replacing water lost from the aquifer by increasing groundwater recharge to the basin-fill aquifer through conjunctive management of groundwater and surface water resources, and importation of

water from other basins, 3) dispersing high-discharge wells to reduce localized land subsidence, and 4) reducing overall groundwater withdrawals in the basin (USGS 2012). In addition, well field programs covering production and injection plans in Imperial County are required by the Bureau of Land Management and CalGEM for each major geothermal project and are subject to review by CalGEM and the County (Imperial County Planning and Development Services 1993b).

9.6.5. Constraints

The primary geologic constraints associated with proposed geothermal extraction in the SPA are potential induced seismicity and induced subsidence. As described in Section 9.6.4, Existing Conditions, fluid injection and geothermal energy extraction in the North Brawley Geothermal Field, located within the Brawley Seismic Zone, have been linked to seismic hazards. After a few years of geothermal operations at the North Brawley Geothermal Field, located within the Brawley Seismic Zone, several magnitude 4 to 5 earthquakes occurred in 2012, followed by a long period of few earthquakes. In addition, aseismic slip occurred from 2009 to 2013, coinciding with underground pressure changes from 2014 to 2019.

In addition, as described in Section 9.6.4, Existing Conditions, subsidence in geothermal fields can occur when large fluid volume production leads to the decrease of pore pressure inside reservoirs. This decline disturbs the pressure stability and overburden pressure compresses the pores, resulting in a drop in the ground surface. The decrease in ground surface elevation can not only result in damage to buildings, pipelines, and canals, but may interrupt the balance in the nearby ecosystem. Significant ground movement, in the form of ground subsidence and horizontal movement, may accompany geothermal development and lithium extraction in the SPA.

9.6.6. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding geology and soils. Policies and programs may be included in the Specific Plan that apply to geological hazards. Geology and soil requirements may be made in the form mitigation measures as a part of the PEIR. Additional geology and soil opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.6.7. Recommendations

Further investigation of geology and soils for the Project should be incorporated into the PEIR. Further recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.7. GREENHOUSE GAS EMISSIONS

9.7.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for greenhouse gas (GHG) emissions and climate change in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project).

Climate Change Overview

Climate change refers to any significant change in measures of climate—such as temperature, precipitation, or wind patterns—lasting for an extended period (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching the Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017).

The greenhouse effect is the trapping and buildup of heat in the atmosphere near the Earth's surface (troposphere). The greenhouse effect traps heat in the troposphere through a threefold process, as follows: short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. However, recent climate changes, in particular the warming observed over the past century, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (see also 14 CCR 15364.5).[10] Some GHGs, such as CO_2, CH_4, and N_2O, are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include

[10] Climate forcing substances include GHGs and other substances such as black carbon and aerosols.

fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[11]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities. It is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 are the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

Methane. CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. CH_4 is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide. N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers; manure management; industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants); vehicle emissions; and use as a propellant (such as in rockets, racecars, and aerosol sprays).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric O_3-depleting substances (e.g., CFCs, hydrochlorofluorocarbons [HCFCs], and halons). The most prevalent fluorinated gases include the following:

- Hydrofluorocarbons. HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to O_3-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- Perfluorocarbons. PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to O_3-depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Because PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- Sulfur Hexafluoride. SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment,

[11] The descriptions of GHGs are summarized from the IPCC Fourth Assessment Report (2007), CARB's "Glossary of Terms Used in GHG Inventories" (2018), and EPA's "Climate Change" (2017).

is used in semiconductor manufacturing and the magnesium industry, and is used as a tracer gas for leak detection.

Nitrogen Trifluoride. NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons. CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons. HCFCs are a large group of compounds whose structure is very close to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but include one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon. Black carbon is a component of $PM_{2.5}$, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes it difficult to quantify the global warming potential (GWP). Diesel exhaust emissions are a major source of black carbon and are TACs that have been regulated and controlled in California for several decades to protect public health. In relation to declining DPM as a result of CARB's regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

Water Vapor. The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone. Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols. Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical

transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2017). The Intergovernmental Panel on Climate Change (IPCC) developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e).

The current version of CalEEMod (Version 2022) assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the IPCC's Fourth Assessment Report (IPCC 2007).

9.7.2. Methodology and Sources

The primary sources of information for the baseline report are from the key regulatory agencies of air quality including the U.S. EPA, CARB, and the ICAPCD. Additional information was derived from the appropriate agency and available public information.

The forthcoming analysis of potential GHG emissions impacts under CEQA will employ different tools and methodology depending on the type of emission sources and availability of project-specific data, as explained in Section 9.3, Air Quality. Project-generated construction emissions, and operational emissions to the extent relevant, may be estimated using CalEEMod or custom Excel spreadsheets using industry-standard emission factors.

9.7.3. Applicable Regulations

Federal Regulations

Massachusetts v. U.S. Environmental Protection Agency

On April 2, 2007, in *Massachusetts v. EPA*, the U.S. Supreme Court ruled that CO_2 was a pollutant and directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The elevated concentrations of GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."

The combined emissions of GHGs—CO_2, CH_4, N_2O, and hydrofluorocarbons—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act

The Energy Independence and Security Act of 2007 (Public Law 110-140), among other key measures, would do the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and direct National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling discussed above, the Bush Administration issued Executive Order (EO) 13432 directing EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016 (75 FR 25324–25728).

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 through 2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans,

and vocational vehicles. According to EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines (76 FR 57106–57513).

In August 2016, EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

On April 2, 2018, EPA, under administrator Scott Pruitt, reconsidered the final determination for light-duty vehicles and withdrew its previous 2017 determination, stating that the current standards may be too stringent and therefore should be revised as appropriate (83 FR 16077–16087).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards then in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2% to 3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of 1°C by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives.

In 2019, the EPA and NHTSA published the Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program (SAFE-1) (84 FR 51310), which revoked California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. In March 2020, Part Two was issued, which set CO_2 emissions standards and CAFE standards for passenger vehicles and light-duty trucks for model years 2021 through 2026.

In response to EO 13990, on December 21, 2021, NHTSA finalized the CAFE Preemption rulemaking to withdraw its portions of the Part One Rule. The final rule concluded that the Part One Rule overstepped the agency's legal authority and established overly broad prohibitions that did not account for a variety of important state and local interests.

Then, in March 2022, NHTSA established new fuel economy standards that would require an industry-wide fleet average of approximately 49 miles per gallon for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8% annually for model years 2024 and 2025, and 10% annually for model year 2026.

Inflation Reduction Act of 2022

The Inflation Reduction Act was signed into law by President Biden in August 2022. The bill includes specific investment in energy and climate reform and is projected to reduce GHG emissions within the United States by 40% as compared to 2005 levels by 2030. The bill allocates funds to boost

renewable energy infrastructure (e.g., solar panels and wind turbines), includes tax credits for the purchase of electric vehicles, and includes measures that will make homes more energy efficient.

State Regulations

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, ABs, Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

The state has taken a number of actions to address climate change. These actions are summarized below, and include EOs, legislation, and CARB plans and requirements.

Executive Order S-3-05.

EO S-3-05 (June 2005) identified GHG emissions-reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO identified the following targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry.

Assembly Bill 32

In furtherance of the goals identified in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code Sections 38500–38599). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

Executive Order B-30-15.

EO B-30-15 (April 2015) identified an interim GHG-reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050, as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Climate Change Scoping Plan (Scoping Plan) to express the 2030 target in terms of millions of

metric tons (MMT) CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission-reduction programs in support of the reduction targets.

Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions-reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and requires CARB to identify specific information for GHG emissions-reduction measures when updating the Scoping Plan.

Executive Order B-55-18

EO B-55-18 (September 2018) identified a policy for the state to achieve carbon neutrality as soon as possible (no later than 2045) and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

Assembly Bill 1279

The Legislature enacted AB 1279, the California Climate Crisis Act, in September 2022. The bill declares the policy of the state to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter. Additionally, the bill requires that by 2045, statewide anthropogenic GHG emissions be reduced to at least 85% below 1990 levels.

California Air Resources Board's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code Section 38561[a]), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan: The Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan). The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012 (CARB 2014). The First Update concluded

that California was on track to meet the 2020 target, but recommended that a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

In December 2017, CARB released the 2017 Climate Change Scoping Plan Update (Second Update) for public review and comment (CARB 2017b). The Second Update builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' known commitments include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant (SLCP) Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the Second Update recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%. The Second Update was approved by CARB's Governing Board on December 14, 2017.

CARB adopted the Final 2022 Scoping Plan for Achieving Carbon Neutrality in December 2022, which outlines the state's plan to reach carbon neutrality by 2045 or earlier, while also assessing the progress the state is making toward reducing GHG emissions by at least 40% below 1990 levels by 2030, as is required by SB 32 and laid out in the Second Update. The carbon neutrality goal requires CARB to expand proposed actions from only the reduction of anthropogenic sources of GHG emissions to also include those that capture and store carbon (e.g., through natural and working lands, or mechanical technologies). The carbon reduction programs build on and accelerate those currently in place, including moving to zero-emission transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; displacement of fossil-fuel-fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines); and scaling up new options such as green hydrogen (CARB 2022c).[12]

The 2022 Scoping Plan also emphasizes that there is no realistic path to carbon neutrality without carbon removal and sequestration, and to achieve the state's carbon neutrality goal, carbon reduction programs must be supplemented by strategies to remove and sequester carbon. Strategies for carbon removal and sequestration include carbon capture and storage (CCS) from anthropogenic point sources, where CO_2 is captured as it leaves a facility's smokestack and is injected into geologic formations or used in industrial materials (e.g., concrete); and carbon dioxide removal (CDR) from

[12] *Green hydrogen* refers to hydrogen that is generated by renewable energy or from low-carbon power. It has significantly lower associated carbon emissions than *grey hydrogen*, which is produced using natural gas and makes up the majority of hydrogen production. For the purposes of the 2022 Scoping Plan, the term *green hydrogen* is not limited to only electrolytic hydrogen produced from renewables.

ambient air, through mechanical (e.g., direct air capture with sequestration [DACS]) or nature-based (e.g., management of natural and working lands) applications.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs; it also establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it would meet the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and would not impede attainment of those goals.

California Air Resources Board's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 CFR, Section 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHG emissions through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

Executive Order B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the Governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also identified goals for existing state buildings for reducing grid-based energy purchases and water use.

Senate Bill 605 and Senate Bill 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state (California Health and Safety Code Section 39730) and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018 (California Public Resources Code Sections 42652–43654). SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for CH_4 and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon) and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its SLCP Reduction Strategy in March 2017 (CARB 2017c). The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases (CARB 2017c).

Assembly Bill 1757

AB 1757 (September 2022) requires the California Natural Resources Agency (CNRA) to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions that reduce GHG emissions for future years 2030, 2038, and 2045. These targets are to be determined by no later than January 1, 2024, and are established to support the state's goals to achieve carbon neutrality and foster climate adaptation and resilience.

California Code of Regulations, Title 24, Part 6.

The California Building Standards Code was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every 3 years by the Building Standards Commission and the California Energy Commission (CEC) and revised if necessary (California Public Resources Code Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code Section 25402[d]) and cost effectiveness (California Public Resources Code Section 25402[b][2–3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The current Title 24 standards are the 2019 Title 24 building energy efficiency standards, which became effective January 1, 2020.

The 2022 Title 24 standards will improve upon the 2019 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. CEC adopted the 2022 Title 24 Energy Code in August 2021 and the California Building Standards Commission approved incorporating the updated code into the California Building Standards Code (CALGreen) in December 2021. The 2022 Energy Code will go into effect on January 1, 2023. The 2022 Energy Code focuses on four key areas in newly constructed homes and businesses:

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units
- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking, and electric vehicle (EV) charging options whenever they choose to adopt those technologies
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available on site and complement the state's progress toward a 100% clean electricity grid
- Strengthening ventilation standards to improve indoor air quality

California Code of Regulations, Title 24, Part 11

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24), which is commonly referred to as California's Green Building Standards (CALGreen), establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, EV charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR, Part 11).

California Code of Regulations, Title 20

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency (20 CCR 1401–1410). CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

Senate Bill 1

SB 1 (2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the California Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy-efficiency levels and performance requirements (California Public Resources Code Sections 25780–25784). Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

Assembly Bill 1470 (Solar Water Heating)

This bill established the Solar Water Heating and Efficiency Act of 2007 (California Public Utilities Code Sections 2851–2869). The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand.

Assembly Bill 1109

Enacted in 2007, AB 1109 required CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50% for indoor residential lighting and by 25% for indoor commercial lighting (California Public Resources Code Section 25402.5.4).

Senate Bill 1078, Senate Bill 1368, Executive Order S-14-08, Executive Order S-21-09 and Senate Bill X1-2, and Senate Bill 1020

SB 1078 (2002) (California Public Utilities Code Section 399.11 et seq.) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and EO S-21-09).

SB 1368 (2006), required CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities (California Public Utilities Code Section 8340–8341). These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC).

EO S-14-08 (2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. CNRA, in collaboration with CEC and the California Department of Fish and Wildlife, was directed to lead this effort.

EO S-21-09 (2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and those that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard; however, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 expanded RPS by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All these entities must meet the renewable energy goals listed above.

SB 350 (2015) further expanded the RPS program by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires CPUC, in consultation with CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

SB 100 (2018) increased the standards set forth in SB 350, establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024; 52% by December 31, 2027; and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

SB 1020 (September 2022) revises the standards from SB 100, requiring the following percentage of retail sales of electricity to California end-use customers to come from eligible renewable energy resources and zero-carbon resources: 90% by December 31, 2035; 95% by December 31, 2040; and 100% by December 31, 2045.

State Vehicle Standards (Assembly Bill 1493 and Executive Order B-16-12).

AB 1493 (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of ZEVs. It ordered CARB, CEC, CPUC, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 identified a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special

performance requirements necessary for the protection of the public safety and welfare. As explained under the "Federal Vehicle Standards" description in Section 3.2.1, Federal Regulations, EPA and NHTSA approved the SAFE Vehicles Rule Part One and Two, which revoked California's authority to set its own GHG emissions standards and set ZEV mandates in California.

As also explained in Section 3.2.1, in March 2022, EPA reinstated California's authority under the Clean Air Act to implement its own GHG emission standards and ZEV sales mandate. EPA's action concludes its reconsideration of the 2019 SAFE-1 rule by finding that the actions taken under the previous administration as a part of SAFE-1 were decided in error and are now entirely rescinded

Heavy-Duty Diesel

CARB adopted the final Heavy-Duty Truck and Bus Regulation on December 31, 2014, to reduce DPM, a major source of black carbon, and NO_x emissions from heavy-duty diesel vehicles (13 CCR, Part 2025). The rule requires that DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxics Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR, Part 2485).

Executive Order S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel—including extraction/feedstock production, processing, transportation, and final consumption—per unit of energy delivered.

Senate Bill 375

SB 375 (California Government Code Section 65080) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG-reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations (MPOs) to prepare a sustainable communities strategy (SCS) as part of their Regional Transportation Plan that will achieve the GHG-reduction targets set by CARB. If an MPO is unable to devise an SCS to achieve the GHG-reduction target, the MPO must prepare an alternative planning strategy demonstrating how the GHG-reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

An SCS does not (1) regulate the use of land; (2) supersede the land use authority of cities and counties; or (3) require that a city's or county's land use policies and regulations, including those in

a general plan, be consistent with it (California Government Code Section 65080[b][2][K]). Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars (ACC) I program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package of regulations: the Low-Emission Vehicle (LEV) regulation for criteria air pollutant and GHG emissions and a technology forcing regulation for ZEVs that contributes to both types of emission reductions (CARB 2022). The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold in 2015. The ZEV program will act as the focused technology of the ACC I program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid EVs in the 2018 to 2025 model years.

The ACC II program, which was adopted in August 2022 and became effective November 30, 2022, established the next set of LEV and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards (CARB 2022). The main objectives of ACC II are as follows:

- Maximize criteria and GHG emission reductions through increased stringency and real-world reductions.
- Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

The ACC II rulemaking package also considers technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts.

Executive Order N-79-20

EO N-79-20 (September 2020) requires CARB to develop regulations as follows: (1) Passenger vehicle and truck regulations requiring increasing volumes of new ZEVs sold in the state towards the target of 100% of in-state sales by 2035; (2) medium- and heavy-duty vehicle regulations requiring increasing volumes of new zero-emission trucks and buses sold and operated in the state towards the target of 100% of the fleet transitioning to ZEVs by 2045 everywhere feasible and for all drayage trucks to be zero emission by 2035; and (3) strategies, in coordination with other state agencies, the EPA, and local air districts, to achieve 100% zero emissions from off-road vehicles and equipment operations in the state by 2035. EO N-79-20 called for the development of a ZEV Market Development Strategy, which was released February 2021, to be updated every 3 years, that ensures coordination and implementation of the EO and outlines actions to support new and used ZEV markets. In addition, the EO specifies identification of near-term actions, and investment

strategies, to improve clean transportation, sustainable freight, and transit options; and calls for development of strategies, recommendations, and actions by July 15, 2021, to manage and expedite the responsible closure and remediation of former oil extraction sites as the state transitions to a carbon-neutral economy.

Advanced Clean Trucks Regulation

The Advanced Clean Trucks (ACT) Regulation was also approved by CARB in 2020. The purpose of the ACT Regulation is to accelerate the market for ZEVs in the medium- and heavy-duty truck sector and to reduce air pollutant emissions generated from on-road mobile sources (CARB 2021b). The regulation has two components, (1) a manufacturer sales requirement and (2) a reporting requirement:

- *Zero-emission truck sales:* Manufacturers who certify Class 2b–8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b–3 truck sales, 75% of Class 4–8 straight truck sales, and 40% of truck tractor sales.
- *Company and fleet reporting:* Large employers including retailers, manufacturers, brokers, and others will be required to report information about shipments and shuttle services. Fleet owners with 50 or more trucks will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Senate Bill X7-7

SB X7-7, or the Water Conservation Act of 2009, required that all water suppliers increase their water use efficiency with an overall goal of reducing per capita urban water use by 20% by December 31, 2020. Each urban water supplier was required to develop water use targets to meet this goal.

Executive Order B-29-15

In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

Executive Order N-10-21

In response to a state of emergency due to severe drought conditions, EO N-10-21 (July 2021) called on all Californians to voluntarily reduce their water use by 15% from their 2020 levels. Actions suggested in EO N-10-21 include reducing landscape irrigation, running dishwashers and washing machines only when full, finding and fixing leaks, installing water-efficient showerheads, taking shorter showers, using a shut-off nozzle on hoses, and taking cars to commercial car washes that use recycled water.

Assembly Bill 939, Assembly Bill 341, Assembly Bill 1826, and Senate Bill 1383.

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code Section 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board (replaced in 2010 by the California Department of Resources Recycling and Recovery, or CalRecycle), which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required CalRecycle to develop strategies to achieve the state's policy goal. CalRecycle has conducted multiple workshops and published documents that identify priority strategies that it believes would assist the state in reaching the 75% goal by 2020.

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

SB 1383 (2016) requires a 50% reduction in organic waste disposal from 2014 levels by 2020 and a 75% reduction by 2025—essentially requiring the diversion of up to 27 million tons of organic waste—to reduce GHG emissions. SB 1383 also requires that not less than 20% of edible food that is currently disposed be recovered for human consumption by 2025.

Senate Bill 97

SB 97 (2007) directed the Governor's Office of Planning and Research and CNRA to develop guidelines under CEQA for the mitigation of GHG emissions. CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures (14 CCR 15126.4[c]). The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. CNRA also acknowledged that a lead agency could consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

With respect to GHG emissions, CEQA Guidelines Section 15064.4(a), as subsequently amended in 2018, states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines now note that an agency "shall have discretion to determine, in the context of a particular project, whether to: (1) Quantify greenhouse gas emissions resulting from a project; and/or (2) Rely on a qualitative analysis or performance-based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014. To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of Safeguarding California: Implementation Action Plans followed in March 2016. In January 2018, CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency.

Regional and Local Regulations

Imperial County Air Pollution Control District

Air districts typically act in an advisory capacity to local governments in establishing the framework for environmental review of air pollution impacts under CEQA. This may include recommendations regarding significance thresholds, analytical tools to estimate emissions and assess impacts, and mitigation for potentially significant impacts. As discussed in Section 9.7.4, Thresholds of Significance, the ICAPCD has not adopted numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts.

Southern California Association of Governments

As noted above, California's 18 metropolitan planning organizations have been tasked with creating SCSs in an effort to reduce the region's vehicle miles traveled (VMT) in order to help meet AB 32 targets through integrated transportation, land use, housing, and environmental planning. Pursuant to SB 375, CARB set per-capita GHG emissions reduction targets from passenger vehicles for each of the state's 18 metropolitan planning organizations. For the Southern California Association of Governments (SCAG), the state's initial mandated reductions were set at 8% by 2020 and 13% by 2035. In March 2018, CARB updated the SB 375 targets for SCAG to require 8% reduction by 2020 and a 19% reduction by 2035 in per-capita passenger vehicle GHG emissions.

Pursuant to Government Code Section 65080(b)(2)(B), the SCS must "set forth forecasted development pattern for the region which when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks to achieve the GHG reduction targets." To that end, SCAG has developed Connect SoCal, the 2020–2045 RTP/SCS, which complies with CARB's updated emissions reduction targets and meets the requirements of SB 375 by achieving per-capita GHG emissions reductions relative to 2005 of 8% by 2020 and 19% by 2035 (SCAG 2020). In addition, the plan anticipates a 25.7% decrease in time spent in traffic delay per capita and a 5% decrease in daily miles driven per capita from 2016 to 2045. The 2020–2045 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals, and charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies, and between the people whose collaboration can improve the quality of life for southern Californians. Connect SoCal embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The Regional Council approved of the 2020–2045 RTP/SCS in its entirety in September 2020 (SCAG 2020). The following are the 2020-2045 RTP/SCS goals (SCAG 2020):

1. Encourage regional economic prosperity and global competitiveness
2. Improve mobility, accessibility, reliability, and travel safety for people and goods
3. Enhance the preservation, security, and resilience of the regional transportation system
4. Increase person and goods movement and travel choices within the transportation system
5. Reduce GHG emissions and improve air quality
6. Support healthy and equitable communities

7. Adapt to a changing climate and support an integrated regional development pattern and transportation network
8. Leverage new transportation technologies and data-driven solutions that result in more efficient travel
9. Encourage development of diverse housing types in areas that are supported by multiple transportation options
10. Promote conservation of natural and agricultural lands and restoration of habitats

9.7.4. Existing Conditions

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 IPCC Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87°C (1.6°F) (likely between 0.75°C [1.4°F] and 0.99°C [1.8°F]) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. OEHHA identified various indicators of climate change in California that are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered the physical systems—the ocean, lakes, rivers, and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately

one-third of California's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life-cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California, as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has followed an increasing trend overall.

CNRA has released four California Climate Change Assessments (in 2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments' need for information to support action in their communities, the Fourth Assessment (CNRA 2018) includes reports for nine regions of the state. A general summary of climate risks facing the California's Inland Deserts region (which includes Imperial County where the Specific Plan Project is located) include (CNRA 2018):

- Extremely high maximum temperatures are expected to occur in the Inland Deserts.
- The fate of the Salton Sea is a critical determinant of future environmental quality.
- Renewable energy development will have big impacts on the economy and infrastructure.
- Continuing current land use/development patterns (i.e., housing development in the region to compensate for lack of development on the coast) will require increased energy for cooling to compensate for a rise in extremely high temperatures.
- Higher temperatures will exacerbate water stress in an already very water-limited region.
- Changing water availability is a key determinant of the future for ecological and agricultural systems.
- Population in the Inland Deserts is highly vulnerable to the effects of climate change.
- Tourism is a major economic driver that is likely to be threatened by a changing climate.

The Inland Deserts Region Report also including the following relevant information about the Salton Sea (CNRA 2018):

> "A major geographic feature of the region is the Salton Sea, the state's largest lake, which is maintained by inflows from agricultural runoff. Future environmental quality of the region is highly dependent on the fate of the Salton Sea, which is currently threatened by diminishing levels of inflows from agricultural runoff. As the Sea shrinks, the increasingly exposed playa (dry lakebed) is likely to become a major source of dust, polluting the air of the region and potentially of areas beyond. The region already suffers from high rates of childhood asthma and cardiovascular disease thought to be linked to dust emissions from the Sea (Imperial County Public Health, 2016), making increased playa dust emissions of particular concern in terms of human health and environmental justice. Climate change will exacerbate water supply and quality issues that hamper efforts to restore the Sea, and will place additional stress on environmental quality, habitat, and public health challenges related to the shrinking Sea."

Sources of Greenhouse Gas Emissions

Global Inventory

Anthropogenic GHG emissions worldwide in 2019 (the most recent year for which data is available) totaled approximately 52,400 MMT CO_2e, excluding land use change and forestry (PBL 2020). The top six GHG emitters include China, the United States, the Russian Federation, India, Japan, and the European Union, which accounted for approximately 62% of the total global emissions, or approximately 32,500 MMT CO_2e (PBL 2020). Table 9.7-1 presents the top GHG-emissions-producing countries and international organizations.

Table 9.7-1 Top GHG-Producer Countries and International Organizations

Emitting Countries and International Organizations (Listed in Order of Emissions)	Greenhouse Gas Emissions (MMT CO_2e)
China	14,000
United States	6,600
European Union	4,300
India	3,700
Russian Federation	2,500
Japan	1,400
Total	32,500

Source: PBL 2020

Note: MMT CO_2e = million metric tons of carbon dioxide equivalent.

National Inventory

Per the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 to 2019 (EPA 2021), total U.S. GHG emissions were approximately 6,558.3 MMT CO_2e in 2019 (EPA 2021). The primary GHG emitted by human activities in the United States was CO_2, which represented approximately

80.1% of total GHG emissions (5,255.8 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.4% of CO_2 emissions in 2019 (4,856.7 MMT CO_2e). Relative to 1990, gross U.S. GHG emissions in 2019 were 1.8% higher; however, the gross emissions were down from a high of 15.6% above 1990 levels in 2007. GHG emissions decreased from 2018 to 2019 by 1.7% (113.1 MMT CO_2e) and overall, net emissions in 2019 were 13% below 2005 levels (EPA 2021).

State Inventory

According to California's 2000–2019 GHG emissions inventory (2021 edition), California emitted approximately 418 MMT CO_2e in 2019, including emissions resulting from out-of-state electrical generation (CARB 2021c). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high-GWP substances, and recycling and waste. Table 9.7-2 presents California GHG emission source categories and their relative contributions to the emissions inventory in 2019.

Table 9.7-2. Greenhouse Gas Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO_2e)	Percent of Total [a]
Transportation	166.1	39.7%
Industrial	88.2	21.1%
Electric power	58.8	14.1%
Commercial and residential	43.8	10.5%
Agriculture	31.8	7.6%
High global-warming potential substances	20.6	4.9%
Recycling and waste	8.9	2.1%
Total	418.2	100%

Source: CARB 2021.
Notes: GHG = greenhouse gas; MMT CO_2e = million metric tons of carbon dioxide equivalent; GWP = global warming potential.
Emissions reflect 2019 California GHG inventory.
[a] Percent of total has been rounded, and total does not sum due to rounding.

Between 2000 and 2019, per capita GHG emissions in California have dropped from a peak of 14.0 MT CO_2e per person in 2001 to 10.5 MT CO_2e per person in 2019, representing an approximate 25% decrease. In addition, total GHG emissions in 2019 were approximately 7 MMT CO_2e lower than 2018 emissions (CARB 2021c).

9.7.1. Constraints

GHG emissions and climate change is global; constraints are not tied to the location of the GHG emission sources, but rather the source itself. Planning considerations should include developing a Specific Plan that encourages and incentivizes reductions in VMT, energy usage (both natural gas and electricity), water consumption, solid waste generation, and limiting high-GWP pollutants, such as refrigerants. Additional constraints will be identified and tailored pending identification of permitted land uses for the Specific Plan.

Anticipated GHG emissions analysis-related constraints for the Specific Plan include potentially resulting in a significant GHG emissions impact based on the nature of the Project (plan-level) and the potential magnitude of GHG emissions. While Project-generated GHG emissions will be estimated based on the best available information, there are modeling limitations due to the potential lack of standardized methods, available emission factors, and typical activity data for the unique components of the Project that reflect evolving science and technology. In addition, the environmental analysis will strive to evaluate maximum development allowed under the Specific Plan versus what may actually be built out, which is speculative, which may result in an overestimation of potential GHG emissions and associated impacts. While the environmental evaluation will strive to evaluate a conservative analysis, there are unknowns based on the reality of Specific Plan development such as the process details and activity data for some land uses. It is very common for plan-level analyses to result in GHG emissions impacts requiring mitigation measures. Identifying the appropriate types of mitigation measures that are both feasible and reflect best available control technology which evolves overtime is a constraint based on the unique character of the Project's anticipated land uses.

9.7.2. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding GHG emissions. Policies and programs may be included in the Specific Plan that apply to reducing GHG emissions. GHG emission requirements may be made in the form mitigation measures as a part of the PEIR. Additional GHG emission reduction opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.7.3. Recommendations

Preparation of a GHG emission technical report for the Project is recommended. Further GHG emission reduction recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.8. HAZARDS AND HAZARDOUS MATERIALS

9.8.1. Introduction

This section of the Baseline Report provides a discussion of the existing hazards and hazardous materials conditions in the Study Area is included in this section to present the environmental baseline for the Specific Plan.

The Specific Plan is being developed to support existing and future renewable energy (i.e., geothermal and solar) development, lithium extraction, and associated infrastructure and industrial uses. Federal and state renewable energy and greenhouse gas reduction goals are driving the need to find additional utility-scale renewable energy sources as well as the raw materials for battery-powered vehicles. This area of Imperial County is poised to provide these resources provided that sufficient facilities and infrastructure are developed. The Specific Plan is being developed to frame and guide this development.

The 51,786-acre Study Area for the Specific Plan is located in the northern portion of the Imperial Valley along the southeastern portion of the Salton Sea. The irregularly shaped Study Area spans from the Imperial Wildlife Area Wister Unit northwest of Niland, California in the north to Calipatria, California in the south. On the southwest, the Study Area is bounded by the New River and includes the shoreline and open water portions of the Salton Sea from Vail Seven Drain north past the mouth of the Alamo River to Beach Road. The Study Area consists mostly of existing agricultural properties, but includes wetlands, wildlife areas, open space, and energy facilities, including electrical and geothermal facilities. The agricultural properties include farms and cattle ranches. The majority of the Study Area has been used for agriculture (crops) since the early 1900s. Irrigation ditches are present throughout the Study Area. Agricultural runoff has historically discharged into the Salton Sea.

9.8.2. Methodology and Sources

The following analysis considers the existing environmental setting and regulatory environment applicable to the Study Area. The analysis determines whether implementation of the Specific Plan could create significant hazardous materials or safety to the public or the environment. The analysis considers the existing subsurface conditions within the Study Area based, in part, on information obtained from the following hazardous materials-related databases:

1. Cortese List (Databases maintained in accordance with California Government Code Section 65962.5; CalEPA 2022)
2. National Pipeline Mapping System (NPMS 2022)
3. California Geologic Energy Management Division Well Finder (CalGEM 2022)
4. Environmental Protection Agency (EPA) Superfund (EPA 2022)
5. Department of Toxic Substances Control's (DTSC's) EnviroStor and State Water Resources Control Board's (SWRCB's) GeoTracker Databases (DTSC 2022 and SWRCB 2022a)
6. SWRCB Groundwater Ambient Monitoring and Assessment Program (SWRCB 2022b)

Existing hazardous materials and waste regulations and safety plans are also considered herein.

In addition, it is assumed that the Specific Plan does not include Project-specific site plans or development proposals, but rather would permit and facilitate future development in the Study Area.

9.8.3. Applicable Regulations

Federal

Resource Conservation and Recovery Act of 1976, with Hazardous and Solid Waste Amendments of 1984

Federal hazardous waste laws are generally promulgated under the Resource Conservation and Recovery Act (RCRA). These laws provide for the "cradle to grave" regulation of hazardous wastes. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed. The DTSC is responsible for implementing the RCRA program and California's own hazardous waste laws, which are collectively known as the Hazardous Waste Control Law. Under the Certified Unified Program Agency (CUPA) program, Cal/EPA has in turn delegated enforcement authority to the County for state law regulating hazardous waste producers or generators. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

Comprehensive Environmental Response, Compensation, and Liability Act and the Superfund Amendments and Reauthorization Act of 1986

Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, on December 11, 1980. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The Superfund Amendments and Reauthorization Act (SARA) amended CERCLA on October 17, 1986. SARA stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites, required Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations, provided new enforcement authorities and settlement tools, increased state involvement in every phase of the Superfund program, increased the focus on human health problems posed by hazardous waste sites, encouraged greater citizen participation in making decisions on how sites should be cleaned up, and increased the size of the trust fund to $8.5 billion.

Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act, also known as SARA Title III, was enacted in October 1986. This law requires any infrastructure at the state and local levels to plan for chemical emergencies. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their community. Sections 301 through 312 of the act are administered by EPA's Office of Emergency Management. EPA's Office of Information Analysis and Access implements the Emergency Planning Community Right-to-Know Act Section 313 program. In California, SARA Title III is implemented through the California Accidental Release Prevention Program.

Hazardous Materials Transportation Act

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 Code of Federal Regulations (CFR) Parts 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR Part 383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

Occupational and Safety Health Act

The Occupational Safety and Health Administration (OSHA) is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementing workplace training, exposure limits, and safety procedures for the handling of hazardous substances and hazardous materials (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

Federal Response Plan

The Federal Response Plan of 1999, as amended in 2003 is a signed agreement among 27 federal departments and agencies, including the American Red Cross, that (1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency; (2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and (3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a presidential declaration of a major disaster or emergency.

International Fire Code

The International Fire Code (IFC), created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code use a hazard classification system to determine what measures are

required to protect against structural fires. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, IFC employs a permit system based on hazard classification. The IFC is updated every 3 years.

Code of Federal Regulations – Title 40

Title 40 CFR Part 273 governs the collection and management of widely generated waste, including batteries, pesticides, mercury-containing equipment, and bulbs. This regulation streamlines the hazardous waste management standards and ensures that such waste is diverted to the appropriate treatment or recycling facility.

Title 40 CFR Part 112 requires the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan if oil is stored in excess of 1,320 gallons in aboveground storage (or have a buried capacity of 42,000 gallons). SPCC regulations place restrictions on the management of petroleum materials and, therefore, have some bearing on hazardous materials management.

Title 40 CFR Part 61 established National Emission Standards for Hazardous Air Pollutants (NESHAP) and names asbestos-containing material (ACM) as one of these materials. ACM use, removal, and disposal are regulated by USEPA under this law. In addition, notification of friable ACM removal prior to a proposed demolition project is required by this law.

Regional Screening Levels (RSLs)

The federal EPA provides regional screening levels for chemical contaminants to provide comparison values for residential and commercial/industrial exposures to soil, air, and tap water (drinking water). RSLs are available on the EPA's website and provide a screening level calculation tool to assist risk assessors, remediation project managers, and others involved with risk assessment and decision-making. RSLs are also used when a site is initially investigated to determine if potentially significant levels of contamination are present to warrant further investigation. In California, the DTSC Human and Ecological Risk Office (HERO) incorporated the EPA RSLs into the HERO human health risk assessment. HERO created Human Health Risk Assessment Note 3, which incorporates HERO recommendations and DTSC-modified screening levels (DTSC-SLs) based on review of the EPA RSLs. The DTSC-SL should be used in conjunction with the EPA RSLs to evaluate chemical concentrations in environmental media at California sites and facilities.

State

California Health and Safety Code and Code of Regulations

California Health and Safety Code Chapter 6.95 and 19 California Code of Regulations Section 2729 set out the minimum requirements for business emergency plans and chemical inventory reporting. These regulations require businesses to provide emergency response plans and procedures, training program information, and a hazardous materials chemical inventory disclosing hazardous materials stored, used, or handled on site. A business that uses hazardous materials or a mixture containing

hazardous materials must establish and implement a business plan if the hazardous material is handled in certain quantities.

California Environmental Protection Agency

Cal/EPA was created in 1991 by the governor's Executive Order W-5-91. Several state regulatory boards, departments, and offices were placed under the Cal/EPA umbrella to create a cabinet-level voice for the protection of human health and the environment and to assure the coordinated deployment of state resources. Among those responsible for hazardous materials and waste management are DTSC, Department of Pesticide Regulation, and Office of Environmental Health Hazard Assessment. Cal/EPA also oversees the unified hazardous waste and hazardous materials management regulatory program (Unified Program).

California Department of Toxic Substances Control

The California DTSC, which is a department of Cal/EPA, is authorized to carry out the federal RCRA hazardous waste program in California to protect people from exposure to hazardous wastes. The department regulates hazardous waste, cleans up existing contamination, and looks for ways to control and reduce the hazardous waste produced in California, primarily under the authority of RCRA and in accordance with the California Hazardous Waste Control Law (California Health and Safety Code Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (22 CCR Divisions 4 and 4.5). Permitting, inspection, compliance, and corrective action programs ensure that people who manage hazardous waste follow state and federal requirements and other laws that affect hazardous waste specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

California Geologic Energy Management Division

The California Geologic Energy Management Division (CalGEM), formerly the Division of Oil, Gas, and Geothermal Resources (DOGGR), provides oversight of the oil, natural gas, and geothermal industries in California. CalGEM requires that prior to commencing any work to abandon any oil/gas well, the owner or operator must request receive approval from CalGEM. Idle well regulations were revised in April 2019 to create more stringent testing requirements that better protect public safety and the environment from the potential threats posed by idle wells. The regulations require idle wells to be tested and, if necessary, repaired, or permanently sealed and closed.

California Building Code

The State of California provides a minimum standard for building design through the 2019 California Building Code (CBC), which is located in Part 2 of Title 24 of the California Code of Regulations. The 2019 CBC is based on the 1997 Uniform Building Code but has been modified for California conditions. It is generally adopted on a jurisdiction by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local city and county building officials for compliance with the CBC. Typical fire safety requirements of the CBC include the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the

clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

California Accidental Release Prevention Program (CalARP)

The CalARP Program (19 CCR 2735.1 et seq.) regulates facilities that use or store regulated substances, such as toxic or flammable chemicals, in quantities that exceed established thresholds. Under the regulations, industrial facilities that handle hazardous materials above threshold quantities are required to prepare and submit a Risk Management Plan to the local Certified Unified Program Agency (CUPA). The overall purpose of CalARP is to prevent accidental releases of regulated substances and reduce the severity of releases that may occur. The CalARP Program meets the requirements of the EPA Risk Management Program, which was established pursuant to the Clean Air Act amendments.

California Division of Occupational Safety and Health (Cal/OSHA)

Cal/OSHA is responsible for developing and enforcing workplace safety standards and ensuring worker safety in the handling and use of hazardous materials (8 CCR, Section 1529). Among other requirements, Cal/OSHA requires entities handling specified amounts of certain hazardous chemicals to prepare injury and illness prevention plans and chemical hygiene plans and provides specific regulations to limit exposure of construction workers to lead. OSHA applies to this Project because contractors will be required to comply with its handling and use requirements that would increase worker safety and reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

California Fire Code (2019)

California Code of Regulations, Title 24, also known as the California Building Standards Code, contains the California Fire Code, included as Part 9 of that title. Updated every 3 years, the California Fire Code includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution.

California Emergency Services Act

Under the Emergency Services Act (California Government Code, Section 8550 et seq.), the State of California developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an integral part of the plan, which is administered by the Governor's Office of Emergency Services. The Office of Emergency Services coordinates the responses of other agencies, including the EPA, California Highway Patrol, Regional Water Quality Control Boards, air quality management districts, and county disaster response offices.

Asbestos-Containing Materials Regulations

State-level agencies, in conjunction with EPA and the Occupational Safety and Health Administration, regulate removal, abatement, and transport procedures for asbestos-containing

materials. Releases of asbestos from industrial, demolition, or construction activities are prohibited by these regulations and medical evaluation and monitoring is required for employees performing activities that could expose them to asbestos. Additionally, the regulations include warnings that must be heeded and practices that must be followed to reduce the risk for asbestos emissions and exposure. Finally, federal, state, and local agencies must be notified prior to the onset of demolition or construction activities with the potential to release asbestos.

The California Air Resources Board (CARB) is responsible for overseeing compliance with the federal Asbestos NESHAP in Los Angeles County. The Asbestos NESHAP Program enforces compliance with the federal NESHAP regulation for asbestos and investigates all related complaints, as specified by California Health and Safety Code (HSC) Section 39658(b)(1). Of the 35 air districts in California, 16 of these districts do not have an asbestos program in place. In these "non-delegated" districts, a demolition/renovation notification is required for compliance with the Asbestos NESHAP. (This notification is not equivalent to a permit.) CARB reviews and investigates the notifications. The program also administers two annual statewide asbestos NESHAP task force meetings for air districts and US EPA to facilitate communication and enforcement continuity, and assists US EPA in training district staff to enforce the asbestos NESHAP.

The California Department of Consumer Affairs Contractors State License Board manages the licensing of asbestos abatement contractors.

Polychlorinated Biphenyls

The EPA prohibited the use of polychlorinated biphenyls (PCBs) in the majority of new electrical equipment starting in 1979 and initiated a phase-out for much of the existing PCB-containing equipment. The inclusion of PCBs in electrical equipment and the handling of those PCBs are regulated by the provisions of the Toxic Substances Control Act (15 US Code Section 2601 et seq.). Relevant regulations include labeling and periodic inspection requirements for certain types of PCB-containing equipment and highly specific safety procedures for their disposal. The state likewise regulates PCB-laden electrical equipment and materials contaminated above a certain threshold as hazardous waste; these regulations require that such materials be treated, transported, and disposed accordingly. At lower concentrations for non-liquids, Regional Water Quality Control Boards may exercise discretion over the classification of such wastes.

Lead-Based Paint

California Occupational Safety and Health Administration's Lead in Construction Standard is contained in Title 8, Section 1532.1, of the California Code of Regulations. The regulations address all of the following areas: permissible exposure limits; exposure assessment; compliance methods; respiratory protection; protective clothing and equipment; housekeeping; medical surveillance; medical removal protection; employee information, training, and certification; signage; record keeping; monitoring; and agency notification.

Environmental Screening Levels

Environmental Screening Levels (ESLs) provide conservative screening levels for over 100 chemicals found at sites with contaminated soil and groundwater. They are intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites. The ESLs were developed by San Francisco Bay Regional Water Quality Control Board (RWQCB); however, they are used throughout the state. While ESLs are not intended to establish policy or regulation, they can be used as a conservative screening level for sites with contamination.

DTSC Human and Ecological Risk Office Screening Levels

DTSC screening levels were derived from the EPA RSLs using DTSC-modified exposure and toxicity factors for constituents in soil, tap water, and ambient air. The DTSC screening levels should be used in conjunction with the EPA RSLs and RWQCB ESLs to evaluate chemical concentrations in environmental media at California sites and facilities.

Local

Certified Unified Program Agency

A CUPA is a local agency that has been certified by Cal/EPA to implement the local Unified Program. The CUPA can be a county, city, or joint powers authority. A participating agency is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A designated agency is a local agency that has not been certified by Cal/EPA to become a CUPA but is the responsible local agency that would implement the Unified Programs, listed below, until they are certified. The DTSC is the certified CUPA for the Study Area. The Unified Program consolidates, coordinates, and makes consistent the following five existing programs:

1. Hazardous Materials Release Response Plans and Inventories (Business Plans)
2. California Accidental Release Prevention Program
3. Underground Storage Tank Program
4. Aboveground Petroleum Storage Act
5. Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs

Imperial County Air Pollution Control District (ICAPCD)

ICAPCD Regulation X – Air Toxic Control Measures, Rule 1002 covers regulations on California Airborne Toxic Control Measures (ATCMS). The Rules and Regulations of the ICAPCD incorporates provisions from Title 17 of the California Code of Regulations (CCR), in particular, Section 93105s and Section 93106. These sections apply to disturbance of naturally-occurring asbestos. It is unlikely that naturally-occurring asbestos is present in the Study Area, based on the USGS map Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California (USGS, 2011).

ICAPCD Regulation VIII – Fugitive Dust Rules 800 and 801 cover regulations on General Requirements for Control of Fine Particulate Matter and Construction and Earthmoving Activities.

Rule 800, General Requirements for Control of Fine Particulate Matter, regulates the amount of fine particulate matter (PM-10) in ambient air as a result of emissions generated from anthropogenic fugitive dust (PM-10) sources by requiring actions to prevent, reduce, or mitigate PM-10 emissions. The rules contained within this regulation have been developed pursuant to the US EPA guidance for Serious PM-10 Non-Attainment Areas. Rule 800 applies to any Active Operation, and/or man-made or man-caused condition or practice capable of generating fugitive dust (PM-10) as specified in this regulation except those determined exempt as defined in part E of this rule.

Rule 801, Construction and Earthmoving Activities, regulates the amount of fine particulate matter (PM-10) in ambient air as a result of emissions generated from construction and other earthmoving activities by requiring actions to prevent, reduce, or mitigate PM-10 emissions. Rule 801 applies to any construction or earthmoving activities aside from those that have been made specifically exempt. Rule 801 applicable activities include, but are not limited to, land clearing, excavation related to construction, land leveling, grading, cut and fill grading, construction or demolition of any structure, cutting and filling, trenching, loading or unloading bulk materials, demolishing, drilling, adding to or removing bulk of materials from open storage piles, weed abatement through disking, back filling, travel on-site and travel on access roads to and from the site.

Imperial County General Plan

Conservation and Open Space Element. The Water Element serves as the primary policy statement by the Board of Supervisors for implementing policies to conserve the natural environment of Imperial County. The County recognizes that the degradation of one natural resource will have a cumulative effect upon the total resource base, including water, vegetation, air, wildlife, soil, minerals, and cultural landscapes. This section of the Element presents Imperial County's Goals and Objectives relative to planning for the natural environment of the unincorporated areas of the County.

Goal COS 4*:* The County will identify and protect geologic, soil, aggregate, and mineral resources for extraction while minimizing the effect of mining on surrounding land uses and other environmental resources.

- Objective COS 4.1- Require use of latest technologies for extraction of mineral and quarry/aggregate resources that protect the natural desert environment.
- Objective COS 4.2- Require that mineral extraction and reclamation operations be performed in a way that is compatible with surrounding land uses and minimize adverse effects on the environment.

Goal COS 6: The County will conserve, protect, and enhance water resources in the County.

- Objective COS 6.8 - Discourage the use of hazardous materials in areas of the County where significant water pollution could pose hazards to humans or biological resources.

- Objective COS 6.10 -Encourage water conservation and efficient water use among municipal and industrial water users, as well as reclamation and reuse of wastewater.

Goal COS 7: The County shall actively seek to improve the quality of air in the region.

- Objective COS 7.2 - Develop management strategies to mitigate fugitive dust. Cooperate with all Federal, State and local agencies in the effort to attain air quality objectives.
- Objective COS 7.5 - Coordinate efforts with Imperial County Transportation Commission (ICTC) and other appropriate agencies to reduce fugitive dust from unpaved streets.

Land Use Element. The Land Use Element of the Imperial County General Plan (General Plan) provides the following goals and policies potentially relevant to the Specific Plan:

Goal LU 3*:* Achieve balanced economic and residential growth while preserving the unique natural, scenic, and agricultural resources of Imperial County.

- Objective LU 3.1 - Maintain and improve the quality of life, the protection of property and the public health, safety, and welfare in Imperial County.
- Objective LU 3.15 - Support the safe and orderly development of renewable energy in conformance with the goals and objectives of the Renewable Energy and Transmission Element.

Goal LU 6: Promote orderly industrial development with suitable and adequately distributed industrial land.

- Objective LU 6.3 - Protect industrial zoned areas from incompatible adjacent land uses and from under-utilization by non-industrial uses.

Goal LU 7: Identify and protect areas of regionally-significant mineral resources which are in locations suitable for extractive uses.

- Objective LU 7.2 - Require that extractive uses are designed and operated to avoid air and water quality degradation, including groundwater depletion, other adverse environmental impacts, and comply with the State Surface Mining and Reclamation Act and County Surface Mining Ordinance.

Goal LU 9: Identify and preserve significant natural, cultural, and community character resources and the County's air and water quality.

- Objective LU 9.5 - Establish policies and programs for maintaining salinity levels in the Salton Sea which enable it to remain a viable fish and wildlife habitat.

Renewable Energy and Transmission Element. The purpose of the Renewable Energy and Transmission Element is to provide guidance and approaches with respect to the future siting of renewable energy projects and electrical transmission lines in the County. This is intended to take into account both the expansion of new types of renewable energy projects and the potential and probable growth of major transmission facilities anticipated to occur in Imperial County. This

Element is an optional element of the Imperial County General Plan as permitted by Section 65303 of the California Government Code.

Goal RETE 1: Support the safe and orderly development of renewable energy while providing for the protection of environmental resources.

- Objective RETE 1.4 - Analyze potential impacts on agricultural, natural, and cultural resources, as appropriate.
- Objective RETE 1.5 - Require appropriate mitigation and monitoring for environmental issues associated with developing renewable energy facilities.

Goal RETE 3: Support development of renewable energy resources that will contribute to and enhance the economic vitality of Imperial County.

- Objective RETE 3.7 - Evaluate environmental justice issues associated with job creation and displacement when considering the approval of renewable energy projects.

Goal RETE 4: Support development of renewable energy resources that will contribute to the restoration efforts of the Salton Sea

- Objective RETE 4.2 - Encourage the development of renewable energy facilities that will contribute to the reduction or elimination of airborne pollutants created by exposure of the seabed of the Salton Sea as it recedes.

Goal RETE 6: Support development of renewable energy while providing for the protection of military aviation and operations.

- Objective RETE 6.1 - Assure that renewable energy facilities proposed in areas adjacent to military installations and training areas will be compatible with these uses.
- Objective RETE 6.2 - Facilitate the early exchange of project-related information with the military for proposed renewable energy facilities located within a military operations area (MOA) or within 1,000 feet of a military installation.
- Objective RETE 6.3 -Assure that renewable energy facilities proposed within MOAs will not jeopardize the safety of existing residents or impact military operations.

Goal RETE 7*:* Actively minimize the potential for land subsidence to occur as a result of renewable energy operations.

- Objective RETE 7.2 - For geothermal energy development facilities, establish injection standards consistent with the requirements of the California Division of Oil, Gas, and Geothermal Resources (CDOGGR). Request a CDOGGR subsidence review, if necessary, for consideration prior to setting injection standards.
- Objective RETE 7.5 - Require corrective measures, in proportion to each developer's activities, if evidence indicates that operation of geothermal energy facilities have caused, or will cause, surface impacts. In determining monitoring or mitigation requirements, the

County shall consult with informed parties such as CDOGGR, County Department of Public Works, the IID, the permittee, other developers, and other experts as appropriate.

- Objective RETE 7.9 - Consult with experts, such as CDOGGR, U.S. Geological Survey, geothermal industry representatives, permittees, and other developers to determine appropriate monitoring and mitigation requirements.
- Objective RETE 7.10 - Require operators of geothermal facilities to establish a notification system to warn or notify surrounding residents of the accidental release of potentially harmful emissions as part of an emergency response plan.

Seismic and Public Safety Element. The Seismic and Public Safety Element is to be consulted in the implementation of development policies and land uses in Imperial County. This section (Chapter III) of the Seismic and Public Safety Element presents Imperial County's Goals and Objectives relative to all land use decisions within the unincorporated areas of the County. They have been prepared in collaboration with the General Plan Ad-Hoc Advisory Committee appointed by the Board of Supervisors.

Goal SPS 1: Include public health and safety considerations in land use planning.

- Objective SPS 1.3 - Regulate development adjacent to or near all mineral deposits and geothermal operations.
- Objective SPS 1.9 - Encourage the reclamation of lands where mining, irrigation, landfills, solid waste, hazardous materials/waste storage or disposal, and natural soil erosion has occurred, so as to pose no danger to public health and safety.

Goal SPS 3: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.

- Objective SPS 3.1 - Discourage the transporting of hazardous materials/waste near or through residential areas and critical facilities.
- Objective SPS 3.2 - Minimize the possibility of hazardous materials/waste spills.
- Objective SPS 3.3 - Discourage incompatible development adjacent to sites and facilities for the production, storage, disposal, and transport of hazardous materials/waste as identified in the County General Plan and other regulations.
- Objective SPS 3.4 - Adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

County Land Use Ordinance -Title 9

The Purpose of Title 9, the Land Use Ordinance for the County of Imperial, is to provide comprehensive land use regulations for all unincorporated areas of the County of Imperial. These regulations are adopted to promote and protect the public health, safety, and general welfare

through the orderly regulation of land uses throughout the unincorporated areas of the County. Divisions of the Title 9 Land Use Ordinance applicable to the project are listed below.

Division 17: Renewable Energy & Transmission.

Chapter 1 of this Division is made up of General codes §91701.00 through §91701.05, which encompasses the following codes: Purpose and Intent, 'RE' Renewable Energy Overlay Zone, Conditional Use Permits, General Standards, Relation to Other Regulations, and Land Divisions. The purpose of these regulations is to facilitate the beneficial use of renewable energy resources for the general welfare of the people of Imperial County and the State of California; to protect renewable energy resources from wasteful or detrimental uses; and to protect people, property, and the environment from detriments that might result from the improper use of renewable energy resources. It is the intent of these regulations to implement the Renewable Energy Overlay Zone established in the Renewable Energy and Transmission Element, and integrate, to the extent possible, Imperial County's regulations with those of other governmental agencies which regulate renewable energy development. It is further the intent of these regulations to provide for the protection of the public health, safety and general welfare as the result of changes in the regulations or enforcement policies of those other agencies which regulate renewable energy development.

Chapter 2 of this Division covers code §91702.00 on the Specific Standards for All Renewable Energy Projects. The specific standards include standards on Prehistoric or Historic Resources, Notification of Applicable Acceptance, Emergency Response Plan, Occupied Structures on Active Faults, Project Safety Provisions, Protection of Surface and Groundwater Quality, Minimum Feasible Surface Land Usage, Noise Limitation, Minimize Possibility of Fire Explosion Collision or Release of Hazardous Materials, Continuous Use, Need for Public Access Facilities, Identification of Responsible Agent, Dismantling Upon Cessation of Operation, Disposal of Waste, Electrical Transmission Lines, Sanitary Facilities, Lights, Radio/Television Transmission Signals, On-Site Roads/Parking Areas for Test Projects, Shrubs/Trees/Ground Cover, and Bonds/Forms of Acceptable Security.

Chapter 3 of this Division is made up of Additional Specific Standards for Geothermal Projects, codes §91703.00 through §91703.06, which encompasses the following codes: Specific Standards, Drilling Standards, Production Standards, Replacement and Standby Geothermal Wells, Conditional Use Permits, Subsequent Permits, and Bonding for Site Restoration.

9.8.4. Existing Conditions

This section describes the existing hazardous materials conditions of the Study Area. Information utilized for this section includes the publicly available database searches and documents that are cited within the text below.

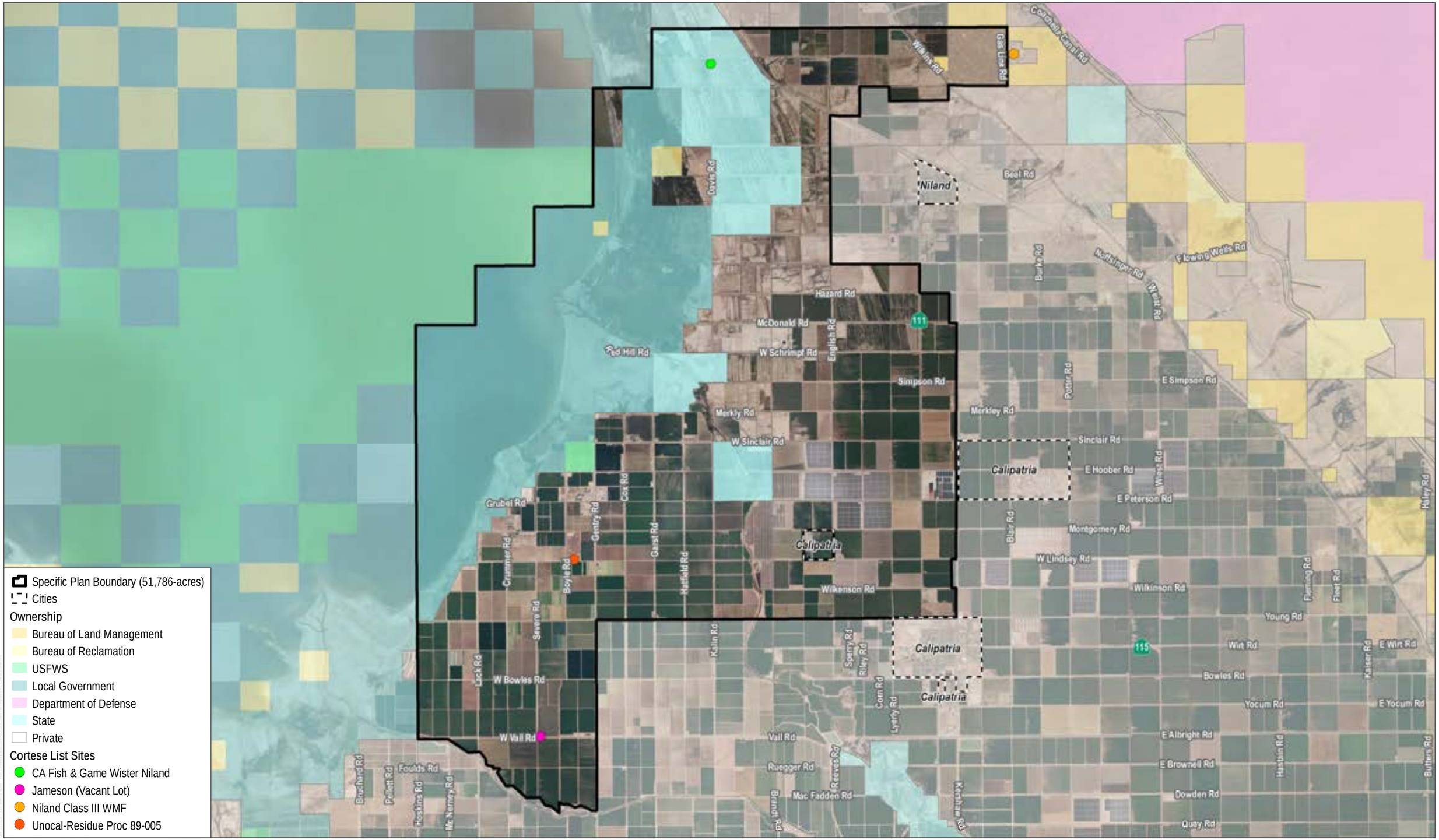
For the purpose of this Baseline Report, the term "hazardous waste" refers to any waste material that is exhibits ignitability, corrosivity, reactivity, and/or toxicity, meeting certain criteria as defined in 22 CCR, Section 66261.20. A "hazardous material" is defined in California Health and Safety Code Section 25501(n)(1), which states that a material could be hazardous "because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential

hazard to human health and safety or to the environment if released into the workplace or the environment."

Cortese List

California Government Code Section 65962.5 requires that information regarding environmental impacts of hazardous substances and wastes be maintained and provided at least annually to the Secretary for Environmental Protection. Commonly referred to as the Cortese List, this information must include the following: sites impacted by hazardous wastes, public drinking water wells that contain detectable levels of contamination, underground storage tanks with unauthorized releases, solid waste disposal facilities from which there is migration of hazardous wastes, and all cease and desist and cleanup and abatement orders. While the Cortese List is no longer maintained as a single list, five databases provide information that meet the Cortese List requirements (CalEPA 2022). These five databases were searched and three Cortese List sites were identified within the Study Area and one Cortese List site was identified immediately adjacent to the Study Area (these sites are shown on Figure 9-10, Cortese List Sites and Table 9.8-1, Cortese Sites):

1. List of Hazardous Waste and Substances sites from DTSC's EnviroStor database (Health and Safety Codes 25220, 25242, 25356, and 116395);
    a. None of the DTSC Hazardous Waste and Substances sites were located within the Study Area.
2. List of Leaking Underground Storage Tank (LUST) Sites from the SWRCB's GeoTracker database (Health and Safety Code 25295);
    a. Two of the LUST sites were located within the Study Area. These two sites are discussed in the table below.
3. List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit (Water Code Section 13273 subdivision (e) and California Code of Regulations Title 14 Section 18051));
    a. None of the SWRCB solid waste disposal sites were located within the Study Area.
4. List of "active" Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB (Water Code Sections 13301 and 13304);
    a. One CDO and CAO site was located within the Study Area. Additionally, one site was located immediately adjacent to the Study Area. These two sites are discussed in the table below.
5. List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.
    a. None of the DTSC corrective action hazardous waste facilities were located within the Study Area.



SOURCE: DTSC; BLM; Imperial County; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-10

Cortese List Sites

Salton Sea Lithium Specific Plan

Table 9.8-1, Cortese Sites			
Located Within or Adjacent to Study Area	Site Name	Site Address	Site Summary
Within	Jameson (Vacant Lot)	910 West Vail Road, Calipatria, CA 92233	Diesel impacts to soil from LUST. LUST case closed by RWQCB in 1992 (SWRCB, 2022a)
Within	CA Fish & Game Wister Niland	8700 Davis Road, Niland, CA 92257	Gasoline impacts to soil from LUST. LUST case closed by RWQCB in 1996 (SWRCB, 2022a).
Within	Unocal-Residue Proc 89-005	950 West Lindsay Road, Calipatria, CA 92233	Unocal operated a geothermal power plant and associated salt dissolving and injecting facility. In 1988, 30,000 tons of undissolvable residues with hazardous levels of lead remained. A cleanup and abatement order was issued by the RWQCB. The soils were mixed with cement and placed on the site as the foundation for a storage area. Additional soils were either mixed with cement or disposed of in off-site landfills. A deed restriction was recorded in 1994 prohibiting residential or agricultural use and requiring that runoff be contained on the

			site. Site groundwater is impacted with lead, arsenic, and total dissolved solids. A request for case closure was submitted in 2022. (Arcadis, 2022; RWQCB, 2011)
Adjacent	Niland Class III WMF	Cuff Road, Niland, CA (33.271060, -115.491880)	Operating landfill monitors perimeter methane and groundwater. No maximum contaminant levels were exceeded in groundwater in 2021 and none of the perimeter gas probes contained measurable methane concentrations. (Geo-Logic Associates, 2021 and 2022)

Source: CalEPA 2022

National Pipeline Mapping System

The National Pipeline Mapping System (NPMS) online database provides a public map viewer application that displays data related to gas transmission and hazardous liquid pipelines, liquefied natural gas plants, and breakout tanks under Department of Transportation Pipeline and Hazardous Material Safety Administration jurisdiction (NPMS 2022). Based on a review of the online database, one hazardous liquid pipeline is located along Highway 111, with the Study Area. The pipeline contains non-highly volatile liquid (non-HVL) product, which could include petroleum products such as crude oil or fuel. A second non-HVL pipeline is located along the eastern boundary of the Study Area, following the railroad line. This pipeline is active, but unfilled. A natural gas pipeline is located along the northeastern boundary of the Study Area.

Oil Well Operations

CalGEM maintains an online database of oil and gas wells in California. The CalGEM online database (CalGEM 2022) was reviewed.

- Two oil and gas wells listed as idle are located within the Study Area. Based on review of CalGEM files, one well (J.P. Chandler & Lee Staton) was drilled to 590 feet in 1935, encountering some carbon dioxide and hydrogen sulfide gas, before drilling was suspended.

The well was not completed. The other well (Salton Sea Chemical Products No. 5) was drilled in 1933. No "gas in a paying quantity" was found. The CalGEM files note that there were plans to cement the well; however, it is not known if it was abandoned (CalGEM 2022).

- Two Hundred and forty (240) geothermal wells were mapped within the Study Area.
    - Eighty-six (86) of those wells were development or exploratory water wells (30 active, 4 idle, and 52 plugged).
    - Fifty-three (53) of those wells were injection wells (34 active, 10 idle, and 9 plugged).
    - Fifty-four (54) of those wells were observation wells (27 active, 1 idle, 24 plugged, and 2 suspended).
    - Forty-eight (48) of those wells were temperature gradient wells, all of which were plugged.
    - Superfund Sites

CERCLA provides funding for EPA to clean up contaminated sites. The contaminated sites under CERCLA are called Superfund sites. The EPA maintains an online database of Superfund sites. The CERCLA database (EPA 2022) was reviewed. One Superfund site was listed in Imperial County. The site, Stoker Chemical located at 3390 Dogwood Road, Imperial, CA, is located more than 5 miles south of the Study Area.

State Water Resources Control Board Groundwater Ambient Monitoring and Assessment Program

The SWRCB maintains an online database presenting groundwater quality data from several sources in California. Sources include groundwater production wells, which are wells that are typically screened in a deeper aquifer for water supply, and groundwater monitoring wells, which are typically shallower wells associated with assessment of near-surface chemical releases. Groundwater quality data associated with groundwater monitoring wells that have been uploaded by responsible parties to the SWRCB's Groundwater Ambient Monitoring and Assessment (GAMA) database were reviewed to understand groundwater quality in the project areas; however, no groundwater monitoring wells were identified within the Study Area (SWRCB 2022b). Groundwater quality data associated with supply or production wells were then reviewed. Groundwater data for common contaminants (trichloroethylene [TCE], tetrachloroethylene [PCE], 1,4-dioxane, hexavalent chromium, and benzene) from the past 10 years were evaluated. No wells within the Study Area reported concentrations of these common contaminants at concentrations greater than the comparison criteria (i.e., drinking water maximum contaminant levels [MCLs]).

Exceedances of the comparison criteria, however, were noted for several metals, chloride, and total dissolved solids, among other analytes. Some of these exceedances are noted as follows:

- Total dissolved solids (TDS) concentrations were in the 100,000s milligrams per liter (mg/L) in some wells, with concentrations in multiple wells in the Study Area well above the MCL of 1,000 mg/L.
- Lithium concentrations were as high as 310 mg/L; however, there are no comparison criteria for lithium in groundwater.
- Lead concentrations (6 mg/L) in one well in the Study Area exceeded the comparison criteria (California Action Level) of 0.015 mg/L.
- Concentrations of arsenic exceeded the MCL of 0.01 mg/L in five wells within the Study Area; the maximum concentration was 0.16 mg/L.
- Manganese concentrations in six wells in the Study Area exceeded the MCL of 0.05 mg/L. The manganese concentrations were as high as 540 mg/L.
- Sulfate concentrations in three wells in the Study Area exceeded the secondary MCL of 500 mg/L. The sulfate concentrations were as high as 6,800 mg/L.

DTSC's EnviroStor and SWRCB's GeoTracker Databases

The DTSC and SWRCB maintain online databases of hazardous materials release sites in California. These sites listed on the DTSC's EnviroStor database are categorized as State Response, Voluntary Cleanup, Evaluation, Military Evaluation, and Corrective Action sites (DTSC 2022). The sites listed on the SWRCB's GeoTracker database are categorized as Cleanup Program and Military Cleanup sites (SWRCB 2022a). Some of the listed sites are already included in the Cortese List sites (Table 9.8-1). Additional sites not already discussed are presented below in Tables 9.8-2 and 9.8-3. These sites are shown on Figure 9-11, Envirostor and Geotracker Sites.

Table 9.8-2. Additional GeoTracker Sites

Site Name	Site Address	Database
Black Rock 1, 2, and 3 Geothermal Power Project Brine Ponds	7030 Gentry Road	Land Disposal Site
Black Rock 1, 2, and 3 Geothermal Power Project Wellfield Mud Sumps	7030 Gentry Road	Land Disposal Site
Cal Energy R1, Salton Sea Power Plants Units 1-5	6922 Crummer Road	Land Disposal Site
Cal Energy R2 Vulcan & Del Ranch (Hoch) Power Plants Sis	7001 Gentry Rd	Land Disposal Site
Del Ranch Geo Hldg Bsn 03-078	7001 Gentry Rd	Land Disposal Site

Del Ranch Power Plant 91-051	7001 Gentry Rd	Land Disposal Site
JJ Elemore Geothermal Plant	786 West Sinclair Rd	Land Disposal Site
JM Leathers Geothermal	342 West Sinclair Rd	Land Disposal Site
Salton Sea I & II 03-127	6920 Lack Rd	Land Disposal Site
Salton Sea III 03-128	6922 Krummer Rd	Land Disposal Site
Salton Sea Unit III 94-084	6922 Krummer Rd	Land Disposal Site
Salton Sea Unit VI	7030 Gentry Road	Land Disposal Site
Salton Sea Units I&II 94-082	6920 Lack Rd	Land Disposal Site
Vulcan/Bn Geothermal	7001 Gentry Rd	Land Disposal Site
Earthrise Nutritionals Evaporation Pond 8 Class II Surface Impoundment	113 Hoober Road	Land Disposal Site
Highline (Ormat Nevada, Orni 21 LLC) Geothermal Exploration Project Wellfield Mud Sumps/Containment Basins	English Road	Other Oil and Gas Projects
Highline / Wister / Orni 21 Geothermal Exploration Project	English Road	Other Oil and Gas Projects
JM Leathers Power Plant 91-053	342 West Sinclair Road	Land Disposal Site
John L. Featherstone (Hudson Ranch I) Geothermal Power Plant	409 McDonald Road	Land Disposal Site

The GeoTracker Land Disposal Sites listed are primarily brine ponds associated with the geothermal power production. The brine ponds can result in elevated TDS and metals concentrations in the area.

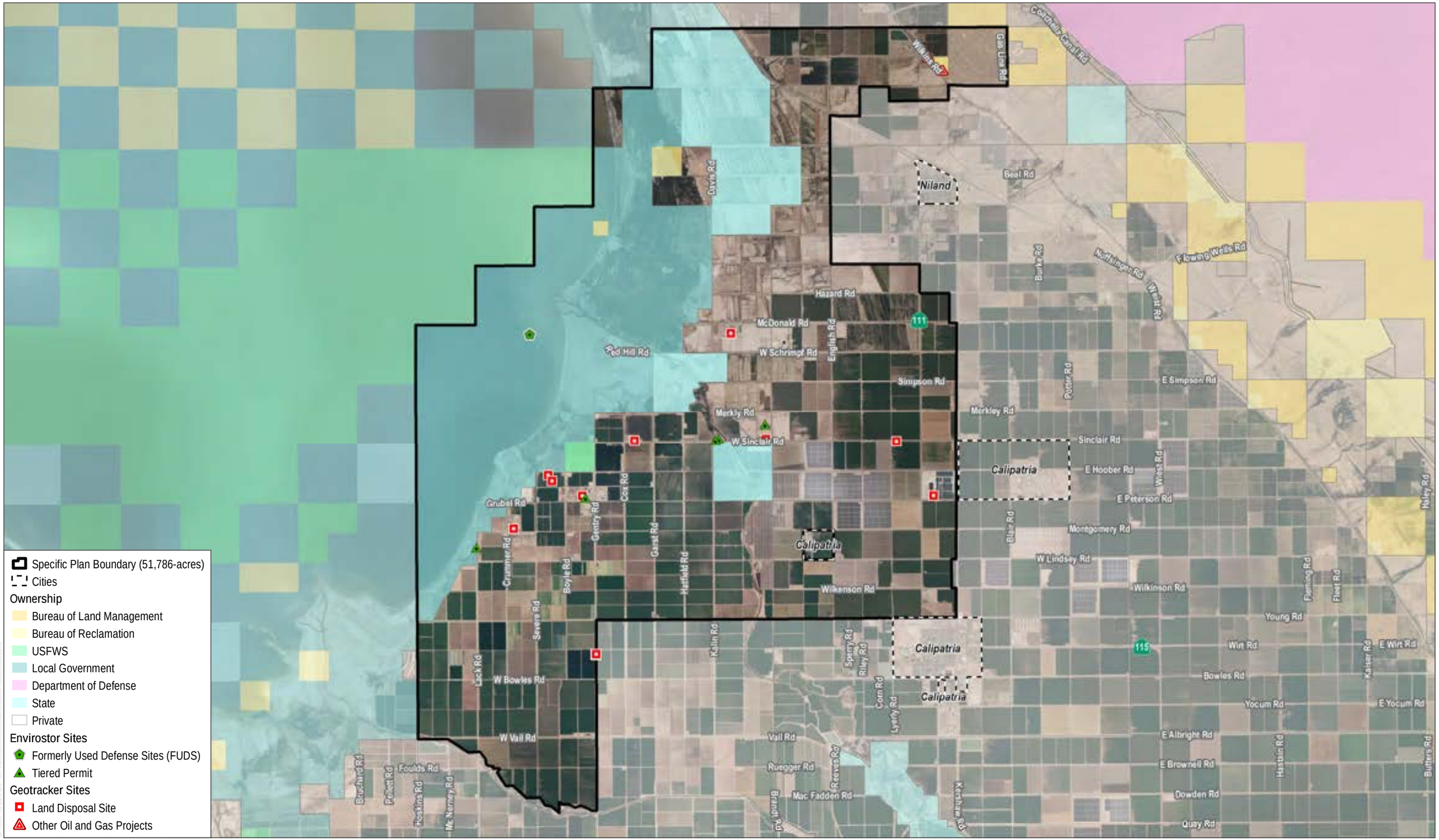
The two Highline Oil and Gas Study Areas were related to geothermal well drilling muds, which were formerly placed in these two basins. The drilling muds from at least one of the sites were sampled and determined to be non-hazardous (Fisher Arnold, 2017).

Table 9.8-3. Additional EnviroStor Sites

Site Name	Site Address	Database
Salton Sea Bomb Targets (12 sites within the Salton Sea – Specific Locations Unknown)	Salton Sea	Formerly Used Defense Sites (FUDS)

CalEnergy - CalEnergy - Vulcan/Del Ranch (Hoch) Facilities	7001Gentry Rd	Tiered Permit
CalEnergy - Central Services	480 W Sinclair Rd	Tiered Permit
CalEnergy - Elmore Facility	786 W Sinclair Rd	Tiered Permit
CalEnergy - Leathers Facility	342 W Sinclair Rd	Tiered Permit
CalEnergy – Units 1&2/Units 3&4/5 Facilities	6920 Lack Rd	Tiered Permit

Several floating bomb targets were placed in the Salton Sea (likely not near the shore, but in unknown locations) during World War II. Based on the EnviroStor summaries, it is understood that practice bombs were used on the targets (DTSC, 2022).



SOURCE: DTSC Envirostor; BLM; Imperial County; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-11

Geotracker and Envirostor Sites

Salton Sea Lithium Specific Plan

The tiered permit CalEnergy sites are related to geothermal facilities with brine ponds, filter cake waste, hydroblast areas, and zinc recovery storage areas. Elevated metals concentrations can be present in these areas; specifically arsenic, barium, copper, lead, and zinc. The sites also have waste oil and petroleum storage and spills, according to the site summaries on EnviroStor (DTSC, 2022). A description of the geothermal energy production process was presented in one of the CalEnergy reports (Iris Environmental, 2009):

"The generation of electricity using geothermal resources begins with brine production wells and ends with replenishment of the geothermal resource through brine injection wells. The brine production wells tap into the geothermal resource approximately 5,200 to 9,500 feet below the surface of the Earth. Geothermal fluids (also referred to as brine) in the Salton Sea Known Geothermal Resource Area are high temperature, high pressure, and contain a high concentration of dissolved solids (approximately 250,000 to 300,000 parts per million [ppm] of solids with primarily 24 percent chlorine salt compounds). The geothermal fluid is extracted through production wells and directed, via piping, to the plants. Throughout CalEnergy geothermal facilities, approximately 72,000 feet of pipe is used to transport the brine. At the facilities, the geothermal liquids brought to the surface are flashed to steam in a controlled manner. This steam or energy from the steam, depending on the design of the facility, drives the turbine generators to produce electricity.

Once the brine has been depleted of energy (i.e., heat) through the electricity generation process, it is injected back into the geothermal resource. Injection permits from the Department of Oil, Gas, and Geothermal Resources require the injection of 75 percent of the fluids drawn from the geothermal resource to ensure protection of the resource. Because the geothermal brine contains a high concentration of dissolved solids, pressure and/or temperature decreases prompt a precipitation of the solid material from the liquids. To minimize degradation of the injection wells, the majority of the insoluble solids are removed from the brine prior to injection into the geothermal resource. The facilities use a patented technology to allow for controlled precipitation of solids within the geothermal process.

Due to the high solids content of the brine (250,000 to 300,000 ppm) used in the geothermal energy production process, pipes used to move brine throughout the facility and other equipment that comes into contact with the brine become coated with solid residue, referred to as "scale." This scale consists of the same constituents found in the geothermal brine. To ensure that facility equipment and pipes continue to operate as designed, after being taken out of service and moved to a designated area, water and air are sprayed at high pressure into or onto the pipe or equipment to remove the geothermal solid scale in a process known as "hydroblasting." The hydroblast pad at the Central Services facility was constructed in 2002 and consisted of a concrete floor with an apron and 12-foot walls on three sides to minimize the potential impact from hydroblast operations. The liquid produced by this process drained into sumps at the hydroblast pad and was then filtered and transferred from the sumps to a storage tank. The liquid was then transferred to a brine pond for injection into the geothermal resource. Based on sampling, the liquid from the hydroblasting operations did not exhibit characteristics of hazardous waste. Solid materials were captured in the filters and removed for proper disposal."

The tiered permit sites (geothermal facilities) have land use covenants that restrict the use of the land to exclude residential uses, hospitals, schools, or day care facilities. The land use covenants also require proper management of contaminated soils and geocrete (some arsenic-contaminated soils were stabilized in concrete on the sites) during grading activities.

9.8.5. Constraints

The primary hazardous materials constraints associated with proposed geothermal extraction in the Study Area and the existing conditions are related to construction activities and grading in areas with soil impacts. These areas would include existing or prior geothermal sites where brine ponds/filter cake have impacted soils with elevated concentrations of metals. These areas also have potential for soil impacts from stored petroleum products or other chemicals used at these facilities. Future construction in these areas could disturb impacted soils. Mitigation would be needed in these areas to ensure worker and public safety during construction. Additionally, consideration for soil management (e.g., off-site disposal) would be needed to ensure potentially hazardous wastes are properly managed and disposed of. Soil impacts are also possible associated with the former agricultural use over much of the SPA. Residual concentrations of pesticides are anticipated in the agricultural areas; however, it is anticipated that residual concentrations of organochlorine pesticides such as DDT have degraded to levels below commercial and industrial soil screening levels. Residual soil impacts may be present at the two petroleum LUST sites identified within the Study Area; however, the release cases have been closed by the lead regulatory agency. Therefore, the residual petroleum impacts are likely minor. Lastly, petroleum-impacted soils may be present along oil pipelines that run along or across the Study Area. Implementation of a soil management plan would mitigate potential impacts to health and safety during grading activities.

Future construction and development could involve the demolition of existing structures that may contain asbestos or lead-based paint. Hazardous materials surveys of structures to be demolished would be conducted prior to demolition.

Hazardous materials constraints associated with future geothermal extraction activities would be associated with future wastewater discharge (e.g., brine ponds), other chemical and petroleum storage, and hazardous waste generation. These activities would be permitted through the RWQCB Land Disposal Program, the local CUPA, the federal EPA spill prevention control and countermeasure plan, and state and federal waste disposal regulations.

9.8.6. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding hazards and hazardous materials. Policies and programs may be included in the Specific Plan that apply to hazards and hazardous materials. Hazards and hazardous materials requirements may be made in the form mitigation measures as a part of the PEIR. Additional hazards and hazardous materials opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.8.7. Recommendations

Soil sampling in proposed development areas is recommended to determine levels of pesticides (former agricultural areas) or metals (prior or existing geothermal facilities) in soil prior to soil disturbance. Proper health and safety and soil management procedures can be developed for grading activities following an understanding of the concentrations of pesticides and metals in soil. Further hazards and hazardous materials recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.9. HYDROLOGY/WATER QUALITY

9.9.1. Introduction

The Study Area and surrounding region consists of agricultural drains, canals, and the New River and Alamo River. Ultimately, all flows are conveyed into the Salton Sea although most flows no longer reach the Salton Sea. This section discusses the relevant regulations, water quality considerations, existing infrastructure inventory, and floodplain and flood hazards for the area.

9.9.2. Methodology and Sources

The following sources were used in our research to write this section:

- California Department of Water Resources. California's Groundwater Bulletin 118. 2004.
- California State Water Resources Control Board (SWRCB) 2009-0009-DWQ Construction General Permit. 2010.
- California SWRCB Industrial General Permit Order 2014-0057-DWQ. 2018.
- Colorado River Regional Water Quality Control Board. Water Quality Control Plan for the Colorado River Basin Region. 2019.
- Imperial County Multi-Jurisdictional Hazard Mitigation Plan. 2015. Imperial Irrigation District. Salton Sea Hydrology Development. 2018.
- Imperial Irrigation District. Imperial Integrated Regional Water Management Plan. 2012.
- Imperial County. Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within the Gateway of the Americas Specific Study Area. 2004.
- UC Riverside Salton Sea Task Force. Crisis at the Salton Sea, The Vital Role of Science. 2021.

9.9.3. Applicable Regulations

Clean Water Act

The USEPA is the lead federal agency responsible for managing water quality. The Clean Water Act (CWA) of 1972 is the primary federal law that governs and authorizes the USEPA and the states to implement activities to control water quality. The various elements of the CWA that address water quality and that are applicable to the Project are discussed below.

Under federal law, the USEPA has published water quality regulations under Volume 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA allows states to adopt water quality standards for all surface waters of the United States by following the processes outlined in Section 303 and

other relevant sections of the CWA. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question, and (2) criteria that protect the designated uses. Section 304(a) requires the USEPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. The USEPA is the federal agency with primary authority for implementing regulations adopted under the CWA. The USEPA has delegated to the State of California the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act), described below.

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain a water quality certification from the SWRCB in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. CWA Section 402 establishes the NPDES permit program to control point source discharges from industrial, municipal, and other facilities if their discharges go directly to surface waters. The 1987 amendments to the CWA created a new section of the CWA devoted to regulating stormwater or nonpoint source discharges (Section 402[p]). The USEPA has granted California primacy in administering and enforcing the provisions of the CWA and the NPDES program through the SWRCB. The SWRCB is responsible for issuing both general and individual permits for discharges from certain activities. At the local and regional levels, general and individual permits are administered by RWQCBs.

National Pollution Discharge Elimination System General Industrial and Construction Permits

The NPDES General Industrial Permit requirements apply to discharges associated with industrial sites. The permit requires implementation of management measures that will achieve the performance standard of the best available technology that is economically achievable and best conventional pollutant control technology. Under the statute, operators of new facilities must implement industrial BMPs in the projects' SWPPP and perform monitoring of stormwater discharges and unauthorized non-stormwater discharges.

Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds 1 acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a Notice of Intent (NOI) to comply with the General Construction Permit. The SWPPP includes a description of BMPs to minimize the discharge of pollutants from the sites during construction. Typical BMPs include temporary soil stabilization measures (e.g., mulching and seeding), storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or stormwater, and using filtering mechanisms at drop inlets to prevent contaminants from entering storm drains. Typical post-construction management practices

include street sweeping and cleaning stormwater drain inlet structures. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this Act, the State must adopt water quality policies, plans, and objectives that protect the waters of the State. The Act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Water Quality Control Plans and establishment of water quality objectives. Unlike the CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

California Department of Water Resources

The Department of Water Resources (DWR) is responsible for managing and protecting California's water resources, systems, and infrastructure, including the State Water Project (SWP). Some responsibilities of the DWR include preventing and responding to floods, droughts and catastrophic events, informing and educating the public on water issues, developing scientific solutions, restoring habitats, planning for future water needs and climate change impacts, constructing and maintaining facilities, generating power, ensuring public safety, and providing recreational opportunities. The DWR works with other agencies (e.g., United States Army Corps of Engineers) to benefit the State's people and to protect, restore, and enhance the natural and human environments.

Regional Water Quality Control Board

The RWQCBs serve as the frontline for State and federal water pollution control efforts. It is composed of nine control boards, each including seven members. Regional boundaries are based on watersheds; and water quality requirements are based on the unique differences in climate, topography, geology, and hydrology for each watershed. Each Regional Board makes critical water quality decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. The Study Area is located in Region 7, the Colorado River Region.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in September 2014, is a comprehensive three-bill package that provides a framework for the sustainable management of groundwater supplies by local authorities. The SGMA requires the formation of local groundwater sustainability agencies (GSAs) to assess local water basin conditions and adopt locally based management plans. Local GSAs must be formed by June 30, 2017. The SGMA provides 20 years for GSAs to implement plans and achieve long-term groundwater sustainability and protect existing surface water and groundwater rights. The SGMA provides local GSAs the authority to: (1) require registration of groundwater wells; (2) measure and manage extractions; (3) require reports and assess fees; and (4) request revisions of basin boundaries, including establishing new subbasins. Furthermore, under the SGMA, GSAs responsible for high- and medium-priority basins must adopt

groundwater sustainability plans within five to seven years of 2015, depending on whether the basin is in critical overdraft. The DWR has designated the Imperial Valley Basin, which the County overlies, as very low-priority and not in critical overdraft (DWR 2019).

Colorado River Regional Water Quality Control Board

The Colorado River Basin RWQCB has adopted the Water Quality Control Plan for the Colorado River Basin in accordance with criteria contained in the CWA, Porter-Cologne Act, and other pertinent State and federal rules and regulations. The intent of the Basin Plan is to provide definitive guidelines and give direction to the scope of Colorado River Basin RWQCB activities that will optimize the beneficial uses of the waters of the State within the Colorado River Basin by preserving and protecting the quality of these waters. The intended beneficial use of water determines the water quality objectives. For example, the quality requirements for irrigation water are different from those of drinking water. The Colorado River Basin RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements for appropriate persons and groups; these can include individuals, communities, or businesses whose waste discharges may affect water quality. These requirements can be either State Waste Discharge Requirements for discharge to land, or federally delegated NPDES permits for discharges to surface water. Discharges are required to meet water quality objectives and protect beneficial uses.

Water Quality Control Plan for the Colorado River Basin

The Water Quality Control Plan for the Colorado River Basin (or Basin Plan) prepared by the Colorado River RWQCB (Region 7) identifies beneficial uses of surface waters within the Colorado River Basin region, establishes quantitative and qualitative water quality objectives for protection of beneficial uses, and establishes policies to guide the implementation of these water quality objectives (Colorado River RWQCB 2019). Water bodies that have beneficial uses that may be affected by construction activity and post-construction activity include the Imperial Valley drains, Alamo River, New River, and the Salton Sea.

Imperial Integrated Water Resources Management Plan

The Imperial Integrated Regional Water Management Plan (IRWMP) serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management and determination, and prioritization of uses and classes of service provided (Imperial Water Forum 2012). In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three stakeholders meets the basic requirement of California DWR for an IRWMP. Through the IRWMP process, IID presented the regional stakeholders' with options in the event long-term water supply augmentation is needed, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water.

County of Imperial Land Use Ordinance, Title 9

The County's Ordinance Code provides specific direction for the protection of water resources. Applicable ordinance requirements are contained in Division 10, Building, Sewer and Grading Regulations as well as Division 22, Groundwater Management, and summarized below.

1. Division 10 – Grading Regulations. Section 91010.02 of the Ordinance Code outlines conditions required for issuance of a Grading Permit. These specific conditions include:
2. If the proposed grading, excavation, or earthwork construction is of irrigatable land, said grading will not cause said land to be unfit for agricultural use.
3. The depth of the grading, excavation, or earthwork construction will not preclude the use of drain tiles in irrigated lands.
4. The grading, excavation, or earthwork construction will not extend below the water table of the immediate area.
5. Where the transition between the grading plane and adjacent ground has a slope less than the ratio of 1.5 feet on the horizontal plane to 1 foot on the vertical plane, the plans and specifications will provide for adequate safety precautions.

Division 22 – Groundwater Management. Section 92201 of the Ordinance Code outlines requirements for the preservation and management of the groundwater within the county for the protection of domestic, commercial, agricultural, industrial, municipal, wildlife habitat, and other uses in the county which is known as Imperial County Groundwater Management Ordinance. The ordinance covers exportation, overdraft regulations, extraction and exportation charges, artificial recharge standards, development projects, penalties, and appeals.

Imperial Irrigation District

The IID is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 et seq. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley; operation and maintenance of the drainage canals and facilities, including those in the Project area; and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

The Law of the River and historical Colorado River decisions, agreements, and contracts

- The Quantification Settlement Agreement and Transfer Agreements
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the Quantification Settlement Agreement commitments.
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water rights.
- Existing IID standards and guidelines for evaluation of new development and define IID's role as a responsible agency and wholesaler of water.

IID has adopted an Interim Water Supply Policy (IWSP) for Non-Agricultural Projects during the development of the Imperial IWRMP, to provide a mechanism to address new water supply requests for proposed projects being developed within the IID service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees. The IWSP currently designates up to 25,000 af per year of water for potential Non-Agricultural Projects that are within IID's water service area.

Water Rights

IID has a "present perfected" right to 2.6 million acre-feet (MAF) of water annually, established in a 1964 Supreme Court decree in California v. Arizona. IID's present perfected rights were set at 2.6 MAF annually because that was the annual quantity being diverted by the district and used on the 424,145 acres under irrigation (IID 2024a). These vested rights preempt the 1902 Reclamation Law and are not subject to reclamation law limitations. The significance of IID's present perfected right is that in times of shortage, present perfected rights must be satisfied first.

Construction General Permit

The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil, including linear underground projects (LUP). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as layout areas, stockpiling, and excavation. The Construction General Permit requires the development and implementation of a SWPPP, which would include and specify best management practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. The 2022 CGP (SWRCB Order No. 2022-0057-DWQ) was adopted by the California State Water Resources Control Board on September 8th, 2022, and will be effective on September 1st, 2023. All projects that start construction before September 1st, 2023, will have a regulatory transition period of two years and would be subject to the 2009 CGP until September 1st, 2025. All projects started after September 1st, 2023, will be subject to the 2022 CGP.

Industrial General Permit

The Industrial General Permit *(SWRCB Order No. 2014-0057-DWQ)* applicable to certain categories of industrial activity, which includes facilities that store, treat, recycle, and reclaim sewage. The IGP is applicable to treatment facilities and may be applicable to pump stations and other ancillary facilities. Final design of pump stations and ancillary facilities shall make the evaluation and determination of applicability. The IGP requires stormwater dischargers to eliminate unauthorized non-stormwater discharges, develop and implement SWPPPs, implement BMPs, conduct monitoring, compare monitoring results to numeric action levels, perform appropriate exceedance response actions when numeric action levels are exceeded, and certify and submit all permit registration documents.

NPDES Phase II Municipal Separate Storm Sewer System (MS4) and Stormwater Control Ordinance

The County of Imperial is enrolled under the State Water Board General Order for the Phase II Small MS4 Permit. The Phase II Rule automatically covers on a nationwide basis all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census (unless waived by the NPDES permitting authority), and on a case-by-case basis those small MS4s located outside of UAs that the NPDES permitting authority designates. Section 402 of the Clean Water Act requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States be regulated by a National Pollutant Discharge Elimination System (NPDES) permit.

9.9.4. Existing Conditions

Regional Setting

The Study Area is located adjacent to the Salton Sea, the largest waterbody in California, which is a terminal water body in the northern extension of the Colorado River Delta. The Salton Sea receives wastewater discharges from numerous municipal wastewater systems in the Imperial and Coachella valleys through the New River, Alamo River, or Coachella Valley Stormwater Channel as well as return flows from the surrounding agricultural operations.

The Imperial Valley is bounded on the north by the south shore of the Salton Sea, on the south by the All-American Canal (AAC), on the east by the East Highline Canal, and on the west by the Westside Main Canal. The existence of most surface waters in the area is dependent primarily upon the inflow of irrigation water from the Colorado River via the AAC.

The Imperial Valley lies entirely within the State's Colorado River Hydrologic Region (IWF 2012). The shallow aquifers beneath the Imperial Valley are affected by the inflow of Colorado River waters, the rate of evaporation, the depth of the agricultural tile drains beneath farmlands, and seepage from drains and rivers. The Colorado River is probably the most important source of recharge into shallow groundwater aquifers; approximately 10 percent is percolated to underlying aquifers. Canals, such as the All American Canal (AAC) and the East Highline, contribute to recharge because they are unlined; they are sometimes up to 200 feet wide; the AAC flows across many miles of sandy terrain; and the water surface of the canals is higher than the general groundwater levels (County 1997b).

Drainage and Watersheds

The Salton Sea watershed encompasses an area of approximately 8,000 square miles from San Bernardino County in the north to the Mexicali Valley (Republic of Mexico) to the south. The Salton Sea lies at the lowest point in the watershed and collects runoff and agricultural drainage from most of Imperial County, a portion of Riverside County, smaller portions of San Bernardino and San Diego Counties, as well as the northern portion of the Mexicali Valley. The Study Area and surrounding region consists of agricultural drains, canals, and the New River and Alamo River. Ultimately, all flows are conveyed into the Salton Sea.

As further discussed in Appendix A, Infrastructure Assessment, the Study Area intersects five watersheds, consisting of the Alamo River watershed, the Imperial Valley-Frontal Salton Sea

watershed, the Superstition Hills-Frontal Salton Sea watershed, the New River watershed, and the Salton Sea watershed.

Due to a variety of conditions including transfers to the San Diego County Water Authority (SDCWA) under the Quantification Settlement Agreement (QSA), potential transfers to the Metropolitan Water District of Southern California (MWD), water management planning in the Coachella and Imperial valleys, and water conservation/reuse in Mexicali, inflows to the Salton Sea have reduced in recent years and also aridification of the Colorado River Basin. The reduced inflows will result in declining water surface elevations in the Salton Sea and will further contribute to increases in Salton Sea salinity.

Water Quality

The State Water Resources Control Board and the Regional Water Quality Control Boards (Water Boards) are committed to protecting and restoring the waters of California to ensure that all applicable beneficial uses are fully attained. Where waters are not meeting their beneficial uses from anthropogenic sources of pollutants, the Water Boards will use the Total Maximum Daily Load (TMDL) program to craft an implementation plan to ensure that the waters meet all applicable standards as soon as is practicable. The TMDL program remains a high priority program of the Water Boards. This Policy is intended to ensure that the impaired waters of the state are addressed in a timely and meaningful fashion. The Alamo and New River TMDLs are listed below (RWQCB 2019).

Table 9.9-1 Alamo River TMDLs

Element		Description
Problem Statement (impaired water quality standard)	Excess delivery of sediment to the Alamo River has resulted in degraded conditions that impair the following designated beneficial uses: warm freshwater habitat; wildlife habitat; preservation of threatened, rare, and endangered species habitat; contact- and non-contact recreation; freshwater replenishment. As the Alamo River discharges into the Salton Sea, sediment also threatens the same beneficial uses of the Salton Sea. Specifically, sediment serves as a carrier for DDT, DDT metabolites, and other insoluble pesticides including toxaphene, which pose a threat to aquatic and avian communities and people feeding on fish from the Alamo River; and suspended solids concentrations, sediment loads, and turbidity levels are in violation of water quality objectives. These current concentrations, loads, and levels are also forming objectionable bottom deposits, which are also adversely affecting the beneficial uses of Alamo River.	
Numeric Target		200 mg/L Total Suspended Solids (annual average)[55]
Source Analysis	Source Agricultural Drain Discharges: In-Stream Erosion & Wind Deposition: NPDES Permitted Facilities:	tons/year 322,493 6,623 215

	International Boundary: Total:	146 329,477
Margin of Safety		8,737 tons/year, (corresponds to 10 mg/L)[56]
Seasonal Variations and Critical Conditions	Both the flow and sedimentation regimes within the Alamo River watershed are relatively stable, and the sediment and water sources within the watershed are relatively uniform and widespread; therefore, this TMDL does not include provisions other than the established load allocations and implementation plan for seasonal variations or critical conditions. Staff's analysis of potential water transfers out of the watershed indicate that the transfers are not likely to affect compliance with this TMDL but could cause other water quality problems that will need to be addressed by the parties responsible for the transfers.	
Loading Capacity		177,247 tons/year

[55] The numeric target is a goal that translates current silt/sediment-related Basin Plan narrative objectives and shall not be used for enforcement purposes.

[56] The margin of safety is roughly equal to the estimated load from natural sources to the Alamo River. This margin of safety allows for the loading of sediment from natural sources to the river to be double the natural source loading estimated in the Source Analysis without exceeding the Numeric Target.

Table 9.9-3 TMDLs for the New River

Element	Description		
Problem Statement (Impaired water quality standard)	The New River headwaters start about 12-16 miles south of Calexico in the Mexicali Valley, Mexico. Bacteria, which are pathogen-indicator organisms, impair the entire segment of the New River in the United States. Pollution is severest at the International Boundary due to discharges of wastes from Mexico. The bacterial concentrations exceed the water quality objectives established to protect mainly the water contact and non-contact water recreational beneficial uses of the New River.		
Numeric Target	The following are the in-stream numeric water quality targets for this TMDL:		
	Indicator Parameters	30-Day Geometric Mean[50]	Maximum
	Fecal Coliforms	200 MPN[51]/100 ml	[52]
	E. Coli	126 MPN/100 ml	400 MPN/100 ml
	Enterococci	33 MPN/100 ml	100 MPN/100 ml
Source Analysis	The main sources of pathogens as indicated by fecal coliforms and E. coli bacteria in the New River are discharges of municipal wastes from the Mexicali Valley, Mexico and undisinfected but treated wastewater discharges from five domestic wastewater treatment plants in the Imperial Valley. Natural sources of pathogens appear to play a relatively insignificant role, but their actual contribution, and contributions from other nonpoint sources of pollution in general require proper characterization.		
Allocations and Margin of Safety	Discharges from point sources and nonpoint sources of pollution shall not exceed the following waste load allocations (WLAs) and load allocations (LAs), respectively:		
	Indicator Parameters	30-Day Geometric Mean[50]	Maximum
	Fecal Coliforms	200 MPN[51]/100 ml	[52]
	E. Coli	126 MPN/100 ml	400 MPN/100 ml

	Enterococci	33 MPN/100 ml	100 MPN/100 ml
	The allocations are applicable throughout the entire stretch of the New River in the U.S. The numeric target concentrations are based on extensive epidemiological studies conducted by the USEPA and others. By setting the TMDL and each of the load and waste load allocations equal to the standards, the proposed TMDL approach results in very limited uncertainty about whether attainment of the TMDL and the individual allocations will result in attainment of the applicable numeric standards. Moreover, the TMDL analysis takes a conservative approach of providing load and waste load allocations even for relatively minor loading sources, which helps to ensure that the selected source control approach will result in attainment of the numeric objectives. Finally, to help address uncertainty concerning the bacterial die-off and regrowth dynamics in the River, the TMDL provides implicit margin of safety by including a relatively aggressive monitoring and review plan which will help ensure that needed data are collected and that, if necessary, the TMDL will be revised in the relatively near future.		

[50] Based on a minimum of no less than 5 samples equally spaced over a 30-day period
[51] Most probable number, and
[52] No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml.

Flood Hazard

The Alamo River originates in Baja California; however, very little flow crosses into the United States from Mexico (U.S. Department of State, 1945-1978). The river flows northerly and passes though the southwestern portion of the City of Holtville before eventually entering the Salton Sea near Niland. The Alamo River near Holtville is unique in that its contributing drainage area is almost entirely comprised of agricultural land. This area contains a maze of irrigation canals, drains, levees, and dikes. Many of the fields act as retention basins during major storms. The amount of flow in the Alamo River during a storm is also affected by irrigation practices. Many times, irrigation water has been ordered by farmers without knowing a storm is coming. Most of this water, once diverted from the Colorado River for irrigation near Holtville, will eventually enter the Alamo River, and may cause over-topping of the channels and inundation of neighboring properties.

The New River also became deeply entrenched from the same breakout events from the Colorado River that affected the Alamo River. These breakout flows also left a very wide floodplain relative to the existing volume of flow in the New River. The southern floodplain of the New River is an area of recent commercial development in the City of Calexico. There is also some residential development at higher elevations.

Groundwater

Imperial Valley Groundwater Basin is in the southeastern part of California at the international border with Mexico. The basin lies within the southern part of the Colorado Desert Hydrologic Region, south of the Salton Sea. Imperial Valley Groundwater basin is bounded on the east by the Sand Hills and on the west by the impermeable rocks of the Fish Creek and Coyote Mountains. To the north the basin is bounded by the Salton Sea, which is the discharge point for groundwater in

the basin. The physical groundwater basin extends across the border into Baja California where it underlies a contiguous part of the Mexicali Valley (CDPW 1954). Major hydrologic features include the New and Alamo rivers, which flow north towards the Salton Sea.

The groundwater aquifer system in the Imperial Valley consists of Tertiary valley-fill deposits (aged 2.6 to 66 million years ago) underlain by pre-Tertiary-age rocks that are referred to as the basement complex (USGS 2015). The valley-fill deposits can be grouped into an upper aquifer system of Quaternary deposits (aged 1.6 million years or younger) and a deeper aquifer system consisting of Tertiary and older deposits. Although these deposits as a whole are more than 20,000 feet thick in the center of the Imperial Valley, the primary zone for water supply is the non-marine deposits in the upper few thousand feet of the aquifer system (USGS 2015). At depths greater than a few thousand feet, the groundwater commonly is too saline for irrigation and most other uses, and the hydraulic connection between the water in the deeper aquifer system and the water in the upper aquifer system is poor (USGS 2015).

Recharge is primarily from irrigation return. Other recharge sources are deep percolation of rainfall and surface runoff, underflow into the basin, and seepage from unlined canals which traverse the valley. Principal areas of recharge from surface runoff are in the East Mesa and West Mesa, where the surface deposits are more permeable than in the central valley. Primary underflow into the basin is from Mexicali Valley to the south and through the alluvial section between the Cargo Muchacho Mountains and Pilot Knob.

The basin may have saturated sedimentary deposits as thick as 20,000 feet. A large portion of this groundwater is undesirable because of high TDS concentrations. The total storage capacity for this basin is estimated to be 14,000,000 acre-feet.

9.9.5. Constraints

Water supply would be provided by the Imperial Irrigation District which sources the majority of its water through surface water rights on the Colorado River. Recent years of extended drought conditions have put additional pressure on the District to broaden their water management and conservation measures to ensure continued ability to meet water supply demands. These measures include water storage and banking opportunities, conservation measures, exchanges and transfer programs, and capital improvements. However, water management challenges for the District include limitations on water storage because of the flat terrain, limitations on reuse opportunities because of the salinity of Colorado River, existing deterioration of Salton Sea including exposed playa and increased salinity, and poor water quality of underlying groundwater resources. Potential constraints on water supply availability for the Study Area will in part be somewhat dependent on a combination of future conditions of the Colorado River and the water demands of the development under the Specific Plan compared to existing agricultural water demands that would be replaced by implementation of the Specific Plan.

The project faces a lack of robust and resilient existing stormwater infrastructure to support the future needs of the specific plan is a major constraint. Hydraulic constraint includes the wide existing 100-year floodplain and floodway of the Alamo and New River which encompasses vast portion of

the Study Area. As discussed in Appendix A, should there be any local unofficial embankments functioning as a levees that are not maintained and monitored properly, there may be a significant flooding risk to the local community should they fail during a significant storm event. Regulatory constraints include requirements outlined in the CGP, IGP and MS4 permit which address stormwater quality during and after construction of future projects.

New development and redevelopment within the Study Area would introduce substantial new impervious surfaces and resultant changes to drainage conditions. All development would have to implement strong water quality management plans that comply with local, state and federal requirements including County stormwater control requirements, NPDES MS4 permit requirements, the SWRCB applicable/approved TMDLs, and also prevent discharge of sediment, because the Colorado River RWQCB currently has a prohibition of sediment/silt discharge.

Industrial land uses will also require adherence to applicable NPDES Industrial Permit requirements that would likely include stringent water quality monitoring and discharge limits that would apply to both stormwater and non-stormwater discharges.

9.9.6. Opportunities

While water supply is a key consideration for this region, as noted above, there could be potential opportunities to reduce water demands under the Specific Plan through removing existing agricultural demands that currently exist within the Plan area and/or providing the means to make the use of recycled water a viable option.

As the area is developed for lithium extraction, storm water flows will increase due to the addition of impervious surfaces based on future land use. Typically, such an increase in peak flow post-project would have to be mitigated (through retention or detention) to be less than the pre-project peak flow. However, considering the Salton Sea is receding currently and is projected to recede even more drastically in the future, this increase in peak flow due to the future developments could be beneficial to the Salton Sea and could negate the need for peak flow mitigation. Another opportunity is to create a buffer of open space along the New and Alamo River to be used as a river park, floodplain buffer, and (or) wetlands. A corridor can be seen along the Alamo and New Rivers in the Infrastructure – Drainage and Water Quality attachment. This corridor was calculated using the 100-year peak flow rates listed in Table 1. The calculations assumed a constant 4-foot depth with 1 foot of freeboard. The cross section for the trapezoidal channel assumes 4:1 side slopes on each side along with 30 feet on each side for maintenance roads and/or recreational trails. This could provide protection to future developments in the vicinity of the Alamo and New River from increased storm water flows while also improving storm water quality and environmental health. A river park could also be constructed in this corridor that provides recreational opportunities and community benefit to the surrounding communities. Other opportunities include establishing a network of backbone storm drain infrastructure throughout the Specific Study Area, building new bridges and upsizing existing bridges to handle larger flows and future traffic demand.

The unique feature of the existing Salton Sea Geothermal Field (SSGF) geothermal brine is its very high salinity. It is estimated that at least 11 km3 of hot brines are contained within the SSGF, and

they contain valuable concentrations of manganese, zinc, and lithium (McKibben et al., 2021; McKibben, 2021). Extracting lithium from the SSGF geothermal brines will reduce the need to import lithium and lower the costs of battery manufacturing.

The location of the Alamo River through the Study Area provides an opportunity for restoration as well as improved water quality by removing agricultural land uses that are sources of runoff contaminants (e.g., pesticides and herbicides). Development within the Specific Plan would include stormwater control features that limit offsite discharge of pollutants.

9.9.7. Recommendations

Creating an open space buffer along the New and Alamo Rivers would provide flood protection to future developments from increased flows. This buffer could also be used as a river park for the community and could even include strategically placed regional wetlands as water quality best management practices (BMPs) to promote stormwater quality and environmental health.

Evaluating the viability of recycled water use to augment water supply could benefit water supply management. In addition, overall hydrologic study of the changes in surface water runoff in addition to the changes that likely occur to the existing system of drainages and laterals would be necessary to understand how the changes in drainage patterns could potentially affect local hydrology including discharges to Salton Sea.

Establishing a network of backbone storm drain infrastructure throughout the Study Area and bridge crossings should be further evaluated and widened, where necessary.

Preparation of a hydrology and water quality technical report for the Project is recommended. Further hydrology and water quality recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.10. MINERAL RESOURCES

9.10.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for mineral resources in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project). This section supports development of the Specific Plan and associated environmental document.

9.10.2. Methodology and Sources

This Mineral Resources section is a compilation of existing information with regard to mineral resources and implementation of the Specific Plan. The information in this section is largely based on publications and web resources from the California Geologic Survey, California Geologic Energy Management Division (CalGEM), and the Imperial County General Plan.

9.10.3. Applicable Regulations

Federal Regulations

Mining Law

The Federal Mining Law of 1872 governs locatable minerals on federal lands and allows U.S. citizens the opportunity to explore for, discover, and purchase certain valuable mineral deposits on those federal lands. Minerals subject to the Mining Law include both metallic minerals, such as gold, silver, and copper, and various industrial minerals such as gypsum and bentonite. Hydrocarbons (petroleum, natural gas, etc.), and geothermal resources, as well as phosphates, sodium, sulfur, and potassium are not subject to the Mining Law, rather they are subject to the Mineral Leasing Act. The mineral deposits subject to the Mining Law are general hard rock minerals including most metallic mineral deposits (gold, platinum, silver, iron, cobalt, copper, etc.) and certain nonmetallic and industrial minerals including lithium, which belongs to the family of alkali metals. The law sets general standards and guidelines for claiming the ownership right to a valuable mineral deposit discovered during exploration.

Mineral Leasing Act

The Mineral Leasing Act of 1920 and an amendment in 1947 specifies the details of the leasing program for mineral resources on federal lands including hydrocarbons, such as oil and gas, as well as other minerals such as phosphate, potassium, sulfur, and sodium. The Mineral Leasing Act also applies to geothermal resources on federal lands. The leasing program details include the number of acres that can be leased, payments to the government, the lease period, and bidding procedures.

State Regulations

Surface Mining and Reclamation Act (SMARA): California Public Resources Code, Sections 2710 et seq.

SMARA is the primary regulator of onshore surface mining in the state. SMARA delegates specific regulatory authority to local jurisdictions. The act requires the State Geologist (California Geological Survey [CGS]) to identify all mineral deposits within the state and to identify any MRZs (i.e., MRZ-1 through MRZ-4) present. The distinctions between MRZs 1 through 4 are detailed in Section 4.12.1, above. Local jurisdictions are required to enact specific procedures to guide mineral conservation and extraction at particular sites and to incorporate mineral resource management policies into their general plans. A particular concern of state legislators in enacting SMARA was the premature loss of minerals and protection of sites threatened by development practices that might preclude future mineral extraction.

California Geological Survey Mineral Resources Project

The CGS Mineral Resources Project provides information about California's nonfuel mineral resources. The Mineral Resources Project classifies lands throughout the state that contain regionally significant mineral resources as mandated by SMARA. Nonfuel mineral resources include metals such as gold, silver, iron, and copper; industrial metals such as boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone; and construction aggregate including sand, gravel, and crushed stone. Development generally results in a demand for minerals, especially construction aggregate. SMARA requires all cities and counties in the state to incorporate in their general plans the mapped MRZ designations approved by the State Mining and Geology Board. The

classification process involves the determination of P-C region boundaries based on identification of active aggregate operations (Production) and the market area served (Consumption). The P-C regional boundaries are modified to include only those portions of the region that are urbanized or urbanizing and are classified for their aggregate content. There are no P-C regions located within Imperial County.

California Geologic Energy Management Division

SMARA is the primary regulator of onshore surface mining in the state. SMARA delegates specific regulatory authority to local jurisdictions. The act requires the State Geologist (California Geological Survey [CGS]) to identify all mineral deposits within the state and to identify any MRZs (i.e., MRZ-1 through MRZ-4) present. The

The California Geologic Energy Management Division (CalGEM), formerly the Division of Oil, Gas, and Geothermal Resources (DOGGR), oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells, while working to help California achieve its climate change and clean energy goals. CalGEM regulates the drilling, operation, and permanent closure of energy resource wells.

Regional and Local Regulations

Imperial County General Plan Conservation and Open Space Element

Policy - Control the extraction of mineral resources in order to assure minimal disturbance to the environment, conservation of significant mineral deposits, and to protect mining operations from encroachment by incompatible land use.

Programs

- The County shall require all surface mine operators to submit surface mining and reclamation plans prior to beginning mining operations. Surface mining includes surface work incident to an underground mine. Such plans shall be processed by the Planning and Development Services Department and shall require the approval of the Planning Commission. Following the approval of those plans, the issuance of all other required regulatory permits, and the commencement of surface mining operations, the Planning and Development Services Department shall inspect each surface mining operation at least once a year, for the life of the operation to assure compliance with the mining plans. The County should coordinate with the Department of Conservation's Office of Mine Reclamation (OMR) and the State Mining and Geology Board (SMGB) to ensure proper administration of the Surface Mining and Reclamation Act of 1975 (SMARA).
- The County shall protect known mineral deposits and mining operations from the encroachment of incompatible urban land uses. All protected areas shall be reevaluated in light of future State reports identifying areas of regional and statewide mineral significance. The Existing Mineral Resources Map (Figure 8 of the Conservation and Open Space Element) for Imperial County provides the details and locations of mining activities.

9.10.4. Existing Conditions

Regional Setting

Mineral Resource Potential

As mandated by the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board (now California Geological Survey (CGS)) classifies California mineral resources with the Mineral Resource Zones (MRZs) system. These zones were established based on the presence or absence of significant sand and gravel deposits and crushed rock source areas (i.e., products used in the production of cement). The classification system emphasizes Portland Cement Concrete aggregate, which is subject to a series of specifications to ensure the manufacture of strong, durable concrete. The following guidelines are presented in SMARA's mineral land classification for the region (CGS 2022):

- MRZ-1 – Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2 – Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that there is a high likelihood for their presence.
- MRZ-3 – Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4 – Areas where available information is inadequate for assignment to any other MRZ zone.

Imperial County

The Study Area is located within Imperial County which is among the counties identified by the CGS where no SMARA classification has occurred and thus not associated with an identified aggregate Production-Consumption (P-C) Region (CGS 2022). According to statewide mapping, there are active aggregate production areas/operations within the county, however they are located north and south of the Study Area (CGS 2018).

The Conservation and Open Space Element of the County of Imperial General Plan identifies a number of mineral resources including gold, gypsum, sand, gravel, lime, clay, stone, kyanite, limestone, sericite, mica, tuff, salt, potash, and manganese that are being extracted from within the County. However, the extraction is limited to a relatively small number of sites dispersed throughout the County (County of Imperial 2016).

Geothermal Energy/Minerals

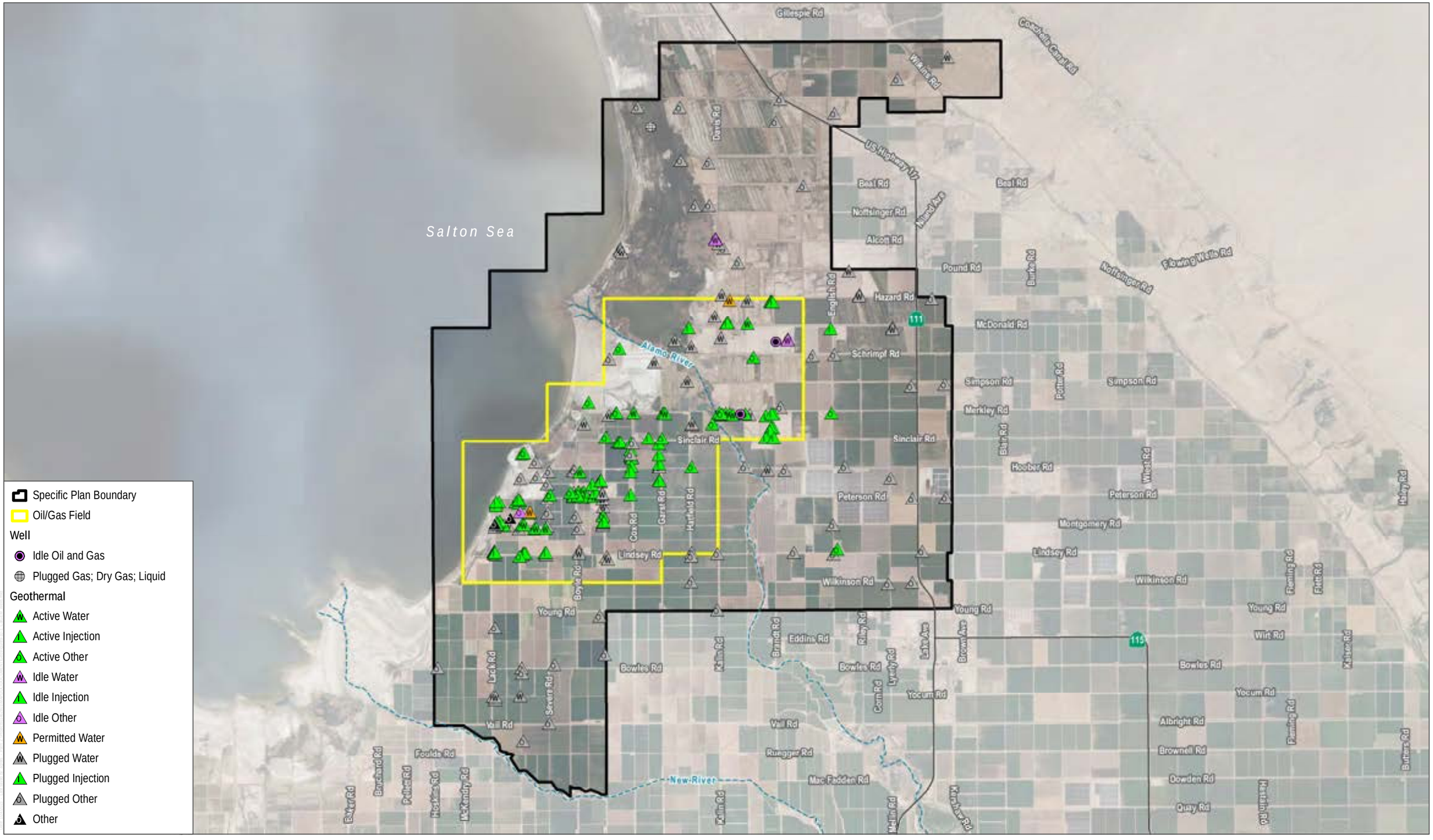
Geothermal power is generated by using heat from underlying aquifers where the groundwater has been heated by underlying sources such as molten rock from depth. The Salton Sea Known Geothermal Resource Area (KGRA) overlaps with the Study Area which is almost entirely within the KGRA. The geothermal reservoir underlying the KGRA is relatively shallow, liquid-dominated and

exists as high-temperature, hyper-saline brine (salt- and metal-laden water) (State Lands 2023). The brine includes relatively high concentrations of minerals including manganese, zinc, and lithium. The Salton Sea KGRA is believed to have the highest concentration of lithium contained in geothermal brines in the world (CEC 2022). When brought to the surface, a portion of the brine flashes to steam, which is used to generate electricity. The remaining brine is injected back into the reservoir. There are 10 power plants located on private lands in this area, with 437 megawatts of installed capacity (State Lands 2023). There are about 28 production wells in the field producing over 265 billion pounds of brine annually, and 41 injection wells reinjecting just over 220 billion pounds of produced brine (Figure 9-12, CalGEM Wells).

Three general processes are typically used for geothermal energy, dry steam, flash steam, and binary. Imperial Valley has both flash steam and binary process plants in operation to harness geothermal energy. Binary plants operate on low temperature resources typically less than 300°F. Flash steam plants use a higher temperature liquid resource that spontaneously flashes into steam at atmospheric pressure.

The geothermal aquifer at the Salton Sea is a high temperature resource typically on the order of 500°F several thousand feet underground. About 20% of the brine is flashed to steam which drives a turbine and generator. The remaining 80% or more of the brine is cleared of solids and pumped back down into the aquifer to be reheated and reused.

As noted above, there are no MRZ-2, MRZ-3, or MRZ-4 zones identified within or near the Study Area (CGS 2022). However, according to the Open Space Element of the County's General Plan, there is a potassium and salt processing plant as well as extraction of gypsum-anhydrite that are within the Study Area (County of Imperial 2016).



SOURCE: CA Department of Conservation; County of Imperial; Bing Maps

DUDEK

0 1 2 Miles

FIGURE 9-12

Cal GEM Wells

Salton Sea Lithium Specific Plan

Oil and Gas Field

CalGEM compiles a database/mapping tool which presents California's oil and gas industry information including oil and gas fields, oil and gas wells and other types of related facilities throughout the state (CalGEM 2023). According to this database, an oil and gas field is located within the Specific Study Area which has had a history of exploration for economically viable oil and gas resources in addition to geothermal energy resources as described above (Figure 9-12, CalGEM Wells) (CalGEM 2023). Since 1912, when G. Hoyt drilled a 6-inch well approximately 475 feet deep, Imperial County has had numerous entrepreneurs, oil companies, and private landowners drill wells throughout Imperial Valley searching for viable economic resources such as oil, gas, geothermal resources, and minerals. This search continues today with exploratory applications being made in various areas in Imperial County (Imperial County Planning 2015).

According to the CalGEM Well Finder map, the Study Area includes an identified oil/gas field, however there are only two oil and gas wells identified within the Study Area, one of which is listed as idle and the other plugged as shown in Figure 9-12, CalGEM Wells (CalGEM 2023). No active oil and gas wells are identified within the Study Area.

9.10.5. Constraints

As there are no identified mineral resource zones located within the Study Area and implementation of the Specific Plan would not preclude continuing operations of the existing operations (geothermal energy/potassium and salt processing/gypsum-anhydrite mining), there would be no substantive constraints related to mineral resources.

9.10.6. Opportunities

The opportunities related to the implementation of the Specific Plan lie directly within the primary purposes of the plan itself which is to access the abundant mineral resources that are currently present in the underlying geothermal brine beneath the Study Area.

9.10.7. Recommendations

No further recommendations are made related to Mineral Resources as no apparent constraints are anticipated with implementation of the Specific Plan.

9.11. NOISE

9.11.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for noise resources in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project). This section supports development of the Specific Plan and associated environmental document.

Acoustical Fundamentals

Sound, Noise, and Acoustics

Sound is a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Similarly, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewton per square meter, also called micropascal. One micropascal is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called bels. To provide a finer resolution, a bel is subdivided into 10 decibels (dB).

A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special situations (e.g., C-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 9.11.1, Typical Sound Levels in the Environment and Industry.

Table 9.11.1, Typical Sound Levels in the Environment and Industry		
Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
Jet fly over at 300 meters (1,000 feet)	110	Rock band
Gas lawn mower at 1 meter (3 feet)	100	Food blender at 1 meter (3 feet)
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour)	90	Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime	80	Vacuum cleaner at 3 meters (10 feet)
Gas lawn mower at 30 meters (100 feet)	70	Normal speech at 1 meter (3 feet)
Commercial area	60	Large business office
Heavy traffic at 90 meters (300 feet)	50	Dishwasher next room
Quiet urban, daytime	40	Theater; large conference room (background)
Quiet urban, nighttime	30	Library
Quiet suburban, nighttime	20	Bedroom at night; concert hall (background)
Quiet rural, nighttime	10	Broadcast/Recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013
Notes: dB = decibel

Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear can discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level).

Noise Descriptors

Units of measure have been developed to evaluate the long-term characteristics of sound. The equivalent sound level (Leq) is also referred to as the time-averaged or energy-averaged sound level. It is the equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. For instance, the 1-

hour A-weighted equivalent sound level, Leq(1h), is the energy average of the A-weighted sound levels occurring during a 1-hour period and is often the basis for a jurisdiction's criteria to define exterior noise thresholds per its regulations.

Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features. Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric divergence or "spreading" of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients introduce further effects that may temporarily increase or decrease sound levels at a receptor position. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to these atmospheric effects. Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as path-occluding hills and wide, dense expanses of forested ground cover.

9.11.2. Methodology and Sources

The existing conditions described in this report were developed from a combination of empirical data, industry reference information, and predictive methods as summarized in the following subsections.

Field Survey

Samples of existing outdoor ambient sound level across the Project and its immediate surroundings were measured with investigator-attended portable American National Standards Institute (ANSI) Type 2 sound level meters (SLM) at locations near Highway 111 and rural communities. These attended sound pressure level (SPL) measurements ranged in duration from 5 to 10 minutes each with acoustical metrics saved to on-board SLM memory at successive 10-second intervals. Additionally, a twenty-four (24) hour unattended SLM was deployed at a location to collect SPL data over a complete diurnal period, with metrics and statistical values saved at regular five-minute intervals.

Predictive Modeling

Approach

The existing outdoor ambient sound environment of the Project area and its surroundings that can be measured or perceived at any listener (a.k.a., receiver) position is an amalgam of natural and artificial noise sources. These noise sources may be mobile or stationary, near or distant from a receiver position, vary in spectral character (i.e., broadband or tonal), and be either continuous, intermittent, or impulsive. For purposes of this analysis, the existing outdoor noise levels for the Project area are estimated as a logarithmic summation of three major component types:

- Surface transportation routes (highways and railroads);

- Stationary sources attributed to residential, office, and retail commercial activities and their typical noise-producing systems (e.g., heating, ventilating, and air-conditioning systems [HVAC]); and
- Stationary sources attributed to manufacturing and industrial activities, which would include power generation (both geothermal and solar) and mineral extraction projects that are characteristic of existing development in the Project area.
- Aviation noise is also a common acoustical contributor to the outdoor sound environment in the Project area, as sampled empirically; however, because its occurrence is not as frequent as the three above-listed types, it is not modeled herein and would be considered an additional source of noise at a receptor only when it occurs. The magnitude of such aviation noise also depends on horizontal distance and flight altitude; hence, references such as the West Coast Basing of the MV-22 Final Environmental Impact Statement (FEIS) (NAVFAC 2009) offer insight on such potential acoustic contribution to a receiver within the Project area.

FTA Guidance

The Federal Transit Administration (FTA) provides a technique to estimate existing outdoor noise levels proximate to roadways or railroad routes, which can be found in its Transit Noise and Vibration Impact Assessment Manual (FTA 2018). The same FTA guidance document also offers an outdoor ambient sound level estimation technique based on population density, which can be interpreted as intensity of potential sound generation due to building HVAC and outdoor activities that vary proportionally with population. With the first of these techniques providing an estimate of noise contribution from nearby road and rail, and the second representing a method to quantify noise from generally stationary sources of residential, retail, and light commercial activities, Table 9.11-2 below combines the two logarithmically in a matrix.

Table 9.11-2. FTA Estimated Outdoor Ambient Sound Level (dBA, daytime L_{eq} or CNEL)

Major Surface Transportation Route Type and Distance Range to Studied Receptor	Population Density (people per square mile) in Vicinity of Studied Receptor Location			
	300–1,000	1,000–3,000	3,000–10,000	10,000–30,000
Interstate Highway [1,2]				
= 10–50 feet	75	75	75	75
50–100 feet	70	70	70	70
100–200 feet	65	65	65	65
200–400 feet	60	60	60	60
400–800 feet	55	55	55	60
800 or more feet	50	50	55	60
Parkway (55 mph) or City Streets (30 mph) [1,3]				
= 10–50 feet	70	70	70	70

50–100 feet	65	65	65	65
100–200 feet	60	60	60	60
200–400 feet	55	55	55	60
400 or more feet	50	50	55	60
Railway [1,4]				
= 10–30 feet	75	75	75	75
30–60 feet	70	70	70	70
60–120 feet	65	65	65	65
120–240 feet	60	60	60	60
240–500 feet	55	55	55	60
500–800 feet	50	50	55	60
800 or more	45	50	55	60

Source: FTA 2018.

Notes: CNEL = Community Noise Equivalent Level; L_{eq} = energy-equivalent sound level; dBA = A-weighted decibel

[1] Distances do not include shielding from intervening rows of buildings.

[2] Roadways with four or more lanes that permit trucks, with traffic at 60 mph.

[3] Parkways with traffic at 55 mph, but without trucks, and city streets with the equivalent of 75 or more heavy trucks per hour and 300 or more medium trucks per hour at 30 mph.

[4] Main line railroad corridors typically carrying 5–10 trains per day at speeds of 30–40 mph.

By way of example, online resources indicate that the 2020 population for the City of Calipatria was 6,515 persons, including 2,543 inmates at Calipatria State Prison (https://en.wikipedia.org/wiki/Calipatria, California). For a receptor location within the developed non-prison community to the south, where the population density would likely fall within the 1,000-3,000 category shown in Table 9.11.2, if located 200 feet from an existing railway, the estimated outdoor ambient noise level would be 60 dBA Leq during the daytime or 60 dBA CNEL over a typical 24-hour period.

Industrial Stationary-Source Model Description

With FTA-based guidance providing a method to estimate the first two of the three major outdoor ambient sound contributors, the third is quantified with a sound propagation model based upon relevant International Organization of Standardization (ISO) 9163-2 algorithms and reference data (ISO 1996), along with reference data from a variety of industry-adopted sources of information. This industry stationary-source prediction model emulates commercially available software tools, but has been prepared with Microsoft Excel and features the following parameters and assumptions:

- Consistent with the Project vicinity topography, flat terrain assumed (i.e., no naturally occurring features to occlude noise paths);
- Model area represented with a 388 by 284 (over 110,000) grid of square-sided cells, spanning the Project area and its geographic surroundings;
- Up to 1,000 cells in the array can each define an aggregate point source of sound emission comprising a unique set of up to ten (10) distinct types of acoustical contributors.

Using this prediction model, and based on a study of available aerial photography imaging, review of previously prepared environmental documentation, and Project area reconnaissance by a Dudek

investigator, a variety of existing operating manufacturing and industrial facilities have been input at their geographic locations within or relative to the Project.

Logarithmic Summation

Given the aforementioned FTA-based technique to estimate acoustic contribution from surface transportation and community development, and the industrial noise propagation model, the overall estimated existing outdoor ambient sound level at a receptor position within or surrounding the Project area can be calculated by a logarithmic summation of the appropriate matrix value from Table 9.11.2 and the apparent value gleaned from the industrial noise emission model output at the same receptor position. By way of illustration, if the preceding sample receptor position within the developed non-prison community portion of Calipatria featured an estimated outdoor ambient noise level of 60 dBA Leq during the daytime due to surface transportation sources and community building HVAC and activities, and the aggregate sound from modeled major industrial, commercial, agricultural, and institutional facility stationary sources was also 60 dBA, then the logarithmic sum of these sources would be 63 dBA Leq per acoustic principles as introduced above.

9.11.3. Applicable Regulations

State

Government Code Section 65302(g)

California Government Code Section 65302(g) requires the preparation of a Noise Element in a general plan, which shall identify and appraise the noise problems in the community. The Noise Element shall recognize the guidelines adopted by the Office of Noise Control in the State Department of Health Services and shall quantify, to the extent practicable, current and projected noise levels for the following sources:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight on-line railroad operations and ground rapid transit systems
- Aviation and airport-related operations
- Local industrial plants
- Other ground stationary noise sources contributing to the community noise environment.

California Code of Regulations Title 24

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis. State noise regulations and policies applicable to the Project include Title 24 requirements and noise exposure limits for various land use categories.

The 2019 California Building Code (CBC, Part 2, Title 24, Section 1204.6, California Code of Regulations) stipulates “interior noise levels attributable to exterior sources shall not exceed 45 dB

in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL)" (ICC 2019).

California General Plan Guidelines

The California General Plan Guidelines, published by the Governor's Office of Planning and Research, provides guidance for the acceptability of specific land use types within areas of specific noise exposure. Table 9.11-3 summarizes these guidelines for determining acceptable and unacceptable community noise exposure limits for the various indicated land use categories.

Table 9.11-3. Land Use Compatibility for Community Noise Environments

Land Use Type	Community Noise Exposure (CNEL)			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential-low density, single-family, duplex, mobile homes	50–60	55–70	70–75	75–85
Residential – multiple-family	50–65	60–70	70–75	70–85
Transit lodging – motel, hotels	50–65	60–70	70–80	80–85
Schools, libraries, churches, hospitals, nursing homes	50–70	60–70	70–80	80–85
Auditoriums, concert halls, amphitheaters	NA	50–70	NA	65–85
Sports arenas, outdoor spectators' sports	NA	50–75	NA	70–85
Playgrounds, neighborhood parks	50–70	NA	67.5–77.5	72.5–85
Golf courses, riding stables, water recreation, cemeteries	50–70	NA	70–80	80–85
Office buildings, business	50–70	67.5–77.5	75–85	NA

commercial and professional				
Industrial, manufacturing, utilities, agriculture	50–75	70–80	75–85	NA

Source: Appendix E, Noise Resources, Figure 2 from Office of Planning and Research (OPR) 2017
CNEL = Community Noise Equivalent Level; NA = not applicable
[1] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
[2] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
[3] Normally Unacceptable: New construction or development should be discouraged. If new construction of development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design.
[4] Clearly Unacceptable: New construction or development should generally not be undertaken.

The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. The Office of Planning and Research guidelines are advisory in nature. Local jurisdictions, including the City, have the responsibility to set specific noise standards based on local conditions.

Local

Imperial County General Plan Noise Element

The Imperial County General Plan Noise Element (Imperial County 2015) sets goals and policies for ensuring compatibility between outdoor ambient noise environments and existing and proposed land uses within. These goals include land use compatibility noise standards akin to State guidelines appearing in Table 9.11-3 and are presented in Figure 9-13, Noise Compatibility Guidelines for Imperial County.

The goals and objectives that would relate to the Project are reproduced as follows.

Goal 1: Noise Environment: Provide an acceptable noise environment for existing and future residents in Imperial County.

- Objective 1.1 - Adopt noise standards which protect sensitive noise receptors from adverse impact.
- Objective 1.2 - Ensure that noise standards and policies are compatible with the standards and policies of other General Plan Elements and other County agencies.
- Objective 1.3 - Control noise levels at the source where feasible.
- Objective 1.4 - Coordinate with airport operators to ensure operations are in conformance with approved Airport Land Use Plans.

- Objective 1.5 - Identify sensitive receptors with noise environments which are less than acceptable, and evaluate measures to improve the noise environment.
- Objective 1.6 - Collect data for existing noise sources in the County in order to improve the data base and enhance the ability to evaluate proposed projects and land uses.

Goal 2: Project/Land Use Planning: Review proposed projects for noise impacts and require design which will provide acceptable indoor and outdoor noise environments.

- Objective 2.1 - Adopt criteria delineating projects which should be analyzed for noise impact to sensitive receptors.
- Objective 2.2 - Provide acoustical analysis guidelines which minimize the burden on project proponents and project reviewers.
- Objective 2.3 - Work with project proponents to utilize site planning, architectural design, construction, and noise barriers to reduce noise impacts as projects are proposed.

Goal 3: Long Range Planning: Provide for environmental noise analysis inclusion in long range planning activities which affect the County.

- Objective 3.1 - Adopt procedures for the preparation of Specific Plans which include the requirement for a noise impact analysis.
- Objective 3.2 - Coordinate regularly with Caltrans to obtain information on trends and plans for roadway changes and improvements which would affect the noise environment.

Figure 9-13, Noise Compatibility Guidelines for Imperial County

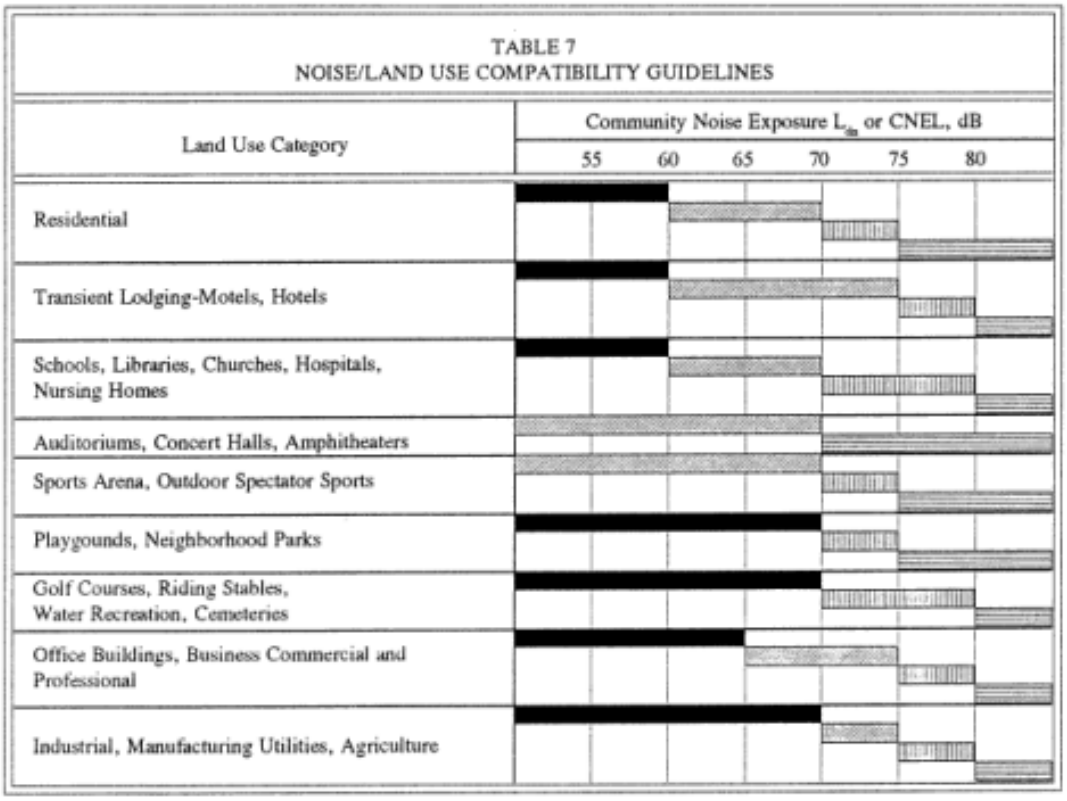


TABLE 7
NOISE/LAND USE COMPATIBILITY GUIDELINES

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dB					
	55	60	65	70	75	80
Residential						
Transient Lodging-Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing Utilities, Agriculture						

Interpretation (For Land Use Planning Purposes)

Normally Acceptable

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

Normally Unacceptable

New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable

New construction or development clearly should not be undertaken.

Source: Imperial County 2015

Imperial County Noise Ordinance

Imperial County establishes its noise regulations in Title 9, Division 7 of its municipal code. Exterior noise limits are based on what is measured at or beyond the property line of the source, and depend on the time of day as reproduced in Table 9.11-4 from Section 90702.00.A (Sound Level Limits).

Table 9.11-4. Imperial County Exterior Noise Limits

Land Use Type(s)	Exterior Noise Limits (L_{eq1hr}, dBA)	
	Daytime[1]	Nighttime[1]
Residential (all zoned R-1)	50	45
Residential (all zoned R-2)	55	50
Residential (R-3, R-4, and all other residential)	55	50
Commercial	60	55
Manufacturing, all other industrial, including agricultural and extraction industry	70	70
General industrial	75	75

Source: Imperial County

Notes: L_{eq1hr} = one-hour energy-equivalent sound level

[1] Daytime is defined as 7:00 a.m. to 10:00 p.m.

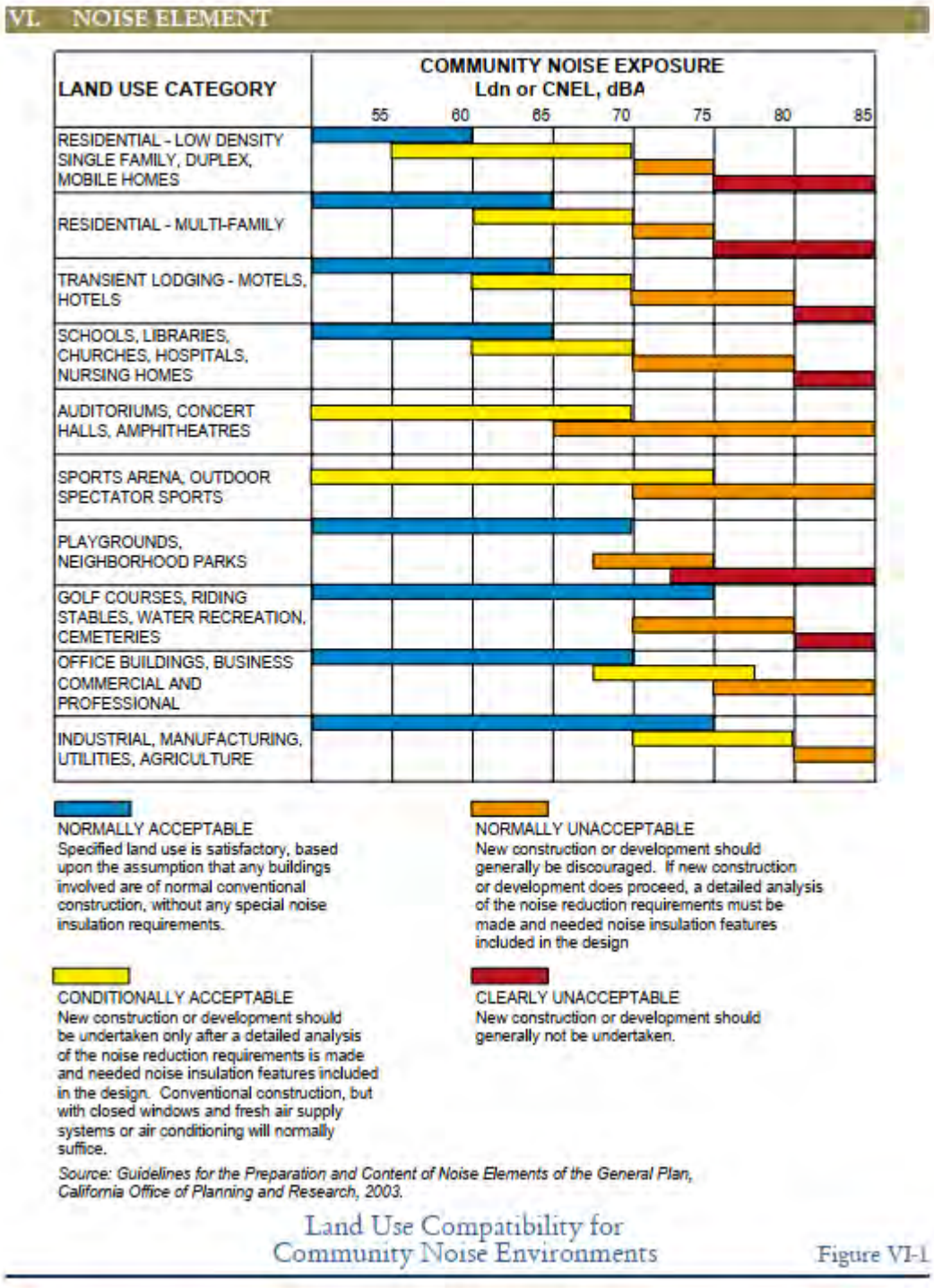
[2] Nighttime is defined as 10:00 p.m. to 7:00 a.m.

Per Section 90702.00.B, where two differing land use types adjoin, the sound level limit shall be measured at the property line between the properties. Exclusions to the limits in Table 9.11.4 include Section 90702.E for noise generated by helicopters at heliports or helistops authorized by a conditional use permit.

City of Calipatria General Plan Noise Element

The City of Calipatria 2035 General Plan includes a Noise Element (City of Calipatria 2013) that, like the County, sets goals and policies for ensuring compatibility between outdoor ambient noise environments and existing and proposed land uses within. These goals include land use compatibility noise standards akin to State guidelines appearing in Table 9.11.3 and are presented in Figure 9-14, Noise Compatibility Guidelines for City of Calipatria.

Figure 9-14, Noise Compatibility Guidelines for City of Calipatria



Source: City of Calipatria 2013

The goals and policies that would relate to the Project are reproduced as follows.

Goal N-1: Minimize transportation-related noise, such as noise generated from traffic on roads and highways and from the airport.

- Policy N-1.1 - Increase the availability of alternative transportation modes such as bicycle paths and pedestrian walkways in order to minimize automobile traffic and its associated noise.
- Policy N-1.2 - Restrict truck traffic to major highways and arterials.
- Policy N-1.3 - Ensure that the flight pattern for the Cliff Hatfield Memorial Airport remains on the north side of the airfield to minimize aircraft noise impacts within the city.
- Policy N-1.4 - Require aircraft pilots to use "noise abatement" techniques during takeoff and landing operations.

Goal N-2: Protect people from the harmful effects of noise exposure related to stationary sources.

- Policy N-2.1 - Restrict major stationary noise generators to industrial zones to the maximum extent feasible.
- Policy N-2.2 - Use noise standards during review of proposed development projects to determine whether a project promotes acceptable noise compatible land uses both during the construction and operational phases.
- Policy N-2.3 - Where appropriate, require noise buffers such as walls to prevent excessive noise transmission off site.

Goal N-3: Minimize exposure of noise-sensitive land uses to excessive noise through careful site planning and project design.

- Policy N-3.1 - Use the Land Use Compatibility for Community Noise Environments matrix (Figure VI-1) to generally determine the compatibility of land use when evaluating proposed new land uses in the city. The matrix shall be used as a preliminary guide to assist in determining the acceptability of a proposed land use with respect to noise.
- Policy N-3.2 - Ensure that the City complies with state and federal noise standards, including the following:
    - Department of Housing and Urban Development Noise Exposure Standards; and
    - California Noise Insulation Standards, including a maximum noise level of 45 dBA CNEL for habitable rooms.
- Policy N-3.3 - Locate and design noise-sensitive land uses and noise generators in such a manner that noise objectives will be maintained.

- Policy N-3.4 - Ensure that residential structures located within the 65 dBA CNEL contour as depicted on Figure VII-1 in the Airport Element are constructed to minimize noise impacts.
- Policy N-3.5 - Restrict the development of new residences and encourage the construction of industrial uses in areas adjacent to the railroad tracks that have high potential noise levels.
- Policy N-3.6 - Utilize the following prioritization of noise management strategies to minimize exposure of noise-sensitive uses to normally unacceptable or clearly unacceptable noise levels (see Figure VI-1):
    - Orient/Locate buildings to shield noise sensitive portions of a project from noise sources;
    - Use sound attenuating architectural design and building features; and
    - Use sound barriers.

9.11.4. Existing Conditions

Noise Emission Sources

Surface Transportation Routes

Major existing surface transportation routes include California State Highway 111 (SR-111) and a freight rail line, both of which generally parallel the eastern edge of the Project area. Table 9.11.4 from the Imperial County General Plan Noise Element (Imperial County 2015) provides estimated noise levels in the vicinity of many roadway segments within the County, including SR-111, and presents horizontal distances from the studied roadway segments at which a 60 CNEL can be expected. For example, north of SR-115, the distance to 60 CNEL from the SR-111 is predicted to be 865 feet, and south of SR-111 is 910 feet. Both of these are considered within the Calipatria community southeast of the Project area.

Aviation

In addition to occasional civilian aviation traffic and commercial aviation traffic, the latter of which occurs at high elevation that results in intermittent and relatively low-magnitude noise exposure levels near the ground, the Project area is surrounded by several portions of the Bob Stump Training Range, which includes restricted areas identified as “R-2507N” and “R-2507S” within the Chocolate Mountain Artillery Range (CMAGR) to the northeast, “R-2512” to the southeast, and “R2510A” and “R-2510B” to the southwest as appearing in Figure 6.2.14-1 of the West Coast Basing of the MV-22 FEIS (NAVFAC 2009). Flight operations in the Project vicinity would thus occlude occasional overflights by fixed-wing and rotary-wing aircraft, such as AH-1W Huey Super Cobra helicopters that were observed and measured as discussed herein.

Industrial, Commercial, Agricultural, and Institutional

Table 9.11-5 lists existing operating industrial, commercial, agricultural, and institutional facilities that were input as locations in the sound propagation model from which several representative major noise-producing equipment types are known (or assumed, based on facility function) to emit noise to the outdoor ambient sound environment.

Table 9.11-5, Modeled Existing Operating Industrial Facilities and Major Sound Sources

Facility Name (and tag used in sound propagation model)	Estimated major sound emission sources at each named Facility site (and estimated sound pressure level [SPL] at indicated distance)
Earthrise Nutritionals (EriseN) and Viridos (Viridos)	pumps (74 dBA at 50 feet); refrigeration compressors and air-cooled condensers (82 dBA at 50 feet); "Sonic Sentinel" bird-deterrent sound cannon (60 dBA hourly L_{eq} at 50 feet)
Calipatria State Prison (CSP)	pumps (74 dBA at 50 feet); ventilation fans (79 dBA at 50 feet); generator (69 dBA at 50 feet); air compressor (74 dBA at 50 feet)
Hudson Ranch (HR1), Elmore Geothermal Facility (EGF), CalEnergy 1 (CalE1a, CalE1b), CalEnergy 2 (CalE2), CalEnergy 3 (CalE3), CalEnergy 4 (CalE4a, CalE4b, CalE4c), Orni Power Plant Site (Orni21 west and east sites), ATLiS (south and west sites)	pumps (74 dBA at 50 feet); cooling towers (88 dBA at 50 feet); organic vapor turbines (83 dBA at 50 feet); substation transformers (60 dBA at 50 feet)
Brandt Cattle (BrandtC)	pumps (74 dBA at 50 feet); ventilation fans (79 dBA at 50 feet); generator (69 dBA at 50 feet); air compressor (74 dBA at 50 feet)
PV solar electrical generation facility on E. Hoober Road (PVI01 through PVI47)	PV solar inverter (84 dBA at 10 feet)

Sources: FHWA 2006; Dudek 2022; U.S. Department of Energy 2011; Beranek & Ver 1992; Bies & Hansen 1996

Measured Outdoor Ambient Sound

Daytime Samples

Sound pressure level (SPL) measurements were conducted proximate to the Study Area area on October 27, 2022 to quantify and characterize the existing outdoor ambient noise levels of the vicinity. Table 9.11-6 provides the location, date, and time the noise measurements were taken at four (4) "short-term" (ST) investigator-attended locations as illustrated in Figure 9-15, Baseline Outdoor Ambient Sound Measurement Locations. The attending Dudek investigator used a SoftdB "Piccolo" Integrating Sound Level Meter (SLM, serial number [SN] last four digits: 0201) equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The SLM meets the current American National Standards Institute (ANSI) standard for a "Type 2" precision sound level meter, and had its calibration status checked with a portable calibrator (i.e., a reference signal generator) before and after the field measurement survey.

Table 9.11-6, October 27, 2022 Samples of Existing Outdoor Ambient Sound Level

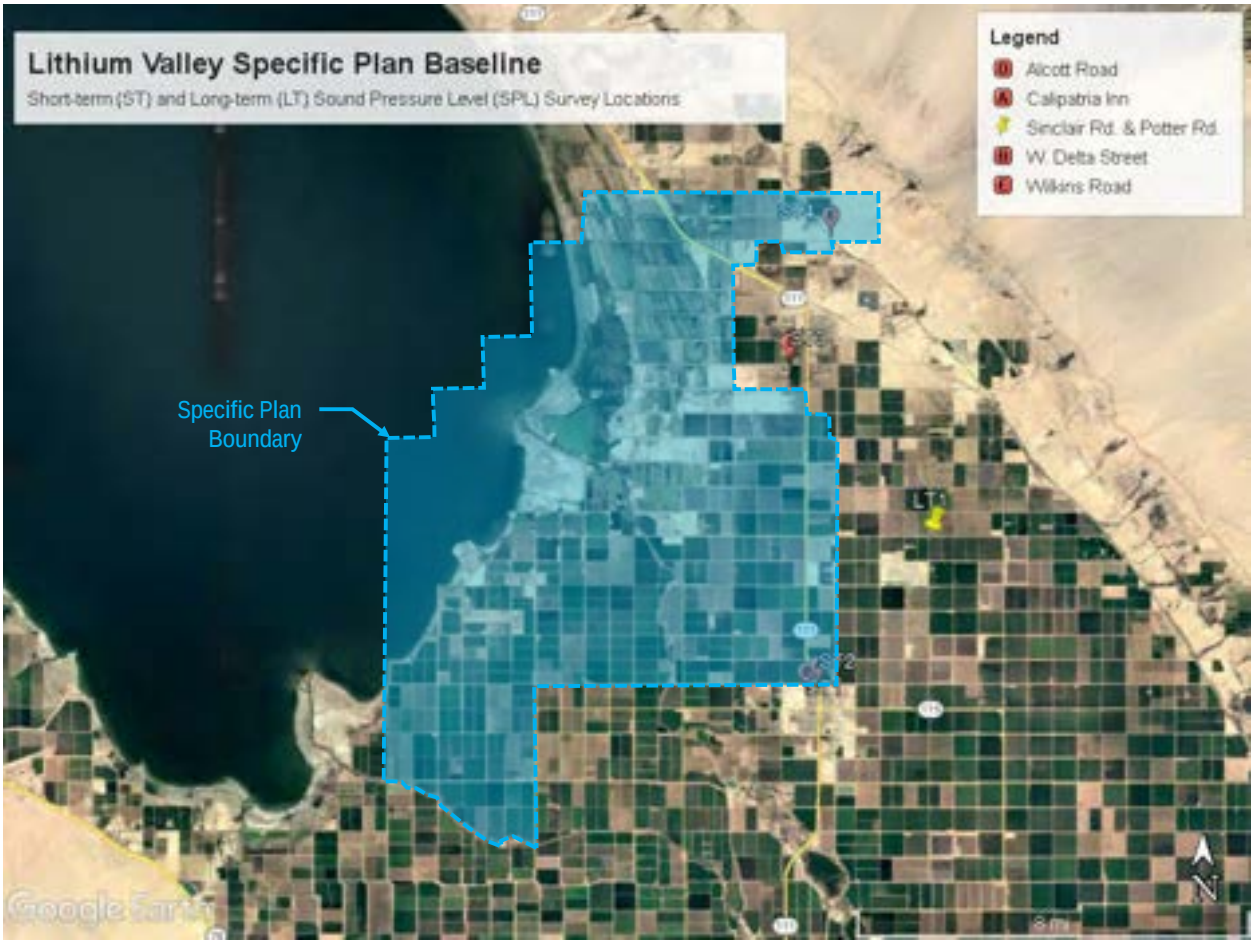
Exhibit A Location Tag	Location Description	Date (mm/dd/yy), Time (hh:mm)	L_{eq}	L_{max}	L_{min}	L_{90}
ST1	West Delta Road	10/27/22, 15:27 to 15:38	52.1	68.5	35.6	41.8
ST2	Calipatria Inn	10/27/22, 15:47 to 15:58	53.2	67.6	36.5	45.1
ST3	Alcott Road	10/27/22, 16:11 to 16:22	62.3	79.8	30.7	36.8
ST4	Wilkins Road	10/27/22, 16:37 to 16:48	60.0	78.5	30.6	42.5

Source: Dudek 2022

Investigator field data sheets, along with field photographs of the ST1 through ST4 positions, can be found in Appendix E, Noise Resources. These notes provide important clues on what was actually measured, such as the fly-over of three Huey Cobra helicopters at 4:17 p.m. during the measurement period at ST3 on Alcott Road. The fly-over event not only produced a relatively high Lmax value, but it correspondingly raised the Leq value of the approximate ten-minute duration measurement to over 60 dBA, when the Lmin of 30.7 dBA and L90 value of 36.8 dBA indicate the sound environment without the fly-over was much quieter.

The Calipatria Inn measurement location (ST2) is very comparable to the outdoor ambient noise survey position #1, shown in Figure 9-16, 2012 Outdoor Ambient Sound Level Survey Positions, which was performed in 2012 for the City of Calipatria 2035 General Plan Noise Element. The measured Leq value of 66.5 dBA and Lmax of 84.9 dBA from that earlier field survey (City of Calipatria 2013) are comparable to the ST2 metrics presented in Table 9.11-6 from the October 27, 2022 field survey, with the approximate 6 dB differences likely attributed to horizontal distance of the measurement location from the SR-111 roadway and traffic flows.

Figure 9-15, Baseline Outdoor Ambient Sound Measurement Locations



Source: Dudek 2022

Figure 9-16, 2012 Outdoor Ambient Sound Level Survey Positions

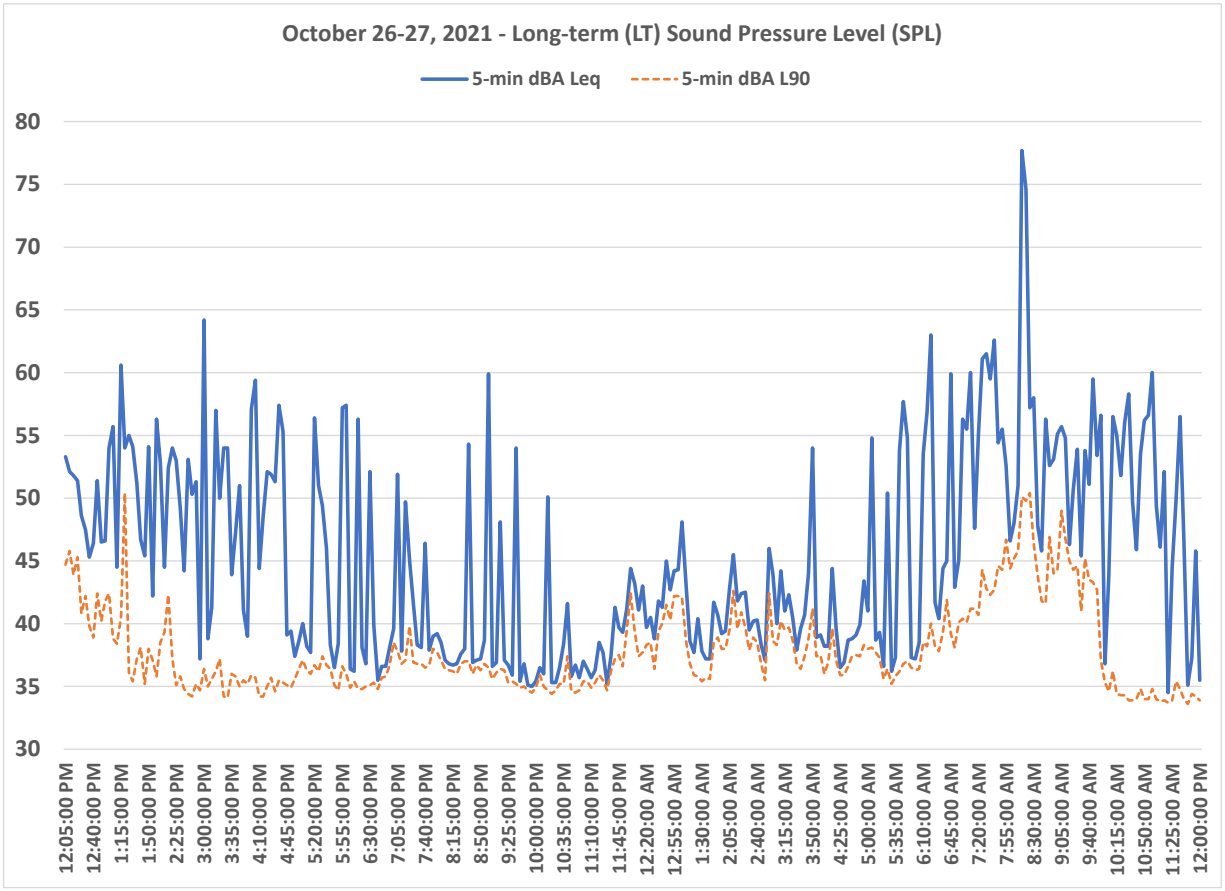


Source: City of Calipatria 2013

24-hour Sampling

A year prior to the field-collected SPL data presented in Table 9.11-6, Dudek had opportunity to deploy an unattended 24-hour noise level monitor at a location on the southeastern corner of Sinclair Road and Potter Road, which appears in Figure 9-17 as "LT1" and is 2.5 miles east of Highway 111 and a half-mile north of Calipatria State Prison. Figure 9-17 displays the measured Leq and L90 values over the 24-hour period beginning on 12:05 p.m. October 26, 2021 and concluding at 12:05 p.m. on October 27, 2021. Comparable to the October 2022 field survey of short-duration measurements on the afternoon of October 27, 2022, the Dudek investigator used a SoftdB Piccolo SLM.

Figure 9-17, Baseline Outdoor Ambient Sound Levels – LT1 (southeast corner of Sinclair Road and Potter Road)



Source: Dudek 2021

Sensitive Receptors

As mentioned in Section II.C of the County General Plan Noise Element, "sensitive noise receptors are, in general, areas of habitation where the intrusion of noise has the potential to impact adversely the occupancy, use or enjoyment of the environment. Sensitive receptors include, but are not limited to, residences, schools, hospitals, parks and office buildings. Sensitive receptors may also be non-human species. Many riparian bird species are sensitive to excessive noise." (Imperial County 2015).

9.11.5. Constraints

The presence of the City of Calipatria and its constituent residential communities adjoining the southeastern boundary of the Project area suggests that development of new industrial, manufacturing, energy production, mineral extraction, and other projects comparable to existing facilities studied herein would need to carefully consider the Imperial County and City of Calipatria Land Use Noise Compatibility guidelines and ensure that such projects implemented under the Project would be considered "acceptable" or "conditionally acceptable". By way of example, Figure 9-18, Estimated Noise from Existing Major Operating Industrial, Commercial, and Institutional

Facilities illustrates with an orange-colored band where estimated noise from existing operating facilities produce—in aggregate—a noise exposure level ranging from 45 to 50 dBA and thus (depending on time of day) at exterior noise limits for residentially zoned R-1 property appearing as appearing in Table 9.11-4.

Similarly, new noise-sensitive development proposed for implementation under the Project would need to respect existing surface transportation noise exposure levels from highways (e.g., SR-111 and SR-115) and operating freight railroads. Adherence to applicable Airport Land Use Compatibility Plan (ALUCP) content or other requirements associated with Clifford Hatfield Memorial Airport operations would be an additional consideration.

9.11.6. Opportunities

New development implemented under the Project shall comply with the federal, state, regional, and local regulatory documents regarding noise. Policies and programs may be included in the Specific Plan that apply to noise reduction. Noise requirements may be made in the form mitigation measures as a part of the PEIR. Additional noise reduction opportunities will be more accurately determined once a preferred land use alternative has been selected.

9.11.7. Recommendations

Further noise recommendations will be more accurately determined once a preferred land use alternative has been selected.

9.12. TRIBAL CULTURAL RESOURCES

9.12.1. Introduction

This section describes the existing tribal cultural resources (TRCs) conditions of the Specific Plan and vicinity, and identifies associated regulatory requirements, thresholds of significance, impact analysis, cumulative impacts, mitigation measures, level of significance after mitigation, and references. Information contained in this section is based on survey and evaluation of cultural resources within the Study Area and surrounding area.

As part of the public outreach process, the Quechan tribe was engaged to provide input on Lithium Valley's draft report of the Blue Ribbon Commission on Lithium Extraction in California, dated September 21, 2022. In the tribe's response letter, the Quechan Tribal President expressed their frustration with the lack of government-to-government tribal consultation conducted by the County. In addition, the tribe states that the draft report should state what impacts to the Salton Sea landscape have already occurred from the current geothermal and lithium extraction facilities in the area.

9.12.2. Methodology and Sources

A project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (PRC Section 21084.2.). AB 52 requires a TCR to have tangible, geographically defined properties that could be impacted by an undertaking. An appropriate approach to potential impacts to TCRs is developed in response to the identified presence of a TCR by California Native American Tribes through the process of

consultation. Government-to-government consultation is presently pending. In this process the CEQA lead agency must extend a good faith and reasonable effort to consult with tribes, and to jointly develop management strategies for TCRs.

Tribal consultation and engagement with regard to the Lithium Valley Specific Plan and PEIR will occur throughout the project process.

9.12.3. Applicable Regulations

Assembly Bill 52

California Assembly Bill 52 (AB 52), which took effect July 1, 2015, establishes a consultation process between California Native American Tribes and lead agencies in order to address tribal concerns regarding project impacts and mitigation to "tribal cultural resources" (TCR). Public Resources Code section 21074(a) defines TCRs and states that a project that has the potential to cause a substantial adverse change to a TCR is a project that may have an adverse effect on the environment. A TCR is defined as a site, feature, place, cultural landscape, sacred place, and object with cultural value to a California Native American tribe that is either:

1. listed or eligible for listing in the CRHR or a local register of historical resources, or
2. determined by a lead agency to be a TCR.

Native American Heritage Values

Federal and state laws mandate that consideration be given to the concerns of contemporary Native Americans with regard to potentially ancestral human remains, associated funerary objects, and items of cultural patrimony. Consequently, an important element in assessing the significance of the study site has been to evaluate the likelihood that these classes of items are present in areas that would be affected by the proposed project.

Also, potentially relevant to prehistoric archaeological sites is the category termed Traditional Cultural Properties in discussions of cultural resource management (CRM) performed under federal auspices. According to Patricia L. Parker and Thomas F. King (1998), "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include:

1. A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;

- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;

- A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
- A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

A Traditional Cultural Property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

9.12.4. Existing Conditions

In accordance with Appendix G of the State CEQA Guidelines, the applicable thresholds of significance with regard to Tribal Cultural Resources are listed below.

a) Would the project cause a substantial change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to California Native American tribe, and that is:

   i. Listed or eligible for listing in the California Register of Historical Resource, or in a local register of historical resources as defined in Public Resources Code §5020.1(k), or

   ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the criteria set forth in subdivision c) of Public Resource Code §024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

9.12.5. Constraints

Constraints will be defined based on the results of government-to-government consultation. This process is pending. Through the ongoing government-to-government consultation process and public review of the Baseline Report, Land Use Alternatives, and Initial Study and Notice of Preparation of an Environmental Impact Report, Obsidian Butte has been identified as an important Tribal Cultural Resource that should be avoided and viewsheds inclusive of it should be considered.

9.12.6. Opportunities

Tribal consultation and engagement with regard to the Lithium Valley Specific Plan and PEIR will occur throughout the project process. Opportunities will be assessed with the tribes and addressed in the land use alternatives, Specific Plan, and PEIR.

9.12.7. Recommendations

Tribal consultation and engagement with regard to the Lithium Valley Specific Plan and PEIR will occur throughout the project process. Recommendation will be assessed with the tribes and addressed in the land use alternatives, Specific Plan, and PEIR.

9.13. WILDFIRE

9.13.1. Introduction

The purpose of this section is to provide information to establish the existing conditions for Wildfire in the Study Area of the County of Imperial (County) Lithium Valley Specific Plan (Specific Plan; Project). This Wildfire Existing Conditions Technical Report will support development of the Specific Plan and associated environmental document.

9.13.2. Methodology and Sources

The following analysis considers the existing environmental setting and regulatory environment applicable to the Study Area. The analysis determines whether implementation of the Specific Plan could create significant wildfire hazards to the public or the environment. The analysis considers the existing climate, terrain, and vegetation conditions within the Study Area based, in part, on information obtained from the following wildfire-related databases:

- California Department of Forestry and Fire Protection Fire and Resource Assessment Program GIS Data
- Office of the State Fire Marshall Fire Hazard Severity Zone Maps

Additionally, a review of existing documents, literature, and regional data was conducted for this report, including peer-reviewed scientific papers; resource agency documents and data; national, state, regional, and local geographic information system (GIS) datasets, and all other relevant information and data. This section also uses information provided in other sections as they relate to wildfire (ex. Biology, Geology and Soils, etc.) Specific sources used are cited throughout this report with references provided.

9.13.3. Applicable Regulations

Federal Regulations

National Fire Protection Association Codes, Standards, Practices, and Guides

National Fire Protection Association codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by ANSI. This process brings together professionals representing varied viewpoints and interests to achieve consensus on fire and other safety issues. National Fire Protection Association standards are recommended guidelines and nationally accepted good practices in fire protection but are not law or "codes" unless adopted as such or referenced as such by the California Fire Code (CFC) or the Fire Authority Having Jurisdiction (FAHJ).

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 and again in 2009 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgment

of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are founded on the following guiding principles:

- Firefighter and public safety are the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

National Fire Plan

The National Fire Plan was a presidential directive in 2000 as a response to severe wildland fires that had burned throughout the United States. The National Fire Plan focuses on reducing fire impacts on rural communities and ensuring sufficient firefighting capacity in the future. It is a long-term investment that will help protect natural resources in addition to communities, as well as a long-term commitment based on cooperation and communication among federal agencies, states, local governments, Tribes, and interested members of the public. Five key areas are addressed under the National Fire Plan: Firefighting and Preparedness, Rehabilitation and Restoration, Hazardous Fuels Reduction, Community Assistance, and Accountability.

International Fire Code

Created by the International Code Council, the International Fire Code (IFC) addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage (although it is not a federal regulation, but rather the product of the International Code Council). The IFC emphasizes prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the IFC uses a hazards classification system to determine the appropriate measures (often including construction standards and specialized equipment) to be incorporated in order to protect life and property. The IFC uses a permit system (based on hazard classification) to ensure that required measures are instituted.

Federal Energy Regulatory Commission Standards

The Federal Energy Regulatory Commission requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, the minimum clearances required in state regulations are greater than the federal requirement. In California for example, the state has adopted General Order 95 rather than the North American Electric Reliability Corporation (NERC) Standards as the electric safety standard for the state. Federal Energy Regulatory Commission standards are not discussed further.

North American Electric Reliability Corporation Standards

NERC is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2020). NERC FAC 003-4 is a Federal Energy Regulatory Commission-approved standard implemented to eliminate transmission outages and resulting blackouts due to vegetation contact. The standard applies to transmission line voltages operating at 200 kilovolts and higher and certain lower-voltage transmission lines identified as critical by the Western Electricity Coordinating Council. NERC FAC 003-4 applies to all utilities across the United States and directs them to manage vegetation clearances between trees and power lines to ensure the reliable operation of the transmission system.

National Electric Safety Code 2017

The National Electric Safety Code covers basic provisions related to electric supply stations, overhead electric supply and communication lines, and underground electric supply and communication lines. The code also contains work rules for construction, maintenance, and operational activities associated with electric supply and communication lines and equipment. The code, which must be adopted by states on an individual basis, is not applicable in the State of California. As stated previously, the State of California has adopted its own standard (General Order 95) rather than a general national standard. The National Electric Safety Code is not discussed further.

Institute of Electrical and Electronics Engineers Standards 516-2009

The Institute of Electrical and Electronics Engineers is a leading authority in setting standards for the electric power industry. Standard 516-2009, Guide for Maintenance Methods on Energized Power Lines, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State Regulations

California Strategic Fire Plan

The 2018 Strategic Fire Plan for California reflects CAL FIRE's focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services and (2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate

change goals and to serve as important habitat for adaptation and mitigation. The Strategic Fire Plan for California provides a vision for a natural environment that is more fire resilient; buildings and infrastructure that are more fire resistant; and a society that is more aware of and responsive to the benefits and threats of wildland fire; all achieved through local, state, federal, tribal, and private partnerships (CAL FIRE 2018).

California Government Code

California Government Code Sections 51175 through 51189 provide guidance for classifying lands in California as fire hazard areas and establishes requirements for management of property within those lands. CAL FIRE is responsible for classifying FHSZs based on statewide criteria and makes the information available for public review. Furthermore, local agencies must designate, by ordinance, very high FHSZs within their jurisdiction based on the recommendations of CAL FIRE.

California Code of Regulations

California Fire Code

The CFC is Chapter 9 of Title 24 of the California Code of Regulations. It was created by the California Building Standards Commission and is based on the IFC. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazards classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every 3 years.

California Public Resources Code

California Public Resources Code, Section 4292, states that a minimum firebreak of 10 feet in all directions from the outer circumference of a pole or tower be established around any pole that supports a switch, transformer, lightning arrester, line junction, or end or corner pole. All vegetation shall be cleared within the firebreak.

California Public Resources Code, Section 4293, establishes the minimum vegetation clearance distances (between vegetation and energized conductors) required for overhead transmission line construction. Minimum clearances are discussed as follows:

- A minimum radial clearance of 4 feet shall be established for any conductor of a line operating at 2,400 or more volts but less than 72,000 volts.
- A minimum radial clearance of 6 feet shall be established for any conductor of a line operating at 72,000 or more volts but less than 110,000 volts.

- A minimum radial clearance of 10 feet shall be established for any conductor of a line operating at 110,000 or more volts but less than 300,000 volts.
- A minimum radial clearance of 15 feet shall be established for any conductor of a line operating at 300,000 or more volts.

Specific requirements applicable to the construction and operation of the proposed project include those from California Public Resources Code, Division 4, Chapter 6:

- Section 4427 – Operation of fire-causing equipment.
- Section 4428 – Use of hydrocarbon-powered engines near forest, brush, or grass-covered lands without maintaining firefighting tools.
- Section 4431 – Gasoline-powered saws and firefighting tools.
- Section 4442 – Measures, requirements, and exemptions for spark arresters.

California Department of Forestry and Fire Protection

CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE responds to all types of emergencies, including wildland fires and residential/commercial structure fires. In addition, CAL FIRE is responsible for the protection of approximately 31 million acres of private land within the state and, at the local level, is responsible for inspecting defensible space around private residences. CAL FIRE is responsible for enforcing State of California fire safety codes included in the California Code of Regulations and the California Public Resources Code.

CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and successfully implement fire prevention techniques and policies. Violations of state fire codes discovered during inspections are required to be brought into compliance with the established codes. If a CAL FIRE investigation reveals that a wildfire occurred because of a violation of a law or negligence, the responsible party could face criminal and/or misdemeanor charges. For cases where a violation of a law or negligence has occurred, CAL FIRE has established the Civil Cost Recovery Program, which requires parties liable for wildfires to pay for wildfire-related damages.

CAL FIRE maps FHSZs based on fuel loading, slope, fire history, weather, and other relevant factors as directed by California Public Resources Code, Sections 4201–4204, and California Government Code Sections 51175–51189. FHSZs are ranked from moderate to very high and are categorized for fire protection within a Federal Responsibility Area, State Responsibility Area, or Local Responsibility Area under the jurisdiction of a federal agency, CAL FIRE, or local agency, respectively.

CPUC General Order 95: Rules for Overhead Transmission Line Construction

California Public Utilities Commission (CPUC) General Order 95 governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 generally states that this should be done in

accordance with accepted good practices for the given location conditions known at the time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment. Rule 35 of General Order 95 (Tree Trimming) requires the following:

- Four-foot radial clearances for any conductor of a line operating at 2,400 volts or more, but less than 72,000 volts
- Six-foot radial clearances for any conductor of a line operating at 72,000 volts or more, but less than 110,000 volts
- Ten-foot radial clearances for any conductor of a line operating at 110,000 volts or more, but less than 300,000 volts (this would apply to the proposed project)
- Fifteen-foot radial clearances for any conductor of a line operating at 300,000 volts or more

CPUC General Orders (GOs) 128 and 165

GO 128 establishes rules governing the construction of underground electric and communication lines to promote and safeguard public health and safety. GO 165 establishes requirements for inspections of electric distribution and transmission facilities (excluding those facilities contained in a substation) in rural, high fire threat areas in order to ensure safe and high-quality electrical service.

Power Line Fire Prevention Field Guide 2021 Edition

The Power Line Fire Prevention Field Guide outlines procedures to minimize the risk of wildfire caused by electrical power lines and equipment. CAL FIRE, the state's three investor-owned utilities (Pacific Gas and Electric Company, SCE, and San Diego Gas and Electric), and other California electric utilities have mutually developed the comprehensive field guide for their personnel. In addition to safety of the public, the guide details fire hazard reduction maintenance procedures for the safety of conductors and certain hardware.

CPUC Fire Threat Zones

In 2018, CPUC approved a statewide Fire-Threat Map (CPUC 2019), which delineates a High Fire-Threat District and is intended to assist with implementation of new fire prevention rules. The map delineates areas in the state where there is an elevated risk and an extreme risk (including likelihood and potential impacts on people and property) from utility-associated wildfires. The Fire-Threat Map helps prioritize fire hazard areas to allow for implementation of new fire-safety regulations adopted by the CPUC in December 2017. Electric investor-owned utilities must file an annual report that contains a fire-prevention plan containing specified information for its overhead electric facilities in the High Fire-Threat District. Increased vegetation management and new fire regulations also apply to the High Fire-Threat District.

Mutual Aid Agreements

There are multiple regional, state, and local agreements and operating plans currently in use that provide for mutual aid between and among federal, state, and local fire agencies (Imperial County OES, 2016). The statewide mutual aid system exists to ensure that adequate resources, facilities,

and other supports are provided to jurisdictions whenever resources prove to be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed.

Regional and Local Regulations

Imperial County General Plan Seismic and Public Safety

The General Plan's Seismic and Public Safety Element contains a section on Fire Hazards, which describes the potential for a major fire in unincorporated areas of the County and addresses building code and performance standards including the County's adoption of the Uniform Building Code (UBC) and Uniform Fire Code (UFC), which provide minimum fire safety standards (Imperial County, 1993). This section also provides a brief description of County ordinances related to fire hazard reduction and adequate emergency response, including:

- Imperial County Codified Zoning Ordinance: Prevents the construction of incompatible or hazardous structures, limits height and bulk of buildings, and specifies setbacks and distances between buildings.
- Imperial County Subdivision Ordinance: As a condition of securing a subdivision of land, water systems of adequate size and pressure for firefighting, and adequate roadway widths for emergency service vehicle access including maneuverability of fire trucks are required to reduce risk of fire.
- County of Imperial Fire Prevention and Explosives Ordinance, Section 52101-53300: Contains provisions for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion. Such measures in this Ordinance include the following: Storage of flammable materials, storage of radioactive materials, permit required for the sale and use of fireworks, abatement of weeds and other vegetation.

The Seismic and Public Safety Element of the Imperial County General Plan contains goals and policies to minimize the risks associated with natural and human-made hazards, including fire hazards. This element of the General Plan includes the following goals and objectives related to wildfire.

Land Use Planning and Public Safety

Goal 1: Include public health and safety considerations in land use planning.

- Objective 1.6 - Ensure environmental hazards are considered when siting critical facilities.
- Objective 1.8 - Reduce fire hazards by the design of new developments.

Emergency Preparedness

Goal 2: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.

- Objective 2.1 - Ensure the adequacy of existing emergency preparedness and evacuation plans to deal with identified hazards and potential emergencies
- Objective 2.5 - Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.
- Objective 2.8 - Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards, including flooding, land subsidence, earthquakes, other geologic phenomena, levee or dam failure, urban and wildland fires, and building collapse, by appropriate planning and emergency measures.

Imperial County Multi-Jurisdictional Hazard Mitigation Plan (MHMP)

The County's MHMP aims to significantly reduce deaths, injuries, and other disaster losses caused by natural and human caused hazards in Imperial County (Imperial County, 2021). Past and current hazard mitigation activities and goals are identified to reduce future disaster losses. The MHMP identifies wildfire as a potential natural hazard in Imperial County.

Imperial County Fire Department Fire Prevention Bureau

The County Fire Prevention Bureau enforces the 2010 California Fire, Building, Electrical, County Ordinances, as amended by the County of Imperial Municipal Code, in addition to National Fire Protection Association standards; Title 19, of the California Public Safety Code; and, the California Health and Safety Code (Imperial County Fire Department, 2023).

Municipal Code

Chapter 8.20 of the Municipal Code adopts, with local amendments, the 2007 California Fire Code. The California Fire Code was last updated in 2022. The project would be subject to the 2022 California Fire Code, which contains significant updates since 2007 that are intended to safeguard people and property from fire.

9.13.4. Existing Conditions

Fire Hazard Severity Zones

CAL FIRE is responsible for mapping fire hazard areas throughout the state and provides these maps through the Fire and Resource Assessment Program database. As depicted in these maps, wildfire suppression and prevention responsibility are geographically divided by Federal, State, and Local Responsibility Areas and further categorized into FHSZs, which are ranked as Moderate, High, and Very High. FHSZs are determined by a region's land cover, vegetation, terrain, climate, fire history, and several other factors that contribute to the fire environment. This information is provided to the public and local agencies to incorporate the fire hazard mapping into local planning efforts. The Project Area lacks dense flammable vegetation and steep slopes, and according to CAL FIRE's fire hazard maps, the Project Area is currently mapped as Unzoned and Moderate Hazard, with Unzoned covering the majority (OSFM, 2007). The Project Area is mainly LRA with small areas of FRA (CAL FIRE, 2021b).

Climate

The Imperial Valley has an arid low latitude desert (hot) climate, characterized by extremely hot and dry summers and moderately cold winters (CDFG 2003; PEC 2006). The average annual high temperature is 88 degrees Fahrenheit and average annual low temperature is 57 degrees Fahrenheit, which is much higher than other regions of California (U.S. Climate Data 2022; PEC 2006). The average annual precipitation is approximately 2.9 inches with most rainfall occurring December to February (U.S. Climate Data 2022). The region receives 85 to 90 percent of possible sunshine each year, the highest in the United States. Due to the arid nature of the region, vegetative fuel moisture can drop to low levels any time of the year.

Vegetation

Vegetation conditions largely dictate wildfire hazard. As provided in Section 9.4.4.2, the Study Area is characterized by a highly modified landscape influenced by human activities and disturbance. The Salton Sea itself, surrounding agricultural uses and associated irrigation system, and the other extensive land uses, including geothermal facilities, solar fields, and roads and urban areas have transformed the vegetation communities and land cover of the Study Area. Figure 9.4-2 provides mapping of the vegetation communities and land cover types in the Study Area, and Table 9.4-2 in Section 9.4.4.2 provides an acreage summary of the general vegetation communities and land cover types in the Study Area. Agricultural areas cover the majority of the Project Area followed by developed and disturbed areas.

The Project area supports isolated parcels and patches of remnant desert scrub vegetation not previously converted by land use changes, primarily located in the northeastern corner of the Study Area and around the rock outcrops associated with Obsidian Buttes and Red Hill. Desert scrub communities include widely scattered creosote bush (Larrea tridentada), saltbush species (e.g., Atriplex canescens), white bur-sage (Ambrosia dumosa), brittlebush (Encelia farinosa), and boxthorn (Lycium andersonii) among other species (USACE and CNRA 2022). While wildfires can occur in desert scrub vegetation, the occurrence is considered rare due to limited burnable fuels to carry a wildfire.

The SPA also includes areas of riparian vegetation primarily associated with the Alamo River and immediate tributaries and drains. These communities occur along the banks of these features are primarily dominated by non-native species such as tamarisk, athel tree (Tamarix aphylla), quail bush (Atriplex lentiformis) but also supports narrowleaf willow (Salix exigua), salt grass, and arrowweed (Pluchea sericea) (Dudek 2010). In the remnant patches of desert scrub communities that occur in the higher elevation areas in the northeastern portion of the Study Area, desert riparian communities occur along ephemeral washes, which are characterized by scattered desert ironwood (Olneya tesota), mesquite (Prosopis spp.), and palo verde (Parkinsonia spp.). Additionally, a system of irrigation canals and drains occurs generally along roadway shoulders throughout the Study Area. Canals are largely devoid of vegetation. Drains can be unvegetated or support sparse to thick vegetation cover with species such as tamarisk and arrowweed. Wildfires have the potential to occur in these vegetation communities within the SPA, however low fuel density limits the potential for

substantial wildfire spread. Overall, the vegetation at the Study Area and adjacent areas is not conducive to significant wildfire hazards.

Terrain

Terrain affects wildfire movement and spread. Steep terrain typically results in faster upslope fire spread due to the pre-heating of uphill vegetation. Flat areas typically result in slower fire spread when absent of windy conditions. For example, fire generally moves slower downslope than upslope. Topographic features, such as saddles, canyons, and chimneys (land formations that collect and funnel heated air upward along a slope), may form unique circulation conditions that concentrate winds and funnel or accelerate fire spread. Terrain may also buffer, shelter, or redirect winds away from some areas based on canyons or formations on the landscape. Saddles occurring at the top of drainages or ridgelines may facilitate the migration of wildfire from one canyon to the next. Various terrain features can also influence fire behavior. Terrain in the Project Area is considered mostly flat with areas of gently rolling terrain. The Project Area does not include topographical features with the potential to exacerbate wildfire hazard.

Fire History

Fire history assists in understanding potential wildfire behavior based on previous wildfire occurrences. Known areas of historical wildfire identify areas and communities that may again be impacted by wildfire. Fire History data was obtained from the California Department of Forestry and Fire Protection (CAL FIRE) fire perimeter data (CAL FIRE, 2021a). The fire history record is from 1878 to 2021; however, Imperial County Fire may have additional fire perimeter data that was not in the FRAP data record.

The fire history data suggest that only one wildfire has occurred within the Specific Study Area. The Alamo Fire occurred on 8/20/2011 and burned roughly 30 acres in the Alamo River drainage in the central portion of the SPA before it was quickly contained. No other wildfires are recorded to have occurred within 5 miles of the SPA.

Infrastructure

The Project would convert undeveloped land requiring the installation of infrastructure associated with the Project. Project construction would introduce new potential sources of ignition to the Study Area, including vehicles, roadways, sparks associated with grading and welding activities or other hot work, parking on or near dry vegetation, and the overall increase in human activity on site. Accidental ignition could result in a fire, however, limited vegetation on an offsite is not likely to lead to a substantial wildfire.

Emergency Response

Emergency fire response to the Study Area would be expected to come from the Imperial County Fire Department (ICFD). Through the statewide mutual aid system, agencies can rely on a collaborative response to fire and emergency situations. This system exists to ensure that adequate resources, facilities, and other supports are provided to jurisdictions whenever resources prove to

be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed.

Imperial County Fire has a station located approximately 1 mile from the northern portion of the Project Area at 8071 Luxor Ave, Niland, CA 92257. Other fire stations in the Project's vicinity include the Calipatria Fire Department at 125 Park St, Calipatria, CA 92233 less than one mile from the southeast boundary of the SPA. Additional stations which could respond to wildfires at the SPA include the City of Brawley Fire Station 2 at 1505 Jones St, Brawley, CA 92227 and City of Brawley Station 1 at 815 Main St, Brawley, CA 92227 roughly 8 and 9 miles from the southernmost boundary of the SPA respectively. In the event of a nearby wildfire, fire protection services could come from a combination of federal (BLM), state (CAL FIRE), and local Imperial County and city fire agencies.

The Imperial County Office of Emergency Services (OES) works to provide an all-hazards approach to emergency management (Imperial County OES, 2016). The OES is responsible for writing, reviewing, and updating the Imperial County Emergency Operations Plan. The Emergency Operations Plan, last updated in 2016 EOP establishes the framework of the Imperial County Operational Area's emergency organization consisting of the County, cities, towns, special districts, schools, volunteer and private sector organizations, as well as State and Federal agencies and conforms to current State and Federal guidelines for emergency plans. The EOP further defines functions, assigns responsibilities, specifies policies and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements utilizing the Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS) standards (Imperial County OES, 2016).The Emergency Operations Plan describes various hazard situations that may arise in the County including, earthquakes, hazardous materials exposure, flooding, fires, and others (Imperial County OES, 2016).

Furthermore, Objective 1.17 of Goal 1 of the County's General Plan Circulation and Scenic Highways Element requires that road systems are adequate to accommodate emergency situations and evacuation plans (Imperial County Planning and Development Services Department, 2008). In the event of an emergency requiring evacuation and emergency vehicle access, the Imperial County Sheriff's Department, in collaboration with the Transportation and Land Management Agency, city law enforcement, California Department of Transportation (Caltrans), and California Highway Patrol, would establish evacuation routes.

Post-fire Slope Instability

Wildfires can result in slope instability due to increased erosion and reduced soil water absorption. Post-fire instability concerns are general greatest during or following substantial rains impacting post-fire hillslopes.

As described in Section 9.6 Geology/Soils, the topography of the SPA is predominantly flat to gently sloping, resulting in no potential for landslides and slope instability across the SPA. An exception would be Obsidian Butte and Rock Hill (also known as Red Hill), which have historically been mined for pumice and include outcrops of obsidian, pyroclastic flows, and basalt. Steep natural and

manmade slopes (for mining) are present within these areas, which are located adjacent to the Salton Sea. Over steepened slopes may be susceptible to landslide and slope instability. However, it is not anticipated that wildfires would occur on these slopes due to minimal vegetation present.

9.13.5. Constraints

New development and redevelopment within the Specific Study Area is not anticipated to directly expose people or structures to wildfire given the factors described above including minimal vegetation, flat terrain, minimal fire history, and nearby fire stations. Substantial wildfires are not likely to occur within the SPA. Development of the Project would introduce new potential sources of ignition to the Study Area, including vehicles, roadways, sparks associated with grading and welding activities or other hot work, parking on or near dry vegetation, and the overall temporary increase in human activity on site. Accidental ignition could result in a fire, however, limited vegetation on an offsite is not likely to lead to a substantial wildfire. New development will remove natural flammable fuels further reducing wildfire spread within the SPA.

As noted in Section 9.9 Hydrology/Water Quality, water supply would be provided by the Imperial Irrigation District which sources most of its water through surface water rights on the Colorado River. Recent years of extended drought conditions has put additional pressure on the district to broaden their water management and conservation measures to ensure continued ability to meet water supply demands. These measures include water storage and banking opportunities, conservation measures, exchanges and transfer programs, and capital improvements. However, water management challenges for the district include limitations on water storage because of the flat terrain, limitations on reuse opportunities because of the salinity of Colorado River, existing deterioration of Salton Sea including exposed playa and increased salinity, and poor water quality of underlying groundwater resources. Potential constraints on water supply availability for fire prevention for the Study Area will in part be somewhat dependent on a combination of future conditions of the Colorado River and the water demands of the development under the Specific Plan compared to existing agricultural water demands that would be replaced by implementation of the Specific Plan.

9.13.6. Opportunities

It is possible for the Project to further reduce wildfire hazard through the conversion of natural vegetation in the SPA to areas of development and maintaining and managing hazardous fuel conditions on-site through annual weed abatement further limiting the potential for wildfire spread within the SPA.

9.13.7. Recommendations

No further recommendations are made related to Wildfire as no apparent constraints are anticipated with implementation of the Specific Plan.

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APPENDIX A
INFRASTRUCTURE ASSESSMENT

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1. Introduction

1.1 PURPOSE AND INTENT OF THE INFRASTRUCTURE ASSESSMENT

The Lithium Valley Infrastructure Assessment (Infrastructure Assessment) is intended to provide a comprehensive evaluation of the existing infrastructure located within and surrounding the Lithium Valley Study Area (Study Area). The Study Area encompasses 51,786 acres, located adjacent to the southeastern bend of the Salton Sea in Imperial County, California. It is mostly comprised of unincorporated land within the County's jurisdiction, holding a small piece of land owned by the City of Calipatria. See Figure 1-1, Study Area, to view the boundary extent of the Study Area.

The Infrastructure Assessment produces a high-level overview of the existing conditions of the infrastructure pertinent to the success of the proposed project. Through interdisciplinary collaboration, engagement with technical experts, and coordination with the County's Public Works Department, the Infrastructure Assessment represents an extensive research effort to establish a baseline for existing conditions to help identify barriers to maintaining efficient and effective infrastructure assets.

Renewable energy and lithium extraction is expected to bring significant economic benefits to the region, including new jobs and regional investment into public services and community resources. The County's public infrastructure is currently focused on incorporated cities, such as nearby Calipatria, Brawley and Westmorland while the Study Area remains primarily undeveloped.

To realize the potential of these resources, the County intends to make significant investments in its infrastructure. This includes investments in transportation, water, and other critical systems that are essential for supporting the development and growth of these industries. The County will also need to work with state and federal agencies to ensure that the necessary regulations and incentives are in place to support the development of these industries.

The findings of this document will inform project stakeholders, County staff, consultants and key decision makers on the current state of infrastructure, potential issues and areas of opportunity to assist in the development of high-quality infrastructure to better service the Study Area.

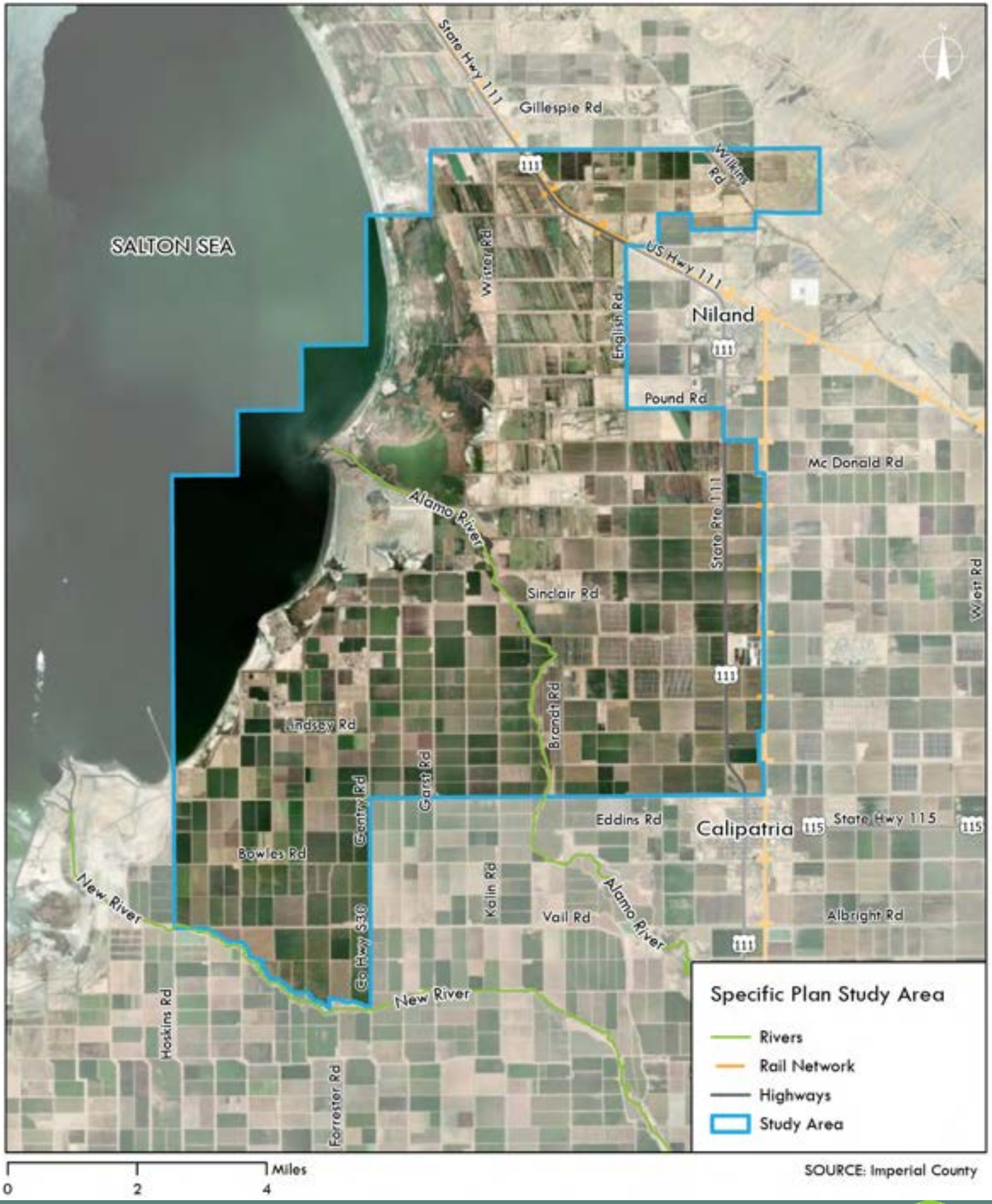
1.2 METHODOLOGY

The Infrastructure Assessment is organized by infrastructure asset categories and subcategories. Categories range from general mobility, circulation, utility infrastructure and the availability of community resources which contribute to the quality of life of residents. Public infrastructure is critical for providing necessary public services such as transportation, electricity, water, and sewer, amongst various other community resources.

These individual concepts are explored using a standardized evaluation process starting with:

1. A brief introduction establishing context for the category of infrastructure being assessed;
2. An explanation of the specific research methodology and authoritative sources leveraged;

3. Research of relevant planning documents and a summary of the applicable regional, state and federal regulations identifying potential project-level impacts;
4. An inventory of existing infrastructure and components of the infrastructure asset network
5. A conclusive summary illustrating key findings, highlighting areas of concern and recommending potential infrastructure improvements to incorporate in the Specific Plan.



INFRASTRUCTURE ASSESSMENT
FIGURE 1-1, Study Area

1.3 REGIONAL CONTEXT

Imperial County (County) is located in Southern California, east of San Diego County and north of the US-Mexico Border which comprises its southern boundary. The County is largely dominated by agricultural land uses, holding a rich history of crop production and employment for the agricultural industry, serving as a hub for international trade and regional commerce. The County is home to a population of approximately 180,000 individuals, while the Study Area is located southeast, adjacent to the region's prominent landscape feature, the Salton Sea.

Imperial County is characterized as a semiarid desert with hot, dry summers and warm winters. The County's favorable climate and fertile soil optimize its location for agriculture, and the sector employs a significant portion of the local population. Agriculture is the mainstay of the Imperial County economy, however recent discoveries in geothermal energy potential and lithium extraction have generated interest into the region's future economic opportunities with the green energy industry. The combination of the flat terrain of the valley and the strong diurnal temperature differentials created by solar heating produce moderate winds and deep thermal convection, making the County an ideal location for a wide range of renewable energy projects.

1.4 EXECUTIVE SUMMARY

Table 1-1, Executive Summary, provides the key findings of each topic covered in this Infrastructure Assessment. See specific topic sections for further analysis and findings.

Table 1-1, Executive Summary

Topic	Key Findings
Wet Utilities	Water System • IID's Present Perfected Right to use Colorado River agreement presents challenges to sufficiently support future demand. Alternative sources to access freshwater are limited due to the water distribution supply delivered by IID. • Existing main, supply, and lateral canals will need to remain operational for all existing development not impacted by proposed improvements. • Potential upgrades to conveyance canals/ditches via the All-American Canal, Coachella Canal, Westside Main Canal and Central Canal should be considered depending on water demand, adjusted supply, and land use planning. • Water distribution system operations from IID will likely need to be updated to accommodate supply release from the Hoover Dam to support increased residential, industrial and commercial developments. Wastewater System • Future development will require extensive installation of trunk sewer mains, laterals/service lines, lift stations (due to the existing

	flat topography) and upgrades to appropriate wastewater treatment facilities to handle currently projected future flows as well as development within the Study Area. • Future programmatic studies should be completed to determine viability of existing infrastructure, feasibility of future infrastructure development and tie in points. Stormwater & Drainage System • The Study Area currently lacks stormwater infrastructure a proper storm drain system and would be beneficial for this area if it is developed.
Dry Utilities	Electricity and Energy Grid • Once land use alternatives are prepared, further analysis can be prepared to evaluate the capacities of specific transmission lines, anticipated load, and easements that may be utilized to support the land use alternatives. Solid Waste, Recycling, and Composting • Recent closures of landfill and hazardous solid waste facilities puts the County at risk of not having capacity for future development, or requiring future uses to truck waste out of state. Telecommunications • Telecommunication services are currently provided on a customer-by-customer basis. Due to the remoteness of the Study Area, servicing commercial customers in the Study Area can be costly.
Roads and Bridges	Roads • Existing traffic volumes in the Transportation Study Area are relatively low, and there is sufficient capacity on the existing roadways to accommodate additional traffic from new development. • The majority of existing roads within the Transportation Study Area are currently unpaved; where they are paved, pavement conditions are fair to poor. • None of the Transportation Study Area roadways are built to General Plan Circulation Element standards based on their classification types. • Many of the Transportation Study Area roadways may be too narrow for two-way heavy truck traffic. Bridges • Four of the bridges in the Transportation Study Area were built over 50 years ago while six of them have the highest permit rating and can accommodate legal loads.

	• Lack Road Bridge was recently reconstructed and is currently operational for legal loads. • A bridge rehabilitation project is currently underway for the Sinclair Road Bridge over the Alamo River. • Brandt Road Bridge over the Alamo River will be replaced with a new single-span bridge. • The Operating Rating of some of the bridges in the Transportation Study Area will restrict the traffic of material and equipment.
Rail	• Utilizing the existing rail subdivisions as a transportation commodity for the Lithium Valley site area is observed to be viable option for future development of the Study Area. • Designing a connection to the established railroad network would be most viable along the Calexico Sub, likely south of the Niland Junction.
Airports	Imperial County Airport • IPL is currently designated as an Aircraft Approach Category B-II. Aircrafts larger than B-II may under certain conditions safely use the airport. • IPL's pavement load bearing for the runway surface and the ramp area are not sufficient for multiple commercial services aircraft. • Numerically, the airport is well below annual capacity for utilization. Brawley Municipal Airport • BWC is currently designated as an Aircraft Approach Category B. • All aircraft can be accommodated at BWC in its current configuration, with exception to B-II greater than 12,500 pounds that are marginally accommodated. • Numerically the airport is well below annual capacity for utilization. • There is limited space for aircraft parking as well as cargo loading and vehicular staging. For this reason, cargo operations at BWC are currently limited to B-II aircraft.
Quality of Life	Parks and Recreation • The only available park asset in the Study Area is Red Hill Marina County Park. • FWS-managed lands within the Study Area contain critical habitat for wildlife and bird populations. Current recreation facilities are financially supported and managed by the state and federal agencies which govern the area. Pedestrian and Bicycle Facilities

	• There are little to no existing infrastructure dedicated for pedestrians and bicyclists in the Study Area. • Roads often have insufficient shoulder to accommodate for pedestrian and bicycle uses and are often inaccessible to residents facing mobility challenges. Community Resources • Unincorporated areas throughout the County lack access to community resources and must often seek distant support in comparison to their counterparts in neighboring cities. • County-operated cooling centers are located in areas with varying populations from urban areas, such as Calipatria and Niland, extending LOS to residents in more rural communities.

2. Wet Utilities

2.1 WATER SYSTEM

2.1.1 Introduction

This section includes a discussion of the existing water system conditions in the Study Area to present the environmental baseline for the Specific Plan and PEIR.

2.1.2 Methodology and Sources

To establish a baseline for existing conditions of the water system in the Study Area, an existing inventory was developed using a combination of publicly available water infrastructure data, applicable planning documents and input from relevant agencies and organizations.

First, a comprehensive review of relevant policies and documents was performed to construct the regulatory framework surrounding the operation, maintenance and management of the water supply system. The existing inventory then served to identify the various water infrastructure assets and network components to assist in the evaluation of its adequacy for water provision. Upon definition of the analytical approach chosen to assess the system, the method employed revealed a series of findings relevant for evaluating the potential for the existing water supply infrastructure network to service the proposed project site. These findings, as well as the authoritative sources leveraged to perform the analysis, are provided in the "References" section of this document.

2.1.3 Applicable Regulations

Senate Bill 610

SB 610 was approved by the Governor in 2001, and became effect January 1, 2022. SB 610 requires a lead agency to determine that a project (as defined in Water Code section 10912) subject to CEQA), to identify any public water system that may supply water for the project and to request the applicants to prepare a specified Water Supply Assessment. With the introduction of SB 610,

any project under the CEQA shall provide a WSA if: (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space; (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area; or (7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in September 2014, is a comprehensive three-bill package that provides a framework for the sustainable management of groundwater supplies by local authorities. The SGMA requires the formation of local groundwater sustainability agencies (GSAs) to assess local water basin conditions and adopt locally based management plans. Local GSAs must be formed by June 30, 2017. The SGMA provides 20 years for GSAs to implement plans and achieve long-term groundwater sustainability and protect existing surface water and groundwater rights. The SGMA provides local GSAs the authority to: (1) require registration of groundwater wells; (2) measure and manage extractions; (3) require reports and assess fees; and (4) request revisions of basin boundaries, including establishing new subbasins. Furthermore, under the SGMA, GSAs responsible for high- and medium-priority basins must adopt groundwater sustainability plans within five to seven years of 2015, depending on whether the basin is in critical overdraft. The DWR has designated the Imperial Valley Basin, which the County overlies, as very low-priority and not in critical overdraft (DWR 2019).

QSA- Water Transfer Agreement

The 2003 Quantification Settlement Agreement and Related Agreements (QSA) serve as the laws, regulations, and agreements granting California the most senior water rights along the Colorado River and specifying that IID has access to 3.1 million acre-feet (maf) of Colorado River water per year. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona, and Mexico. Water is transported to the IID water service area through the All American Canal (AAC) for use throughout the Imperial Valley.

Imperial Integrated Water Resources Management Plan

The Imperial Integrated Regional Water Management Plan (IRWMP) serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management and determination, and prioritization of uses and classes of service provided (Imperial Water Forum 2012). In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three stakeholders meets the basic requirement of California DWR for an IRWMP. Through the IRWMP process, IID presented the regional stakeholders' with options in the event long-term water supply augmentation is needed, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water.

County of Imperial Land Use Ordinance, Title 9

The County's Ordinance Code provides specific direction for the protection of water resources. Applicable ordinance requirements are contained in Division 10, Building, Sewer and Grading Regulations as well as Division 22, Groundwater Management, and summarized below.

Division 10 – Grading Regulations. Section 91010.02 of the Ordinance Code outlines conditions required for issuance of a Grading Permit. These specific conditions include:

1. If the proposed grading, excavation, or earthwork construction is of irrigable land, said grading will not cause said land to be unfit for agricultural use.
2. The depth of the grading, excavation, or earthwork construction will not preclude the use of drain tiles in irrigated lands.
3. The grading, excavation, or earthwork construction will not extend below the water table of the immediate area.
4. Where the transition between the grading plane and adjacent ground has a slope less than the ratio of 1.5 feet on the horizontal plane to 1 foot on the vertical plane, the plans and specifications will provide for adequate safety precautions.

Division 22 – Groundwater Management. Section 92201 of the Ordinance Code outlines requirements for the preservation and management of the groundwater within the county for the protection of domestic, commercial, agricultural, industrial, municipal, wildlife habitat, and other uses in the county, which is known as Imperial County Groundwater Management Ordinance. The ordinance covers exportation, overdraft regulations, extraction and exportation charges, artificial recharge standards, development projects, penalties, and appeals.

Imperial Irrigation District

The IID is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 et seq. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley; operation and maintenance of the drainage canals and facilities, including those in the Project area; and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

- The Law of the River and historical Colorado River decisions, agreements, and contracts;
- The Quantification Settlement Agreement and Transfer Agreements;
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the Quantification Settlement Agreement commitments;
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water right;
- Existing IID standards and guidelines for evaluation of new development and define IID's role as a responsible agency and wholesaler of water.

IID has adopted an Interim Water Supply Policy (IWSP) for Non-Agricultural Projects during the development of the Imperial IWRMP, from which water supplies can be contracted to serve new developments within IID's water service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

Persistent drought affecting the Colorado River watershed has led to a concerted effort by Section 5 contractors in the Upper and Lower basins to develop what has become known as a Drought Contingency Plan to arrest the declining elevation at both Lake Mead and Lake Powell. A Settlement Agreement was reached in 2021 between IID and MWD reaching agreement on additional storage for excess conservation.

2.1.4 Existing Inventory

Imported Surface Water

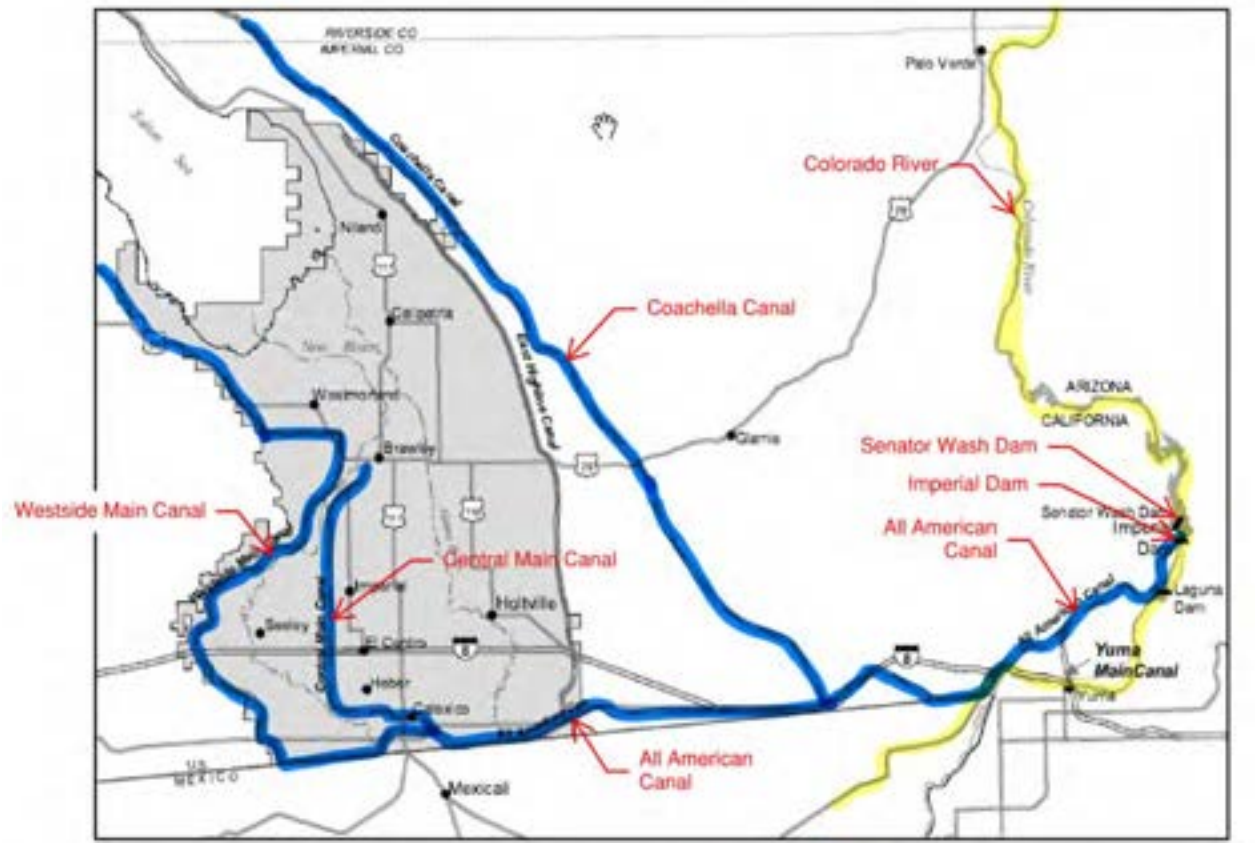
The principal source of water supply in Imperial County is Colorado River water from the All-American Canal and three main supply canals (East Highline, Central Main, and Westside Main) managed by Imperial Irrigation District (IID). Industrial users have equal access to the water as agricultural and municipal users. Resulting from the outcome of the Michael Abatti, et al. v. Imperial Irrigation District litigation, the water rights are held by IID and not the individual users. Therefore, water allocations must meet the conditions of the policy of the State of California that water be put to "reasonable and beneficial use". Industrial water supply can be obtained under IID's Interim Water Supply Policy for new Non-Agricultural Projects, which is IID's current policy to provide raw (untreated) Colorado River water to municipal, industrial, and commercial customers. Under the policy, 25,000 AFY of IID's annual Colorado River water supply has been made available for these new projects. As of December 2021, 22,800 AFY remained available under the Interim Water Supply Policy for new Non-Agricultural Projects. As a senior Colorado River water rights holder of 3.1 million AF, IID expects to continue to have sufficient water supplies available for its customers in perpetuity. To obtain water supply from IID, a project must prepare a Water Supply Development Report, establish a Water Supply Agreement, and pay the reservation and water supply development fees. The IID Water Transmission System is demonstrated in Table 2-1, IID Water Transmission System, and in Figure 2-1, IID Water Transmission System.

Table 2-1, IID Water Transmission System

System Used	Earthen	Concrete Lined	Piped	Total Length (mi)
All-American Canal	56.72	23	0.071[1]	79.79
Main Canals	128.218	22.072	0	150.29
Lateral Canals	319.702	1,091.24	26.87	1,437.81
Canals Total Miles	**504.64**	**1,136.31**	**26.941**	**1,667.89**

Table notes:
[1]The New River Siphon is a 374-foot piped portion of the AAC.
Source: Concrete Lining Projects completed 2015-2018 from IID Water Department Report and 2019 MIWA's.

Figure 2-1, IID Water Transmission System



In the unincorporated areas of the County, water and sewer services are generally limited to parcels within or immediately adjacent to established communities or incorporated cities. Each city and unincorporated community has its own water treatment facilities for treating and distributing water (including booster pump stations) to the users of each jurisdiction. Ten communities within Imperial County receive water for domestic purposes from the IID, including Calipatria and Niland.

The Calipatria Customer Service Area includes all portions of Calipatria, Niland and some adjacent Imperial County territory, with Golden State Water Company being the water purveyor for these areas and surrounding communities. Golden State Water has activated its staged Mandatory Water Conservation and Rationing filings that outline restrictions, water allocations, enforcement measures and surcharges designed to govern reductions due to water supply shortages or to achieve identified water usage goals.

Groundwater

Groundwater basins within the Imperial Region include portions of the Coyote Wells Valley Basin, Borrego Valley Basin, Ocotillo-Clark Valley Basin, West Salton Sea Basin, Ogilby Valley Basin, and all of the Imperial Valley Basin, East Salton Basin, and East Amos Valley Basin, for a total of approximately 2,800 square miles (IWF 2012). The major surface water body within the region is the Salton Sea, and drainage is to the Salton Sea via the New River and Alamo River, a few direct-

to-sea drains, and various washes. In general, the groundwater resources of the Imperial Valley can be further broken down into three principal physiographic and hydrologic areas that include: (1) the Central Irrigated Area, which lies within the valley floor generally inside the boundaries of Lake Cahuilla; (2) the East Mesa; and (3) the West Mesa. The storage capacity of the Imperial Valley Basin has been estimated at approximately 14 million acre-feet of water (Imperial Water Forum 2012).

Groundwater beneath the Study Area is primarily located in the Central Irrigated Area which has limited data largely due to the poor water quality and may have low or unpredictable yield. While unsuitable for irrigation or domestic purposes, groundwater quality may be adequate for other uses such as industrial process supply. Reclaimed water is not currently a significant source of supply in the Imperial Valley. The Imperial County groundwater basins are not adjudicated and are all designated by the California Department of Water Resources (DWR) as having a very low priority with regard to enacting the SGMA (DWR 2009). The Study Area is primarily underlain by the Imperial Valley Groundwater Basin (Basin No. 7-30), with the eastern part of its northern "arm" being area underlain by the East Salton Sea Groundwater Basin (Basin No. 7-33) (DWR 2022). Low and very low priority basins are not required to prepare GSPs at this time. Groundwater is managed by Imperial County's Groundwater Ordinance contained in Title 9, Division 22, of the Land Use Ordinance, Section 92201. Groundwater within Imperial County is generally of poor quality and unsuitable for most domestic and irrigation uses.

Neither the Imperial Valley Groundwater Basin nor East Salton Sea Groundwater Basins are adjudicated, so overlying landowners have a right to extract and use groundwater for beneficial use. Groundwater usage is regulated by Imperial County's Groundwater Ordinance contained in Title 9, Division 22, of the Land Use Ordinance, Section 92201. To secure the use of groundwater for a project in the Imperial Valley, a project must obtain a Conditional Use Permit (CUP) with Imperial County Planning and Development Services to extract groundwater. Projects that propose to use groundwater are subject to a California Environmental Quality Act (CEQA) review process and preparation of a Groundwater Extraction Feasibility Analysis and Hydrogeologic Report required per Imperial County's Groundwater Ordinance and the CEQA Guidelines, Appendix G, Environmental Checklist.

Reclaimed Water

There are significant environmental and treatment issues with this source of supply that likely make it uneconomical at this time compared to imported water or groundwater. Dudek previously evaluated the potential use of wastewater from the City of Calipatria Wastewater Treatment Plant for the Nider Solar Project and determined that it is currently not a viable source of supply but could be evaluated further if imported water were not available for future projects.

Potential sources of reclaimed water in the larger vicinity of the Study Area include the Seeley County Water District Wastewater Treatment Facility (WWTF) or a wastewater treatment plant in one of the nearby cities.

The Niland County Sanitary District (District)(formerly known as the Niland Sanitary District before is dissolved in 2018) operates the Niland Colonia Sanitation District Wastewater Treatment Plant (WTP) which serves the city of Niland. ASs of 22019, the design capacity of the WTP was 0.5 million

gallons per day (MGD) (RWQCB 2019). The discharge consists of disinfected equivalent-to-secondary treated wastewater. The treatment process includes a headworks (manual bar screen and a lift pump station), three lined ponds connected in series (Ponds 1, 2, and 3), each with two aeration units for aerated stabilization, and contact chlorination using sodium hypochlorite followed by dechlorination using sodium bisulfite. The District received a grant in 2021 to upgrade the WTP to address violations that were issued by the Colorado River Regional Water Quality Control Board. It is unknown at this time if disinfected secondary treated wastewater from the District WTP could be used for Project supply. Use of this supply would require additional discussion with Sthe District and development of a water supply agreement between the District and the Project, in addition to construction of a water pipeline and potentially upgrades to the existing treatment system.

Recycled water use in California is governed by state and federal laws and regulations enforced by the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs). The Water Quality Control Policy for Recycled Water provides direction to the RWQCBs and proponents of recycled water projects regarding recycled water use and permitting requirements. Proponents of recycled water projects are required to submit an application including a Title 22 engineering report to the RWQCB for review and approval prior to receiving a permit for recycled water use. As defined in the Water Recycling Criteria, Title 22, Division 4, Chapter 3 of the California Code of Regulations, disinfected secondary and tertiary treated recycled water can be used for industrial process water. Disinfected secondary treated recycled water may only be used for industrial process water that will not come into contact with workers. In addition, there are requirements and standard conditions for recycled water use including development of a monitoring and reporting program.

All water wells in Imperial County require a Conditional Use Permit (CUP) issued through the Imperial County Planning & Development Services Department (ICPDS). As of 1997, the California Department of Water Resources has cultivated the development of a "Well Completion Report" dataset which identifies the location and intended use of groundwater wells in the Study Area.

Several well completion reports have been submitted in and around the Study Area. Currently, the high majority of well completion reports which have been submitted in the Study Area are based on intention for exploratory and investigative purposes of geothermal energy extraction. However, other sources are intended for industrial water supply or manufacturing purposes. Considering that there are very few residential water uses in the Study Area, commercial and industrial interests appear to dominate the majority of applications for existing Well Completion Reports, indicating that most of the development occurring is based on market trends toward renewable energy development and extraction. Certain groundwater wells near the Study Area are intended for domestic water supply for the areas of Calipatria and Niland. These water supply sources are intended to supplement the available potable water provided by city departments.

As an area that has historically experienced a lack of public utility services for water, considerations for the availability and proximity to viable freshwater resources contributes to reliance on the IID to support growth. Currently there are few alternatives for water utility in the Study Area.

Critical Existing Infrastructure

1. Senator Wash Dam and Reservoir

    a. This facility acts as a regulating reservoir to balance fluctuating flow and delivery schedules at the Imperial Dam.

    b. Reservoir is controlled by IID's River Water Dispatching Unit under the direction of the USBR's Yuma Area Office

    c. Reservoir was designed to hold approximately 14,000 acre-feet, but was since updated to be restricted to an elevation of 240' above mean sea level with approximately 9,000 acre-feet of storage.

2. Imperial Dam and Desilting Works

    a. Serves as a diversion structure for water deliveries throughout southeast California, southwest Arizona, and northwest New Mexico.

    b. Three desilting basins with a design capacity of 4,000 cfs each remove sand and silt from the river water before it passes to the All American Canal (AAC).

3. Imperial Valley Reservoir Facilities

    a. IID's distribution system includes seven regulating and four interceptor reservoirs with a total water storage capacity of 4,372 acre-feet (at the end of 2014).

    b. At the end of 2019, IID completed the design of the East Highline Reservoir, which has an operational capacity of up to 2,900 acre-feet

    c. Seven of IID's eleven reservoirs are part of the IID/MWD Water Conservation Program

4. Distribution System Information

    a. Each September, IID submits an annual water order to the USBR for the next calendar year. The order represents the amount of Colorado River water IID intends to use during the next year. IID's River Division office collects weekly water orders from all Imperial Dam users and relays the request to the USBR Yuma Area Office. After all orders are accepted, the USBR prepares a weekly master schedule for releasing flows from the Hoover Dam during the upcoming 7-day period. In 2019, IID had an inventory of 5,575 delivery gates, of which 4,780 were active serving all categories of users throughout the district's water service area.

2.1.5 Findings

The long-standing water appropriations from the Colorado River date back to 1914, which define the amount of water allocated to the various stakeholders including Arizona, New Mexico and Imperial County. IID's Present Perfected Right to use Colorado River consists of an annual diversion of 2.6 million acre-feet from the mainstream or the quantity of mainstream necessary to supply the consumptive use required for irrigation of 424,145 acres and the satisfaction of related uses,

whichever is less. This volume agreement presents challenges to sufficiently support future demand. Alternative sources to access freshwater are limited due to the water distribution supply delivered by IID.

Alternative strategies for water provision are suited toward those who participate in groundwater diversion or well completion projects. Maintenance of these alternate water resource extraction strategies can assist in sustaining a reliable freshwater resource for a workforce in the Study Area. Certain groundwater well resources provide supplemental supply of freshwater to residents inhabiting areas outside of the existing public service infrastructure network.

The existing water system is comprised of main and supply canals with diversions to lateral canals, and from lateral canals into customer's head ditches. These supply canals and lateral canals will need to remain operational for all existing development not impacted by proposed improvements. Improvements proposed for the Study Area may require that water connections/lines be provided for the undeveloped parcels including transmission lines, service laterals, booster pumps and associated appurtenances. Since there is no existing water infrastructure within Study Area, future development within this area will not be constrained due to other existing infrastructure. Service to the IID region is supplied by the All-American Canal, Coachella Canal, Westside Main Canal and Central Canal, providing opportunities for design flexibility and options. Potential upgrades to conveyance canals/ditches depending on water demand, adjusted supply, and land use planning should be considered.

The Senator Wash Dam provides flow regulation for three different states' supply: California, Arizona and New Mexico. Although the supply from this dam is controlled by IID's River Water Dispatching Unit under the direction of the USBR's Yuma Area Office, coordination with interstate municipalities may be required to increase overall supply to the All-American Canal (canal that supplies IID). Similarly, distribution system operations from IID will likely need to be updated to accommodate supply release from the Hoover Dam to support increased residential, industrial and commercial developments.

Future programmatic studies should be completed to determine viability of existing infrastructure, feasibility of future infrastructure development and tie in points.

2.2 WASTEWATER SYSTEM

2.2.1 Introduction

This section includes a discussion of the existing wastewater system conditions in the Study Area to present the environmental baseline for the Specific Plan and PEIR.

2.2.2 Methodology and Sources

To evaluate the existing wastewater system, an inventory of the wastewater infrastructure network was developed, identifying wastewater treatment facilities and infrastructure in and around the Study Area. Considering that the Study Area remains largely undeveloped, without connections to the wastewater transport system, the evaluation of the existing system was focused primarily in nearby cities which have established wastewater treatment facilities in their jurisdiction. Applicable regulations and planning documents were reviewed to establish context for the regulatory environment surrounding wastewater treatment and distribution services.

The existing inventory and regulatory setting were considered within the analysis to identify how wastewater infrastructure and treatment services may be expanded into the Study Area. The Niland Sanitary District Wastewater Treatment Plant Improvements Supplemental Preliminary Engineering Report prepared by The Holt Group in 2016 was assessed to determine wastewater capacity and anticipate improvements. These findings were outlined along with future recommendations to determine the viability of future development and service connections to the Study Area.

2.2.3 Applicable Regulations

Assembly Bill 885 - California Onsite Wastewater Treatment Systems

Assembly Bill (AB) 885 was signed into law in September 2000. AB 855 requires the SWRCB to develop statewide regulations for the permitting and operation of onsite wastewater treatment systems, better known as septic systems. These regulations are developed through consultation with the Department of Health Services (DHS), California Conference of Directors of Environmental Health (CCDEH), California Coastal Commission (CCC), counties, cities, and other interested parties. Individual disposal systems that use subsurface disposal are all included under AB 885.

2.2.4 Existing Inventory

The Study Area (Calipatria, Niland and unincorporated Imperial County areas) includes wastewater infrastructure in the developed areas, but utilizes septic systems in other areas.

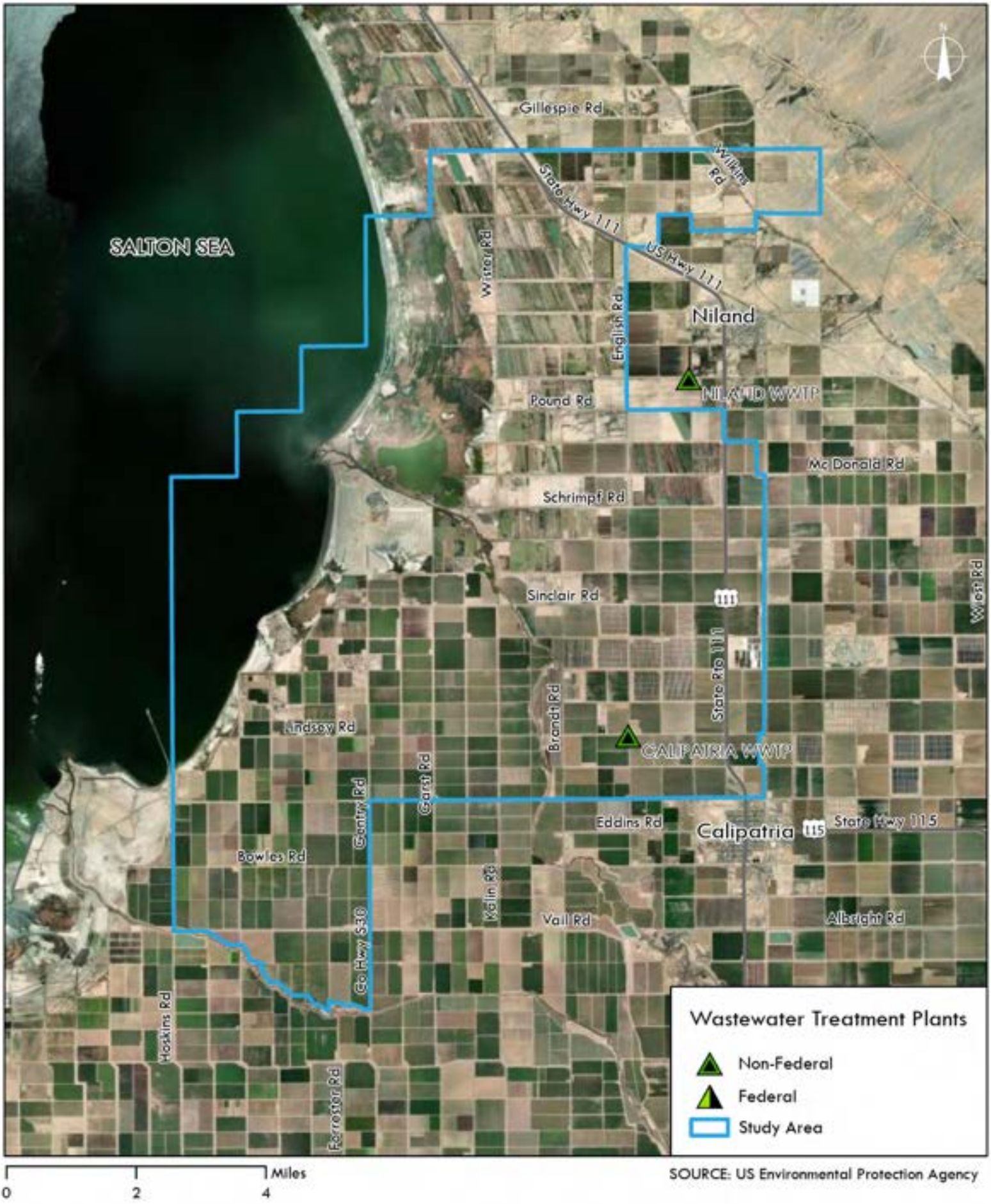
The City of Calipatria operates the publicly owned Wastewater Treatment plan on Lindsey Road. This facility has a capacity of 1,938 Acre-Feet per Year (AFY) and is secondary treatment facility that discharges into the "G" Drain/ Alamo River with drains to the Salton Sea. This plant is recommended to be upgraded by 2025 to accommodate future conditions average flow.

The City of Niland has a primary-level treatment plant with a capacity of 560 AFY and an average flow of 258 AFY. This facility has chlorination/fluoridation ponds as a part of their primary treatment system. According to the Niland Sanitary District Wastewater Treatment Plant Improvements Supplemental Preliminary Engineering Report (NSD Plant Report), prepared by The Holt Group in 2016, the Niland Sanitation District (NSD) Plant effluent flows have been historically lower than the

rated plant capacity. The NSD Plant Report recommended that the NSD Plant be designed for an annual average flow of 150,000 gpd to arrive at the maximum monthly average 200,000 gpd by 2035 (Holt Group 2012). This was based on the historical 20 year annual growth rate on record for Niland.

Westmorland also has a wastewater treatment plant that operates on a secondary treatment level and drains to the Trifolium Drain Number 6 and ultimately to the Salton Sea via the New River. This plant has a capacity of 560 AFY with an average flow of 291 AFY.

The unincorporated areas of Imperial County are assumed to have little to no wastewater infrastructure except septic systems. Figure 2-2, Wastewater Treatment Plants, shows the current locations of the area wastewater treatment plants.



INFRASTRUCTURE ASSESSMENT
FIGURE 2-2, Wastewater Treament Plants

2.2.5 Findings

Future development will require extensive installation of trunk sewer mains, laterals/service lines, lift stations (due to the existing flat topography) and upgrades to appropriate wastewater treatment facilities to handle currently projected future flows as well as development within the Study Area.

Septic systems in the area will need to be systematically removed and replaced as development occurs.

Due to the disadvantaged communities, lack of political acceptance of rate increases and the ability of rate-payers to pay taxes required to fund continued maintenance and improvements, these facilities could be in jeopardy.

Renewed development opportunities could assist with funding necessary improvements to the existing wastewater treatment plants, provide funding for upgrades and improvements as well as potential construction of additional facilities that are more cost effective and efficient.

Future programmatic studies should be completed to determine viability of existing infrastructure, feasibility of future infrastructure development and tie in points.

2.3 STORMWATER & DRAINAGE SYSTEM

2.3.1 Introduction

The Study Area and surrounding region consists of agricultural drains, canals, and the New River and Alamo River. Ultimately, all flows are conveyed into the Salton Sea. This section discusses the relevant regulations, water quality considerations, existing infrastructure inventory, and floodplain and flood hazards for the area.

2.3.2 Methodology and Sources

The following sources were used in our research to write this section:

- California State Water Resources Control Board (SWRCB) *2009-0009-DWQ Construction General Permit*. 2010.
- California SWRCB *Industrial General Permit Order 2014-0057-DWQ.* 2018.
- Colorado River Regional Water Quality Control Board. *Water Quality Control Plan for the Colorado River Basin Region.* 2019.
- Imperial County *Multi-Jurisdictional Hazard Mitigation Plan*. 2015. Imperial Irrigation District. *Salton Sea Hydrology Development*. 2018.
- Imperial Irrigation District. *Imperial Integrated Regional Water Management Plan.* 2012.
- Imperial County. *Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within the Gateway of the Americas Study Area.* 2004.
- UC Riverside Salton Sea Task Force. *Crisis at the Salton Sea, The Vital Role of Science.* 2021.

2.3.3 Applicable Regulations

Imperial County General Plan

The Water Element and the Conservation and Open Space Element of the General Plan contain goals, objectives, policies, and programs to ensure water resources are preserved and protected. The General Plan includes general policies that direct development to be consistent with state and regional water quality control policies and permits and encourages water supply planning, water conservation, and water use efficiency. Construction General Permit

Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as amended)

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit - CGP) in order to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit (CGP) applies to all projects in which construction activity disturbs 1 acre or more of soil, including linear underground projects (LUP). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as layout areas, stockpiling, and excavation. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would include and specify Best Management Practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the Section 303(d) list for sediment. SWPPPs must be developed and implemented by qualified individuals with appropriate credentials and training, as defined by the SWRCB (SWRCB 2010).

The 2022 CGP (SWRCB Order No. 2022-0057-DWQ) was adopted by the California State Water Resources Control Board on September 8th, 2022 and will be effective on September 1st, 2023. All projects that start construction before September 1st, 2023 will have a regulatory transition period of two years and would be subject to the 2009 CGP until September 1st, 2025. All projects started after September 1st, 2023 will be subject to the 2022 CGP.

Industrial General Permit

Industrial General Permit for Storm Water (SWRCB Order No. 2014-0057-DWQ): The SWRCB adopted the Industrial General Permit (IGP) applicable to certain categories of industrial activity, which includes facilities that store, treat, recycle, and reclaim sewage. The IGP is applicable to treatment facilities and may be applicable to pump stations and other ancillary facilities. Final design of pump stations and ancillary facilities shall make the evaluation and determination of applicability. The IGP requires stormwater dischargers to eliminate unauthorized non-stormwater discharges, develop and implement SWPPPs, implement BMPs, conduct monitoring, compare monitoring results to numeric action levels, perform appropriate exceedance response actions when numeric action levels are exceeded, and certify and submit all permit registration documents. Changes under the current IGP (in effect as of June 30, 2015) compared to the IGP issued in 1997 are that stormwater

dischargers are required to implement minimum BMPs; electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System (SMARTS); comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under CWA Section 303(d); design treatment control BMPs for flow- and volume-based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event (SWRCB 2018).

Municipal Separate Storm Sewer System (MS4) Permit

The County of Imperial is enrolled under the State Water Board General Order for the Phase II Small MS4 Permit. A Small MS4 is an MS4 that is not permitted under the municipal Phase I regulations. (40 C.F.R. §122.26(b)(16)). Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares, but do not include separate storm sewers in very discrete areas, such as individual buildings. (40 C.F.R. §122.26(b)(16(iii).) This permit refers to MS4s that operate throughout a community as "Traditional MS4s" and MS4s that are similar to traditional MS4s but operate at a separate campus or facility as "Non-traditional MS4s."

The Phase II Rule automatically covers on a nationwide basis all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census (unless waived by the NPDES permitting authority), and on a case-by-case basis those small MS4s located outside of UAs that the NPDES permitting authority designates.

Section 402 of the Clean Water Act requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States be regulated by a National Pollutant Discharge Elimination System (NPDES) permit. A MS4 is defined as a publicly owned conveyance or system of conveyances - including roadways, catch basins, curbs, gutters, ditches, man-made channels and storm drains – designed or used for collecting and conveying stormwater. NPDES municipal stormwater permits require MS4 operators (permittees) to:

1) effectively prohibit non stormwater discharges to the MS4; and

2) implement controls to reduce the discharge of pollutants to the maximum extent practicable.

2.3.4 Existing Inventory

Watershed Perspective

The Salton Sea watershed encompasses an area of approximately 8,000 square miles from San Bernardino County in the north to the Mexicali Valley (Republic of Mexico) to the south. The Salton Sea lies at the lowest point in the watershed and collects runoff and agricultural drainage from most of Imperial County, a portion of Riverside County, smaller portions of San Bernardino and San Diego Counties, as well as the northern portion of the Mexicali Valley. Mountains on the west and northeast rims of the basin reach elevations of 3,000 feet in the Coyote Mountains to over 11,000

feet in the San Jacinto and San Bernardino mountains. To the south, the basin extends to the crest of the Colorado River Delta. About one-fifth of the basin is below or only slightly above mean sea level (Hely et al., 1966).

Annual precipitation within the watershed ranges from less than 3 inches near the Salton Sea to up to 40 inches in the upper San Jacinto and San Bernardino Mountains. The maximum temperature in the basin exceeds 100 degrees F on more than 110 days per year. The open water surface evaporation rate at the Salton Sea is estimated at approximately 69 inches per year and the average annual crop reference evapotranspiration rate at Brawley is reported to be approximately 71 inches per year (California Irrigation Management Information System [CIMIS] 2012). Agriculture in the Imperial and Coachella valleys is sustained by Colorado River water diverted at Imperial Dam and delivered via the All-American and Coachella canals. In recent years, total diversions at the Imperial Dam have ranged from approximately 3.0 to 3.6 million acre-feet per year (maf/yr) to support over 500,000 acres of irrigated agriculture in the Imperial and Coachella valleys (Reclamation 1999-2003). Agricultural return flows from these areas and parts of the Mexicali Valley, as well as municipal and industrial discharges in the watershed, feed the major rivers flowing to the Salton Sea.

The principal sources of inflow to the Salton Sea are the Whitewater River to the north, the Alamo and New Rivers to the south, and direct return flows from fields in both Imperial and Coachella valleys. Smaller contributions to inflow come from San Felipe Creek to the west, Salt Creek to the east, direct precipitation, and subsurface inflow. Total average annual inflow to the Salton Sea over the period from 1950 to 2015 is estimated to be approximately 1.3 million acre-feet (maf) but has been as low as 1.0 maf in the recent decade.

Due to a variety of conditions including transfers to the San Diego County Water Authority (SDCWA) under the Quantification Settlement Agreement (QSA), potential transfers to the Metropolitan Water District of Southern California (MWD), water management planning in the Coachella and Imperial valleys, and water conservation/reuse in Mexicali, inflows to the Salton Sea will be reduced in the future. The reduced inflows will result in declining water surface elevations in the Salton Sea and will further contribute to increases in Salton Sea salinity.

The Salton Sea watershed encompasses an area of approximately 8,000 square miles from San Bernardino County in the north to the Mexicali Valley (Republic of Mexico) to the south. The Salton Sea lies at the lowest point in the watershed and collects runoff and agricultural drainage from most of Imperial County, a portion of Riverside County, smaller portions of San Bernardino and San Diego Counties, as well as the northern portion of the Mexicali Valley. The Study Area and surrounding region consists of agricultural drains, canals, and the New River and Alamo River. Ultimately, all flows are conveyed into the Salton Sea.

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The word watershed is sometimes used interchangeably with drainage basin or catchment. Watersheds are usually bordered and separated from other watersheds by mountain ridges or other naturally elevated areas. According to the USGS Watershed Boundary Dataset (WBD), the Study Area intersects five

watersheds, consisting of the Alamo River watershed, the Imperial Valley-Frontal Salton Sea watershed, the Superstition Hills-Frontal Salton Sea watershed, the New River watershed, and the Salton Sea watershed. Table 2-2, Watershed Intersected by the Study Area, shows the five watersheds within the Study Area.

Table 2-2, Watershed Intersected by the Study Area

Basin (HUC, size)	Subbasin (HUC, size)	Watershed / Sub-watershed (HUC, size)	Study Area, in mi^2 (percent of watershed)
Salton Sea (181002, 8,220 mi^2)	Salton Sea (18100204, 5,009 mi^2)	Alamo River (1810020407, 647 mi^2)	20.6 (3.2%)
		Imperial Valley-Frontal Salton Sea (1810020411, 378 mi^2)	20.6 (5.5%)
		Superstition Hills-Frontal Salton Sea (1810020412, 157 mi^2)	19.7 (12.5%)
		New River (1810020409, 1,299 mi^2)	1.3 (0.1%)
		Salton Sea (1810020414, 367 mi^2)	18.6 (5.1%)

Source: USGS 2022.

Notes:
HUC = hydrologic unit code; mi2 = square miles

1 The USGS WBD designates this as the "Middle Lewis Creek" sub-watershed, but it is referred to as Round Valley herein to be consistent with nomenclature found elsewhere in the EIR and appendices.

2 The USGS WBD designates this as the "Middle South Fork Kaweah River" sub-watershed, but it is referred to as Grouse Creek herein to be consistent with nomenclature found elsewhere in the EIR and appendices.

The Alamo River originates in the Mexicali Valley and flows north into the United States. The Alamo River watershed is approximately 1,235,000 acres. This watershed is in Imperial County, and borders Salton Sea direct drains to the north and the New River watershed to the south. This watershed is comprised of Agricultural, Urban, and Recreation land uses. The Alamo River 100-year flow rate of 3,450 cfs is cited from Flood Insurance Study (FIS) Number 06025CV001B, dated March 22, 2022. This FIS also cites the New River 100-year flow rate at the IID Gage as 1,200 cfs with a 454 square mile watershed. The IID Gage is located at a footbridge approximately 100 feet downstream of Second Street.

The New River originates in the Mexicali Valley and flows north into the United States. The New River watershed is approximately 837,000 acres. This watershed is located in Imperial County and borders the Alamo River to the north. This watershed is comprised of Agricultural and Recreation land uses. The New River 100-year flow rate of 4,705 cfs at Brawley Solid Waste Cite is cited from Letter of Map Revision (LOMR) Case Number 14-09-3275P, dated August 27, 2014. The flow rate of 4,705 cfs from LOMR Case Number 14-09-3275P is used in this study due to the Brawley Solid Waste Cite being further downstream the New River, and closer to the Salton Sea.

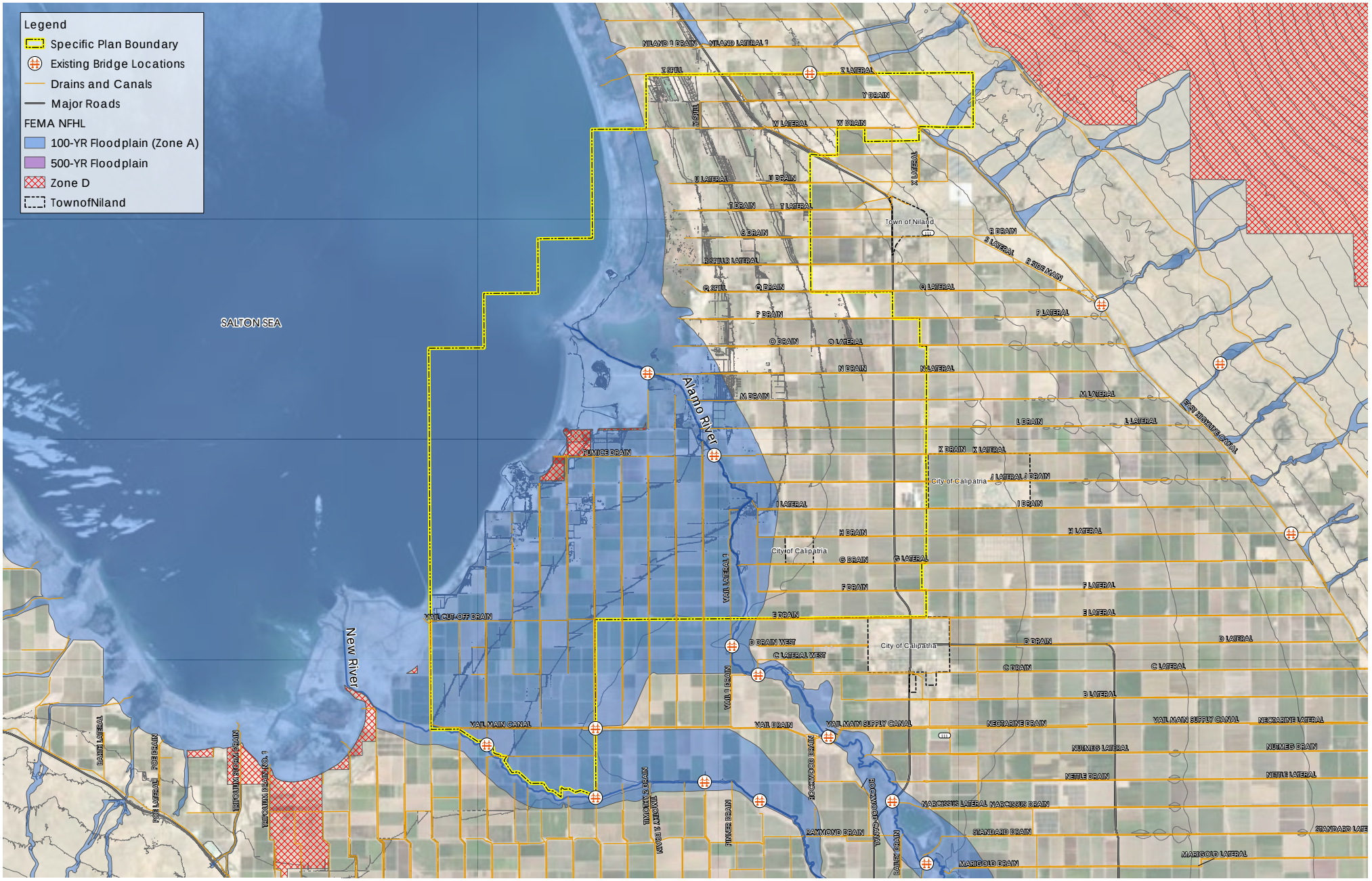
Regional Drainage

Historical discharge from all IID drains that lead directly to the Salton Sea (as opposed to the New and Alamo rivers) has been estimated by IID for the period from 1950 to present (IID, 2002; 2003a; 2012, 2016a). The direct drain discharge values reported by IID have been used in this analysis.

Direct drainage is estimated to be about 95,000 af/yr and accounts for approximately nine percent of the total Imperial Valley contribution to Salton Sea inflows.

The regional drainage within the Study Area largely involves agricultural drains and canals. The general purpose for the canals is to provide water supply to the agricultural fields surrounding the southeast region of the Salton Sea. The drains convey agricultural runoff from the fields directly to the Salton Sea. Details of the drains and canals can be found in Figure 2-3, Hydraulics Exhibit. Generally, the drains convey water from south to north and east to west.

The Salton Sea's water is primarily maintained by stormwater and agricultural runoff. This water supply affects the salinity levels, and a decrease in water supply results in higher salinity. The Salton Sea shoreline is receding and there are increasing concerns about the decreasing water level.



Date of Exhibit: 01.03.2023
SANGIS/ SANDAG Aerial Image: 2017

Imperial Irrigation District Drains and Canals: 2022
Imperial County Existing Bridge Locations: November 2022
FEMA NFHL: July 2022

INFRASTRUCTURE ASSESSMENT
FIGURE 2-3, Hydraulic Exhibit

Local Drainage

The Study Area is crossed by numerous waterways, consisting of Alamo River (which crosses the central part of the Study Area), the New River (which defines the Study Area's southern-most border), numerous agricultural canals and drains, and the Salton Sea (USGS 2022).

Table 2-3, Waterways and Canals Intersected by the Study Area, shows the length of these features within the Study Area, based on data from the USGS National Hydroghraphy Dataset (NHD) as well as data from IID (USGS 2022).

Table 2-3, Waterways and Canals Intersected by the Study Area

Canal Name	Length within SPA	
	Feet	Miles
Ephemeral Waterways		
Alamo River	37,322	7.1
New River	1,360	0.3
Waterways Subtotal	38,681	7.3
Canals		
NEW NILAND INTERCEPTORS	76,758	14.5
NEW VAIL INTERCEPTORS	54,865	10.4
E LATERAL	15,714	3.0
EAST HIGHLINE CANAL	6,849	1.3
F LATERAL	15,871	3.0
G LATERAL	16,333	3.1
G LATERAL 2	2,574	0.5
H LATERAL	14,641	2.8
I LATERAL	16,343	3.1
J LATERAL	16,390	3.1
K LATERAL	3,160	0.6
L LATERAL	16,557	3.1
M LATERAL	14,038	2.7
N LATERAL	21,884	4.1
O LATERAL	19,212	3.6
O'BRIEN LATERAL	10,356	2.0
P LATERAL	21,218	4.0
Q LATERAL	11,887	2.3
R LATERAL	10,755	2.0
S LATERAL	8,266	1.6
T LATERAL	11,995	2.3
TRIFOLIIUM INTERCEPTER	9,312	1.8
U LATERAL	8,260	1.6
VAIL CANAL	10,880	2.1
VAIL LATERAL 1	10,687	2.0

VAIL LATERAL 2	15,874	3.0
VAIL LATERAL 2A	18,602	3.5
VAIL LATERAL 3	23,527	4.5
VAIL LATERAL 3A	18,166	3.4
VAIL LATERAL 4	28,731	5.4
VAIL LATERAL 4A	18,653	3.5
VAIL LATERAL 5	26,454	5.0
VAIL LATERAL 5A	15,806	3.0
VAIL LATERAL 6	18,000	3.4
VAIL LATERAL 6A	2,582	0.5
VAIL LATERAL 6B	2,582	0.5
VAIL LATERAL 6-C	2,582	0.5
VAIL LATERAL 7	5,223	1.0
W LATERAL	13,398	2.5
X LATERAL	1,058	0.2
Y LATERAL	19,695	3.7
Z LATERAL	9,080	1.7
Canals Subtotal	664,821	125.9

The New and Alamo rivers account for approximately 75% of the total surface runoff in the valley, and nearly all the recharge to the Salton Sea (Montgomery Watson, 1995 as cited in Imperial Water Forum 2012). Both rivers cross the central area of irrigated farmland and intercept the area's elaborate system of seepage drains to convey water out of the area and eventually to the Salton Sea.

Individual developments must follow guidance outlined in Imperial County's 'Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within the Gateway of the Americas Study Area' published in September 2004. Local drainage should be considered by any new and(or) redevelopment projects to maintain historic drainage patterns as best possible pursuant to the Imperial County drainage standards.

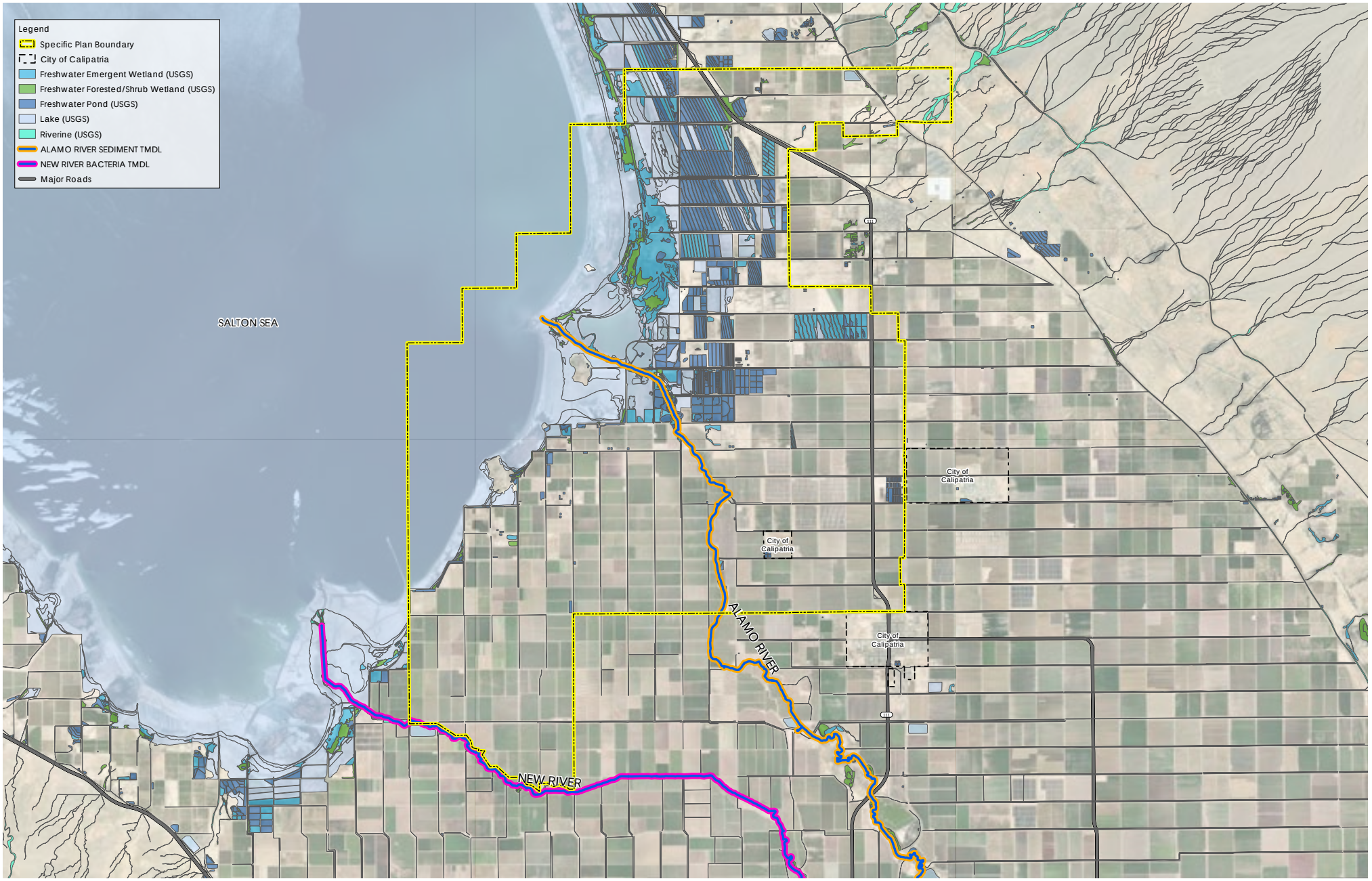
Water Quality Considerations

i. Wetlands

Wetlands are transitional areas, sandwiched between permanently flooded deepwater environments and well-drained uplands, where the water table is usually at or near the surface or the land is covered by shallow water. They include mangroves, marshes (salt, brackish, intermediate, and fresh), swamps, forested wetlands, bogs, wet prairies, prairie potholes, and vernal pools. In general terms, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water.

The FGDC Wetlands Classification Standard (WCS) defines "wetlands" according to Cowardin et al. (1979): "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil2; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year."

Wetlands (USGS) surrounding the Study Area are shown in Figure 2-4, Water Quality Exhibit.



Scale in Feet
0 4,000 8,000 12,000
North

Date of Exhibit: 01.03.2023
SANGIS/ SANDAG Aerial Image: 2017
USGS Wetlands: September 2022
Colorado River Regional Water Quality Control Board TMDLs: January 2019

INFRASTRUCTURE ASSESSMENT
FIGURE 2-4, Water Quality Exhibit

LITHIUM VALLEY SPECIFIC PLAN

ii. Surface Waters

There are three general categories which describe the surface water in Imperial County. These are freshwater, brackish water, and saline water. The freshwater (with TDS generally less than 1,000 ppm) includes the All-American Canal and other canals and laterals which deliver irrigation water to the agricultural fields within the County. The brackish waters (with TDS in the range of 2,000 to 4,000 ppm) include the Alamo River, New River and the agricultural drains that flow into these rivers or directly into the Salton Sea. The Salton Sea represents the saline water category. Salinity concentrations are currently slightly higher than ocean water (the Salton Sea's current TDS is approximately 44,000 ppm compared to 35,000 ppm for ocean water). The surface waters in Imperial County thus pass through a salinity gradient from the Colorado River to the Salton Sea.

This regional salinity gradient exists because of the high evaporation rates of the Imperial Valley, high temperatures, low annual rainfall, and continual leaching of salts from irrigated areas. Evapotransporation is water transported and evaporated from plants and surrounding soil surfaces. Although water is continually evaporated from the major canals, this evaporation represents a relatively minor increase in dissolved solids concentration because of the short residence times within the water conveyance system.

High evaporation rates from the irrigated fields substantially reduce the amount of water and increase the concentration of salt entering the drainage system. A 300% to 500% increase in total dissolved solids concentration is normal within the valley as water moves from the All-American Canal to the New and Alamo Rivers.

The change in salinity through the valley is extremely important because it affects the aquatic ecosystems and other beneficial uses of the surface waters. However, salinity is not the only water quality issue. The intensive irrigation in the valley presents the potential for the introduction of agricultural chemicals, such as pesticides and herbicides, into downstream waters. Field erosion and dredging activities also result in siltation in the New and Alamo Rivers and the Salton Sea. The bacteriological quality of these waters is also a concern because these streams receive locally generated municipal waste discharges, in addition to the waste load entering the United States from Mexico.

Under CWA Section 303(d), all waterways and waterbodies (listed in Table 9.9-2) in the Study Area are listed as impaired for variety of pollutants such as nutrients, certain metals, physical parameters (i.e., dissolved oxygen), organochlorine pesticides, petroleum hydrocarbons, sedimentation/siltation, toxicity, and others (SWRCB 2022). Specifically, impairments consist of the following (SWRCB 2022):

- Alamo River: Sedimentation/Siltation (68028), Toxaphene (68238), Chlorpyrifos (68406), Selenium (68609), Toxicity (68990), PCBs (Polychlorinated biphenyls) (69642), Chlordane (71071), Diazinon (71434), Escherichia coli (E. coli) (71481), Chloride (71978), Cypermethrin (73634), Enterococcus (77366), Malathion (78054), DDT (Dichlorodiphenyltrichloroethane) (78402), Dieldrin (78414), Cyhalothrin, Lambda (78446)

- New River: Nutrients (68100), Sediment (68342), Chlordane (68542), Toxicity (68548), Toxaphene (68558), Organic Enrichment/Low Dissolved Oxygen (68712), Dieldrin (68720), Hexachlorobenzene/ HCB (69669), Trash (69763), Indicator Bacteria (71413), Diazinon (71630), Cyhalothrin, Lambda (71659), Naphthalene (72101), DDT (Dichlorodiphenyltrichloroethane) (72800), Chloride (75383), Selenium (77137), Mercury (78015), Ammonia (78250), Cypermethrin (78384), Bifenthrin (78596), Malathion (78661), Chlorpyrifos (78734), PCBs (Polychlorinated biphenyls) (79441), Disulfoton (103766), Imidacloprid (104373), DDD (Dichlorodiphenyldichloroethane) (104431).
- Salton Sea: Nutrients (70708), DDT (Dichlorodiphenyltrichloroethane) (71363), Arsenic (71387), Chlorpyrifos (71889), Enterococcus (72548), Low Dissolved Oxygen (75163), Salinity (77576), Toxicity (78053), Chloride (78362), Ammonia (78466)
- Imperial Valley drains: Toxaphene (68135), Selenium (68778), Sedimentation/Siltation (68868), Chlorpyrifos (69997), Dieldrin (78078), PCBs (Polychlorinated biphenyls) (78295), Chlordane (78347), DDT (Dichlorodiphenyltrichloroethane) (78496), Imidacloprid (102661), Toxicity (104470).

The State Water Resources Control Board and the Regional Water Quality Control Boards (Water Boards) are committed to protecting and restoring the waters of California to ensure that all applicable beneficial uses are fully attained. Where waters are not meeting their beneficial uses from anthropogenic sources of pollutants, the Water Boards will use the Total Maximum Daily Load (TMDL) program to craft an implementation plan to ensure that the waters meet all applicable standards as soon as is practicable. The TMDL program remains a high priority program of the Water Boards. This Policy is intended to ensure that the impaired waters of the state are addressed in a timely and meaningful fashion. In those cases where immediate restoration activities are available, the policy encourages those actions to take place immediately rather than waiting for a regulatory action by the Water Boards. In this respect, the Water Boards are committed to work with all interested parties to develop appropriate plans to restore water bodies to water quality standards. The Water Boards will continue to pursue information from all interested persons in developing such plans and will encourage early restoration activities prior to completion of a TMDL, where such activities will result in improved water quality. While the Policy allows a TMDL to be established through alternative regulatory actions, it is anticipated that the majority of TMDLs will be established through an implementation plan adopted as a Basin Plan amendment. This is due to the complexity of the problems needing correction for most of the impaired waters. Where alternative regulatory methods are used to establish TMDLs, however, those TMDLs will be incorporated into the Water Quality Management Plan after they are approved.

Using existing regulatory programs listed in Table 2-4, Alamo River TMDLs, and Table 2-5, New River TMDLs, to ensure waters are restored, where such mechanism exists, will promote a cost effective and timely response that has proven elusive when relying exclusively on basin planning to establish TMDLs. See Figure 2-4, Water Quality Exhibit, for the locations of the Alamo River Sediment TMDL and New River Bacteria TMDL.

Table 2-4, Alamo River TMDLs

Element	Description	
Problem Statement (impaired water quality standard)	Excess delivery of sediment to the Alamo River has resulted in degraded conditions that impair the following designated beneficial uses: warm freshwater habitat; wildlife habitat; preservation of threatened, rare, and endangered species habitat; contact- and non-contact recreation; freshwater replenishment. As the Alamo River discharges into the Salton Sea, sediment also threatens the same beneficial uses of the Salton Sea. Specifically, sediment serves as a carrier for DDT, DDT metabolites, and other insoluble pesticides including toxaphene, which pose a threat to aquatic and avian communities and people feeding on fish from the Alamo River; and suspended solids concentrations, sediment loads, and turbidity levels are in violation of water quality objectives. These current concentrations, loads, and levels are also forming objectionable bottom deposits, which are also adversely affecting the beneficial uses of Alamo River.	
Numeric Target	200 mg/L Total Suspended Solids (annual average)[55]	
Source Analysis	<u>Source</u> Agricultural Drain Discharges: In-Stream Erosion & Wind Deposition: NPDES Permitted Facilities: International Boundary: Total:	<u>tons/year</u> 322,493 6,623 215 146 329,477
Margin of Safety	8,737 tons/year, (corresponds to 10 mg/L)[56]	
Seasonal Variations and Critical Conditions	Both the flow and sedimentation regimes within the Alamo River watershed are relatively stable, and the sediment and water sources within the watershed are relatively uniform and widespread; therefore, this TMDL does not include provisions other than the established load allocations and implementation plan for seasonal variations or critical conditions. Staff's analysis of potential water transfers out of the watershed indicate that the transfers are not likely to affect compliance with this TMDL but could cause other water quality problems that will need to be addressed by the parties responsible for the transfers.	
Loading Capacity	177,247 tons/year	

[55] The numeric target is a goal that translates current silt/sediment-related Basin Plan narrative objectives and shall not be used for enforcement purposes.

[56] The margin of safety is roughly equal to the estimated load from natural sources to the Alamo River. This margin of safety allows for the loading of sediment from natural sources to the river to be double the natural source loading estimated in the Source Analysis without exceeding the Numeric Target.

Table 2-5, New River TMDLs

Element	Description
Problem Statement (Impaired water quality	The New River headwaters start about 12-16 miles south of Calexico in the Mexicali Valley, Mexico. Bacteria, which are pathogen-indicator organisms, impair the entire segment of the New River in the United States. Pollution is severest at the International Boundary due to discharges of wastes from Mexico. The bacterial

<table>
<tr><td>standard)</td><td colspan="3">concentrations exceed the water quality objectives established to protect mainly the water contact and non-contact water recreational beneficial uses of the New River.</td></tr>
<tr><td>Numeric Target</td><td colspan="3">The following are the in-stream numeric water quality targets for this TMDL:
<table><tr><th>Indicator Parameters</th><th>30-Day Geometric Mean[50]</th><th>Maximum</th></tr><tr><td>Fecal Coliforms</td><td>200 MPN[51]/100 ml</td><td>[52]</td></tr><tr><td>E. Coli</td><td>126 MPN/100 ml</td><td>400 MPN/100 ml</td></tr><tr><td>Enterococci</td><td>33 MPN/100 ml</td><td>100 MPN/100 ml</td></tr></table></td></tr>
<tr><td>Source Analysis</td><td colspan="3">The main sources of pathogens as indicated by fecal coliforms and E. coli bacteria in the New River are discharges of municipal wastes from the Mexicali Valley, Mexico and undisinfected but treated wastewater discharges from five domestic wastewater treatment plants in the Imperial Valley. Natural sources of pathogens appear to play a relatively insignificant role,
but their actual contribution, and contributions from other nonpoint sources of pollution in general require proper characterization.</td></tr>
<tr><td>Allocations and Margin of Safety</td><td colspan="3">Discharges from point sources and nonpoint sources of pollution shall not exceed the following waste load allocations (WLAs) and load allocations (LAs), respectively:
<table><tr><th>Indicator Parameters</th><th>30-Day Geometric Mean[50]</th><th>Maximum</th></tr><tr><td>Fecal Coliforms</td><td>200 MPN[51]/100 ml</td><td>[52]</td></tr><tr><td>E. Coli</td><td>126 MPN/100 ml</td><td>400 MPN/100 ml</td></tr><tr><td>Enterococci</td><td>33 MPN/100 ml</td><td>100 MPN/100 ml</td></tr></table>
The allocations are applicable throughout the entire stretch of the New River in the U.S. The numeric target concentrations are based on extensive epidemiological studies conducted by the USEPA and others. By setting the TMDL and each of the load and waste load allocations equal to the standards, the proposed TMDL approach results in very limited uncertainty about whether attainment of the TMDL and the individual allocations will result in attainment of the applicable numeric standards. Moreover, the TMDL analysis takes a conservative approach of providing load and waste load allocations even for relatively minor loading sources, which helps to ensure that the selected source control approach will result in attainment of the numeric objectives. Finally, to help address uncertainty concerning the bacterial die-off and regrowth dynamics in the River, the TMDL provides implicit margin of safety by including a relatively aggressive monitoring and review plan which will help ensure that needed data are collected and that, if necessary, the TMDL will be revised in the relatively near future.</td></tr>
</table>

Table notes:
[50] Based on a minimum of no less than 5 samples equally spaced over a 30-day period
[51] Most probable number, and
[52] No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml.

New development and redevelopment within the Study Area will have to implement strong water quality management plans that comply with the applicable/approved TMDLs, and prevent discharge of sediment, because the Colorado River RWQCB currently has a prohibition of sediment/silt discharge.

iii. Groundwater

Groundwater in the Imperial Valley sub-basin is of generally poor quality and unsuitable for domestic or irrigation use due to high levels of total dissolved solids and of fluoride and boron concentrations. Salinity levels range from hundreds to an extreme of up to tens of thousands of milligrams per liter. Groundwater in the West Mesa is from a sole source aquifer of good quality. East Mesa groundwater is largely undeveloped and quality varies. US Bureau of Reclamation operates the Lower Colorado River Water Supply Project well field along the All-American Canal.

The concentration of total dissolved solids (TDS) is the primary water quality issue, particularly at greater depths. TDS concentrations range from the low hundreds to over 10,000 milligrams per liter (mg/L) (DWR 2004). A review of available water quality data for wells within 1-mile of the Study Area indicates TDS concentrations range from 1,480 to 17,400 mg/L for an average TDS concentration of 10,279 mg/L. Additionally, specific conductance values range from 2,820 to 24,800 microsiemens per centimeter (μS/cm) for an average specific conductance of 14,325 μS/cm (USGS 2022). Additional constituents that occur at concentrations that are higher than recommended for drinking water include nitrate, fluoride, sulfate, boron, and selenium (DWR 2004).

Floodplains and Flood Hazards

Flood zones identified on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are identified as a Special Flood Hazard Area (SFHA). An SFHA is defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1%-annual-chance flood is also referred to as the base flood or 100-year flood. "Floodways" are areas within the SFHA that include the channel of a river/watercourse and adjacent land areas which in an unobstructed condition can discharge a 100-year flood/base flood without any increase in water surface elevations. The area outside the floodway but still within the 100-year floodplain can be obstructed without increasing the water surface elevation of a 100-year flood event more than 1 foot at any point.

According to the FEMA, there is a large SFHA associated with the southeastern part of the Salton Sea (FEMA 2008). Within the Study Area, this 1% annual chance flood zone spans from the Alamo River to the New River and extends up to three miles inland from the shore. This flood zone covers the southwestern half of the Study Area.

Although the County is in a desert with very low precipitation, it is sometimes subject to heavy rains and subsequent flooding. The entire County is subject to various degrees of flooding in the form of flash floods or slow floods caused by heavy precipitation. Flash flooding is not infrequent in desert areas. Such flooding occurs when sudden downpours over the mountains and/or desert tend to create instantaneous peak flows which roughly follow empty stream beds and mountain washes.

Flooding could occur either in floodplains or floodways. Floodplains are generally located adjacent to rivers and other bodies of water and in low lying areas near a water source. The external boundary of floodplains is defined by the predicted extent of inundation that would result from the most intense storm that occurs once every 100 years. Floodways are defined by discernible drainage channels. Floodways are more hazardous due to the anticipated velocities of the flood waters and expected damage to life and property. Such designations occur along the New River and Alamo

River. Please refer to Figure 2-3, Hydraulics Exhibit, for the floodplain and floodway delineations within the Study Area.

According to the FEMA FIRMs, there are no FEMA accredited or provisionally accredited levees within the study area. Levees are embankments built to prevent the overflow of a river. There could be local unofficial embankments that could function as a levee along Alamo or New River. However, there are no records of such structures, and they are likely not monitored or maintained regularly. Levees that are not maintained and monitored properly could pose a significant risk due to structural issues and could break during a significant storm event causing serious damage to the local community.

Most rainfall in Imperial County occurs during late summer and early winter. Three types of storms produce rainfall over the County: (1) general winter storms, which originate in the Pacific Ocean, characterized by moderate rain spread over broad areas; (2) local "cloudbursts" storms which produce high-intensity rain for a short duration over small areas; and (3) general summer storms, which normally consist of general rain and local thunderstorms. These storms are often associated with moisture from tropical storms moving into the area from the Gulf of California of the Pacific Ocean (U.S. Department of the Army Corps of Engineers, July 1976).

Alamo River

The Alamo River originates in Baja California; however, very little flow crosses into the United States from Mexico (U.S. Department of State, 1945-1978). The river flows northerly and passes though the southwestern portion of the City of Holtville before eventually entering the Salton Sea near Niland. The Alamo River near Holtville is unique in that its contributing drainage area is almost entirely comprised of agricultural land. This area contains a maze of irrigation canals, drains, levee, and dikes. Many of the fields act as retention basins during major storms. The amount of flow in the Alamo River during a storm is also affected by irrigation practices. Many times, irrigation water has been ordered by farmers without knowing a storm is coming. Most of this water, once diverted from the Colorado River for irrigation near Holtville, will eventually enter the Alamo River, and may cause over-topping of the channels and inundation of neighboring properties. The Alamo River floodplain and floodway is shown in Figure 2-3, Hydraulics Exhibit.

New River

The New River also became deeply entrenched from the same breakout events from the Colorado River that affected the Alamo River. These breakout flows also left a very wide floodplain relative to the existing volume of flow in the New River. The southern floodplain of the New River is an area of recent commercial development in the City of Calexico. There is also some residential development at higher elevations. The New River floodplain and floodway is shown in Figure 2-3, Hydraulics Exhibit.

Salton Sea

The Salton Sea, the major water feature within the County, is located near its northwestern corner, and is a closed basin with a drainage area of approximately 8,000 square miles. Imperial County has an ordinance which requires a permit for any construction near the Salton Sea which takes place

below the minus 220-foot contour. All flows from the Alamo River and New River are conveyed to the Salton Sea. The water level in the Salton Sea is currently decreasing, exposing more of the shoreline.

Regional & Local Drainage

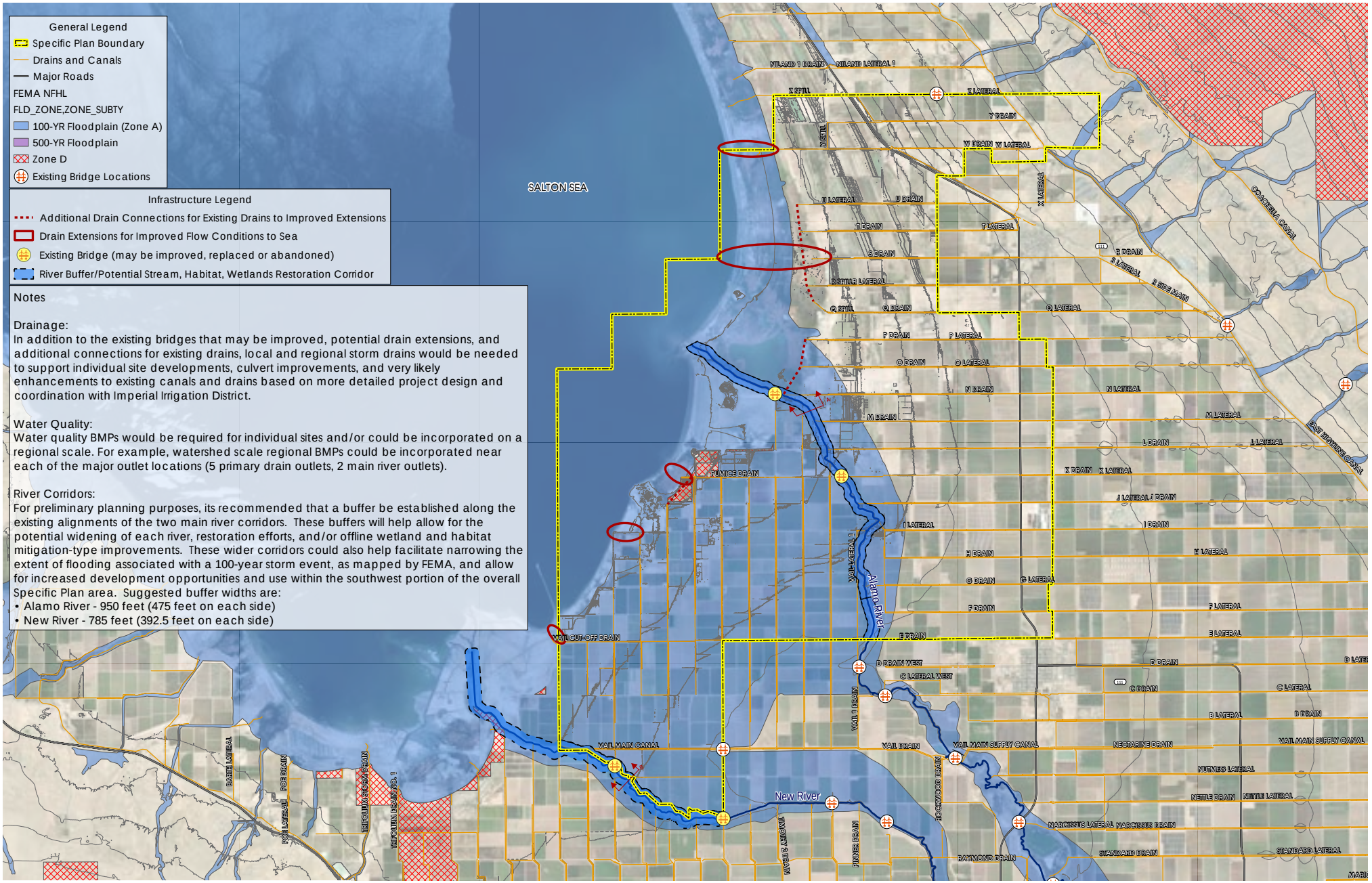
Floodplains and floodways should be considered in new developments and redevelopments. To protect new and existing communities and structures from flooding, properties should be constructed above the base flood elevation of the flood source (Alamo/New River). A floodplain buffer along the Alamo and New River may be beneficial in protecting infrastructure against flood hazard during larger storm events while also providing habitat protection, and water quality benefits.

Agricultural Runoff

Surface waters mostly drain toward the Salton Sea. The New and Alamo Rivers convey agricultural irrigation drainage, surface runoff, and lesser amounts of treated municipal and industrial waste waters from the Imperial Valley. The flow in the New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali, Mexico.

2.3.5 Findings

The stormwater system within and surrounding the Study Area consists of drains and canals as well as the Alamo and New River. The area lacks stormwater infrastructure. Should there be any local unofficial embankments functioning as a levees that are not maintained and monitored properly, there may be a significant flooding risk to the local community should they fail during a significant storm event. As demonstrated in Figure 2-5, Drainage Infrastructure Opportunities, a proper storm drain system would be beneficial for this area if it is developed. Ultimately, all flows end up in the Salton Sea. Within the Study Area, there is one bridge crossing. The Salton Sea is maintained with stormwater runoff and agricultural flows. The amount of water that enters the Salton Sea affects the salinity. The Salton Sea water level is decreasing; therefore, the salinity is increasing. This has also caused the shoreline to recede.


General Legend
Specific Plan Boundary
Drains and Canals
Major Roads
FEMA NFHL
FLD_ZONE,ZONE_SUBTY
100-YR Floodplain (Zone A)
500-YR Floodplain
Zone D
Existing Bridge Locations
Infrastructure Legend
Additional Drain Connections for Existing Drains to Improved Extensions
Drain Extensions for Improved Flow Conditions to Sea
Existing Bridge (may be improved, replaced or abandoned)
River Buffer/Potential Stream, Habitat, Wetlands Restoration Corridor
Notes
Drainage:
In addition to the existing bridges that may be improved, potential drain extensions, and additional connections for existing drains, local and regional storm drains would be needed to support individual site developments, culvert improvements, and very likely enhancements to existing canals and drains based on more detailed project design and coordination with Imperial Irrigation District.
Water Quality:
Water quality BMPs would be required for individual sites and/or could be incorporated on a regional scale. For example, watershed scale regional BMPs could be incorporated near each of the major outlet locations (5 primary drain outlets, 2 main river outlets).
River Corridors:
For preliminary planning purposes, its recommended that a buffer be established along the existing alignments of the two main river corridors. These buffers will help allow for the potential widening of each river, restoration efforts, and/or offline wetland and habitat mitigation-type improvements. These wider corridors could also help facilitate narrowing the extent of flooding associated with a 100-year storm event, as mapped by FEMA, and allow for increased development opportunities and use within the southwest portion of the overall Specific Plan area. Suggested buffer widths are:
• Alamo River - 950 feet (475 feet on each side)
• New River - 785 feet (392.5 feet on each side)
SALTON SEA
NILAND 1 DRAIN
NILAND LATERAL 1
Z STILL
Z LATERAL
Y DRAIN
Y STILL
W DRAIN
W LATERAL
X LATERAL
COACHELLA CANAL
V LATERAL
V DRAIN
T DRAIN
T LATERAL
S DRAIN
R DRAIN
S LATERAL
R SIDE MAIN
R STILL LATERAL
Q STILL
Q DRAIN
Q LATERAL
P DRAIN
P LATERAL
O DRAIN
O LATERAL
N DRAIN
N LATERAL
M DRAIN
M LATERAL
EAST HIGHline CANAL
L DRAIN
L LATERAL
FUMICE DRAIN
X DRAIN
X LATERAL
J LATERAL J DRAIN
I LATERAL
I DRAIN
H DRAIN
H LATERAL
VAIL LATERAL 1
Alamo River
G DRAIN
G LATERAL
F DRAIN
F LATERAL
VAIL CUT-OFF DRAIN
E DRAIN
E LATERAL
D DRAIN WEST
D DRAIN
C LATERAL WEST
G DRAIN
C LATERAL
VAIL 1 DRAIN
B LATERAL
B DRAIN
VAIL MAIN CANAL
VAIL DRAIN
VAIL MAIN SUPPLY CANAL
NECTARINE DRAIN
VAIL MAIN SUPPLY CANAL
NUTMEG LATERAL
New River
ROCKWOOD DRAIN
NETTLE DRAIN
NETTLE LATERAL
NARCISSUS LATERAL
NARCISSUS DRAIN
TIMOTHY 2 DRAIN
FUNNEL DRAIN
STANDARD DRAIN
STANDARD LATERAL
RAYMOND DRAIN
BASIL LATERAL
ROSE LATERAL
ROSE DRAIN
LITHIUM BRANCH NO. 1
LITHIUM BRANCH NO. 2
Scale in Feet
0
4,000
8,000
12,000
North
Date of Exhibit: 01.03.2023
SANGIS/ SANDAG Aerial Image: 2017
Imperial Irrigation District Drains and Canals: 2022
Imperial County Existing Bridge Locations: November 2022
FEMA NFHL: July 2022

3. Dry Utilities

3.1 ELECTRICITY AND ENERGY GRID

3.1.1 Introduction

Due to the high volume of energy grid data within the 51,786-acre Study Area, it has not been feasible for the Imperial Irrigation District (IID) to provide focused information that would be best-utilized. Ongoing consultation with IID will provide analysis of existing electrical infrastructure once a focus area is established and/or land use alternatives are prepared.

3.1.2 Methodology and Sources

Utilizing publicly-sourced data, subconsultant, Coffman Engineers, mapped out the existing substations, transmission lines, and renewable energy facilities. Once land use alternatives are prepared, further analysis can be prepared to evaluate the capacities of specific transmission lines, anticipated load, and easements that may be utilized to support the land use alternatives.

Sources used include: California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, CGIAR, and USGS.

3.1.3 Applicable Regulations

California Code of Regulations Title 24

California's energy code is designed to reduce wasteful and unnecessary energy consumption in newly constructed and existing buildings. The California Energy Commission updates the Building Energy Efficiency Standards (Title 24, Parts 6 and 11) every three years by working with stakeholders in a public and transparent process.

The 2022 Energy Code encourages efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, and more. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.

Executive Order N-79-20

Under Governor Newsom's Executive Order N-79-20, all new passenger vehicles sold in California will be zero-emission by 2035, and all other fleets will have transitioned to zero-emission as fully possible by 2045.

AB 1279

AB 1279 (Gozalez and Limón) Establishes statewide carbon neutrality goal to dramatically reduce climate pollution with a clear, legally binding, and achievable goal for California to achieve statewide carbon neutrality as soon as possible, and no later than 2045, and establishes an 85% emissions reduction target as part of that goal. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO2 removal solutions and carbon capture, utilization, and storage (CCUS) technologies.

2022 Scoping Plan for Achieving Carbon Neutrality

The 2022 Scoping Plan for Achieving Carbon Neutrality lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas (GHG) emissions by 85 percent below 1990 levels no later than 2045, per Assembly Bill 1279.

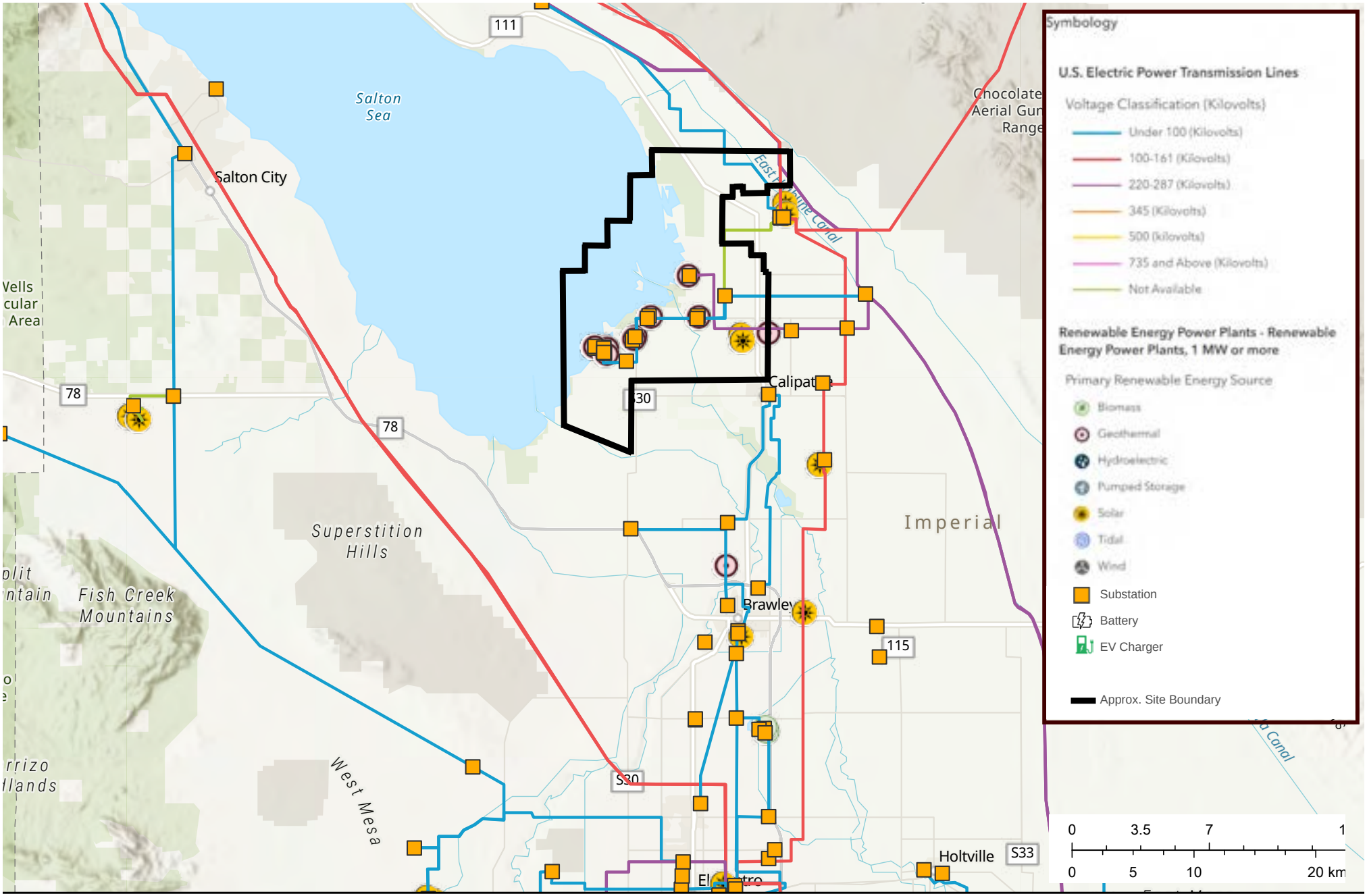
SB 1020

SB 1020 (Laird) establishes a pathway toward the California's clean energy future. It creates clean electricity targets of 90% by 2035 and 95% by 2040 with the intent of advancing the state's trajectory to the existing 100% clean electricity retail sales by 2045 goal. This bill requires the CPUC, California Energy Commission (CEC), and CARB, on or before December 1, 2023, and annually thereafter, to issue a joint reliability progress report that reviews system and local reliability.

3.1.4 Existing Inventory

As shown in Figure 3-1, Substations, Transmission & Renewables, renewable energy facilities are clustered along the southeastern boundary of the Salton Sea, largely connected via a transmission line that is under 100 kilowatts. This transmission line is owned and operated by IID and provided to retail customers such as geothermal power plants. Due to the high investment costs to construct transmission lines, electricity is provided to development at the time of construction, meaning energy transmission is not built proactively.

Consultation and coordination with IID is ongoing and will be more productive once a land use alternative is established to assess how and where IID transmission lines could access and support such land uses. Consultation to date has noted the development of an additional transmission line into the Salton Sea area into the Edison system in which information will be shared.



INFRASTRUCTURE ASSESSMENT

FIGURE 3-1, Substations, Transmission & Renewables

3.1.5 Findings

Once land use alternatives are prepared, further analysis can be prepared to evaluate the capacities of specific transmission lines, anticipated load, and easements that may be utilized to support the land use alternatives.

3.2 SOLID WASTE, RECYCLING, AND COMPOSTING

3.2.1 Introduction

The Imperial Valley Resource Management Agency (IVRMA) is a Joint Powers Authority (JPA) that focuses on solid waste and recycling for public agencies in Imperial County. Specifically, IVRMA's mission is stated as 'developing, implementing, and supporting efficient and sustainable programs for waste reduction, reuse, recycling, hazardous waste management, composting and recycled content purchasing for Imperial Valley citizens in accordance with local, state, and national mandates'. To this end, the agency facilities household hazardous waste collection facilities at its three locations in Brawley, Calexico and El Centro. The Agency's main offices are located in El Centro and governance comprises 11 board members from the member agencies including all seven Imperial County cities, Imperial County, Imperial Irrigation District and Caltrans.

Within the Study Area, CR&R Environmental Services (CR&R) provides non-hazardous household and commercial solid waste and recycling services to Calipatria under contract with the City, via a curbside pick-up once a week. This municipal waste is taken to CR&R's El Centro sorting facility prior to landfill disposal at either Republic Landfill or the South Yuma County Landfill.

3.2.2 Methodology and Sources

Research was conducted through an internet search using the following sources:

- Imperial Valley Resource Management Agency
- Imperial County Public Health Department
- Department of Toxic Substances Control (DTSC)
- CalRecycle
- City of Calipatria
- Calipatria General Plan 2035
- Imperial County Department of Public Works Joint Technical Document for Niland and Calexico Solid Waste Sites

3.2.3 Applicable Regulations

CalRecycle

CalRecycle is a state agency that administers and provides oversight for all of California's state-managed non-hazardous waste handling and recycling programs. CalRecycle sets minimum standards for the handling and disposal of solid waste designed to protect public health and safety, as well as the environment. CalRecycle also provides training and ongoing support for Local

Enforcement Agencies, which regulate and inspect California's active and closed solid waste landfills, as well as materials recovery facilities, solid waste transfer stations, compost facilities,

Integrated Waste Management Act (AB 939)

The Integrated Waste Management Act (IWMA), introduced as AB 939, was passed by the State Legislature in 1989 due to the increase in waste stream and decrease in landfill capacity. It was intended to reduce dependence on overallocated landfills and to ensure an effective and coordinated waste management system for waste generated within California.

AB939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of 25% by 1995 and 50% by the year 2000. AB 939 also established an integrated framework for program implementation, solid waste planning, and solid waste facility and landfill compliance.

Construction and Demolition Waste Materials Diversion Requirements (SB 1374)

The Construction and Demolition Waste Materials Diversion Requirements was passed in 2002 and requires that jurisdictions include a summary of the progress made in diverting construction and demolition waste in their annual AB 939 report. The legislation also requires that CalRecycle adopt a model ordinance for diverting 50 to 75 percent of all construction and demolition waste from landfills.

3.2.4 Existing Inventory

As evaluated by Lawrence Berkely National Laboratory's 2023 Report: Characterizing the Geothermal Lithium Resource at the Salton Sea, existing geothermal power plants in the Study Area produce approximately 80,000 metric tons of solid waste annually, representing approximately 30 kg of solid waste per MWh of electrical production. These solid wastes are predominantly composed of iron-silicate filter cake, brine-pond solids, and solids generated during plant maintenance (Dobson et.al 2023). Filter-cake solids are predominantly nonhazardous and are disposed of in regional Class II or Class III landfills. Brine-pond solids are predominantly hazardous wastes and are disposed of in Class II or Class I landfills, appropriate for industrial waste solids or hazardous waste solids, respectively (Dobson et.al 2023).

Solid Waste Facilities

Table 3-1, Functioning Solid Waste Facilities, identifies Imperial County Public Health Department's eight solid waste facilities within Imperial County (Figure 3-2, Waste Disposal Sites). Transfer stations operated by County are small (less than 100 cy per day) facilities and only operate twice per month on average. Waste is transferred to the Calexico and Niland Solid Waste Sites for final disposal depending upon transfer station location. Information on the capacity of these facilities is provided below Table 3-1. The Salton City landfill is a public private partnership operated by Burtec. This landfill is a public landfill that has a remaining capacity of 1.2 million cubic yards to serve new development.

Table 3-1, Functioning Solid Waste Facilities

Facility	Location

Calexico	133 W Hwy 98 Calexico, CA 92231 East of Hammers Road on Highway 98 Approximately 3 miles west of Calexico
Holtville[1]	Whitlock Road North of Norrish Rd.
Hot Spa	10466 Spa Road Niland, CA 92257 Spa Road west of Frink Road
Imperial[2]	1705 W Worthington Road Imperial, CA 92251 3 miles west of Forrester Road on Worthington Road-
Niland	8450 Cuff Road Niland, CA 92257 Cuff Road north of Beal Road
Ocotillo[1]	1802 Shell Canyon Rd. Ocotillo, CA 92259 Shell Canyon Road north of Ocotillo-
Palo Verde[1]	589 Stallard Road Palo Verde, CA 92266 Stallard Road approximately 3 miles south of Palo Verde
Salton City	935 W Highway 86 Salton City, CA 92275 South of S22 and west of Hwy 86
Imperial Landfill (Closed)	3354 Dogwood Road Imperial, CA 92251

Source: Imperial County Public Health Department (https://www.icphd.org/environmental-health/solid-waste/solid-waste-facilities/)
Footnotes:
1. The Holtville, Ocotillo, and Palo Verde facilities are transfer facilities.
2. The Imperial Facility is in the process of final closure and is closed to the public.

Notably, in 2021, Imperial County was informed that it is out of compliance with mandatory state recycling regulations and a decision was made by the Imperial County Board of Supervisors to close the Imperial Landfill, which is authorized to accept Class III solid waste. This results in the closest landfill in which to dispose Class III non-hazardous solid wastes to be Niland which has an authorized capacity of 358,000 cubic yards of which approximately 200,000 cubic yards were available for use as of 2020.

Transfer Station - Niland Solid Waste Site

Per the November 2022, Joint Technical Document for the Niland Solid Waste Site prepared by Imperial County, the Niland Solid Waste Site (NSWS) encompasses approximately 100 acres, with an average daily inflow rate of 6.1 tons per day. The estimated remaining service life as of September 22, 2022 is 38 years, meaning it will have capacity through 2060, as long as no additional cells are cut by the Imperial County Department of Public Works (ICPDW 2022).

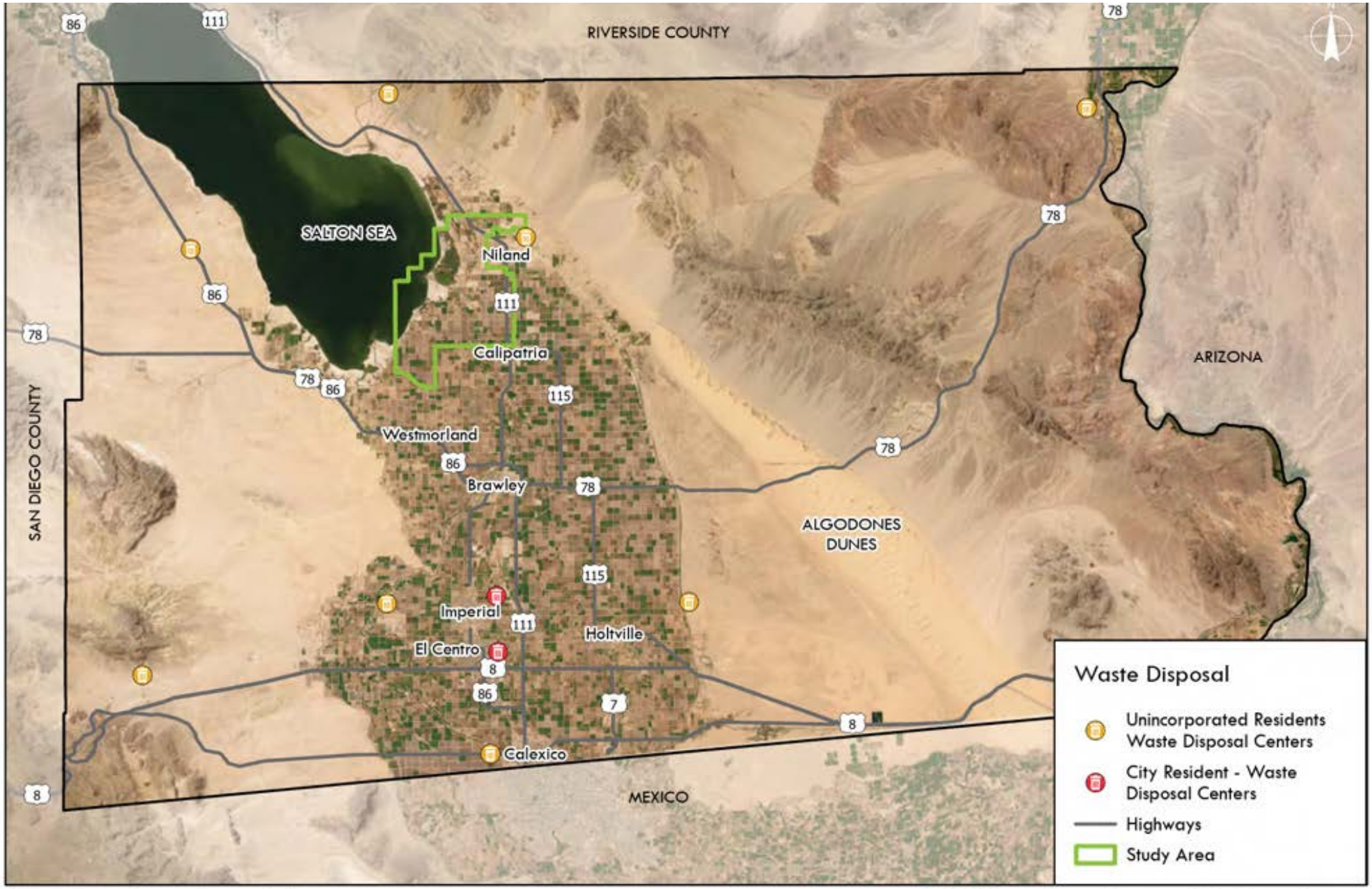
Transfer Station - Calexico Solid Waste Site

Per the August 2019, Joint Technical Document for the Calexico Solid Waste Site prepared by Imperial County, the Calexico Solid Waste Site (CSWS) encompasses approximately 40 acres of disposal area. The estimated remaining service life as of August 2019 is approximately 160 years,

meaning it will have capacity through 2179, assuming there is no expansion into the current unfilled areas of the landfill (ICPDW 2019).

Hazardous Solid Waste Facilities

The closest accepting hazardous waste disposal facilities to the study area are Republic Services Allied Imperial Landfill with a maximum permit capacity of 15,600 cubic yards and the South Yuma County Landfill.



SOURCE: Imperial County Planning and Development Services

Notably, in 2021, Imperial County was informed that it is out of compliance with mandatory state recycling regulations and a decision was made by the Imperial County Board of Supervisors to close the Imperial Solid Waste Site, which is authorized to accept Class III solid waste. This results in the closest landfill in which to dispose Class III non-hazardous solid wastes to be Niland which has an authorized capacity of 318,673 cubic yards, approximately 211,439 of which were available for use as of 2020. The Niland facility has total of 100 acres, but the disposal acreage is 13.9. Per County staff, the operation deficits experienced at the solid waste facilities in Imperial County is due to not receiving enough waste and revenues. For example, Niland is permitted to receive 55 tons per day but only receives roughly 10 tons per operating day.

Hazardous Solid Waste Facilities

3.2.5 Findings

Currently, the County has sufficient landfill capacity for the existing projected demand, however, further investigation would be required once the Project identifies a preferred land use alternative. Efforts to divert waste solids from landfills to useful purpose should be encouraged to save landfill space (Dobson et.al 2023).

Should the Republic Services Allied Imperial Landfill facility close, the closest hazardous waste disposal facility will be the South Yuma County Landfill. This facility is a 300+ mile drive from the Study Area. Hazardous wastes are commonly trucked out of state if applicable toxicity standards are complied with for the respective state, most likely Arizona, Utah or Nevada.

3.3 TELECOMMUNICATIONS

3.3.1 Introduction

Telecommunications technology allows people to communicate and exchange information over distances by electronic means such as internet, telephone or broadcasting. Telecommunications systems are generally run by telecommunication service provides which typically offer telephone and internet services to the public. The majority of telecommunication service providers are privately owned, and therefore government agencies have been set up to enforce guidelines. In the United States, the Federal Communications Commission (FCC) is the primary regulatory agency.

3.3.2 Applicable Regulations

Federal Communications Commission

The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in the United States. The FCC operates as an independent government agency and serves as the primary authority for communications law, regulations, and technological innovation. The FCC is organized into seven separate bureaus; Consumer and Governmental Affairs, Enforcement, International, Media, Public Safety and Homeland Security, Wireless Telecommunications, and Wireline Competition.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, and transportation companies. CPUC regulates the planning and

approval for the physical construction of electric generation, transmission, or distribution facilities; and the local pipelines of natural gas. In addition, CPUC regulates rates and charges for basic telecommunication services, such as how much one pays for the ability to make and receive calls.

County of Imperial Land Use Code Division 24 - Communication Facilities

This division establishes a consistent set of standards regulating the placement and design of all types of communication facilities in unincorporated areas of Imperial County. These standards are intended to protect and promote public health, safety, community welfare and the unique visual character of Imperial County by encouraging the orderly development of communication infrastructure.

3.3.3 Existing Inventory

BorderLink

The Imperial County Office of Education has teamed up with local school districts to bring wireless internet connectivity to students in the communities of Brawley, Calexico, Calipatria, El Centro, Heber, Holtville, Imperial, Niland, Seeley and Westmorland. This program is called BorderLink which would have the capability to service the Study Area, with Westmorland Elementary School, Calipatria High School and Niland Grace Smith Elementary being the main hubs/where facilities are located close to the study area.

Imperial Valley Telecommunications Authority (IVTA)

The Imperial Valley Telecommunications Authority (IVTA) is a joint powers authority (JPA) that focuses on broadband infrastructure for public agencies in Imperial County. IVTA is comprised of 31 member agencies, each with a seat on the board. Membership includes the 16 school districts, the community college, San Diego State University, the County of Imperial, and most of the cities within the County. Imperial County Office of Education (ICOE) is the network administrator, responsible for day-to-day operations of the JPA. The communications and relationships with all agencies help to remove barriers and keep costs down.

Affordability is a big issue in Imperial County with more than 20% of residents living in poverty, and about three-quarters of students qualifying for free and reduced-price meals. Due to this a big focus for ICOE was making sure we could help students and families access affordable broadband at home. In 2018, ICOE launched BorderLink, a collaborative effort to narrow the “homework gap” by expanding affordable access to reliable Internet connection at home. The effort focused on building broadband networks to serve our community anchor institutions (schools, libraries, hospitals, first responders, city and the County of Imperial). The network today serves mostly students.

Private Broadband Providers

The Study Area lacks residential broadband customers and has only a few industrial customers. The most common broadband providers that serve private customers in neighboring urban areas are listed below. It appears that each service area provider extends beyond city limits and serves the Study Area although further information would be needed from each provider to verify this.

- AT&T
- T-Mobile Home Internet

- Beamspeed
- HughesNet
- Viasat
- EarthLink

AT&T provides 4G LTE wireless coverage to most of Imperial County, including the study area. The ATLitS Plant within the study area utilizes AT&T for phone services and Beamspeed for internet services. HughesNet and Viasat provide Satellite Internet and Phone while AT&T provides DSL Internet and Television. HughesNet and Viasat provide Satellite Internet and Phone while EarthLink provides DSL Internet and Fiber Internet. Beamspeed provides direct wireless internet connection. Services are currently provided on a customer-by-customer basis. Due to the remoteness of the Study Area, servicing commercial customers in the Study Area can be costly.

3.3.4 Findings

Telecommunications services are provided by a number of companies in the area including AT&T, HughesNet and Viasat. In some cases, such as with AT&T, the highest level of internet is unavailable in the Study Area. In order to determine the full level of service and/or how robust their facilities in the area conversations should be had with these service providers.

BorderLink provides affordable access to reliable Internet connection at home, particularly for students in Imperial County. Access is for public agencies in Imperial County only, there could be opportunities to expand this network.

4. Roads and Bridges

4.1 ROADS

4.1.1 Introduction

The roadways and intersections that were evaluated in this study were selected based on input from Imperial County and include several roadways and intersections that are located outside of the 51,786-acre Lithium Valley Study Area. Due to the larger geographic area in which the study roadways and intersections are evaluated, this area is referred to hereto forth as the "Transportation Study Area" where applicable in this chapter. In addition to including the entire 51,786-acre Lithium Valley Study Area, the Transportation Study Area extends north to the Highway 111/Davis Road intersection, east and southeast through the community of Niland and the City of Calipatria, and south toward the City of Brawley and City of Westmorland. Although visitors and residents in the Transportation Study Area rely primarily on private automobiles, public transit opportunities are available in the form of bus routes.

This section evaluates the existing transportation infrastructure in the Transportation Study Area, including the physical and operational conditions of the existing roadway network.

4.1.2 Methodology and Sources

The Project Team conducted a high-level evaluation of the existing roadway network including roadway capacities and level of service analysis of the primary roadways in the Transportation Study Area. The Project Team conducted an assessment of roadway conditions using County-provided documentation to understand where the existing transportation infrastructure system is failing and where it can be expanded upon.

4.1.3 Applicable Regulations

Federal

Highway Capacity Manual

The Federal Highway Capacity Manual, 6th Edition, adopted in 2016, is a publication of the Transportation Research Board of the National Academies of Science in the United States. It contains concepts, guidelines, and procedures for computing the capacity and quality of service of various highway facilities, including freeways, highways, arterial roads, roundabouts, signalized and unsignalized intersections, and rural highways, and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

State

California Department of Transportation (Caltrans) Highway Design Manual (HDM)

The Highway Design Manual (HDM) was prepared by the California Department of Transportation (Caltrans) to establish uniform policies and procedures to carry out the State highway design functions of the Department. It is neither intended as, nor does it establish, a legal standard for these functions. The standards, procedures, and requirements established and discussed in the HDM are for the information and guidance of the officers and employees of Caltrans. Many of the instructions given in the HDM are subject to amendment as conditions and experience warrant. The current Seventh Edition of the HDM was last updated on May 20, 2022.

Local

Imperial County General Plan Circulation and Scenic Highways Element

The County's General Plan Circulation and Scenic Highways Element (January 29, 2008) includes guidance for development of a balanced, multimodal transportation system to facilitate and enhance the movement of people and goods in the unincorporated areas of the county. The element is aimed at achieving a balanced transportation system that offers multiple modes of travel, including motor vehicles, public transportation, bicycles, pedestrians, and to a lesser extent, rail and air transportation. Issues addressed include regional transportation coordination and facilities, achieving a safe and efficient multimodal system, improving public transit, implementing transportation system management (optimizing the transportation network) and travel demand management (reducing the use of the road network), parking, protecting and enhancing scenic highway corridors, and providing bicycle, pedestrian, and trail facilities. The Circulation and Scenic Highways Element also recognizes its correlation with the Land Use Element and includes identification of a road network that can

adequately support the uses designated on the General Plan Land Use Map at buildout, based on a reasonable expectation for funding of the regional transportation network.

Imperial County Engineering Design Guidelines Manual

The County's Engineering Design Guidelines Manual (September 15, 2008) establishes uniform engineering design guidelines for the preparation and plan checking of street improvement plans, drainage and grading plans, and includes standards and design guidelines for use within the unincorporated areas of Imperial County. The purpose of these standards and guidelines are to provide for the regulation of improvements to be dedicated to the public and accepted by the County as a result of the Land Development process. They are intended to keep the cost of maintaining public facilities at a reasonable level and at the same time provide for the service and protection of the public. The County's Engineering Design Guidelines Manual includes Standard Drawings of the typical street cross section and minimum Traffic Index (TI) for each roadway classification type based on the County's General Plan Circulation and Scenic Highways Element.

4.1.4 Existing Inventory of Key Corridors

Roadway Classifications

Expressway – the main function of this classification is to provide regional and intra-county travel services. Features include high design standards with six travel lanes; wide, landscaped medians; highly restricted access; provisions for public transit lanes, including but not limited to, bus lanes, train lanes, or other mass transit type means; and no parking. Minimum right-of-way (ROW) is 210 feet consisting of three travel lanes per direction, a 56-foot median, and shoulders along both sides of the travel way. The ROW width is exclusive of necessary adjacent easements such as for IID facilities as these vary. The minimum intersection spacing is one (1) mile. (NOTE: ROW's may be greater if the road segment also serves as a corridor for public utilities.)

Prime Arterial — the main function of this classification is to provide regional, sub regional, and intra-county travel services. Features include high design standards with four to six travel lanes, raised and landscaped medians, highly restricted access, which in most cases will be a one mile (1 mile) minimum, provisions for public transit lanes, including but not limited to bus lanes, train lanes, or other mass transit type means and no parking. The absolute minimum right of way w/o public transit lanes is 136 feet. ROW dimensions are specified in the STANDARDS for specific road segments. Please refer to appropriate standards section. (NOTE: ROW's may be greater if the road segment also serves as a corridor for public utilities.)

Minor Arterial — these roadways provide intra-county and sub regional service. Access and parking may be allowed, but closely restricted in such a manner as to ensure proper function of this roadway. Typical standards include the provision for four and six travel lanes with raised and landscaped medians for added safety and efficiency by providing protected left turn lanes at selected locations. Some may also contain provisions for public transit lanes or other mass transit type means. Minimum right of way is 102 feet for 4 lanes and 126 for 6 lanes.

Major Collector (Collector) — these roadways are designed for intra-county travel as a link between the long haul facilities and the collector/local facilities. Although it frequently provides direct access

to abutting properties, that is not its primary purpose. Typical design features include provision for four travel lanes without a raised median and some may also contain provisions for public transit lanes or other mass transit type means. Minimum right of way is 84 feet. Parking is generally not permitted.

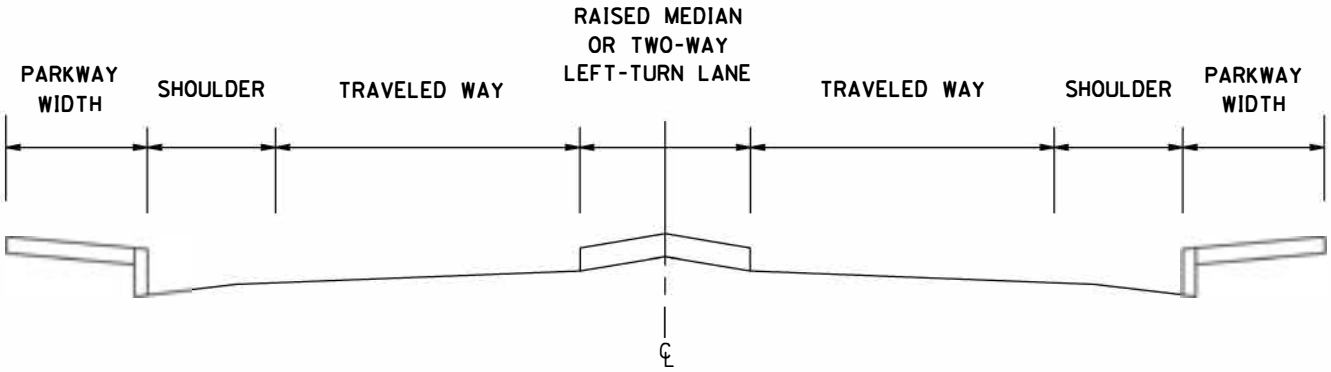
Minor Local Collector (Local Collector) – this is designed to connect local streets with the adjacent Collectors or arterial street system. Design standards include provision for two travel lanes and parking, except in specific locations where parking is removed to provide a turn lane at intersections. Local Collector streets frequently provide direct access to abutting properties, although that should be avoided where feasible. Minimum right of way is 70 feet.

Residential Street – this street type also includes residential cul de sac and loop street and is designed to provide direct access to abutting properties and to give access from neighborhoods to the Local Street and Collector Street system. This classification should be discontinuous in alignment such that through trips are discouraged. Typical design standards include provision for two travel lanes, parking on both sides, and direct driveway access. Minimum right of way is 60 feet.

Major Industrial Collector (Industrial) – the main function of this classification is to provide for efficient movement of goods for regional, subregional, and intra- county travel services. Access and parking may be allowed, but closely restricted in such a manner as to ensure safe and proper function of industrial traffic on this roadway. Typical design standards include provisions for up to four travel lanes and parking on both sides. Minimum right of way is 96 feet.

Industrial Local Street – this classification is designed to connect industrial properties and areas with the adjacent Industrial Collector, Residential, Collector or arterial system. Design standards include provisions for two travel lanes, of a minimum of 13 feet width each, and parking. Industrial streets frequently provide direct access to abutting industrial sites and parking of industrial-sized vehicles. Minimum right of way is 64 feet.

The typical cross-section for each roadway classification type as described above is illustrated in Figure 4-1, Typical Cross-SectionsSections by Roadway Classification Type.



ROADWAY CLASSIFICATION	MEDIAN OR TWLTL	TRAVELED WAY	SHOULDER	PARKWAY	CURB TO CURB WIDTH	RIGHT OF WAY
EXPRESSWAY	46′	3 - 12′	8′ - MEDIAN 10′ - OUTER	28′	154′	210′
PRIME ARTERIAL	18′	3 - 12′	8′	15′	106′	136′
MINOR ARTERIAL	18′	2 - 12′	8′	10′	82′	102′
COLLECTOR	-	2 - 12′	8′	12′	60′	84′
MINOR COLLECTOR	-	1 - 12′	8′	15′	40′	70′
INDUSTRIAL COLLECTOR	12′	2 - 12′	9′	10′	78′	98′
INDUSTRIAL MINOR	-	1 - 13′	9′	10′	44′	64′
LOCAL COUNTY	-	1 - 12′	8′	10′	40′	60′

Existing Roadway Network

Highway 78/86 is oriented in a general east-west direction along the segment that is shared by both highways. Highway 78/86 is classified as a divided 6 Lane State Highway/Expressway, and is currently built as a divided 4 Lane State Highway/ Expressway with a pavement width of 164 feet (including the 84 foot center median), except through Westmorland, where Highway 78/86 is currently built as an undivided 4 lane roadway with a pavement width of 76 feet. Sidewalks are generally not provided except along several blocks in Westmorland. There are currently no bike lanes along Highway 78/86, but a 4-6 foot shoulder is generally provided. On-street parking is prohibited on Highway 78/86. The posted speed limit ranges from 35 mph through Westmorland to 65 mph between cities and communities. Highway 78/86 is a major goods movement route and would provide regional access between the Study Area and areas to the west and south of the Study Area.

Highway 111 is oriented in a general north-south direction and is classified as a divided 6 Lane State Highway/Expressway. Highway 111 is currently built as an undivided 2 lane State Highway facility with a pavement width ranging from 32 feet to 54 feet, except for a 4-block segment in Calipatria where 4 lanes are currently provided with a pavement width of 76 feet. Sidewalks are generally not provided except along the east side of the roadway for several blocks in Calipatria. There are currently no bike lanes along Highway 111, but a 4-6 foot shoulder is generally provided. On-street parking is prohibited on Highway 111. The posted speed limit ranges from 40 mph through Calipatria, to 45 mph through Niland, to 65 mph between cities and communities. Highway 111 serves as a major goods movement route in Imperial County and would provide primary regional access to and from the Study Area.

Main Street (Calipatria)/Highway 115 is oriented in a general east-west direction, and is classified as a 4 lane Major Collector from Lyerly Road to Highway 111, and as a divided 6 Lane State Highway/Expressway along the Highway 115 segment east of Highway 111. Main Street is currently built as an undivided 2 lane roadway between Lyerly Road and Hornet Street (Calipatria High School). Main Street is currently built as a 4 lane roadway between Hornet Street (Calipatria High School) and Park Avenue, with a pavement width of 76 feet. West Main Street between Park Avenue and Highway 111 is currently built as an undivided 2 lane roadway with on-street angled parking, with a pavement width of 76 feet. East Main Street (Highway 115) between Highway 111 and Northeast/ Southeast Avenue is currently built as an undivided 4 lane roadway, with a pavement width ranging from 52 feet to 76 feet, and transitions to an undivided 2 lane roadway east of Northeast/ Southeast Avenue, with a pavement width ranging from 32 feet to 44 feet. Sidewalks are generally provided between Lyerly Road and Industrial Avenue. Bike lanes are not provided along Main Street/Highway 115. The posted speed limit on Main Street/Highway 115 ranges from 25 mph to 45 mph through Calipatria and is 65 mph on Highway 115 east of Northeast/ Southeast Avenue. West Main Street would provide access between Highway 111 and the southern portion of the Transportation Study Area (via Eddins Road), whereas East Main Street/Highway 115 would provide regional access between the Study Area and areas to the southeast of the Study Area.

Forrester Road/Center Street is oriented in a general north-south direction, and is classified as a 6 lane Prime Arterial. Forrester Road/Center Street is currently built as an undivided 2 lane roadway

between Walker Road and Interstate 8, with a pavement width generally ranging from 24 to 26 feet. A half-mile section of Forrester Road becomes Center Street through Westmorland that is currently built as an undivided 2 lane roadway with a two-way left-turn lane and on-street parallel and angled parking, with a pavement width ranging from 48 to 72 feet. Sidewalks are generally not provided except along several blocks in Westmorland where Forrester Road becomes Center Street. A Class II bike lane is currently provided in each direction along a 2-block section of Center Street between 7th Street and 5th Street. The posted speed limit on Forrester Road ranges from 35 to 55 mph, except through Westmorland where the posted speed limit on Center Street is 25 mph. Forrester Road would provide access between Highway 78/86 and the southern and central portions of the Study Area via Gentry Road (north of Walker Road).

Sinclair Road is oriented in a general east-west direction, and is classified as a 4 lane Major Collector. Sinclair Road is currently built as an undivided 2 lane roadway between Gentry Road and Wiest Road, with a pavement width ranging from 24 to 26 feet. Sidewalks, bike lanes and parking are not provided on Sinclair Road. No posted speed limit sign was observed on Sinclair Road. Sinclair Road west of Highway 111 is located entirely within the Study Area and would provide access between Highway 111 and the central portion of the Study Area.

Eddins Road is oriented in a general east-west direction, and is classified as a 4 lane Major Collector. Eddins Road is currently built as an undivided 2 lane roadway between Gentry Road and Lyerly Road, with a pavement width of 24 feet. Eddins Road transitions to Main Street east of Lyerly Road at the City of Calipatria western boundary. Sidewalks, bike lanes and parking are not provided on Eddins Road. No posted speed limit sign was observed on Eddins Road. Eddins Road would provide access between Highway 111 (via Main Street) and the southern portion of the Study Area.

Gentry Road is oriented in a general north-south direction, and is classified as a 4 lane Major Collector. Gentry Road is currently built as an undivided 2 lane roadway between Sinclair Road and Walker Road, with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on Gentry Road. No posted speed limit sign was observed on Gentry Road. Gentry Road would provide access between Highway 78/86 and the southern and central portions of the Study Area via Forrester Road (south of Walker Road). Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Gentry Road via Eddins Road and Sinclair Road.

Kalin Road is oriented in a general north-south direction, and is classified as a 4 lane Major Collector. Kalin Road is currently built as an undivided 2 lane roadway between Sinclair Road and Carter Road south of Highway 86, with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on Kalin Road. No posted speed limit sign was observed on Kalin Road. Kalin Road would provide access between Highway 86 and the southern and central portions of the Study Area. Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Kalin Road via Eddins Road and Sinclair Road.

Main Street (Niland) is oriented in a general east-west direction, and is classified as a 2 lane Minor Local Collector. Main Street is currently built as an undivided 2 lane roadway between Highway 111 and the Wilkins Road/Beal Road intersection, with a pavement width of 24 feet. Sidewalks, bike

lanes and parking are not provided on Main Street. The posted speed limit is 35 mph. Main Street would provide access between Highway 111 and areas in the northeast corner of the Study Area (via Wilkins Road).

Wilkins Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Wilkins Road is currently built as an undivided 2 lane roadway between Beal Road and Hobbs Road, with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on Wilkins Road. No posted speed limit sign was observed on Wilkins Road. Wilkins Road would provide access into the northeast corner of the Study Area.

English Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. English Road extends from Coachella Canal Road to Bowles Road, and is currently unpaved between Coachella Canal Road and Wilkins Road, and between Highway 111 and Sinclair Road. English Road is paved between Wilkins Road and Highway 111, and between Sinclair Road and Bowles Road, and is built as an undivided 2 lane roadway with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on English Road. No posted speed limit sign was observed on English Road. English Road north of Highway 111 would provide access into the northeast corner of the Study Area.

Brandt Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Brandt Road is currently built as an undivided 2 lane roadway between Sinclair Road and Webster Road south of Highway 86, with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on Brandt Road. No posted speed limit sign was observed on Brandt Road. Brandt Road would provide access between Highway 78 and the southern and central portions of the Study Area. Access between Highway 111 and the southern and central portions of the Study Area would also be provided from Brandt Road via Eddins Road and Sinclair Road.

Lack Road is oriented in a general north-south direction, and is classified as a 2 lane Minor Local Collector. Lack Road is currently built as an undivided 2 lane roadway between Bowles Road and Baughman Road south of Highway 78/86, with a pavement width ranging from 22 to 24 feet. Sidewalks, bike lanes and parking are not provided on Lack Road. No posted speed limit sign was observed on Lack Road. Lack Road would provide access between Highway 78/86 and the southern portion of the Study Area.

Figure 4-2, Existing Roadway Configurations In Transportation Study Area, illustrates the existing roadway configurations of the above-listed roadways that provide access to and within the Study Area. Figure 4-3, General Plan Circulation Element Roadway Classifications In Transportation Study Area, illustrates the Imperial County General Plan Circulation Element roadway classifications of the above-listed roadways and others in the Transportation Study Area. Figure 4-4, Existing Study Intersection Lane Geometry and Traffic Controls, illustrates the existing conditions intersection geometry and traffic control of the eight (8) study intersections, which are listed in the next section.

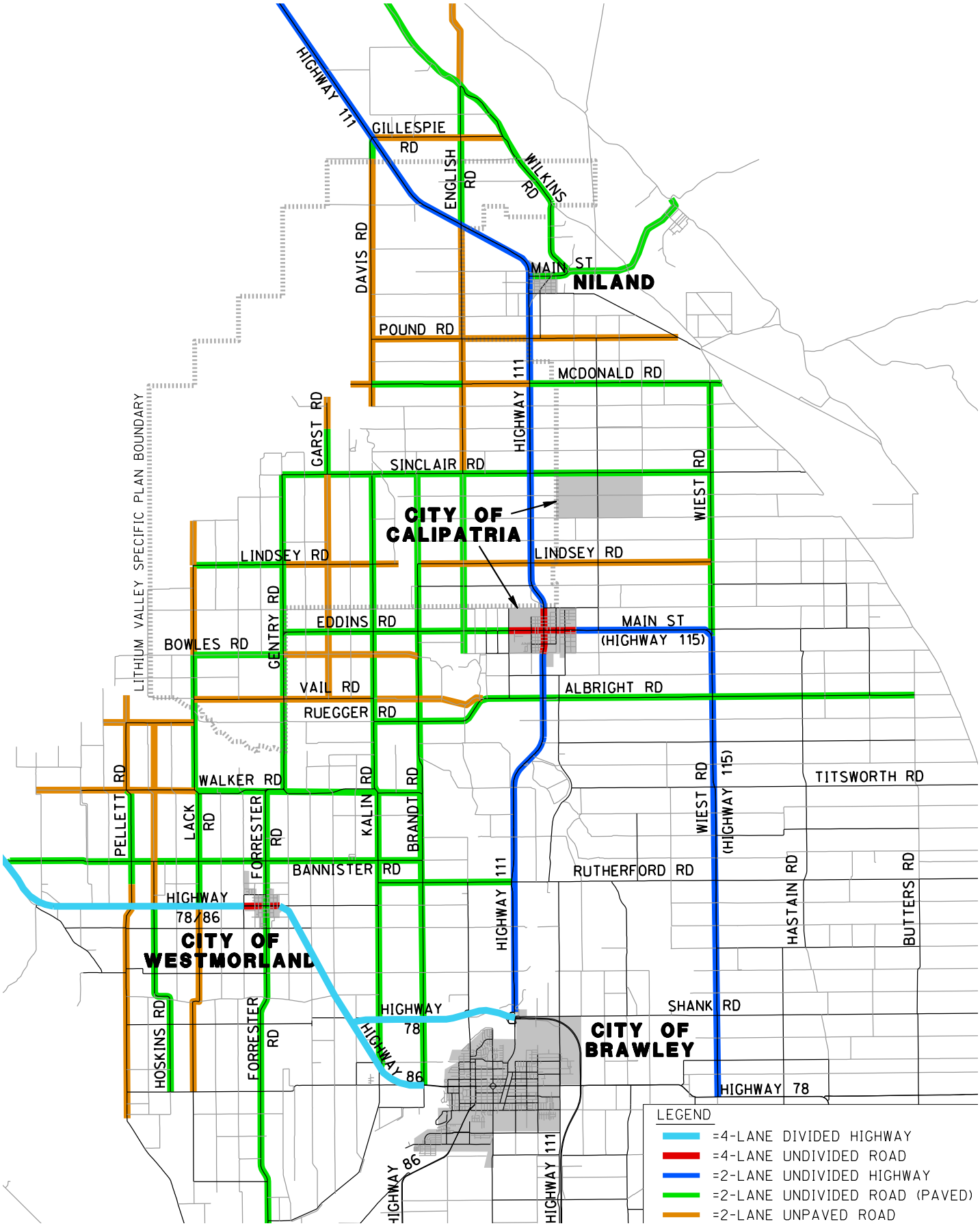


FIGURE 4-2, Existing Roadway Configurations in Transportation Study Area

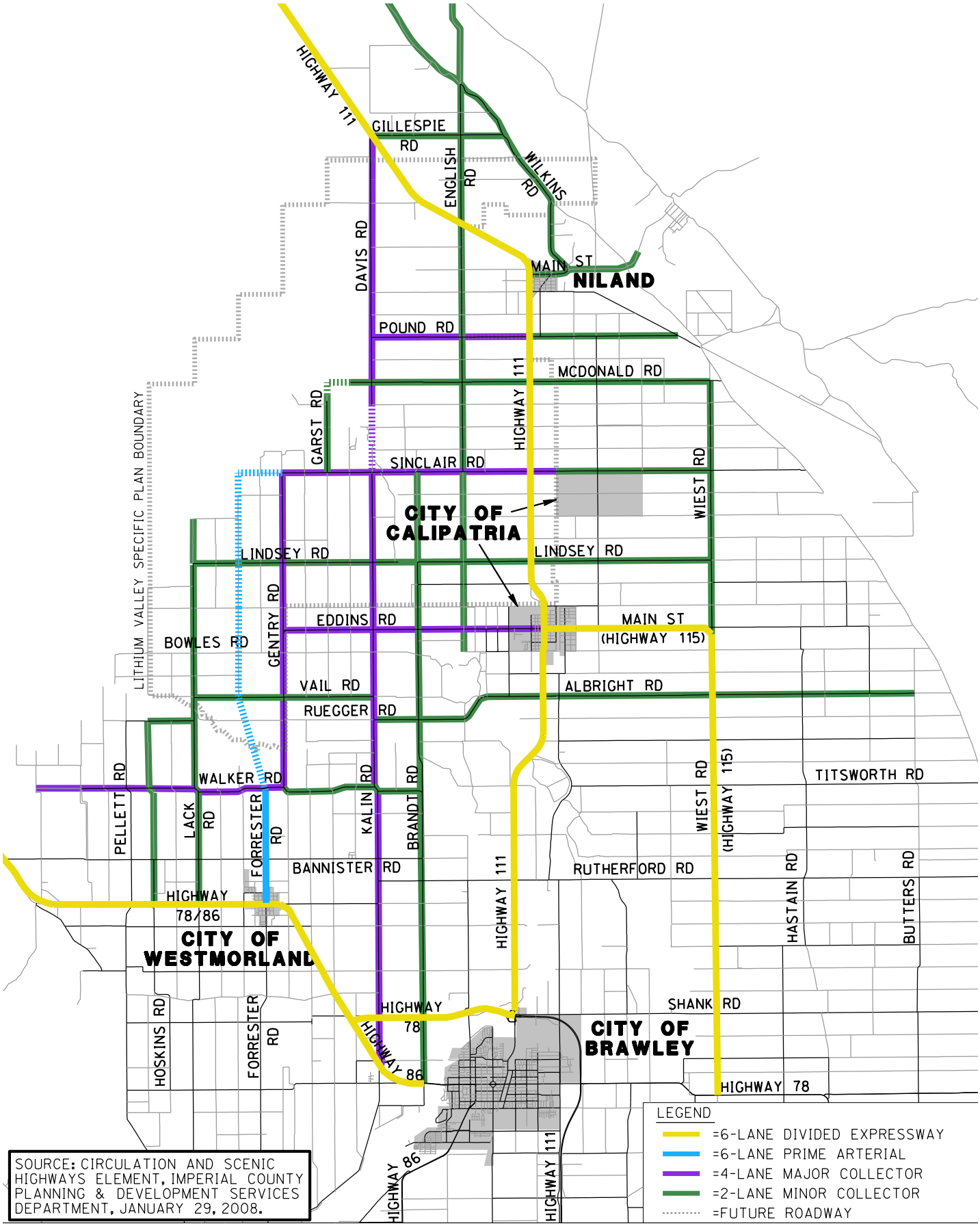


FIGURE 4-3, General Plan Circulation Element Roadway Classifications in Transportation Study Area

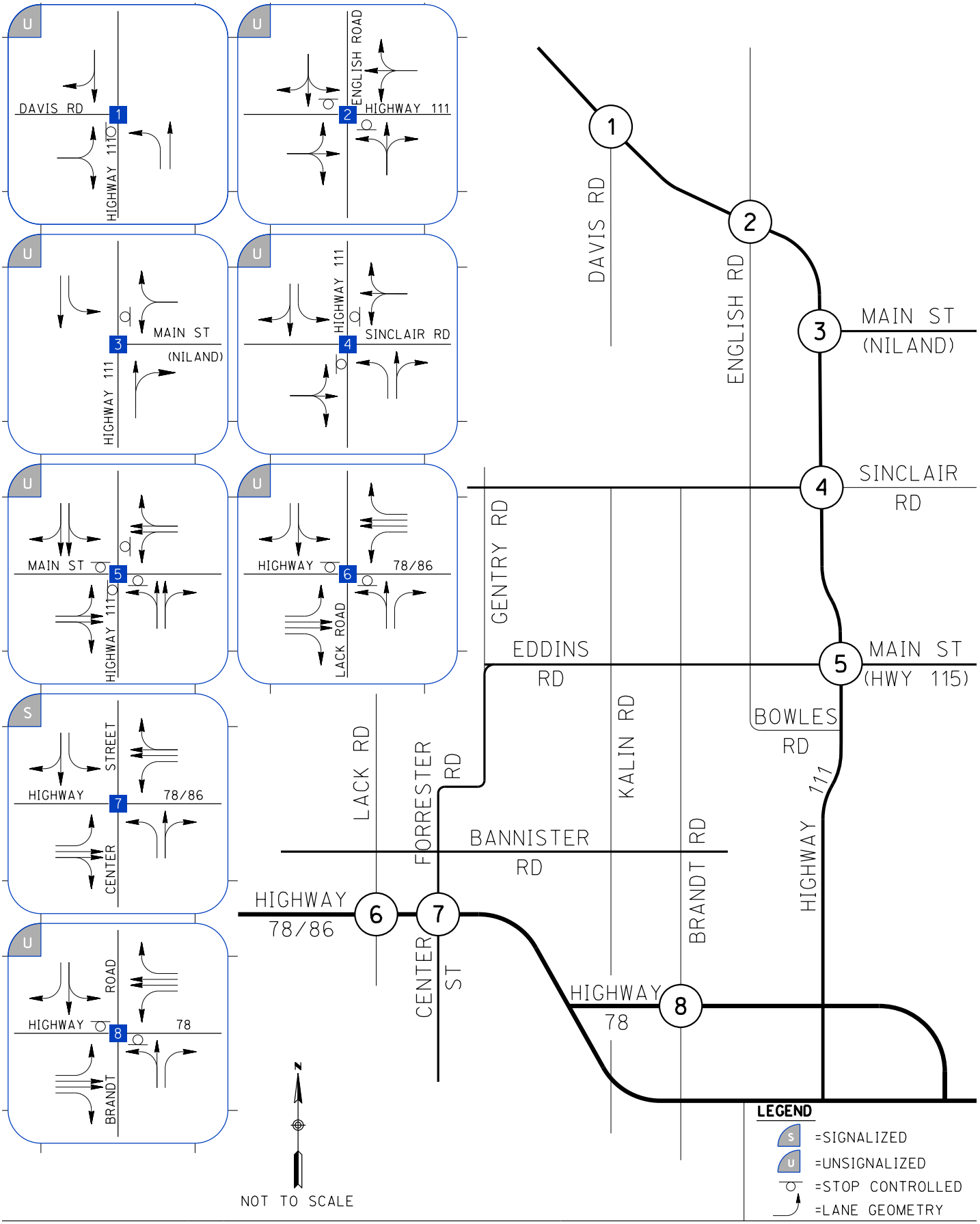


FIGURE 4-4, Existing Study Intersection Lane Geometry and Traffic Controls

Traffic Volumes

Existing intersection turning movement volumes for the study intersections, including both bicycles and pedestrians, were obtained from traffic counts conducted on Wednesday, November 9, 2022 during the AM (7:00-9:00) and PM (4:00-6:00) peak periods. The calculated peak hour volumes within the count period of each intersection were utilized in the analysis. The study intersections where traffic counts were collected are listed below:

1. Highway 111 / Davis Road
2. Highway 111 / English Road
3. Highway 111 / Main Street (in Niland)
4. Highway 111 / Sinclair Road
5. Highway 111 / Main Street (in Calipatria)
6. Highway 78/86 / Lack Road
7. Highway 78/86 / Center Street (becomes Forrester Road inoutside of Westmorland)
8. Highway 78 / Brandt Road

Existing roadway segment volumes in the Transportation Study Area roadways for both regular vehicles and heavy trucks were obtained from 24-hour traffic counts conducted on Wednesday, November 9, 2022 and on Thursday, November 17, 2022. The study roadway segments where traffic counts were collected are listed below:

1. Highway 111, between Davis Road and Main Street Niland
2. Highway 111, between Main Street Niland and Sinclair Road
3. Highway 111, between Sinclair Road and Main Street Calipatria
4. Highway 111, between Yocum Road and Ruegger Road
5. English Road, north of Highway 111
6. Wilkins Road, between Beal Road and Gillespie Road
7. Main Street (Niland), between Commercial Avenue and Railroad Tracks
8. Sinclair Road, between Brandt Road and Highway 111
9. Eddins Road, between Brandt Road and Highway 111
10. Highway 115, between Northeast Avenue and Blair Road
11. Highway 78/86, between Lack Road and Martin Road
12. Kalin Road, between Sinclair Road and Eddins Road
13. Gentry Road, between Sinclair Road and Eddins Road
14. Lack Road, between New River and Bannister Road
15. Forrester Road, between New River and Bannister Road
16. Brandt Road, north of Vail Road
17. Brandt Road, south of Swink Road

Figure 4-5, Existing Conditions Intersection Volumes In Transportation Study Area, illustrates the existing conditions intersection turning movement volumes of the study intersections in the Transportation Study Area. Figure 4-6, Existing Conditions Roadway Segment Volumes In Transportation Study Area, illustrates the existing conditions roadway segment volumes in the Transportation Study Area, including the percentage of heavy vehicles on these roadway segments.

The intersection and roadway segment traffic counts are contained in Appendix B Part 1 of the Lithium Valley Baseline Report.

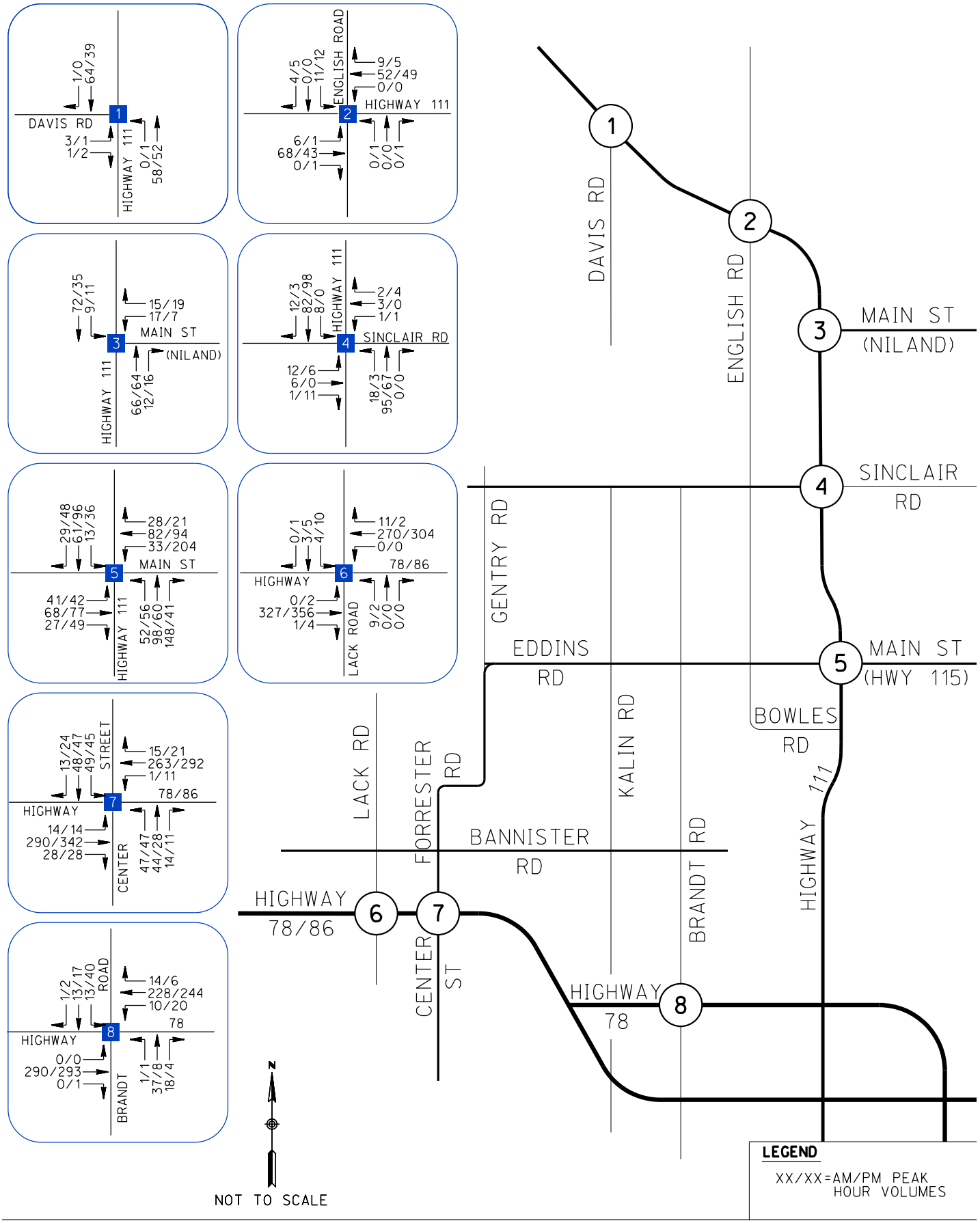
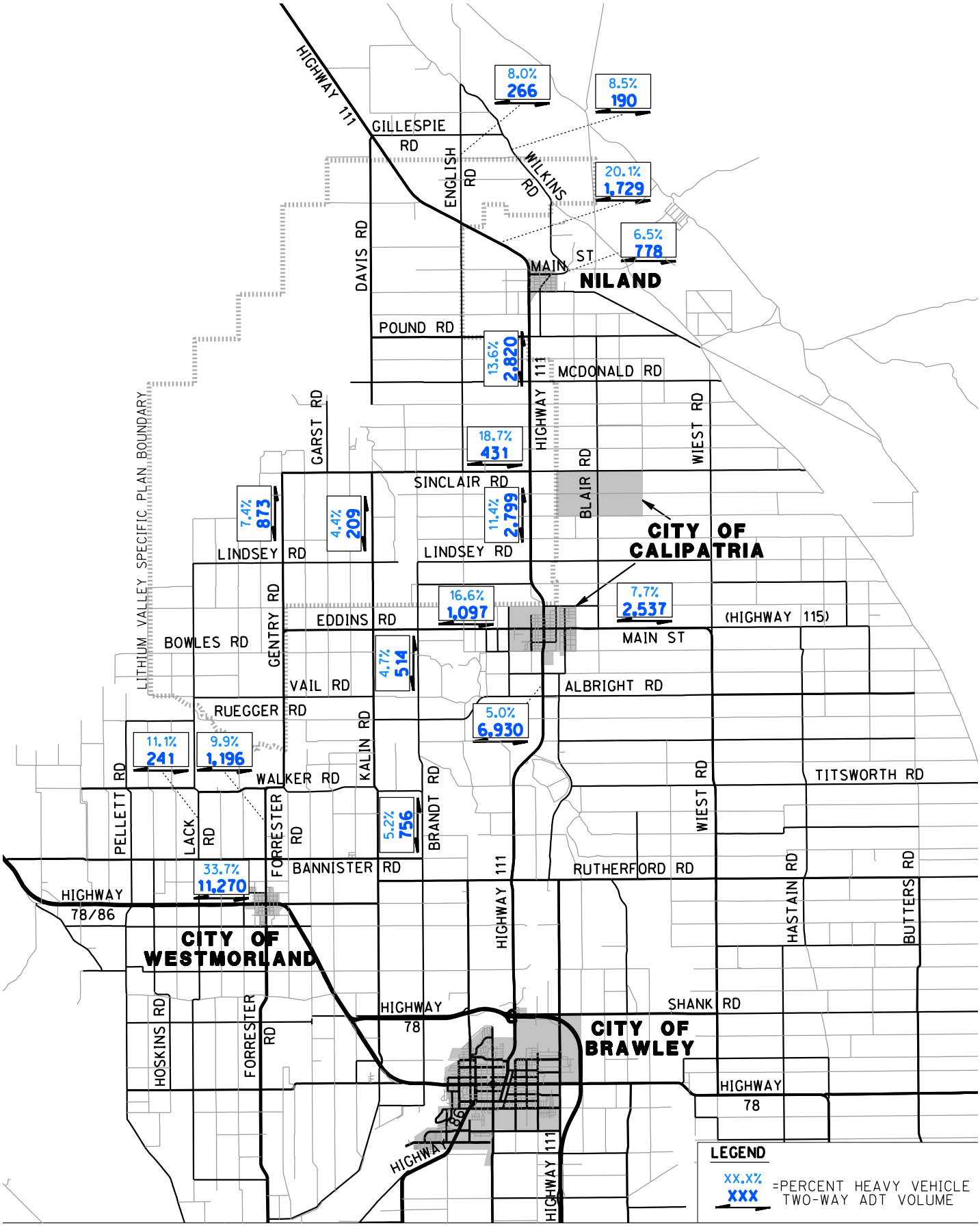


FIGURE 4-5, Existing Conditions Intersection Volumes In Transportation Study Area



INFRASTRUCTURE ASSESSMENT

FIGURE 4-6, Existing Conditions Roadway Segment Volumes In Transportation Study Area

Intersection and Roadway Operations

Intersection Operations

Level of Service (LOS) is a qualitative measure describing the efficiency of traffic flow. LOS describes the way such conditions are perceived by persons traveling in a traffic stream, with LOS measurements accounting for such variables such as speed and travel time, freedom to maneuver, traffic interruptions, traveler comfort and convenience and safety. Measurements are graduated ranging from LOS A, representing free flow and excellent comfort for the motorist, passenger or pedestrian, to LOS F, reflecting highly congested traffic conditions where traffic volumes approach or exceed the capacities of streets. As indicated in the County's General Plan Circulation Element, Imperial County will strive to maintain LOS C or better on roadways and intersections wherever possible.

The Level of Service (LOS) for signalized intersections was analyzed using the methodologies described in Chapter 19 of the 6th Edition Highway Capacity Manual (HCM 6). The LOS for signalized intersections is defined in terms of control delay, which is made up of several factors that relate to right-of-way control, geometrics and traffic volumes. The signalized intersection analysis also considers intersection spacing and coordination.

The LOS for two-way and all-way stop controlled intersections was calculated using the methodologies described in Chapters 20 and 21 of the 6th Edition HCM. The LOS for a two-way stop controlled intersection is determined by the computed control delay for each minor street movement and major street left turns, and not for the intersection as a whole. The LOS reported reflects the highest delay and associated LOS for an individual movement, typically occurring on the stop controlled approach.

The computerized analysis of signalized and unsignalized intersection operations was performed utilizing the Synchro 11 traffic analysis software. The Synchro 11 software supports the HCM-6 methodologies for signalized and stop controlled intersections and was utilized to produce the analysis results.

Signal timing data and parameters such as cycle lengths, splits, clearance intervals, etc. were obtained from the current signal timing sheets provided by the County and calibrated into the Synchro model. Synchro reports delays, which correspond to a particular LOS, to describe the overall operation of an intersection. The criteria for the intersection LOS grade designations are provided in Table 4-1, LOS Criteria for Intersections.

Table 4-1, LOS Criteria for Intersections

LOS	Control Delay (Sec/Veh)		Description
	Signalized Intersections	Unsignalized Intersections	
A	≤10	≤10	Operations with very low delay and most vehicles do not stop.

B	>10 to 20	>10 to 15	Operations with good progression but with some restricted movements.
C	>20 to 35	>15 to 25	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35 to 55	>25 to 35	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55 to 80	>35 to 50	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80	>50	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source: 6th Edition Highway Capacity Manual

Existing traffic operations were analyzed for the eight (8) study intersections in the Transportation Study Area, based on the existing turning movement volumes and intersection geometry.

Table 4-2, Existing Conditions Intersection Operations, shows the existing conditions intersection operations during the peak hours. Appendix B Part 2 of the Lithium Valley Baseline Report contains the HCM intersection operations worksheets.

As shown in the table on the following page, all Transportation Study Area intersections currently operate at Level of Service (LOS) C or better, which is considered acceptable by Imperial County standards.

Table 4-2, Existing Conditions Intersection Operations

Intersection / Peak Hour		Control	Movement	Existing (2022) Operations	
				Delay[1]	LOS[2]
Highway 111 / Davis Rd					
1	AM Peak Hour	Uncontrolled	NBL	0.0	A
		(OWSC)	EBL/R	9.4	A
	PM Peak Hour	Uncontrolled	NBL	7.5	A
		(OWSC)	EBL/R	8.9	A
Highway 111 / English Rd					
2	AM Peak Hour	(TWSC)	NBL/T/R	0.0	A
		(TWSC)	SBL/T/R	9.4	A
		Uncontrolled	EBL/T/R	7.5	A
		Uncontrolled	WBL/T/R	0.0	A
	PM Peak Hour	(TWSC)	NBL/T/R	8.9	A
		(TWSC)	SBL/T/R	9.1	A
		Uncontrolled	EBL/T/R	7.5	A
		Uncontrolled	WBL/T/R	0.0	A

Highway 111 / Main St (Niland)					
3	AM Peak Hour	Uncontrolled	SBL	7.6	A
		(OWSC)	WBL/R	9.5	A
	PM Peak Hour	Uncontrolled	SBL	7.6	A
		(OWSC)	WBL/R	9.1	A
Highway 111 / Sinclair Rd					
4	AM Peak Hour	Uncontrolled	NBL	7.5	A
		Uncontrolled	SBL	7.6	A
		(TWSC)	EBL/T/R	10.7	B
		(TWSC)	WBL/T/R	10.3	B
	PM Peak Hour	Uncontrolled	NBL	7.6	A
		Uncontrolled	SBL	0.0	A
		(TWSC)	EBL/T/R	9.6	A
		(TWSC)	WBL/T/R	9.2	A
Highway 111 / Main St (Calipatria)					
5	AM Peak Hour	(AWSC)	Overall	12.0	B
	PM Peak Hour	(AWSC)	Overall	12.4	B
Highway 78/86 / Lack Rd					
6	AM Peak Hour	(TWSC)	NBL/T	13.2	B
		(TWSC)	NBR	0.0	A
		(TWSC)	SBL/T	13.5	B
		(TWSC)	SBR	0.0	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	0.0	A
	PM Peak Hour	(TWSC)	NBL/T	14.8	B
		(TWSC)	NBR	0.0	A
		(TWSC)	SBL/T	15.3	C
		(TWSC)	SBR	9.4	A
		Uncontrolled	EBL	8.6	A
		Uncontrolled	WBL	0.0	A
Highway 78/86 / Center St (Forrester Rd -- outside of Westmorland)					
7	AM Peak Hour	(Signal)	Overall	20.3	C
	PM Peak Hour	(Signal)	Overall	20.0	B
Highway 78 / Brandt Rd					
8	AM Peak Hour	(TWSC)	NBL/T	15.8	C
		(TWSC)	NBR	9.4	A
		(TWSC)	SBL/T	14.9	B
		(TWSC)	SBR	9.1	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	8.6	A
	PM Peak Hour	(TWSC)	NBL/T	15.0	B
		(TWSC)	NBR	9.3	A

		(TWSC)	SBL/T	15.4	C
		(TWSC)	SBR	9.1	A
		Uncontrolled	EBL	0.0	A
		Uncontrolled	WBL	8.6	A

Footnotes:
Results calculated utilizing the methodologies described in Chapters 19, 20, 21, and 22 in the 6th Edition of the HCM.
1) Delay is measured in seconds per vehicle.
2) Level of Service
(AWSC)=All-Way Stop Controlled, (TWSC)=Two-Way Stop Controlled, (OWSC)=One-Way Stop Controlled
NB=Northbound, WB=Westbound, etc.
L=Left-turn movement, T=Thru movement, R= Right-turn movement, etc.
L/T=Left-Through lane, L/T/R=Left-Through-Right lane, etc.

Roadway Segment Operations

Roadway segments were analyzed based on the volume-to-capacity (v/c) ratios and the County's daily LOS capacity thresholds per Table 5 of the County's General Plan Circulation and Scenic Highways Element (January 29, 2008). The analysis results provide a planning-level assessment of whether a segment is under, approaching, or over capacity, where LOS E represents capacity. Imperial County considers LOS C or better to be acceptable for daily roadway segment operations. Table 4-3, LOS Criteria For Roadway Segments, presents the roadway segment capacity and LOS thresholds utilized by Imperial County.

Table 4-3, LOS Criteria For Roadway Segments

Roadway Classification	X-Section	Level of Service (LOS)				
		A	B	C	D	E
Expressway	154/210	30,000	42,000	60,000	70,000	80,000
Prime Arterial	106/136	22,200	37,000	44,600	50,000	57,000
Minor Arterial	82/102	14,800	24,700	29,600	33,400	37,000
Major Collector (Collector)	64/84	13,700	22,800	27,400	30,800	34,200
Minor Collector (Local Collector)	40/70	1,900	4,100	7,100	10,900	16,200
Local County (Residential)	40/60	*	*	<1,500	*	*
Local County (Residential Cul-de- Sac or Loop Street)	40/60	*	*	<200	*	*
Major Industrial Collector – (Industrial)	76/96	5,000	10,000	14,000	17,000	20,000
Industrial Local	44/64	2,500	5,000	7,000	8,500	10,000

Source: Imperial County General Plan Circulation and Scenic Highways Element (January 29, 2008)

The existing roadway level of service results are based on existing daily traffic volumes and roadway capacity. Table 4-4, Existing Conditions Roadway Segment Operations, summarizes the existing conditions roadway segment capacity analysis results. As shown in the table, all study roadway segments currently operate at an acceptable level of service (LOS C or better).

Table 4-4, Existing Conditions Roadway Segment Operations

	Roadway Segment	Existing/ Functional Classification	Roadway Capacity (LOS C) [A]	Existing (2022) Operations	
				ADT	LOS
1	Highway 111, between Davis Road and Main Street Niland	2-Lane State Highway	7,100	1,729	A
2	Highway 111, between Main Street Niland and Sinclair Road	2-Lane State Highway	7,100	2,820	B
3	Highway 111, between Sinclair Road and Main Street Calipatria	2-Lane State Highway	7,100	2,799	B
4	Highway 111, between Yocum Road and Ruegger Road	2-Lane State Highway	7,100	6,930	C
5	English Road, north of Highway 111	2-Lane Road	7,100	266	A
6	Wilkins Road, between Beal Road and Gillespie Road	2-Lane Road	7,100	190	A
7	Main Street (Niland), between Commercial Avenue and Railroad Tracks	2-Lane Road	7,100	778	A
8	Sinclair Road, between Brandt Road and Highway 111	2-Lane Road	7,100	431	A
9	Eddins Road, between Brandt Road and Highway 111	2-Lane Road	7,100	1,097	A
10	Highway 115, between Northeast Avenue and Blair Road	2-Lane State Highway	7,100	2,537	B
11	Highway 78/86, between Lack Road and Martin Road	4-Lane Divided Highway	29,600	11,270	A???
12	Kalin Road, between Sinclair Road and Eddins Road	2-Lane Road	7,100	209	A
13	Gentry Road, between Sinclair Road and Eddins Road	2-Lane Road	7,100	873	A
14	Lack Road, between New River and Bannister Road	2-Lane Road	7,100	241	A
15	Forrester Road, between New River and Bannister Road	2-Lane Road	7,100	1,196	A
16	Brandt Road, north of Vail Road	2-Lane Road	7,100	514	A
17	Brandt Road, between Swink Road and Hovley Road	2-Lane Road	7,100	756	A

Footnotes: A. Roadway capacity sourced from the Imperial County General Plan Circulation and Scenic Highways Element (January 29, 2008). Imperial County accepts LOS C or better for roadway operations as identified in the Circulation Element.

Roadway Conditions

None of the existing roadways in the Transportation Study Area are built to the County's Circulation Element standard for their respective roadway classification types, and all study roadways are currently built with one travel lane in each direction with the exception of Highway 78/86 and short segments of Highway 111 and Highway 115 within the City of Calipatria. Although all of the study roadways that were selected for analysis are currently paved, the pavement conditions are poor on some of these roadways, and many roadways in the Transportation Study Area that are identified in the County's Circulation Element are currently unpaved.

Table 4-5 presents the existing roadways in the Transportation Study Area that are identified in the County's General Plan Circulation Element, and provides descriptions of the current roadway conditions. As shown, nearly half of the Circulation Element roadway segments in the Transportation Study Area are currently unpaved. Pavement conditions were identified as generally poor on the following roadways:

- Davis Road (1/4 mile paved segment south of Highway 111)
- Wilkins Road from Hobbs Road to Beal Road
- Brandt Road from Sinclair Road to Highway 86

Table 4-5, Existing Roadway Inventory and Conditions

Roadway Segment	Existing Configuration	Circulation Element Classification	Existing Roadway Condition	Pavement Condition (If Applicable)
North/South Roadways				
Davis Road				
Highway 111 to Schrimpf Road	2-Lane Undivided	4-Lane Major Collector	Paved/Unpaved[1]	Poor[1]
Schrimpf Road to Sinclair Road	Unbuilt-Future Roadway	4-Lane Major Collector	N/A	N/A
English Road				
Coachella Canal Road to Wilkins Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Wilkins Road to Highway 111	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Highway 111 to Sinclair Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Sinclair Road to Bowles Road	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Highway 111				
Imperial County North Boundary to Barbara Street	2-Lane Undivided	6-Lane Divided Expressway	Paved	Good

Barbara Street to Bonita Street (Calipatria)	4-Lane Undivided	6-Lane Divided Expressway	Paved	Good
Bonita Street to Highway 78	2-Lane Undivided	6-Lane Divided Expressway	Paved	Good
Wilkins Road				
Hobbs Road to Beal Road	2-Lane Undivided	2-Lane Minor Collector	Paved	Poor
Garst Road				
McDonald Road to Red Hill Road	Unbuilt-Future Roadway	2-Lane Minor Collector	Unpaved	N/A
Red Hill Road to Sinclair Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Hoskins Road				
Foulds Road to Highway 78	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Lack Road				
Grubel Road to Bowles Road	2-Lane Undivided	2-Lane Minor Collector[2]	Paved/Unpaved[2]	N/A
Bowles Road to Highway 78	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Gentry Road				
Sinclair Road to Walker Road	2-Lane Undivided	4-Lane Major Collector	Paved	Fair
Forester Road/Center Street				
Sinclair Road to Walker Road	Unbuilt-Future Roadway	6-Lane Prime Arterial	N/A	N/A
Walker Road to Highway 78	2-Lane Undivided	6-Lane Prime Arterial	Paved	Fair/Good
Kalin Road				
Sinclair Road to Highway 86	2-Lane Undivided	4-Lane Major Collector	Paved	Fair
Brandt Road				
Sinclair Road to Highway 86	2-Lane Undivided	2-Lane Minor Collector	Paved	Poor
East/West Roadways				
Gillespie Road				
Highway 111 to Wilkins Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Main Street (Niland)				

Highway 111 to Wilkins Road	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Pound Road				
Davis Road to Highway 111	2-Lane Undivided	4-Lane Major Collector	Unpaved	N/A
McDonald Road				
Davis Road to Highway 111	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Sinclair Road				
Gentry Road to Highway 111	2-Lane Undivided	4-Lane Major Collector	Paved	Fair
Lindsey Road				
Lack Road to Gentry Road	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Gentry Road to Dewey Road[3]	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Brandt Road to Highway 111[3]	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Eddins Road				
Gentry Road to Lyerly Road	2-Lane Undivided	4-Lane Major Collector	Paved	Fair/Good
Main Street (Calipatria)/Highway 115				
Lyerly Road to Hornet Street	2-Lane Undivided	4-Lane Major Collector	Paved	Good
Hornet Street to Park Avenue	4-Lane Undivided	4-Lane Major Collector	Paved	Good
Park Avenue to Highway 111	2-Lane Undivided[4]	4-Lane Major Collector	Paved	Good
Highway 111 to Southeast Avenue	4-Lane Undivided	6-Lane Divided Expressway	Paved	Good
East of Southeast Avenue	2-Lane Undivided	6-Lane Divided Expressway	Paved	Good
Bowles Road				
Lack Road to Gentry Road	2-Lane Undivided	Not Included In Circulation Element	Paved	Fair
Vail Road				
Lack Road to Kalin Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A

Ruegger Road				
Kalin Road to Highway 111	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Foulds Road				
Hoskins Road to Lack Road	2-Lane Undivided	2-Lane Minor Collector	Unpaved	N/A
Walker Road				
Baker Road to Lack Road	2-Lane Undivided	4-Lane Major Collector	Unpaved	N/A
Lack Road to Gentry Road	2-Lane Undivided	4-Lane Major Collector	Paved	Fair
Gentry Road to Brandt Road	2-Lane Undivided	2-Lane Minor Collector	Paved	Fair
Highway 78/86				
West of Martin Road	4-Lane Divided Expressway	6-Lane Divided Expressway	Paved	Good
Martin Road to Boarts Road	4-Lane Undivided	6-Lane Divided Expressway	Paved	Good
Southeast of Boarts Road	4-Lane Divided Expressway	6-Lane Divided Expressway	Paved	Good

[1] Davis Road is currently paved from Highway 111 to approximately 1/4 mile south of Highway 111.
[2] The County's Circulation Element classifies Lack Road as a 2-lane Minor Collector between Lindsey Road and Bowles Road. Lack Road is not a Circulation Element roadway north of Lindsey Road. An approximately 1/2 mile segment of Lack Road is currently paved north of Lindsey Road.
[3] Lindsey Road is discontinuous between Dewey Road and Brandt Road, as there is no bridge crossing the Alamo River.
[4] Main Street between Park Avenue and Highway 111 is striped with 2 travel lanes, but pavement width can accommodate 4 travel lanes and is built to 4-lane Major Collector standards.

4.1.5 Findings

The findings of the Roads Infrastructure Assessment revealed the following:

- The intersection and roadway segment operations analysis results had shown that all Transportation Study Area intersections and roadways currently operate at Level of Service (LOS) C or better, which is considered acceptable by Imperial County standards.
- Existing traffic volumes in the Transportation Study Area are relatively low, and there is sufficient capacity on the existing roadways to accommodate additional traffic from new development.
- The majority of existing roads within the Transportation Study Area are currently unpaved, which limits the areas where access is readily available without significant roadway improvements.

- With the exception of the State Highways (78, 86, 111 and 115), the current pavement conditions are fair to poor on the majority of paved roads in the Transportation Study Area. Pavement conditions are generally poor along Wilkins Road and Brandt Road.
- None of the roadways within the Transportation Study Area are built to General Plan Circulation Element standards based on their classification types.
- Many of the roadways within the Transportation Study Area may be too narrow for two-way heavy truck traffic, with pavement widths less than 24 feet along some roadway segments of English Road, Wilkins Road, Brandt Road, Kalin Road, Gentry Road, and Lack Road.

4.2 BRIDGES

4.2.1 Introduction

The Bridges section evaluates the physical and operational conditions of the existing bridges in the Transportation Study Area. Imperial County Public Works staff provided an inventory of the existing bridges that currently cross the Alamo River, the New River or canals within the Transportation Study Area, which are listed below:

Bridges Crossing Alamo River

- Sinclair Road, approximately 3.3 miles west of Highway 111
- Eddins Road, approximately 3.3 miles west of Highway 111
- Brandt Road, approximately 0.4 mile south of Eddins Road
- Ruegger Road, approximately 1.5 miles west of Highway 111

Bridges Crossing New River

- Lack Road, approximately 4.2 miles north of Highway 78/86
- Gentry Road, approximately 0.7 mile north of Walker Road
- Kalin Road, approximately 0.5 mile south of Ruegger Road
- Brandt Road, approximately 0.9 mile south of Ruegger Road

Bridges Crossing Z Lateral Canal

- English Road, approximately 1.4 miles north of Highway 111

Bridges Crossing Vail Canal

- Gentry Road, approximately 1.5 miles south of Eddins Road

Figure 4-7, Existing Bridges, illustrates the locations of the existing above-listed bridges in the Transportation Study Area.

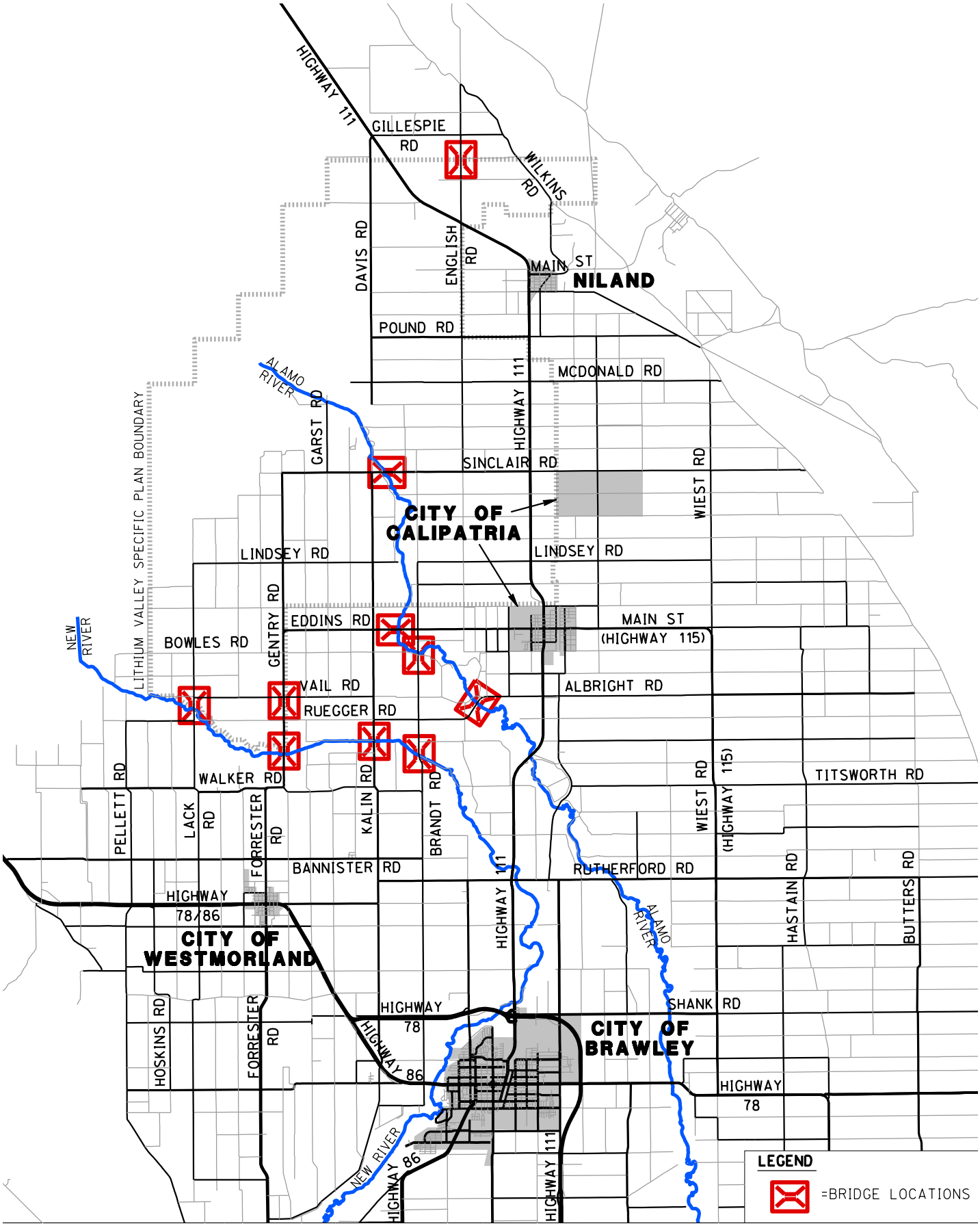


FIGURE 4-7, Existing Bridges in Transportation Study Area

4.2.2 Methodology and Sources

The Project Team conducted a high-level evaluation of the existing bridge network including include bridge capacities conditions using County-provided documentation to understand where the existing transportation infrastructure system is failing and where it can be expanded upon.

4.2.3 Applicable Regulations

The following are the applicable regulations, standards and specifications documents to be used for bridge projects:

Federal

American Association of State Highway and Transportation Officials (AASHTO)

The AASHTO LRFD Bridge Design Specifications, 9th Edition was published in 2020 and is the national standard for the design, evaluation and rehabilitation of bridges. The specifications employ the Load and Resistance Factor Design (LRFD) methodology, using factors developed from current statistical knowledge of loads and structural performance.

The AASHTO Manual for Bridge Evaluation, 3rd Edition was published in 2018 and serves as a resource for use in developing specific policy and procedures for the inspection and evaluation of existing in-service highway bridges. This manual also includes the nationally recognized guidance for the load rating of highway bridges.

Federal Highway Administration (FHWA)

The National Bridge Inspection Standards (NBIS) are the standards established over the safety inspections of highway bridges on public roads throughout the United States. The U.S. Congress originally required the Secretary of Transportation to establish these standards in 1968. The original NBIS was published in 1971, creating the nation's first nationally coordinated bridge inspection program. Updates to the standards have been made over the years, with the latest update to the NBIS in 2022.

State

California Department of Transportation (Caltrans)

The use of the California Department of Transportation Standards is required to ensure that all transportation project contracts are clear, concise, correct, complete and in compliance with the Federal Highway Administration (FHWA). Substantial justification and approval for deviation from the Standards is required. Deviation should be rare and will not be approved for minor or preferential changes. The Caltrans Standard Plans and Standard Specifications were last updated in November 2022.

Effective November 1, 2019, the AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments (AASHTO-CA BDS-8) constitutes the primary design specifications for California bridges and transportation-related structures. For projects under development, adoption of AASHTO-CA BDS-8 is mandatory for all projects with a Type Selection approval after November 1, 2019. Caltrans' Standard Plans and Standard Specifications remain valid for use. If a project under

development requires significant deviation from these standards, the design must meet the requirements of AASHTO-CA BDS-8.

Local

Imperial County Engineering Design Guidelines Manual

The Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within Imperial County was last revised by the Public Works Department in September 2008. The manual establishes uniform engineering design guidelines for the preparation and plan checking of street improvement plans, drainage and grading plans, and includes standards and design guidelines for use within unincorporated Imperial County.

Transportation Permits

The Imperial County Department of Public Works is the local agency responsible for the review and approval of the transport of extralegal loads (as defined by the California Vehicle Code – Section 320.5) along county maintained roads through the issuance of transportation permits. Existing Inventory of Key Bridges

Load Capacities

There are three (3) typical permit rating load capacities for bridges, which are usually shown as a string of five (5) characters showing permit capacity for 5, 7, 9, 11, and 13 axle vehicles, and are listed below:

- Purple Permit Capacity (P5): 45,675 – 76,125 pounds
- Green Permit Capacity (G5): 39,585 – 65,975 pounds
- Orange Permit Capacity (O5): 32,025 – 50,750 pounds
- No Permit Capacity (X5): Not Applicable

The bridges in the Transportation Study Area have permit rating load capacities of either P5 or O5, and one (1) bridge (Lack Road over New River) had a permit rating of X5 (no permit capacity) due to being closed at the time of the last inspection (December 7, 2021). The permit ratings and other bridge conditions for each bridge in the Transportation Study Area are shown in Table 4-6.

There are also legal load capacity limits for specific types of trucks based on size and number of axles, which are listed below:

- Type 3 Trucks (3-Axle Single-Unit): 25 tons (50,000 pounds)
- Type 3-S2 Trucks (5-Axle Semi-Tractor-Trailer): 36 tons (72,000 pounds)
- Type 3-3 Trucks (6-Axle Single-Unit Plus Trailer): 40 tons (80,000 pounds)

Operational Ratings

The Operational Rating of a bridge is the maximum permissible load a bridge may be subjected to. Allowing a load to cross a bridge for which its operational rating is exceeded will shorten the life of such bridge. The Imperial County Department of Public Works uses the operational rating as the

ultimate factor to determine if a load is allowed to cross a bridge, regardless of a transport being within the legal weight limits.

Table 4-6, Existing Bridge Inventory and Conditions, shows the bridges in the Transportation Study Area and the above-listed legal load capacity limits based on truck type they can accommodate.

Bridge Conditions

As shown in Table 4-6, Existing Bridge Inventory and Conditions, the bridges in the Transportation Study Area are all built with two (2) travel lanes and have widths ranging from 24 feet to 38 feet, and lengths ranging from 25 feet to 150 feet. In addition to the permit ratings and legal load capacity limits, Table 4-6 also shows the operational ratings, years bridges were built, and dates of the last inspection by Caltrans.

As shown, the majority of bridges in the Transportation Study Area have the highest permit rating (P5) and can accommodate the legal load limits of Type 3, Type 3-S2 and Type 3-3 trucks. Three (3) bridges in the Transportation Study Area (Brandt Road 0.4 mile south of Eddins Road, Kalin Road 0.5 mile south of Ruegger Road, and Gentry Road 1.5 miles south of Eddins Road) have a lower permit rating of O5, but onlyonly one (Gentry Road) can safely accommodate all the legal load limits of Type 3, Type 3-S2 and Type 3-3 trucks.

Development in the Transportation Study Area will require the transportation of material and equipment, and some of those transports will very likely be beyond legal weight and/or dimensions limits. Some of these transports have the potential of exceeding the operational rating of a bridge along their proposed routes. Other transports may be within the legal limits but have a route that includes bridges with a lower operating rating that is exceeded by the weight of such transports.

Table 4-6, Existing Bridge Inventory and Conditions, shows that according to the information provided by the Imperial County Public Works Department, the bridge on Lack Road over the New River was reconstructed on 2022 (Bridge 58C0224) but has no permit rating load capacity because it has not been inspected by Caltrans. However, the reconstructed bridge is currently operational and considered legal for Type 3, Type 3-S2 and Type 3-3 load limits.

All of the information described above on the bridges in the Transportation Study Area and shown in Table 4-6 was provided by Imperial County Public Works staff and is contained in Appendix A-B.

Table 4-6, Existing Bridge Inventory and Conditions

Bridge Location	Bridge Number	Year Built	Length (ft)	Width (ft)	No. of Lanes	Permit Rating	Operational Rating (Metric Tons)	Date of Last Inspection	Truck Type / Legal Load Limits					
									Type 3 (3-Axle Single-Unit)		Type 3-S2 (5-Axle Semi Tractor-Trailer)		Type 3-3 (6-Axle Single-Unit + Trailer)	
									Load Limit (Tons)	Legal on Bridge?	Load Limit (Tons)	Legal on Bridge?	Load Limit (Tons)	Legal on Bridge?
Bridges Crossing Alamo River														
Sinclair Road, 3.3 miles west of Highway 111	58C0216	1994	144'	24.6'	2	P5	54.1	12/7/2021	25	Yes	36	Yes	40	Yes
Eddins Road, 3.3 miles west of Highway 111	58C0077	1990	97.1'	32.2'	2	P5	54.1	12/8/2020	25	Yes	36	Yes	40	Yes
Brandt Road, 0.4 mile south of Eddins Road	58C0165	1950	150.9'	24.6'	2	O5	33.4	12/7/2021	25	Yes	36	No[3]	40	No[3]
Ruegger Road, 1.5 miles west of Highway 111	58C0145	1967	100.1'	32.2'	2	P5	61.6	12/7/2021	25	Yes	36	Yes	40	Yes
Bridges Crossing New River														
Lack Road, 4.2 miles north of Highway 78/86	58C0224	2022	125’	32’	2	N/A[1]	N/A[1]	N/A[1]	25	N/A[1]	36	N/A[1]	40	N/A[1]
Gentry Road, 0.7 mile north of Walker Road	58C0006	1978	132.9'	32.2'	2	P5	89.7	12/7/2021	25	Yes	36	Yes	40	Yes

Kalin Road, 0.5 mile south of Ruegger Road	58C0100	1940	90.9'	24.6'	2	O5	33.0	12/7/2021	25	Yes	36	No[3]	40	No[3]
Brandt Road, 0.9 mile south of Ruegger Road	58C0222	2002	133.9'	38.1'	2	P5	54.1	11/12/2019	25	Yes	36	Yes	40	Yes
Bridges Crossing Z Lateral Canal														
English Road, 1.4 miles north of Highway 111	58C0223	2014	80'	24'	2	P5	0.0[2]	12/7/2021	25	Yes	36	Yes	40	Yes
Bridges Crossing Vail Canal														
Gentry Road, 1.5 miles south of Eddins Road	58C0007	1936	24.9'	24.9'	2	O5	28.5	12/7/2021	25	Yes	36	Yes	40	Yes

Footnotes:

Source: Imperial County Public Works Department

P5 = Purple Permit Capacity; O5 = Orange Permit Capacity; X = No Permit Capacity

[1]N/A = Not applicable, as Bridge 58C0101 (Lack Road) was closed for reconstruction at the time Caltrans had performed their inspection (12/7/2021), but since that time the reconstruction project was completed and the bridge was re-opened and considered legal for Type 3, Type 3-S2 and Type 3-3 load limits. .

[2]Caltrans did not provide the operational rating for Bridge 58C0223 (English Road) when the last inspection was performed on 12/7/2021; however, the bridge is currently operational and legal for Type 3, Type 3-S2 and Type 3-3 load limits.

[3]These loads are considered as Non-Legal due to the Truck Type load limit exceeding the Operational Rating of the bridge.

4.2.4 Findings

The findings of the Bridges Infrastructure Assessment revealed the following:

- Four (4) of the ten bridges in the Transportation Study Area were built more than 50 years ago.
- Eight (8) of the ten bridges in the Transportation Study Area have been inspected in the past 3 years. One (1) bridge (Brandt Road 0.9 mile south of Ruegger Road) was last inspected in 2019. The inspection of Lack Road Bridge (Bridge 58C0224) is still pending.
- The Operating Rating of the bridges will be the ultimate limiting factor for the approval of transports in the Transportation Study AreaArea for both legal and extralegal loads.
- Six (6) of the ten bridges in the Transportation Study Area have the highest permit rating (P5) and can accommodate the legal load limits of Type 3, Type 3-S2 and Type 3-3 trucks.
- Three (3) of the ten bridges in the Transportation Study Area have a lower permit rating of O5, but only one (1) bridge can accommodate the legal load limits for all three truck types.
- Although the Lack Road Bridge (Bridge 58C0224) has not been inspected by Caltrans, it is currently operational and considered legal for Type 3, Type 3-S2 and Type 3-3 load limits.
- The latest Caltrans inspection report for the English Road Bridge (Bridge 58C0223) does not provide an Operating Rating, but it is reported that it can accommodate the legal load limits of Type 3, Type 3-S2 and Type 3-3 trucks.
- A bridge rehabilitation project is currently underway for the Sinclair Road Bridge over the Alamo River (Bridge 58C0216), which consists of deck repairs to the existing bridge.
- It was recently announced that federal funding of up to $4 million has been secured to replace the 73-year-old Brandt Road Bridge (Bridge 58C0165) over the Alamo River with a new single-span bridge.

5. Rail

5.1 RAIL

5.1.1 Introduction

Union Pacific Railroad (UPRR) is a US Class 1 railway that currently has two operational railroad corridors that traverse the northern and eastern limits of the Study Area, the Yuma and Calexico Subdivisions (Subs). An example of the containers and export materials is shown in Figure 5-1, UPRR Intermodal Double Stack Train Car.

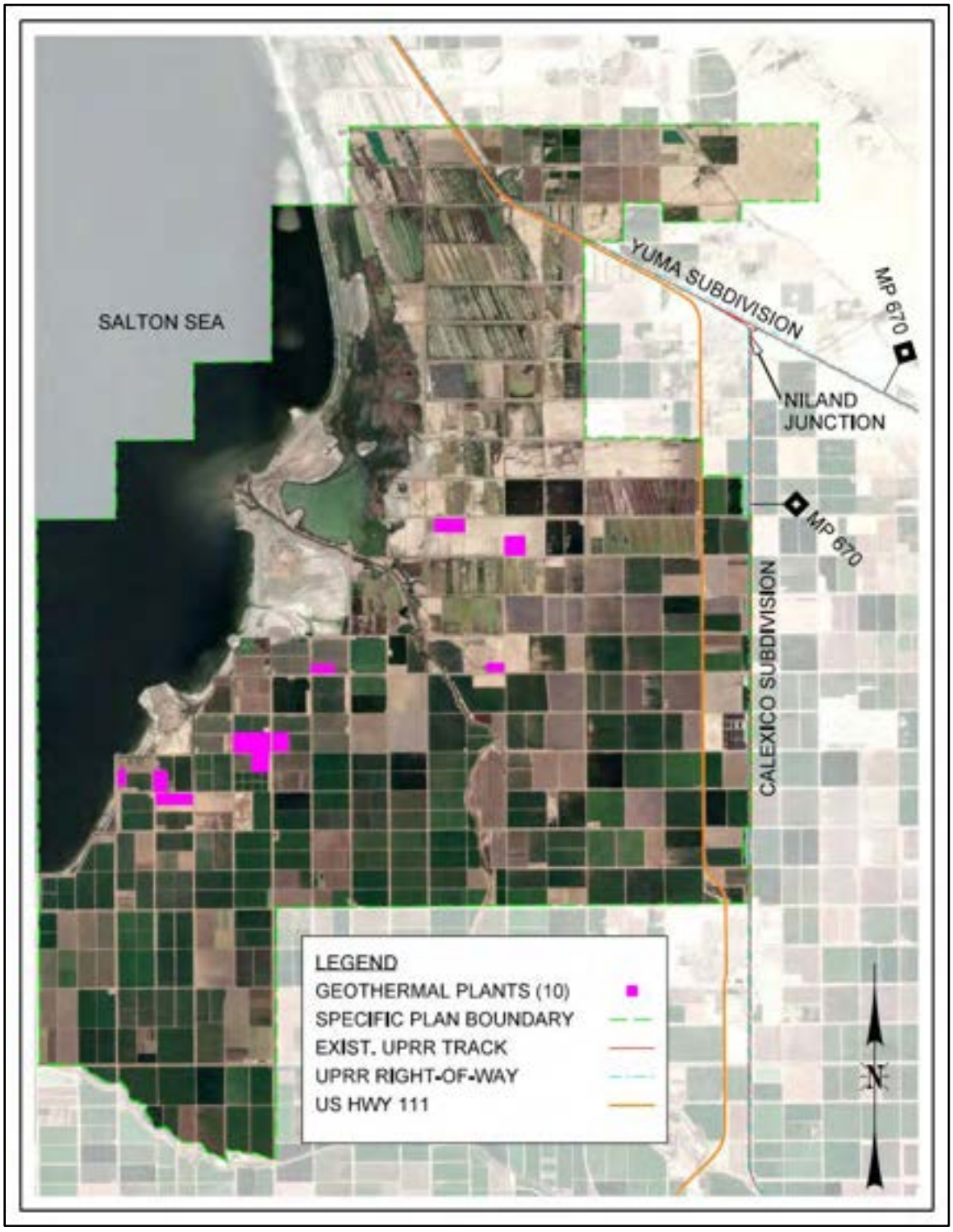
Figure 5-1, UPRR Intermodal Double Stack Train Car



The Yuma Sub, as shown in Figure 5-2, Existing Rail Corridor Location Map, is regarded as one of the premium rail corridors of the UPRR network. It services primarily intermodal trains traveling from the Port of Los Angeles and shipping them east to major hubs such as Dallas and Kansas City. Conversely, empty containers and export materials are concurrently transported west to LA where they are put on container ships for international export.

In contrast, the Calexico Sub does not service any major hubs and predominantly functions as transportation route for local industrial facilities that reside in Imperial Valley.

Figure 5-2, Existing Rail Corridor Location Map



5.1.2 Methodology and Sources

The Project Team attended a site visit to an existing geothermal power plant, meeting and tour on September 29, 2022, with members of BHE Renewables (CalEnergy) and Imperial County. This provided a general understanding of the processing and logistics for the existing Geothermal Power Plants and better informed the team of the Lithium extraction potential in the future.

Our team also confirmed train traffic and schedule data for AMTRAK's "Texas Eagle" Route along the Yuma Sub through their public website.

The Team utilized Google Earth Pro to identify items such as waterways, landmarks, and general infrastructure. Our team has also received access to Topographic data, bridge structure data, and drainage structures data within the Study Area.

5.1.3 Applicable Regulations

The following is a brief list of the known entities that may or may not impact the design, maintenance, and construction for rail infrastructure within the Study Area:

- U.S. Army Corp of Engineers
- Federal Railroad Administration (FRA)
- California Public Utilities Commission (CPUC)
- Union Pacific Railroad (UPRR) Industrial Track Standards
- American Railway Engineering and Maintenance-of-Way Association (AREMA)
- Imperial Irrigation District (IID)

5.1.4 Existing Inventory

The Union Pacific Railroad (UPRR) operates in Imperial County primarily over two lines that are the subject of study under this endeavor. These lines are identified as the Yuma Subdivision and the Calexico Subdivision. The Yuma Subdivision traverses Imperial County diagonally from the northwest near the Salton Sea to the southeast near the California – Arizona border in the vicinity of the City of Yuma. The Calexico Subdivision commences within the Townsite of Niland where it connects to the Yuma Subdivision and traverses Imperial County southward to the City of Calexico and onward across the International Border into Mexico. The two Subdivisions meet at what is known by the UPRR as "Niland Junction" (UPRR Mile Post 667.86). This junction point lies at the northern limit of the Calexico Subdivision.

The Yuma and Calexico Subdivisions serve in different capacities for the UPRR as it relates to freight movements. The Yuma Subdivision serves as a primary interstate rail route between the Ports of Southern California and interior US rail hubs. This line carries long, fast-moving freight trains as well as Amtrak passenger trains. The Calexico Subdivision, in contrast, functions as a "feeder line" or "secondary branch line" whereby shorter, localized freight trains deliver and pick up carloads of various commodities from the many private industries which connect to it.

UPRR trains operating on the Yuma Subdivision do so, generally, at significantly higher speeds as compared to trains operating on the Calexico Subdivision. The maximum speed for freight trains operating on the Yuma Subdivision is 70 MPH. Amtrak passenger trains are authorized to operate at a maximum speed of 79 MPH. This is not to say that trains operate at these speeds at all times, rather, these maximum speeds are employed only when the track geometry, track grade, and other safety factors allow. In certain location and under certain conditions, lower train speeds are employed to ensure safe operating practices.

On the Calexico Subdivision, the maximum operating speed on the line is 40 MPH. There are no Amtrak passenger trains operating on the Calexico Subdivision. In the course of delivering and picking up rail cars from industrial locations, it is common practice for the UPRR to operate at speeds less than 10 MPH and in certain cases, speeds less than 5 MPH.

The UPRR owns, in fee simple, the right-of-way upon which it operates on both the Yuma and Calexico Subdivisions in Imperial County. Predecessor railroad companies to the UPRR acquired the right-of way in the late 1800's and early 1900's from local landowners as well as the federal government. The UPRR's fee simple ownership does include the railroad right-of-way where the right-of-way intersects public road crossings and over the various waterways and washes.

Aside from the mainlines that make up the Yuma and Calexico Subdivisions, each line includes other rail infrastructure which is used to aid in train movement. This infrastructure includes passing tracks, industrial support tracks, maintenance tracks, and tracks designed for rail car storage and staging. Save for a small support rail yard (a conglomerate of tracks, usually in parallel, and used to temporarily store and stage rail cars) there are no other significant rail yards on the Yuma nor the Calexico Subdivisions.

Presently, all railroad-highway crossings along the Yuma and Calexico Subdivisions and lying within the area of study are at the same grade ("at-grade"). The roadways are mainly publicly maintained by the local road authority (City and/or County). In some locations, there exists non-public roadways which traverse over the railroad to allow access to private property and private facilities. Highway 111, a State Highway, runs alongside or in close proximity to the Yuma and Calexico Subdivisions within the Study Area.

The Yuma and Calexico Subdivisions do not cross any major bodies of water which are naturally driven and consistently running. Rather the Yuma and Calexico Subdivisions do intersect locations where storm water run-off, drainage, and irrigation canals are present. In these areas, railroad bridge and culvert structures have been constructed to allow for the movement of water under the railroad tracks without jeopardizing the integrity of the railroad's tracks. These culverts and bridge structures are maintained by numerous entities under agreement with the UPRR.

See Table 5-1, Union Pacific Railroad (UPRR) Corridor Data, for a breakdown of the corridors' existing features.

Table 5-1, Union Pacific Railroad (UPRR) Corridor Data

Subdivision	Speed (mph)	Tie Type	Rail Weight (lbs)	UPRR Daily Trains	AMTRAK Daily Trains	At-Grade Road, Culvert, & IRR Crossings
Yuma	70(F) to 79(P)	Wood, Concrete	136 to 141	40 to 50	2 to 4	22
Calexico	40(F)	Wood	133	2	N/A	26

5.1.5 Findings

Utilizing the existing rail subdivisions as a transportation commodity for the Lithium Valley site area is observed to be viable option given the proximity of the existing rail infrastructure that is readily available along Study Area. There are currently rail operations along both Subdivision lines and the railroad advocates for new industrial growth and expansion. The railroad owner, UPRR, owns the corridors' property in fee. Absent U.S. Highway 111, there are no major physical impairments to getting rail to the subject sites or the Salton Sea.

UPRR has an established process to allow for new industrial projects through which the railroad has set policies, processes, and criteria for the development of new infrastructure per Union Pacific Railroad's website "https://www.up.com". Per Union Pacific (UPRR), the applicant will be contacted by an Economic & Industrial Development expert (UPRR Project Manager). Together the applicant and the UPRR PM will evaluate the project and establish an on-site meeting plan. It is important that the rail engineering consultant be available to participate during this on-site discussion as they will then submit a conceptual plan for UPRR's inter-departmental review. Following acceptance of the final construction drawings, the applicant's consultant will prepare an Exhibit A drawing to be included in the Track Agreement and the applicant will receive a final version for execution.

Designing a connection to the established railroad network would be most viable along the Calexico Sub, likely south of the Niland Junction. While no items have been identified that would make this project not feasible, it will require extensive further study and research under future phases, of which our team is well-prepared to handle given our extensive background with UPRR, AMTRAK, and Imperial County as a whole.

6. Airports

Growing regional demand for aviation services including passenger, cargo, and general aviation requires analysis of existing airport capabilities of Imperial County Airport, identifier (IPL), also known as Boley Field, and Brawley Municipal Airport, identifier (BWC). The following section provides a summary of the full report "Imperial County Airport and Brawley Municipal Airport Inventory Capacities and Limitations," which can be found in Appendix A-A, Airport Analysis, of this document. For geographic context of IPL, see Figure 6-1, Airports within 100 Miles of IPL.

Figure 6-1, Airports within 100 Miles of IPL



6.1 IMPERIAL COUNTY AIRPORT (IPL)

6.1.1 Introduction

Airport Overview

IPL is located at 1099 Airport Road, Imperial California, 92251 and is primarily a general aviation (GA) airport. IPL property is roughly 370 acres and has two runways. The main runway (Runway 14/32) is oriented roughly north south and is 5308 feet long by 100 feet wide. The crosswind runway (Runway 08/26) is oriented east west. IPL has scheduled passenger service from one commercial airline. Service is subsidized by the Essential Air Service (EAS) program. While there is an air traffic control facility (ATCF), it is currently not staffed. IPL is uncontrolled and no air traffic control (ATC) services are available currently. A passenger terminal with public spaces, queuing area, restrooms, and security screening is located directly adjacent to the public parking area. There are approximately 29 T-hangars, eight ground leaseholds, nine shade hangar structures, and eight counter / office suite leases. There are 13 businesses located on the airport including:

- Fixed Base Operator (FBO) Services
- Maintenance and Repair Operator (MRO)
- Emergency Medical Service (EMS)
- Airline Operator
- Rental car agency
- Miscellaneous non-aeronautical tenants

Operational Overview

IPL is included in the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS). IPL is a Public Use Commercial Service Non-Primary Regional Airport with approximately 5,181 enplaned annual passengers in 2022. There were approximately 36 based aircraft in 2022, and the outlook for capital investment in IPL by the FAA from 2023 – 2027 is approximately $4,978,447. IPL reports approximately 6,500 annual operations. IPL is owned by Imperial County, California (County). The management and operation of IPL is the responsibility of the airport manager who reports directly to the County Executive Officer (CEO). IPL staff includes an administrative assistant and two airport maintenance workers.

Location

IPL is located one nautical mile (two kilometers) south of the central business district of Imperial, California. It is partially in the City of Imperial and partially in an unincorporated area of the County. IPL has a primary runway and crosswind runway and is oriented with the bulk of developed infrastructure located in the northeast quadrant. Primary build infrastructure includes aircraft hangars, small business properties, administration buildings, passenger terminal, fuel facilities, and a nonoperational control tower. There are parking areas bounded by perimeter fencing and access control facilities such as walkthrough gates and auto gates. The airport is below mean sea level.

6.1.2 Methodology and Sources

The Federal Aviation Administration (FAA) publishes design standards for airports in Advisory Circular (AC) 150/5300-13B, Airport Design. ACs contain the technical specifications and standards,

recommendations, and best practices for airport design. This guidance is interpreted by the FAA and others when evaluating the capacity of an airport using comparison metrics to the as-built airport environment. Using this guidance, an evaluation of the current capacity of IPL and BWC was developed. Two characteristics outlined in Table 6-1, Aircraft Category, and Table 6-2, Aircraft Group, control the speed and size of aircraft that may safely use an airport.

Table 6-1, Aircraft Category

Aircraft Category	VAT	Range of speeds for initial approach	Range of final approach speeds	Maximum speeds for circling	Maximum speeds for intermediate missed approach	Maximum speeds for final missed approach	Typical Aircraft in this Category
A	<91	90-150	70-110	100	100	110	Small Single Engine
B	91-120	120-180	85-130	135	130	150	Small Multi Engine
C	121-140	160-240	115-160	180	160	240	Airline Jet
D	141-165	185-250	130-185	205	185	265	Large Jet/ Military Jet
E	166-210	185-250	155-230	240	230	275	Special Military

Table 6-2, Aircraft Group

Aircraft Group	Wingspan in feet (m)	Tail Height in feet (m)	Typical Aircraft
I	< 49' (15m)	< 20' (6.1m)	Single Engine, Light/Medium Twin Engine, Turbine, Turbo Prop
II	49' (15m) - < 79' (24m)	20' (6.1m) - < 30' (9.1m)	Regional Jet, Medium Business Jet
III	79' (24m) - < 118' (36m)	30' (9.1m) - < 45' (13.7m)	Airline Narrow Body
IV	118' (36m) - < 171' (52m)	45' (13.7m) - < 60' (18.3m)	Airline Wide Body

V	171' (52m) - < 214' (65m)	60' (18.3m) - < 66' (20.1m)	Airline Wide Body Heavy
VI	214' (65m) - < 262' (80m)	66' (20.1m) - < 80' (24.4m)	Airline Wide Body Heavy

Aircraft operation is highly technical and is variable based on environmental conditions such as temperature, wind, humidity, visibility, and light, as well as crew experience and aircraft weight and configuration. Based on this fact, an airport's typical design aircraft is based on the published approach speed of an aircraft category and classification, and its turning radius on the ground and its wingspan (width) and fuselage (length). However, aircraft outside of this design standard, larger, wider, and faster aircraft, may still safely use the airport. The basis for evaluating an airports capacity rating is predicated on more than 500 annual operations of the design aircraft.

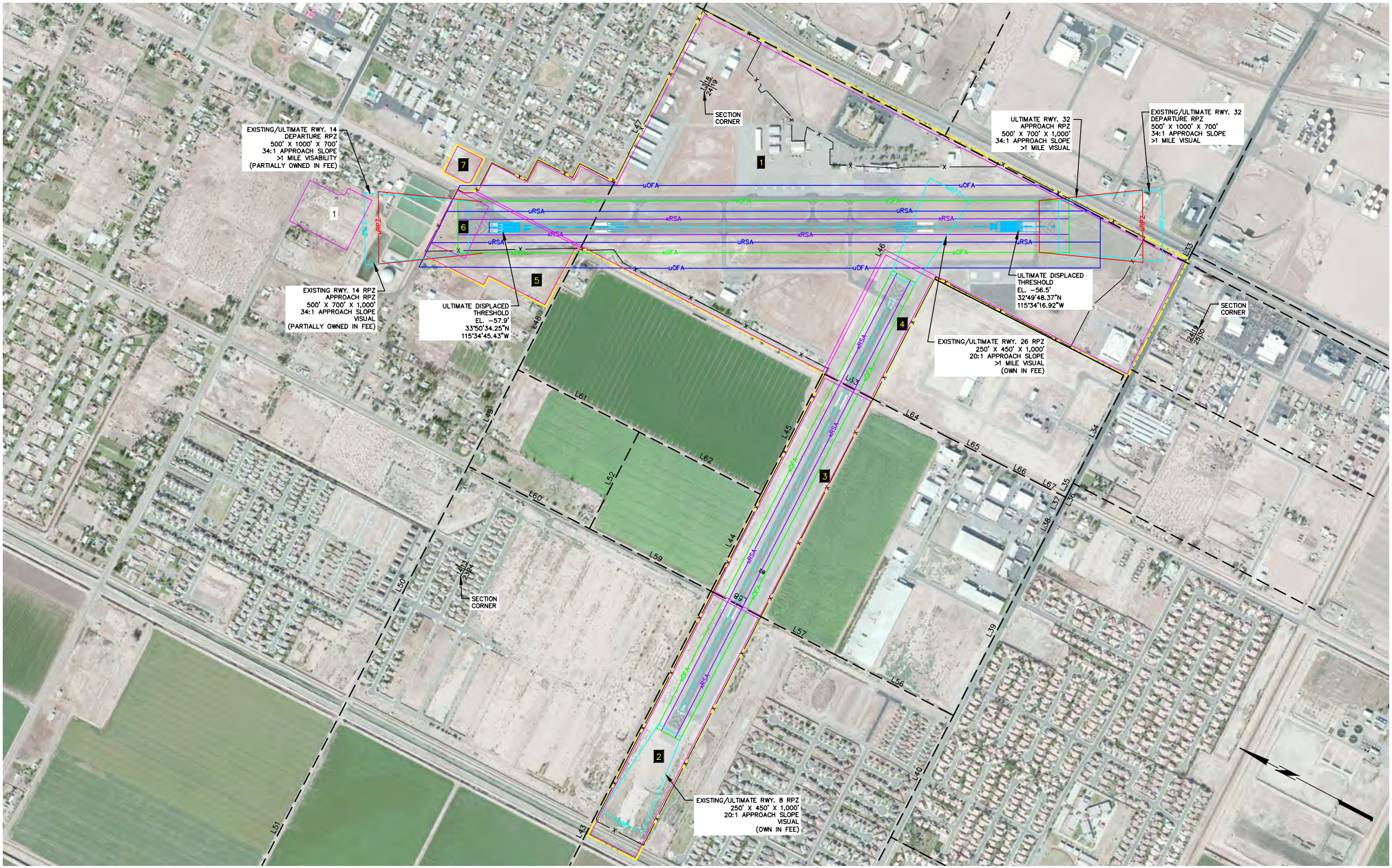
This capacity analysis (analysis) will document the existing conditions at IPL and BWC which will include:

- Runway length, width, and strength
- Verification of existing critical aircraft for design standards
- Taxiway and apron sizes, strengths, and capacity for parked aircraft
- Fuel type availability and capacity
- Available fixed-base operator (FBO) services
- Terminal services
- Terminal auto parking
- Availability of existing cargo aprons or processing areas

Based on the items listed above, the analysis will document the limits of IPL and BWC aviation accommodation without physical improvements to IPL and BWC. The analysis will provide a range of maximum aircraft sizes that could be accommodated at these airports. To provide the reader context within a regional aviation system, the conclusion section of the analysis will summarize the total combined capacity and appropriate uses of the airport.

6.1.3 Existing Inventory

The following section, including Figure 6-2, IPL Airport Property Inventory Map, provides information on IPL's existing inventory, focusing on airport system attributes relevant for analysis of the airport's capacity. For further information on the complete existing inventory at IPL, please reference the full report "Imperial County Airport and Brawley Municipal Airport Inventory Capacities and Limitations" in Appendix A-A, Airport Analysis, of this document.



INFRASTRUCTURE ASSESSMENT

FIGURE 6-2, IPL Airport Property Inventory Map

Airfield

Runway System

As depicted in Figure 6-2, IPL Airport Property Inventory Map, the runway system at IPL is an open-V shape with the main runway and the crosswind runway being closely located at the south end of the airport. Both runways are accessed by parallel taxiways and perpendicular connecters. Each area has a run-up staging area for aircraft to perform safety checks prior to departure. The main runway, Runway 14/32, is oriented north south. The crosswind runway, Runway 08/26, is oriented east west. Table 6-3, IPL Runway Attributes, lists attributes for each runway at IPL.

Table 6-3, IPL Runway Attributes

Runway 14/32			
Dimension	5308 Feet x 100 Feet	PCN	26 /F/C/W/T
Surface Type / Condition	ASPH-G	Single Wheel	60,000
Treatment	PFC	Double Wheel	80,000
Edge Light Intensity	MED	Double Tandem Dual Double Tandem	102,000 130,000
Runway 08/26			
Dimension	4501 Feet x 75 Feet	PCN	6 /F/C/W/T
Surface Type / Condition	ASPH-G	Single Wheel Double Wheel	50,000 50,000
Edge Light Intensity	MED		

Pavement Conditions

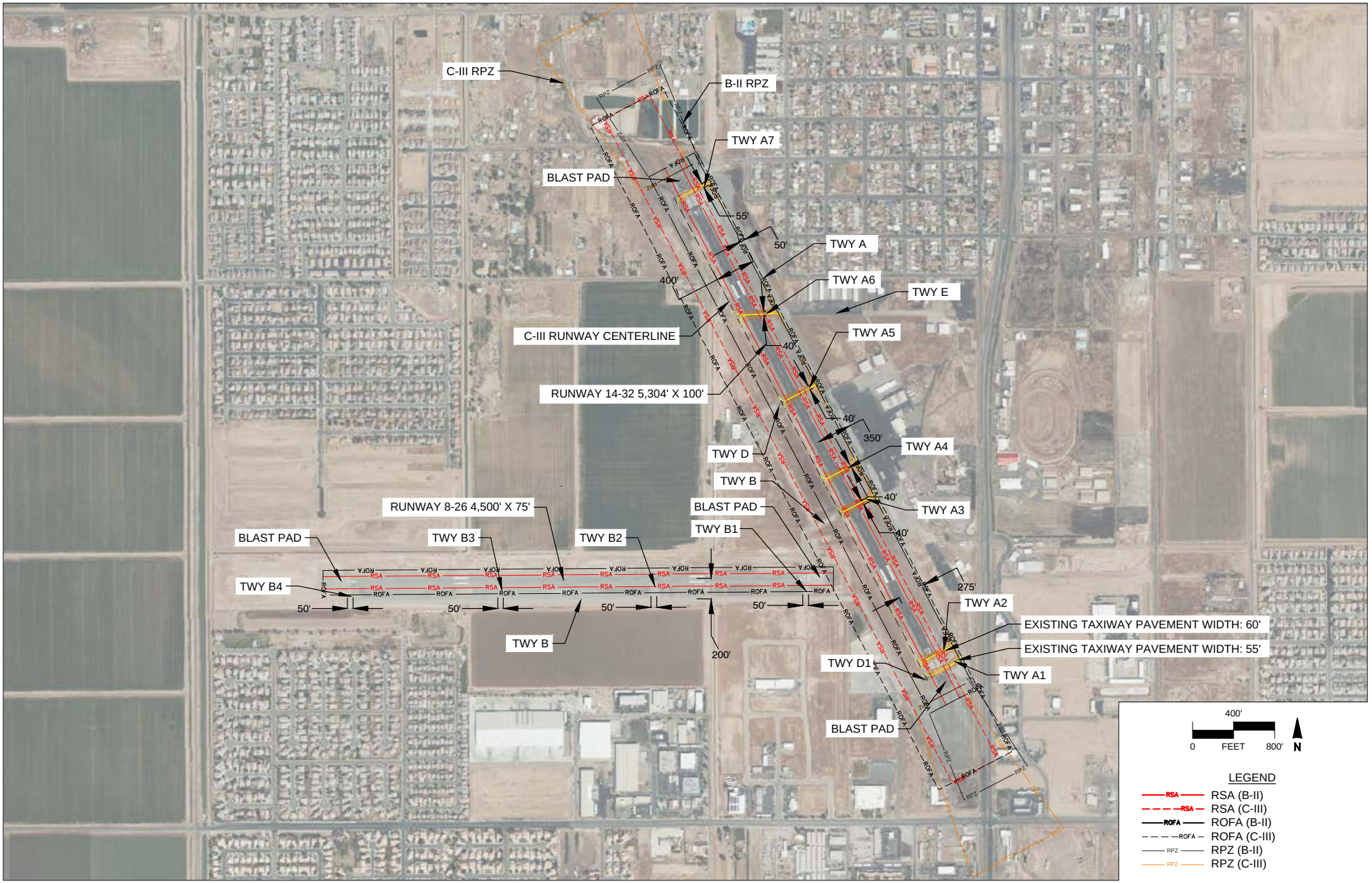
The 2014 Imperial County Airport Pavement Management Update Final Report (APMR) and the Imperial County FAA Airports Capital Improvement Plan (ACIP) (2017-2021) were used to assess the current condition of the pavement at IPL. The ACIP recommended projects in 2017 on Runway 14/32 included crack repairs and seal coating. In 2020, IPL completed two recommended projects for the rehabilitation of main apron pavement and, in 2021, the rehabilitation of taxiways alpha (A), and bravo (B). It is reasonable to assume the load bearing figures listed above under Table 6-3 are accurate.

Taxiway System

The airport taxiway system is typical for a GA airport of this size. Both the primary and crosswind runways have associated parallel taxiways so that aircraft can arrive and depart from the runway surface while other aircraft simultaneously taxi for departure or exit the runway following arrival. Each parallel taxiway has perpendicular connectors to the runway at a 90-degree angle. The configuration of these perpendicular connectors is correct based upon current FAA guidance;

however, taxiway A4 and A5 as well as an A2 lead directly from a ramp area to the runway. This does not conform to current FAA airport design standards. This configuration does not limit capacity. Other variations in airfield configuration exists including the width and shape of taxiways which may limit the size of the aircraft that can use the surface based on the turning radius. Based on this fact, taxiway size and configuration are described as limiting factors in the conclusion section of this analysis. The main parallel taxiway to Runway 14/32 is approximately 50 feet wide. The end connectors are approximately 55 feet wide. Intermediate connectors between the parallel taxiway and main Runway 14/32 are approximately 40 feet wide.

Additional analysis of this is depicted within Figure 6-3, IPL Existing Critical Airport Runway and Taxiway Design Standards of this analysis.



INFRASTRUCTURE ASSESSMENT

FIGURE 6-3, IPL Existing Critical Airport Runway and Taxiway Design Standards

Ramps and Aprons

Aircraft parking and loading ramps and aprons are typical for a GA airport of this size. There is adequate space on the north ramp for the loading of appropriate cargo aircraft parked parallel to the main taxiway. There is additional space for utility vehicles, passenger vehicles, and cargo vehicles to enter and exit the ramp area. GA small aircraft parking exists due-north of the IPL terminal building. The passenger loading area and aircraft parking area directly adjacent to the main passenger terminal gates is not adequately sized to accommodate current passenger aircraft. National Fire Protection Association (NFPA) requires a minimum of 100 feet setback from the fueling port of any passenger aircraft parked directly adjacent to a passenger terminal. Certain mitigation may be allowed for distances less than the required setback. Figure 6-4, Current Aircraft Use Limitations depicts a number of passenger aircraft that may be utilized at IPL in a parking configuration that will allow their operation. The passenger boarding ramp is located directly adjacent to the main parallel taxiway which creates a setback issue when aircraft are parked at the gate. Based on this fact ramp and apron size, as well as configuration are described as limiting factors in the conclusion section of this analysis.

Instrument Flight Procedures

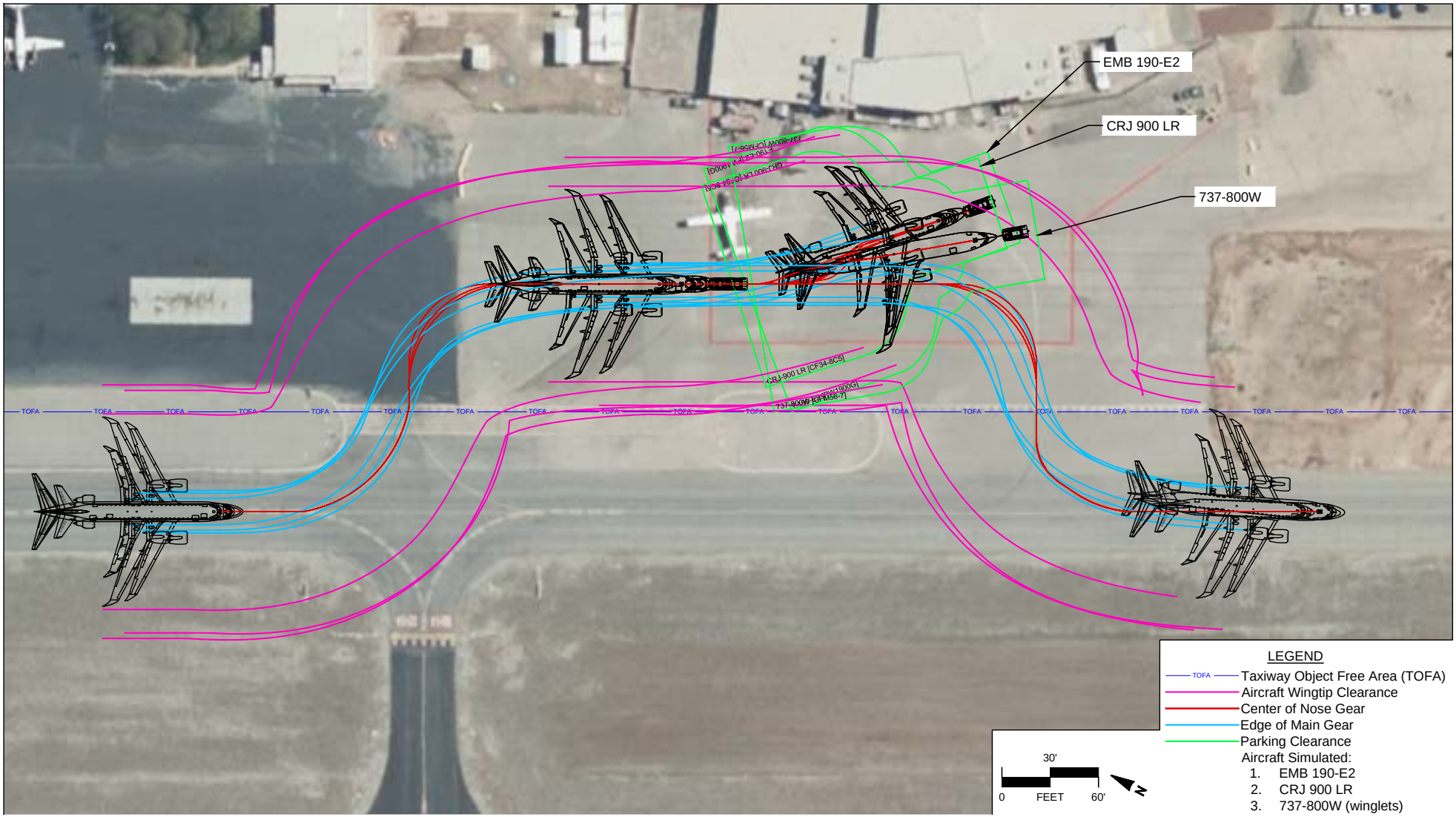
There is one (1) instrument flight procedure for IPL. Considering the average weather conditions for IPL, the approach is functional but airlines providing commercial air service may desire lower minima in reduced visibility scenarios.

Table 6-4, IPL Instrument Flight Procedures

Type VOR or GPS A	
Minimum Decent AGL Altitude	614 Feet
Minimum Visibility Requirements	1 Statute Mile
Aircraft Category Lines of Minima	A, B, C, D
Alternate GPS or VOR	GPS

IPL has been identified on the approved ALP, Figure 6-2, IPL Airport Property Inventory Map, as a B-II airport. Following the guidance listed below and within the published FAA AC, we see that the typical aircraft for this B-II type airport would be:

1. Single engine small light weight aircraft
2. Light twin engine reciprocating aircraft
3. Light single and twin-engine turbo prop aircraft
4. Light and medium weight turbine (jet) aircraft


EMB 190-E2
CRJ 900 LR
737-800W
TOFA
LEGEND
TOFA Taxiway Object Free Area (TOFA)
Aircraft Wingtip Clearance
Center of Nose Gear
Edge of Main Gear
Parking Clearance
Aircraft Simulated:
1. EMB 190-E2
2. CRJ 900 LR
3. 737-800W (winglets)
30'
0 FEET 60'

Cargo Facilities

One cargo operator currently has established facilities at IPL, FedEx. UPS also uses ramp areas for direct loading of aircraft. The FedEx cargo facility is approximately 17,500 square feet and at the present time meets the needs of the cargo storage and handling for FedEx, no additional space is required. UPS uses the existing ramp area near Imperial Flying Service. FedEx currently uses approximately 2,500 square yards of ramp area.

Support Facilities

Terminal Facilities

The existing terminal consists of approximately 22,000 square feet of floor area. The terminal is two stories with equal airside and landside exposure. The terminal was built in 1969; year built is based on records and visual inspection. No significant upgrades have occurred since that time. While meeting the functional needs of today's activity, the terminal is considered outdated by today's passenger experience and access standards. Hold room areas and restroom facilities are very small and security screening areas are nonstandard. The airline's offices and ticket counter function, but lack the passenger amenities customarily found in today's airports.

Air Traffic Control Tower

IPL has an air traffic control tower (ATCT) located west of Runway 14/32. This tower, which was decommissioned in the early 1980s, is in need of significant repair and upgrade and has no useful purpose today. There is no local air traffic control for IPL. Pilots may get limited airfield advisories from Imperial Flying Service on UNICOM when that service is provided. Otherwise, pilots receive advisory and guidance information from Los Angeles Air Route Traffic Control (LA ARTCC).

It is not uncommon for airports of similar size and capacity to lack ATCT services. However, as a result, certain aircraft operators, passenger, cargo, charter, or general aviation will limit operations during periods of inclement weather or during darkness. This limitation can be considerable when understanding the true utility of an airport with respect to expansion capabilities.

Fuel Capacity and Availability

Both Aviation 100 Low Lead and JET A aircraft fuel are available from the local FBO, Imperial Flying Service. The standards set forth for quality reside primarily with the fuel vendor and the personnel handling the fuel as well as protocol established by the airport operator.

6.1.4 Findings

Current Airport Use Limitations

Commercial Services Aircraft Analysis

Three (3) aircraft were considered when assessing the potential maximum aircraft size that could be accommodated at IPL.

- Embraer 190 (AAC C ADG III)
- Bombardier CRJ 900 LR (AAC C ADG III)
- Boeing 737-800 (AAC D ADG III)

These aircraft were chosen based on their common use at smaller, non-hub airport destinations serving communities with limited passenger service through regional routes. Figure 6-4, Current Aircraft Use Limitations depicts the relative size of each type of aircraft to the taxiway, ramp, and terminal building. Using FAA AC 150-5300-13B, as outlined in Figure 6-3, IPL Existing Critical Airport Runway and Taxiway Design Standards, the airfield is currently built to a B-II standard. While this is the case, aircraft larger than B-II may under certain conditions safely use the airport. The goal of this analysis is to ascertain if any aircraft larger than a B-II, such as the three (3) listed above, may be accommodated. This analysis does not account for detailed runway length calculations which vary based on weight and meteorological factors. However, the three (3) aircraft listed may, under certain conditions, use Runway 14/32 near the stated runway length of 5,308 feet.

Table 6-5, IPL Aircraft Types, depicts the limiting factors that control the aircraft operability at IPL.

- Marginal denotes additional detailed calculations of the aircraft operating characteristics are required, and the aircraft size, speed and weight are close to unacceptable limits for use at IPL.
- Fail denotes a critical limiting factor in the operation of the aircraft at IPL. This would disqualify the aircraft for use at IPL.

As detailed in the Pavement Conditions section of this analysis, the pavement load bearing for the runway surface and the ramp area are not sufficient, based on available data, to support either the Embraer 190 or the Boeing 737-800: however, Taxiway A has sufficient load bearing strength for both aircraft at the time of the 2014 Imperial County Airport Pavement Management Update Final Report (APMR).

Table 6-5, IPL Aircraft Types

Aircraft	Embraer 190	Bombardier CRJ 900 LR	Boeing 737-800
Runway Dimension	Marginal	Marginal	Marginal
Taxiway Dimension	Marginal	Marginal	Marginal
Apron Configuration	Marginal	Marginal	Marginal
Pavement Load Bearing	Fail	Marginal	Fail

Figure 6-5, IPL Aircraft Types, outlines a compliment of aircraft that may safely use the airport in its current capacity. Aircraft in the C-III, D-III category are marginal and shaded in yellow.

These aircraft require additional technical analysis and should be considered the upper limit for potential aircraft size accommodation at IPL. The remaining aircraft can be accommodated at IPL in its current configuration. However, aircraft operations of a routine nature, over 500 annual operations per year, should be assessed and IPL should be modified to accommodate the new critical or design aircraft if demand above a B-II occurs.



A-I

Beech Baron 55
Cessna 172
Piper Archer
Cirrus SR 20/22



C-I, D-I

Lear 25, 35, **55**
Israeli Westwind
HS 125
Piaggio Aero
Aero Commnader



B-I <12.5k

Beech Baron 58
Cessna 300, 400
Piper Cheyenne
King Air 90
Phenom 100
Cessna Citation CJ1



C-II, D-II

Challenger 600, 800
Embraer 145
Legacy 450, 550
Gulfstream 450



B-II >12.5k

Super King Air 300
Beech 1900
Falcon 10, 20, 50
Falcon 200, 900
Citation II, III, IV, V
Saab 340
Embraer 120
Beechcraft 400



C-III, D-III

EMB 190
CRJ 900
Boeing 737-800, 900
Gulfstream 500, 600
Airbus A319, 320, 321



A-III, B-III

DHC Dash 7, 8
DC-3
Convair 580
Fokker F-27
ATR 72
ATP



C-IV, D-IV, V

B-757, 767
DC-8-70, 10
MD-11
Boeing 747, 777, 787

Note: Aircraft pictured identified in bold.

Annual Operational Capacity

Annual Aircraft Operations

In 2021, IPL had approximately 6,429 annual operations as depicted below, Table 6-6, IPL Annual Aircraft Operations.

Table 6-6, IPL Annual Aircraft Operations

Air Carrier	Air Taxi	General Aviation Local	General Aviation Itinerant	Military	Total
855	319	1,100	493	3,662	6,429

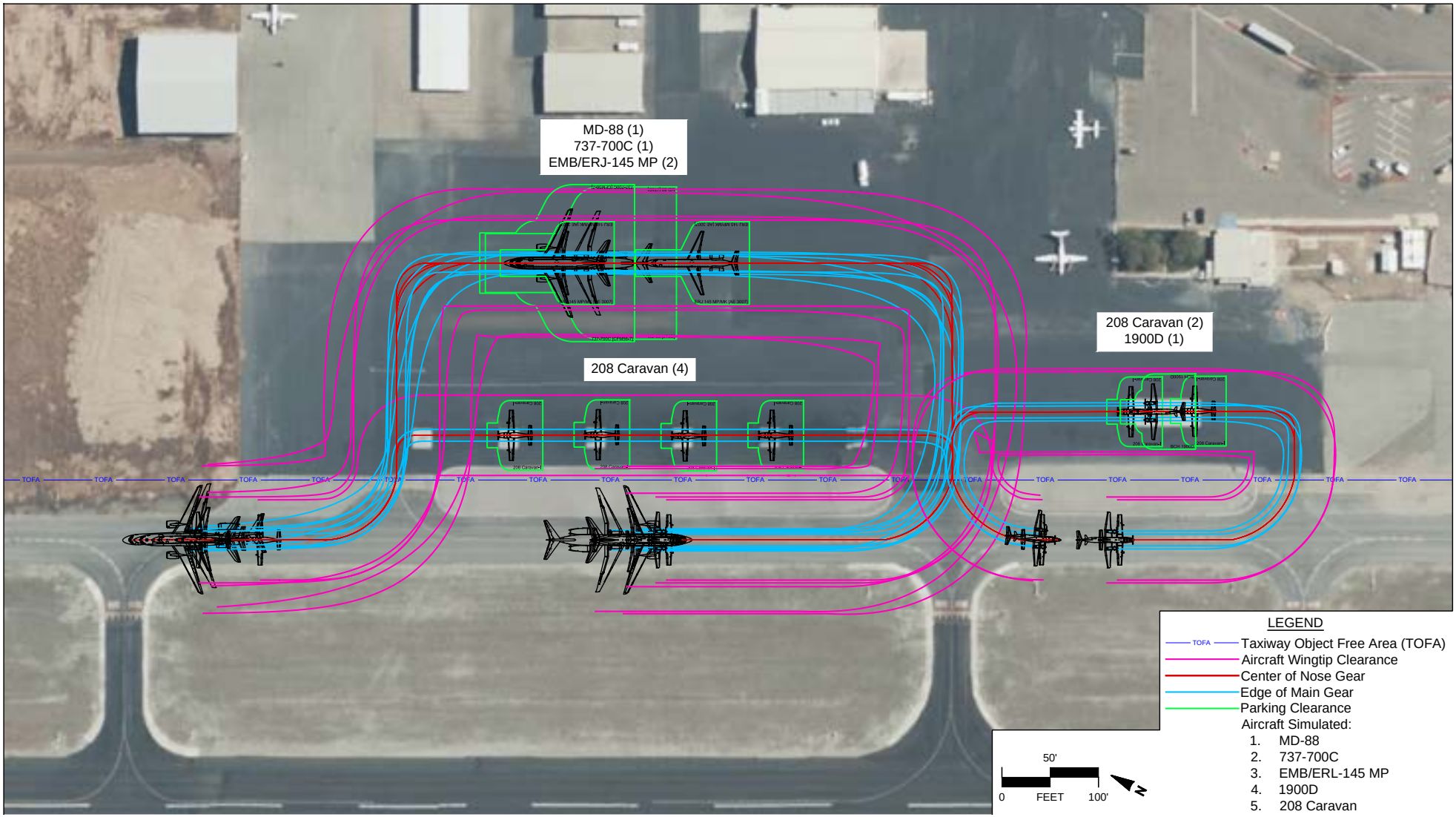
This amounts to approximately 8,020 annual enplaned passengers. The sample data period of 2021 had some restrictions based on COVID-19 protocol, so interpolation was used to derive the average number of enplaned passengers.

The FAA Traffic Flow Management System Counts (TFMSC) composite of operations was used to calculate the maximum number for annual operations that could be accommodated at IPL. This number of actual aircraft operations by type, class, weight, and size are used with FAA AC 150/5060-5, Airport Capacity and Delay, to calculate the maximum number of annual operations IPL can support. This number for IPL is 260,000 annual operations. Numerically, the airport is well below annual capacity for utilization.

Five (5) aircraft were considered when assessing the potential maximum cargo aircraft size that could be accommodated at IPL.

- Embraer 145 MP (AAC C ADG II)
- Cessna 208 (AAC A ADG II)
- Boeing 737-700 (AAC C ADG III)
- McDonald Douglas MD88 (AAC D ADG III)
- Beechcraft 1900 (AAC B ADG II)

These aircraft were chosen based on their common use at smaller, nonhub airport destinations serving communities with regional cargo needs. Figure 6-6, Cargo Aircraft Capacity Analysis depicts the relative size of each type of aircraft to the taxiway, ramp, and terminal building.


MD-88 (1)
737-700C (1)
EMB/ERJ-145 MP (2)
208 Caravan (4)
208 Caravan (2)
1900D (1)
TOFA
LEGEND
Taxiway Object Free Area (TOFA)
Aircraft Wingtip Clearance
Center of Nose Gear
Edge of Main Gear
Parking Clearance
Aircraft Simulated:
1. MD-88
2. 737-700C
3. EMB/ERL-145 MP
4. 1900D
5. 208 Caravan
50'
0
FEET
100'

Using FAA Advisory Circular 150- 5300-13B, as outlined in Figure 6-3, IPL Existing Critical Airport Runway and Taxiway Design Standards, the airfield is currently built to a B-II standard. While this is the case, aircraft larger than B-II may under certain conditions safely use IPL. The goal of this analysis is to ascertain if any aircraft larger than a B-II, such as the five (5) listed above, may be accommodated. This analysis does not account for detailed runway length calculations which vary based on weight and meteorological factors. However, the three (3) aircraft listed may under certain conditions use Runway 14/32 near the listed length of 5,308 feet.

Table 6-7, Cargo Aircraft Operability Limiting Factors, depicts the limiting factors that control the aircraft operability at IPL. Marginal denotes additional detailed calculations of the aircraft operating characteristics ae required, and the aircraft size, speed, and weight are close to unacceptable limits for use at IPL. Fail denotes a critical limiting factor in the operation of the aircraft at IPL. This would disqualify the aircraft for use at IPL.

Table 6-7, Cargo Aircraft Operability Limiting Factors

Aircraft	Embraer 145	Cessna 208	Boeing 737-700	MD 88	Beech 1900
Runway Dimension	Marginal	Pass	Marginal	Fail	Pass
Taxiway Dimension	Marginal	Pass	Marginal	Fail	Pass
Apron Configuration	Marginal	Pass	Marginal	Fail	Pass
Pavement Load Bearing	Pass	Pass	Fail	Fail	Pass

Conclusion

IPL is currently designated as an Aircraft Approach Category B, Airplane Design Group II airport on the existing Airport Layout Plan (APL) dated May 14, 2004. The Airport Design Code is referred to as a B-II. The final evaluation of IPL using B-II aircraft types is listed in Table 6-8, Final IPL Airport Analysis Summary. Aircraft larger than B-II may under certain conditions safely use the airport. Where applicable, accommodation of a C-III aircraft similar to Bombardier CRJ 900 LR is shown. This is depicted for reference only. Further evaluation defining the safe operation of aircraft larger than a B-II is outside the scope of this analysis. However, this analysis strives to show where potential airport enhancements may allow the routine use of aircraft faster and larger than those designated as B-II.

Table 6-8, Final IPL Airport Analysis Summary

Evaluation Criteria	Deficient	Meets	Exceeds
Runway length, width, and strength		X	Marginal accommodation of an aircraft similar to Bombardier CRJ 900 LR
Verification of existing critical aircraft for design standards		X	
Taxiway size, strengths, and capacity		X	Marginal accommodation of an aircraft similar to Bombardier CRJ 900 LR
Apron size, strengths, and capacity		X	Marginal accommodation of an aircraft similar to Bombardier CRJ 900 LR, does not meet required aircraft fuel port setbacks or NFPA mitigation standards
Fuel type availability and capacity		X	Accommodation of an aircraft similar to Bombardier CRJ 900 LR
Available FBO services		X	Accommodation of an aircraft similar to Bombardier CRJ 900 LR
Terminal services	X Does not meet required design standards for access or security		
Terminal auto parking		X	
Availability of existing cargo aprons or processing areas		X	

6.2 BRAWLEY MUNICIPAL AIRPORT (BWC)

6.2.1 Introduction

Airport Overview

BWC is located at 948 Ken Bemis Drive, Brawley, California, 92227 and primarily serves general aviation users. BWC's property is roughly 160 acres. BWC has one runway, Runway 08/26, which

is orientated roughly east to west and is 4,166 feet long by 60 feet wide. There is no air traffic control facility (ATCF), meaning the airfield is uncontrolled and that no air traffic control (ATC) services are available. There is one fixed-base operator (FBO) that is used similarly to a traditional passenger terminal. The FBO provides services to passengers such as aircraft maintenances, aircraft storage, fueling, charters, aircraft rentals, lounges for passengers and pilots, office space, classrooms, maintenance hangars, aircraft parking aprons, and covered aircraft storage. There are approximately 62 hangars and 28 tiedowns.

There are about seven (7) businesses located on or near the airfield including:

- REACH Air Medical Services (RCH 11)
- Brawley Fire Department Station 2
- Green Valley Farms
- Brawley Public Scale
- Imperial County Road District
- One World Beef
- Packers Sanitation Services, Ltd.

Operational Overview

BWC is included in the FAA National Plan of Integrated Airport Systems (NPIAS). BWC is a public use general aviation (GA) airport with zero annual enplanements. There were approximately 48 based aircraft in 2022, and the outlook for capital investment in BWC by the FAA from 2023 – 2027 is approximately $13,342,686. The Airport Data and Information Portal (ADIP) reports approximately 2,300 total annual operations. An operation is defined as either an aircraft departure or arrival. It may be local or itinerant meaning the aircraft could visit or also depart from BWC and arrive back at BWC. BWC is owned by the City of Brawley. The management and operation of BWC is the responsibility of the airport manager who reports directly to the Public Works Director. Airport staff includes one airport manager. The Brawley Public Works Department is responsible for the overall administration and operation of BWC.

Location

BWC is located about 23 miles north of the Mexican Border and about 60 miles west of Yuma, Arizona. BWC is in the northern portion of the United States (US) – Mexico border known as the Mexicali Valley. BWC has one runway that is oriented parallel with Highway 111 and is encompassed by land primarily used for agricultural. Primary infrastructure includes aircraft hangars, small business properties, and administrative offices / FBO. There are parking areas bounded by perimeter fencing and access control facilities such as walk-through gates and auto gates. The airport is below mean sea level.

Area Airports

The closest airport which is comparable to BWC in terms of size and annual operations is Cliff Hatfield Memorial Airport (CLR). Similarly, CLR has one (1) runway, Runway 08/35, which like BWC is orientated east to west and had less than 2,500 operations and no enplanements. Figure 6-7, Airports within 100 Miles of BWC, depicts other airports that may serve the needs of the regional traveler.

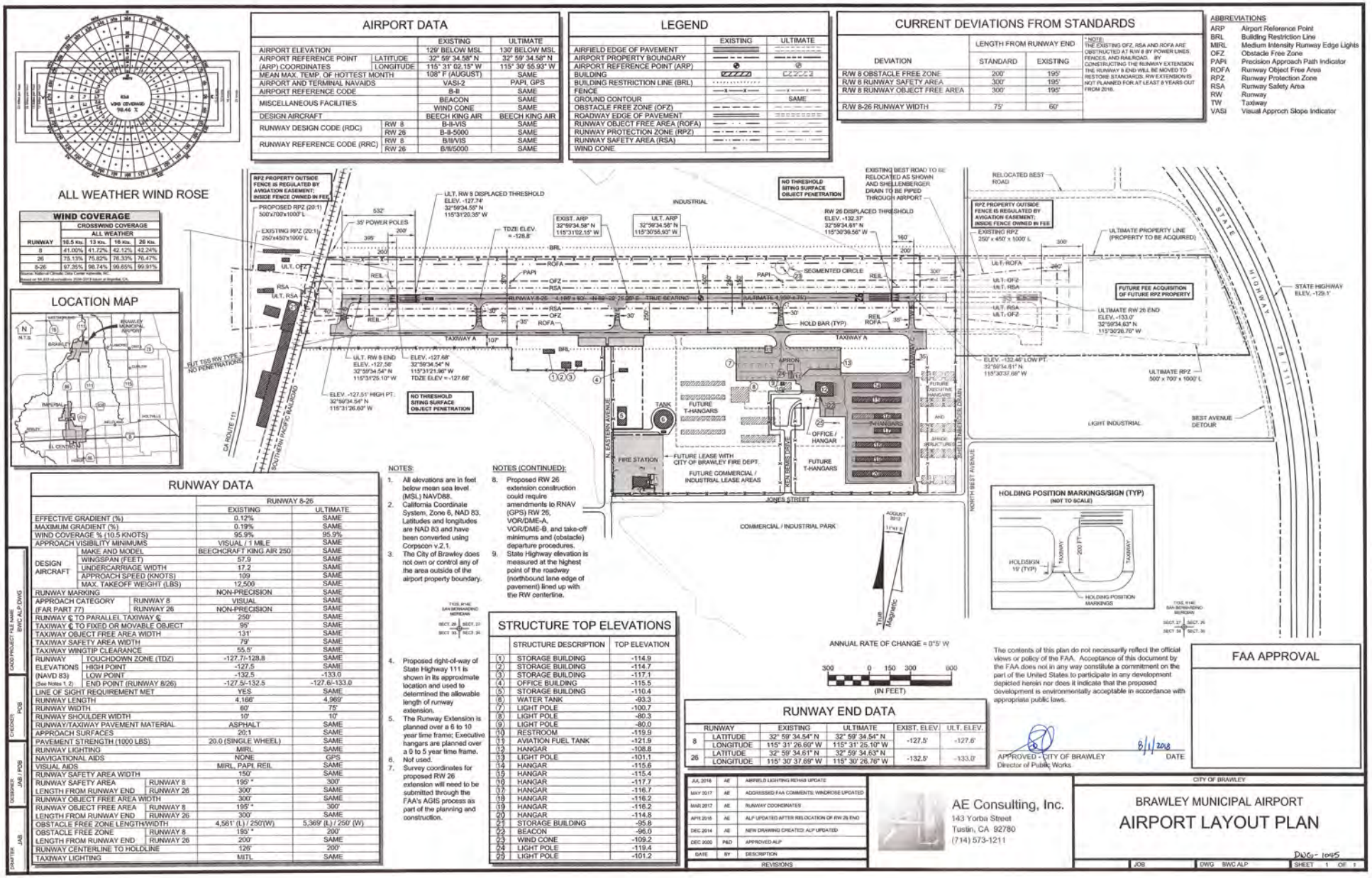
6.2.2 Methodology and Sources

The same methodology and sources for IPL's airport capacity analysis were used to assess BWC. Please reference Section 6.1.2, "Methodology and Sources" for this information.

6.2.3 Existing Inventory

The following section provides information on BWC's existing inventory, focusing on airport system attributes relevant for analysis of the airport's capacity (See Figure 6-8, BWC Airport Layout Plan). For further information on the complete existing inventory at BWC, please reference the full report "Imperial County Airport and Brawley Municipal Airport Inventory Capacities and Limitations" in Appendix A-A, Airport Analysis, of this document.


Victorville
Lake Havasu
Twentynine Palms
TNP
11489 ft
Riverside
Banning
10815 ft
Cathedral City
Indio
5334 ft
50 mi
PSP
Murrieta
TRM
Blythe
BLH
F70
L08
25 mi
Salton Sea
Oceanside
CRQ
Escondido
BWC
L54
RNM
6500 ft
IPL
SAN
SEE
NYL
San Diego
CXL
Yuma
Mexicali
Tijuana
San Luis Río Colorado
SDM
Tijuana Int'l
44A
1856 m
75 mi
Ensenada
Mexico
1678 m
100 mi
N
0
12.5
25 Miles
San Felipe
3065 m


ALL WEATHER WIND ROSE
WIND COVERAGE
CROSSWIND COVERAGE
ALL WEATHER
RUNWAY 10.5 Kts. 13 Kts. 16 Kts. 20 Kts.
8 41.00% 41.72% 42.12% 42.24%
26 75.13% 75.82% 76.33% 76.47%
8-26 97.35% 98.74% 99.65% 99.91%
LOCATION MAP
AIRPORT DATA
AIRPORT ELEVATION EXISTING 129' BELOW MSL ULTIMATE 130' BELOW MSL
AIRPORT REFERENCE POINT (ARP) COORDINATES LATITUDE 32° 59' 34.58" N 32° 59' 34.58" N
LONGITUDE 115° 31' 02.15" W 115° 30' 55.93" W
MEAN MAX. TEMP. OF HOTTEST MONTH 108° F (AUGUST) SAME
AIRPORT AND TERMINAL NAVAIDS VASI-2 PAPI, GPS
AIRPORT REFERENCE CODE B-II SAME
MISCELLANEOUS FACILITIES BEACON SAME
WIND CONE SAME
DESIGN AIRCRAFT BEECH KING AIR BEECH KING AIR
RUNWAY DESIGN CODE (RDC) RW 8 B-II-VIS SAME
RW 26 B-II-5000 SAME
RUNWAY REFERENCE CODE (RRC) RW 8 B/II/VIS SAME
RW 26 B/II/5000 SAME
LEGEND
EXISTING ULTIMATE
AIRFIELD EDGE OF PAVEMENT
AIRPORT PROPERTY BOUNDARY
AIRPORT REFERENCE POINT (ARP)
BUILDING
BUILDING RESTRICTION LINE (BRL)
FENCE
GROUND CONTOUR SAME
OBSTACLE FREE ZONE (OFZ)
ROADWAY EDGE OF PAVEMENT
RUNWAY OBJECT FREE AREA (ROFA)
RUNWAY PROTECTION ZONE (RPZ)
RUNWAY SAFETY AREA (RSA)
WIND CONE
CURRENT DEVIATIONS FROM STANDARDS
DEVIATION LENGTH FROM RUNWAY END STANDARD EXISTING
R/W 8 OBSTACLE FREE ZONE 200' 195'
R/W 8 RUNWAY SAFETY AREA 300' 195'
R/W 8 RUNWAY OBJECT FREE AREA 300' 195'
R/W 8-26 RUNWAY WIDTH 75' 60'
* NOTE: THE EXISTING OFZ, RSA AND ROFA ARE OBSTRUCTED AT R/W 8 BY POWER LINES, FENCES, AND RAILROAD. BY CONSTRUCTING THE RUNWAY EXTENSION, THE RUNWAY 8 END WILL BE MOVED TO RESTORE STANDARDS. RW EXTENSION IS NOT PLANNED FOR AT LEAST 8 YEARS OUT FROM 2018.
ABBREVIATIONS
ARP Airport Reference Point
BRL Building Restriction Line
MIRL Medium Intensity Runway Edge Lights
OFZ Obstacle Free Zone
PAPI Precision Approach Path Indicator
ROFA Runway Object Free Area
RPZ Runway Protection Zone
RSA Runway Safety Area
RW Runway
TW Taxiway
VASI Visual Approch Slope Indicator
RPZ PROPERTY OUTSIDE FENCE IS REGULATED BY AVIGATION EASEMENT; INSIDE FENCE OWNED IN FEE
PROPOSED RPZ (20:1) 500'x700'x1000' L
EXISTING RPZ (20:1) 250'x450'x1000' L
35' POWER POLES
ULT. OFZ
RSA
ULT. RSA
REIL
BRL
ROFA
PAPI
OFZ
SEGMENTED CIRCLE
RUNWAY 8-26 - 4,166' x 60' - N 59° 29' 25.68" E - TRUE BEARING - RUNWAY 4,969' x 75'
HOLD BAR (TYP)
TAXIWAY A
ULT. RW 8 DISPLACED THRESHOLD ELEV. -127.74' 32°59'34.58" N 115°31'20.35" W
TDZE ELEV. = -128.8'
EXIST. ARP 32°59'34.58" N 115°31'02.15" W
ULT. ARP 32°59'34.58" N 115°30'55.93" W
RW 26 DISPLACED THRESHOLD ELEV. -132.37' 32°59'34.61" N 115°30'39.56" W
ULT. RW 8 END ELEV. -127.58' 32°59'34.54" N 115°31'25.10" W
ELEV. -127.68' 32°59'34.54" N 115°31'21.96" W TDZE ELEV = -127.68'
ELEV. -127.51' HIGH PT. 32°59'34.54" N 115°31'26.60" W
NO THRESHOLD SITING SURFACE OBJECT PENETRATION
EXISTING BEST ROAD TO BE RELOCATED AS SHOWN AND SHELLENBERGER DRAIN TO BE PIPED THROUGH AIRPORT
RELOCATED BEST ROAD
RPZ PROPERTY OUTSIDE FENCE IS REGULATED BY AVIGATION EASEMENT; INSIDE FENCE OWNED IN FEE
EXISTING RPZ 250' x 450' x 1000' L
ULTIMATE PROPERTY LINE (PROPERTY TO BE ACQUIRED)
FUTURE FEE ACQUISITION OF FUTURE RPZ PROPERTY
ULTIMATE RW 26 END ELEV. -133.0' 32°59'34.63" N 115°30'26.76" W
ELEV. -132.46' LOW PT. 32°59'34.61" N 115°30'37.68" W
ULTIMATE RPZ 500' x 700' x 1000' L
PUT TIS RW TYPE 3 NO PENETRATIONS
CA ROUTE 111
SOUTHERN PACIFIC RAILROAD
INDUSTRIAL
LIGHT INDUSTRIAL
STATE HIGHWAY ELEV. -129.1'
BEST AVENUE DETOUR
NORTH BEST AVENUE
N. EASTERN AVENUE
FIRE STATION
TANK
FUTURE T-HANGARS
OFFICE / HANGAR
T-HANGARS
APRON
FUTURE EXECUTIVE HANGARS
FUTURE LEASE WITH CITY OF BRAWLEY FIRE DEPT.
FUTURE COMMERCIAL / INDUSTRIAL LEASE AREAS
JONES STREET
COMMERCIAL / INDUSTRIAL PARK
HOLDING POSITION MARKINGS/SIGN (TYP) (NOT TO SCALE)
HOLDSIGN 10' (TYP)
TAXIWAY
200 FT
HOLDING POSITION MARKINGS
ANNUAL RATE OF CHANGE = 0°5' W
300 0 150 300 600 (IN FEET)
RUNWAY DATA
RUNWAY 8-26 EXISTING ULTIMATE
EFFECTIVE GRADIENT (%) 0.12% SAME
MAXIMUM GRADIENT (%) 0.19% SAME
WIND COVERAGE % (10.5 KNOTS) 95.9% 95.9%
APPROACH VISIBILITY MINIMUMS VISUAL / 1 MILE SAME
DESIGN AIRCRAFT MAKE AND MODEL BEECHCRAFT KING AIR 250 SAME
WINGSPAN (FEET) 57.9 SAME
UNDERCARRIAGE WIDTH 17.2 SAME
APPROACH SPEED (KNOTS) 109 SAME
MAX. TAKEOFF WEIGHT (LBS) 12,500 SAME
RUNWAY MARKING NON-PRECISION SAME
APPROACH CATEGORY (FAR PART 77) RUNWAY 8 VISUAL SAME
RUNWAY 26 NON-PRECISION SAME
RUNWAY ℄ TO PARALLEL TAXIWAY ℄ 250' SAME
TAXIWAY ℄ TO FIXED OR MOVABLE OBJECT 95' SAME
TAXIWAY OBJECT FREE AREA WIDTH 131' SAME
TAXIWAY SAFETY AREA WIDTH 79' SAME
TAXIWAY WINGTIP CLEARANCE 55.5' SAME
RUNWAY ELEVATIONS (NAVD 83) (See Notes 1, 2) TOUCHDOWN ZONE (TDZ) -127.7/-128.8 SAME
HIGH POINT -127.5 SAME
LOW POINT -132.5 -133.0
END POINT (RUNWAY 8/26) -127.5/-132.5 -127.6/-133.0
LINE OF SIGHT REQUIREMENT MET YES SAME
RUNWAY LENGTH 4,166' 4,969'
RUNWAY WIDTH 60' 75'
RUNWAY SHOULDER WIDTH 10' 10'
RUNWAY/TAXIWAY PAVEMENT MATERIAL ASPHALT SAME
APPROACH SURFACES 20:1 SAME
PAVEMENT STRENGTH (1000 LBS) 20.0 (SINGLE WHEEL) SAME
RUNWAY LIGHTING MIRL SAME
NAVIGATIONAL AIDS NONE GPS
VISUAL AIDS MIRL, PAPI, REIL SAME
RUNWAY SAFETY AREA WIDTH 150' SAME
RUNWAY SAFETY AREA LENGTH FROM RUNWAY END RUNWAY 8 195' * 300'
RUNWAY 26 300' SAME
RUNWAY OBJECT FREE AREA WIDTH 300' SAME
RUNWAY OBJECT FREE AREA LENGTH FROM RUNWAY END RUNWAY 8 195' * 300'
RUNWAY 26 300' SAME
OBSTACLE FREE ZONE LENGTH/WIDTH 4,561' (L) / 250'(W) 5,369' (L) / 250' (W)
OBSTACLE FREE ZONE LENGTH FROM RUNWAY END RUNWAY 8 195' * 200'
RUNWAY 26 200' SAME
RUNWAY CENTERLINE TO HOLDLINE 126' 200'
TAXIWAY LIGHTING MITL SAME
NOTES:
1. All elevations are in feet below mean sea level (MSL) NAVD88.
2. California Coordinate System, Zone 6, NAD 83. Latitudes and longitudes are NAD 83 and have been converted using Corpscon v 2.1.
3. The City of Brawley does not own or control any of the area outside of the airport property boundary.
4. Proposed right-of-way of State Highway 111 is shown in its approximate location and used to determined the allowable length of runway extension.
5. The Runway Extension is planned over a 6 to 10 year time frame; Executive hangars are planned over a 0 to 5 year time frame.
6. Not used.
7. Survey coordinates for proposed RW 26 extension will need to be submitted through the FAA's AGIS process as part of the planning and construction.
NOTES (CONTINUED):
8. Proposed RW 26 extension construction could require amendments to RNAV (GPS) RW 26, VOR/DME-A, VOR/DME-B, and take-off minimums and (obstacle) departure procedures.
9. State Highway elevation is measured at the highest point of the roadway (northbound lane edge of pavement) lined up with the RW centerline.
STRUCTURE TOP ELEVATIONS
STRUCTURE DESCRIPTION TOP ELEVATION
(1) STORAGE BUILDING -114.9
(2) STORAGE BUILDING -114.7
(3) STORAGE BUILDING -117.1
(4) OFFICE BUILDING -115.5
(5) STORAGE BUILDING -110.4
(6) WATER TANK -93.3
(7) LIGHT POLE -100.7
(8) LIGHT POLE -80.3
(9) LIGHT POLE -80.0
(10) RESTROOM -119.9
(11) AVIATION FUEL TANK -121.9
(12) HANGAR -108.8
(13) LIGHT POLE -101.1
(14) HANGAR -115.6
(15) HANGAR -115.4
(16) HANGAR -117.7
(17) HANGAR -116.7
(18) HANGAR -116.2
(19) HANGAR -116.2
(20) HANGAR -114.8
(21) STORAGE BUILDING -95.8
(22) BEACON -96.0
(23) WIND CONE -109.2
(24) LIGHT POLE -119.4
(25) LIGHT POLE -101.2
RUNWAY END DATA
RUNWAY EXISTING ULTIMATE EXIST. ELEV. ULT. ELEV.
8 LATITUDE 32° 59' 34.54" N 32° 59' 34.54" N -127.5' -127.6'
LONGITUDE 115° 31' 26.60" W 115° 31' 25.10" W
26 LATITUDE 32° 59' 34.61" N 32° 59' 34.63" N -132.5' -133.0'
LONGITUDE 115° 30' 37.69" W 115° 30' 26.76" W
The contents of this plan do not necessarily reflect the official views or policy of the FAA. Acceptance of this document by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.
APPROVED - CITY OF BRAWLEY Director of Public Works
8/1/2018 DATE
FAA APPROVAL
REVISIONS
JUL 2018 AE AIRFIELD LIGHTING REHAB UPDATE
MAY 2017 AE AGGRESSED FAA COMMENTS; WINDROSE UPDATED
MAR 2017 AE RUNWAY COORDINATES
APR 2015 AE ALP UPDATED AFTER RELOCATION OF RW 26 END
DEC 2014 AE NEW DRAWING CREATED; ALP UPDATED
DEC 2000 P&D APPROVED ALP
DATE BY DESCRIPTION
AE Consulting, Inc.
143 Yorba Street
Tustin, CA 92780
(714) 573-1211
CITY OF BRAWLEY
BRAWLEY MUNICIPAL AIRPORT
AIRPORT LAYOUT PLAN
DWG: 1015
JOB DWG BWC ALP SHEET 1 OF 1
CADD PROJECT FILE NAME: BWC ALP.DWG
CHECKED: PDS
DESIGNED: JAB / PDS
DRAFTER: JAB

Airfield

Runway System

As depicted in Figure 6-8, BWC Airport Layout Plan, the runway system at BWC is comprised of a single runway, Runway 08/26. Runway 08/26 is accessed by one (1) parallel taxiway and five (5) perpendicular connectors. There are two (2) run-up staging areas for aircraft to perform safety checks prior to departure located at the east and west ends of the taxiway. Table 6-9, IPL Runway Attributes, lists attributes for each runway at BWC.

Table 6-9, IPL Runway Attributes

Runway 08/26			
Dimension	4166 Feet x 60 Feet	PCN	LBS Load Bearing
Surface Type / Condition	ASPH-E	Single Wheel	20,000
Edge Light Intensity	MED		

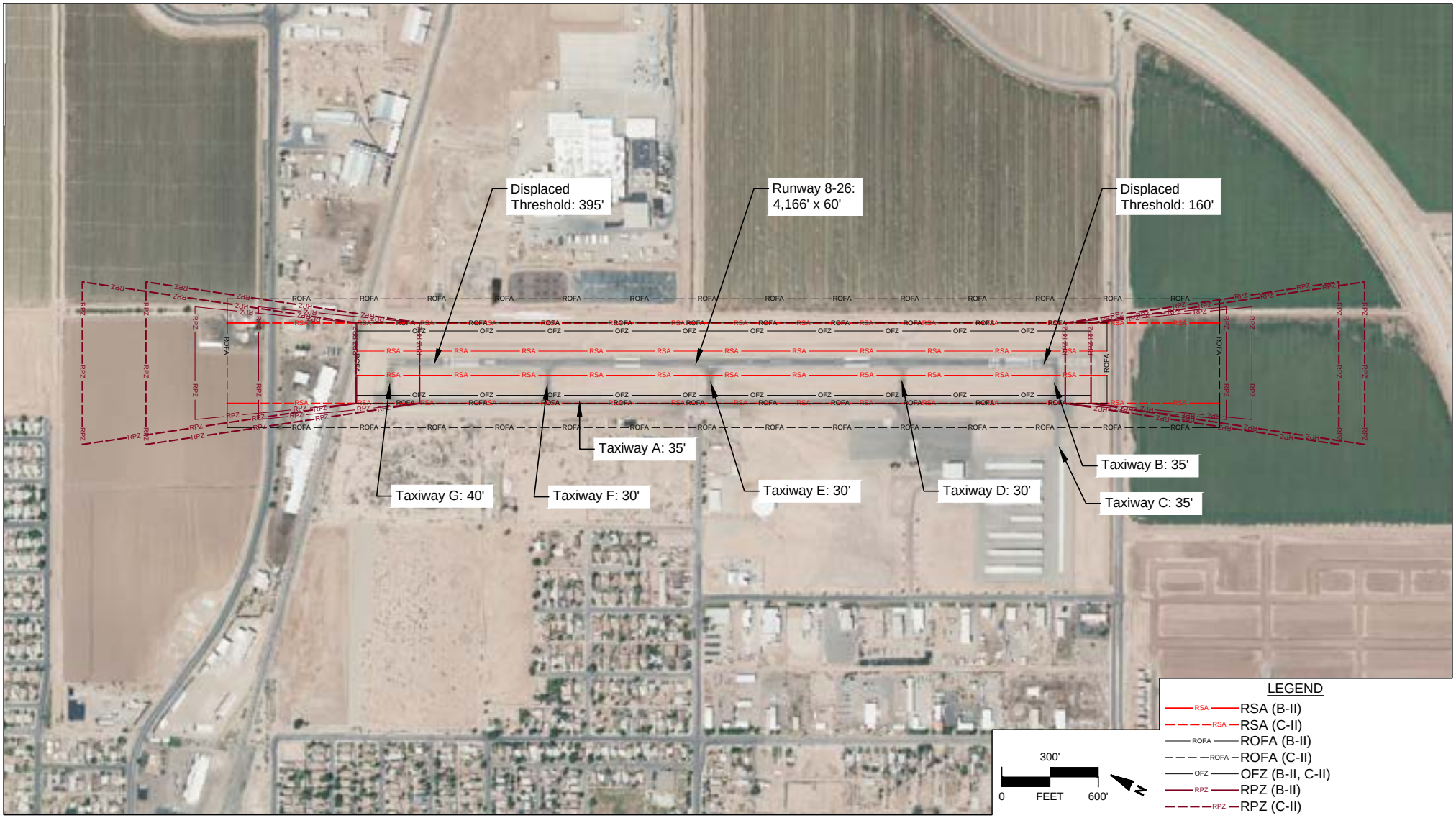
Pavement Conditions

The only available pavement condition information for BWC is included on the FAA-approved APL above, 11 6-8, BWC Airport Layout Plan, which states the main Runway 08/26 has a load bearing capacity of 20,000 pounds single wheel. No dual wheel capacity is stated.

Taxiway System

The airport taxiway system is typical for a GA airport of this size. Runway 08/26 has a parallel taxiway so that aircraft can arrive and depart from the runway surface while other aircraft simultaneously taxi for departure or exit the runway following arrival. The parallel taxiway has perpendicular connectors to the runway at a 90-degree angle. The configuration of these perpendicular connectors is correct based upon current FAA guidance; however, taxiway C and D as well as a E lead directly from a ramp area to the runway. This does not conform to current FAA airport design standards. This configuration does not limit capacity. Other variations in airfield configuration exists including the width and shape of taxiways which may limit the size of the aircraft that can use the surface based on the turning radius.

Additional analysis of this is depicted in Figure 6-9, BWC Existing Critical Airport Runway and Taxiway Design Standards.



INFRASTRUCTURE ASSESSMENT

FIGURE 6-9, BWC Existing Critical Airport Runway and Taxiway Design Standards

Ramps and Aprons

Aircraft parking and loading ramps and aprons are typical for a GA airport of this size. There is adequate space on the ramp for the loading of appropriate small passenger and cargo aircraft parked perpendicular to the main taxiway. There is additional space for utility vehicles, passenger vehicles, and cargo vehicles to enter and exit the ramp area just south of the terminal building. GA small aircraft parking exists north and west due north of the airport terminal building. The passenger loading area and aircraft parking area directly adjacent to the main passenger terminal is not adequately sized to accommodate aircraft larger than the types. Based on this fact, ramp and apron size as well as configuration are limiting factors which is described in the conclusion section of this analysis.

Instrument Flight Procedures

There is one (1) instrument flight procedure for BWC. Considering the average weather conditions for BWC, the approach is functional for BWC.

Table 6-10, BWC Instrument Flight Procedures

Dimension	VOR or GPA-A
Minimum Decent AGL Altitude	614 Feet
Minimum Visibility Requirements	1 Statute Mile
Aircraft Category Lines of Minima	A, B, C, D
Alternate Guidance – YES	GPS

BWC has been identified on the approved ALP, Figure 6-8, BWC Airport Layout Plan, as a B-II airport. Following the guidance listed below and within the published FAA AC, we see that the typical aircraft for this B-II type airport would be:

1. Single engine small light weight aircraft
2. Light twin engine reciprocating aircraft
3. Light single and twin-engine turbo prop aircraft
4. Light and medium weight turbine (jet) aircraft

In Figure 6-9, BWC Existing Critical Airport Runway and Taxiway Design Standards, depicts that the existing alignment of the runway as well as the safety areas are commensurate with a B-II. To increase the capacity of the airfield, we see a future conceptual expansion of the runway depicted as C-III which enhances all the safety area setbacks. Although BWC is currently built to a B-II standard this does not mean larger aircraft may not safely use the airport; occasionally as described by the FAA as less than 500 annual operations. To understand the speed, size, wingspan, and length of the maximum aircraft that may be accommodated, analysis of the taxiways, ramps, aprons, and pavement strength and condition are summarized in the following section by the same name. These

characteristics along with the remaining sections of analysis are comprehensively summarized in the commercial and cargo aircraft summaries section as well as in the conclusion section of this analysis.

Cargo Facilities

There are no cargo facilities located at BWC currently. However, aircraft depicted in Figure 6-10, BWC Aircraft Types, may be used to transport cargo. As stated under the Ramps and Aprons section, there is limited space for aircraft parking as well as cargo loading and vehicular staging. For this reason, cargo operations at BWC are currently limited and will be summarized as a capacity restriction in the conclusion section of this analysis.



A-I

Beech Baron 55
Cessna 172
Piper Archer
Cirrus SR 20/22



C-I, D-I

Lear 25, 35, **55**
Israeli Westwind
HS 125
Piaggio Aero
Aero Commnader



B-I <12.5k

Beech Baron 58
Cessna 300, 400
Piper Cheyenne
King Air 90
Phenom 100
Cessna Citation CJ1



C-II, D-II

Challenger 600, 800
Embraer 145
Legacy 450, 550
Gulfstream 450



B-II >12.5k

Super King Air 300
Beech 1900
Falcon 10, 20, 50
Falcon 200, 900
Citation II, III, IV, V
Saab 340
Embraer 120
Beechcraft 400



C-III, D-III

EMB 190
CRJ 900
Boeing 737-800, 900
Gulfstream 500, 600
Airbus A319, 320, 321



A-III, B-III

DHC Dash 7, 8
DC-3
Convair 580
Fokker F-27
ATR 72
ATP



C-IV, D-IV, V

B-757, 767
DC-8-70, 10
MD-11
Boeing 747, 777, 787

Note: Aircraft pictured identified in bold.

Support Facilities

Terminal Facilities

The existing terminal consists of about 12,500 square feet of floor area. The terminal is one story and approximately one quarter of the building can be accessed from the landside. The functional needs of today's activity are met at the terminal in terms of passenger experience and access standards.

Air Traffic Control Tower

BWC does not have an air traffic control tower (ATCT) and there is no local air traffic control. Pilots may get limited airfield advisories from Imperial Flying Service on UNICOM when that service is provided. Otherwise, pilots receive advisory and guidance information from Los Angeles Air Route Traffic Control (LA ARTCC).

It is not uncommon for airports of similar size and capacity to lack ATCT services. However, certain aircraft operators, passenger, cargo, charter, or general aviation will limit operations during periods of inclement weather or during darkness as a result. This limitation can be considerable when understanding the true utility of an airport with respect to expansion capabilities.

Fuel Capacity and Availability

Both Aviation 100 Low Lead and JET A aircraft fuel are available from the local FBO, Imperial Flying Service. The standards set forth for quality reside primarily with the fuel vendor and the personnel handling the fuel as well as protocol established by the airport operator.

6.2.4 Findings

Current Airport Use Limitations

Commercial Service Aircraft Analysis

Three (3) aircraft were considered when assessing the potential maximum aircraft size that could be accommodated at IPL.

- Embraer 120 (AAC B ADG II)
- King Air 350 (AAC B ADG II)
- Cessna 208 (AAC A ADG II)

These aircraft were chosen based on their common use at smaller, GA airport destinations serving communities without regional passenger service. Using FAA AC 150-5300-13B, as outlined in Figure 6-9, BWC Existing Critical Airport Runway and Taxiway Design Standards, the airfield is currently built to a B-II standard. While this is the case, aircraft larger than B-II may under certain conditions safely use the airport. The goal of this analysis was to ascertain if any aircraft larger than a B-II, such as the three (3) listed, may be accommodated. This analysis does not account for detailed runway length calculations which vary based on weight and meteorological factors. However, the three (3) aircraft listed may under certain conditions use Runway 08/26 near the stated runway length of 4,166 feet. Embraer 120 Brasilia has a published maximum takeoff weight of 26,433 pounds and is configured with dual-wheel landing gear. This landing gear configuration reduce

ground pressure and may allow the aircraft to operate at this weight at BWC with the published pavement load bearing capacity of 20,000. However, additional technical analysis is required.

Table 6-11, BWC Aircraft Types

Aircraft	Embraer 120	King Air 350	Cessna 208
Runway Dimension	Pass	Pass	Pass
Taxiway Dimension	Pass	Pass	Pass
Apron Configuration	Pass	Pass	Pass
Pavement Load Bearing	Marginal	Pass	Pass

Table 6-11 depicts the limiting factors that control the aircraft operability at BWC. Marginal denotes additional detailed calculations of the aircraft operating characteristics are required, and the aircraft size, speed and weight are close to unacceptable limits for use at BWC.

Figure 6-10, BWC Aircraft Types above outlines a compliment of aircraft that may safely use the airport in its current capacity. Aircraft in the B-II greater than 12,500 pounds are marginal and shaded in orange. These aircraft require additional technical analysis and should be considered the upper limit for potential aircraft size accommodation at BWC. The remaining aircraft can be accommodated at BWC in its current configuration. However, aircraft operations of a routine nature, over 500 annual operations per year, should be assessed and BWC should be modified to accommodate the new critical or design aircraft if demand above a B-II occurs.

Annual Operational Capacity

Annual Aircraft Operations

In 2022, BWC had approximately 2,300 annual operations as depicted in Table 6-12 below.

Table 6-12, IPL Annual Aircraft Operations

Air Carrier	Air Taxi	General Aviation Local	General Aviation Itinerant	Military	Total
0	348	980	980	0	2,308

The FAA Traffic Flow Management System Counts (TFMSC) composite of operations was used to calculate the maximum number for annual operations that could be accommodated at BWC. This number of actual aircraft operations by type, class, weight, and size are used with FAA AC 150/5060-5, Airport Capacity and Delay, to calculate the maximum number of annual operations the airport can support. This number for BWC was 230,000 annual operations. Numerically the airport is well below annual capacity for utilization.

Cargo Aircraft Capacity Analysis

There are no cargo facilities located at BWC currently. However, aircraft depicted in Figure 6-10, BWC Aircraft Types may be used to transport cargo. There is limited space for aircraft parking as well as cargo loading and vehicular staging. For this reason, cargo operations at BWC are currently limited to B-II aircraft. As depicted within BWC Aircraft Types, aircraft that may be used for cargo purposes at BWC will generally be B-II or B-I aircraft less than 12,500 pounds. However, B-II aircraft greater than 12,500 pounds may be accommodated with additional technical analysis.

Conclusion

BWC is currently designated as an Aircraft Approach Category B, Airplane Design Group II airport on the existing APL dated May 14, 2004. The Airport Design Code is referred to as a B-II. As designated within FAA AC 150-5300-13B, Appendix A, Aircraft Characteristics, a sample of B-II aircraft are shown in Figure 6-10, BWC Aircraft Types of this analysis. The final evaluation of BWC using B-II aircraft types is listed below. Aircraft larger than B-II may under certain conditions safely use BWC. Where applicable, accommodation of a large B-II aircraft similar to an Embraer 120 Brasilia is shown. This is depicted for reference only. Further evaluation defining the safe operation of aircraft larger than a B-II is outside the scope of this analysis. However, this analysis strives to show where potential airport enhancements may allow the routine use of aircraft faster and larger than those designated as B-II.

Table 6-13, Final BWC Airport Analysis Summary

Evaluation Criteria	Deficient	Meets	Exceeds
Runway length, width, and strength		X	Marginal accommodation of an aircraft similar to Embraer 120
Verification of existing critical aircraft for design standards		X	
Taxiway size, strengths, and capacity		X	Marginal accommodation of an aircraft similar to Embraer 120
Apron size, strengths, and capacity		X	Marginal accommodation of an aircraft similar to Bombardier Embraer 120
Fuel type availability and capacity		X	
Available FBO services		X	
Terminal services	X Does not meet required design standards for passenger access or security		
Terminal auto parking		X	

Availability of existing cargo aprons or processing areas		X	

7. Quality of Life

As part of the effort to review of the established infrastructure in the Study Area and identify future improvement needs, this section documents the existing inventory and findings for infrastructure as it relates to a human's quality of life. In other words, the physical infrastructure that can be directly associated with improved human mental and physical well-being. If neighboring unincorporated or incorporated areas such as Niland and Calipatria were to see an increase in residents and workers, public infrastructure such as parks, sidewalks, and bicycle paths should be assessed for upgrades.

This section relies on the analysis findings of the Lithium Valley Baseline Report. For further detail on Parks and Recreation, see Section 5.1.5, of the Lithium Valley Baseline Report; for further detail on Pedestrian and Bicycle Facilities, see Section 8.1.4 of the Baseline Report; for further detail on Community Resources, see Section 5.1 of the Baseline Report.

7.1 PARKS AND RECREATION

7.1.1 Introduction

Imperial County's desert landscape features create unique recreational benefit for visitors and County residents. The Study Area is southeast of the Salton Sea, home to national wildlife refuges, County parks and various recreation sites for visitors to take part in activities like hiking, boating, fishing, and wildlife viewing. While the public has partaken in these activities less in recent years due to growing concerns with air and water quality, the County continues to support the recreational and restorative efforts to preserve the region's natural areas.

7.1.2 Methodology and Sources

Amount of parkland, available amenities, and ease of access represent comparable characteristics to evaluate parks and recreation quantitatively, however conditions of park infrastructure, level of access for residents and public safety are also significant qualitative considerations to include in this assessment. In 2015, the Imperial County Planning and Development Services Department (ICPDS) completed the Baseline Environmental Inventory Report to inform the Conservation and Open Space Element (COSE) Update, establishing a baseline of existing conditions to explore renewable energy development.

Incorporating the findings from the Baseline Environmental Inventory Report, parks and recreation assets in the Study Area were analyzed to determine the level of service (LOS) provided to residents. LOS evaluates the current state of parks and recreation in the Study Area, establishes a standard approach for evaluating performance metrics and helps identify areas of improvement for meeting projected demand. The use of performance standards in a needs assessment establishes standard metrics for evaluating LOS provided to residents.

County policy determined the performance standard that five acres of parkland should be dedicated for every 1,000 residents to accommodate demand on parks and recreation facilities. Using available U.S. Census data and the calculated acreage of parkland provides necessary metrics to evaluate the existing parks and recreation facilities in the Study Area. Considering there are no population metrics for the Study Area alone, census data for Census Tracts 101.01 and 101.02 were utilized to assess the performance standard of parks and recreation facilities.

7.1.3 Applicable Regulations

Federal Land Policy and Management Act of 1976 (FLPMA)

The U.S. Department of the Interior Bureau of Land Management (BLM) compiled the FLPMA "to establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes." This policy framework serves as a resource to inform policymakers, agency officials and the public on the regulatory mechanisms in place to protect natural, cultural and historic resources when planning for development.

The Bureau of Land Management maintains a national database of land ownership to outline the administrative boundaries of Surface Management Agency Areas. The federal government owns approximately one-half of all land in the County, primarily the Department of the Interior's Bureau of Land Management (BLM) property and U.S. Military lands. The Study Area contains State and Federal agency-owned lands, including BLM, and the US Fish and Wildlife Service. These public lands are subject to their own set of development restrictions, environmental regulations and land use compatibility criteria which must be met to ensure compliance with FLPMA.

Source: U.S. Department of the Interior, Bureau of Land Management (editor), 2016. The Federal Land Policy and Management Act of 1976, as amended. U.S. Department of the Interior, Bureau of Land Management, Office of Public Affairs, Washington, DC. 106 pp.

Quimby Act (California Government Code Section 66477)

The Quimby Act was established by the California State Legislature in 1975, authorizing municipalities to require the dedication of land from developers to help mitigate the impacts of property improvements for parks or recreational purposes. The Quimby Act enforces provisions for cities, counties and special districts to dedicate lands or impose fees from local public agencies for park and recreation services community-wide. The Quimby Act calls for 3-5 acres per 1,000 residents, resembling the County's current parks and recreation performance standard of 5 acres per 1,000 residents (County of Imperial, 2008).

Imperial County General Plan, Parks and Recreation Element

The County General Plan Parks and Recreation Element is the primary policy statement for management and stewardship of County parks and recreational amenities to enhance the quality of life for County residents. The Parks and Recreation Element contains numerous policies that are set forth to help the County achieve and maintain the goal of requiring five acres of park land per 1,000 residents. The document provided a baseline of existing park conditions, projected demand and stated goals and objectives for upholding performance standards to achieve an effective County

park system. The Parks and Recreation Element applies to all unincorporated land within the County and is an optional element of the General Plan, consistent with the requirements set forth in the California Government Code Section 65302 and other applicable sections.

7.1.4 Existing Inventory

The majority of land within County boundaries consists of open space, which is characterized as undeveloped land devoted to conservation of natural resources, outdoor recreation and public commodities. State and federal government agencies manage most open space in Imperial County, which includes wilderness areas, recreation sites and protected habitats.

According to the COSE update, the Imperial County Planning and Development Services Department (ICPDS) operates five parks in unincorporated areas in the County: Sunbeam Lake Park, Wiest Lake Park, Red Hill Marina Park, Ocotillo Community Park, and Palo Verde Park. These parks vary in size, available amenities, level of access and agency oversight, whether Federal, State or County operated. A list of the parks under County jurisdiction with their size and available amenities is shown in Table 7-1. A list of other parks and recreated areas not operated by the County can be found in Table 7-2.

Table 7-1, Imperial County Parks and Recreation

Name	Acres	Amenities/Activities
Sunbeam Lake Park	117	Small lake and lagoon, picnic tables, barbecue stands, shaded areas, restrooms, fishing, swimming, jet skiing, and boating
Wiest Lake Park	63	Lake for fishing, RV spaces, campsites, barbecue pits, recreation hall, picnic tables, and restrooms with showers,
Red Hill Marina Park	10	Recreational vehicle (RV) hookups, camping area, boat launch, picnic tables, and restrooms
Ocotillo Community Park		Basketball court, baseball field, walking path, and community center
Palo Verde Park	13.6	Boat ramp, storage structure

Source: Imperial County General Plan Parks and Recreation Element

Table 7-2, Other Parks and Recreation Areas not Operated by County

Name	Acres	Amenities/Activities
Salton Sea State Recreation Area	14 miles of shoreline	Camping, boating, fishing, water skiing, kayaking, birdwatching, photography, and hiking

Anza-Borrego Desert State Park	Approximately 600,000 acres (partially in County)	Visitor Center, wildflower season, hiking, camping, and interactive programs and events
Pioneer's County Park (Imperial County Historical Society)	22	The Pioneer's Museum and Cultural Center, outdoor exhibits, a train station building, and restrooms
Heber Community and Neighborhood Parks	<1 acre each	Landscaped areas and playground equipment

Source: Imperial County General Plan Parks and Recreation Element

Within the Study Area, there is one County park on the eastern shore, Red Hill Marina Park on the southeast edge of the Sea, west of Niland. Red Hill Marina Park is a ten-acre Regional Park, on the southeastern shore of the Salton Sea, northeast of Calipatria. The park is more difficult to access than other parks, being seven miles away from State Route 111, the nearest major road. Per County Department of Public Works staff, the water and sewer systems need upgrading at the Red Hill Marina Park.

North of the Study Area is Niland Marina County Park, west of the Salton Sea State Recreation Area and Bombay Beach, off Highway 111. The type of recreation uses occurring in the South Shore Zone are linked with shore and boat fishing, boating, and wildlife viewing.

The Study Area is also home to the Salton Sea National Wildlife Refuge and Imperial National Wildlife Refuge. The Sonny Bono Salton Sea National Wildlife Refuge consists of approximately 36,000 acres, 34,250 of which are inundated by the Sea, leaving 1,750 acres of agricultural fields, freshwater marsh, and river lands. This refuge is considered a critical wildlife habitat along the Pacific Flyway, with over 400 bird species recorded. The State Imperial Wildlife Area, operated by the California Department of Fish and Wildlife (CDFW), has been maintained as a hunting, fishing, and passive recreation use area for nearly fifty years.

The California Department of Parks and Recreation (CDPR) manages the Salton Sea State Recreation Area on the northeast shore of the Salton Sea s. The California Department of Fish and Game (CDFG) manages the Imperial Wildlife Refuge Area-Wister Unit on the east shore of the Salton Sea near Niland.

While the Study Area is primarily unincorporated, Cities like Calipatria and Brawley oversee their own parks and recreation systems, which can help to alleviate demand on County-operated recreation facilities.

7.1.5 Findings

The County parks and recreation system provides an essential public service to benefit residents and improve their quality of life. Recreational facilities, activities and programs support the development of livable communities and create spaces for residents to safely congregate, enjoy nature and stay active. The regional importance of providing quality parks and recreation assets to the Study Area will be increased with the introduction of a local workforce and economy. The findings of this effort to assess park and recreation assets in the Study Area are shown below:

- Generally speaking, the current infrastructure such as water sewer drainage at County parks is dated and needs upgrading and/or replacement.
- Establishing a well-supported framework to guide the management and stewardship of County parks is critical to upholding a high level of service and quality of life for County residents in incorporated and unincorporated communities.
- Currently, the only available park asset in the Study Area is Red Hill Marina County Park, a County-operated facility which offers recreational opportunities associated with the Salton Sea Recreation Area.
- Limitations associated with development of parks and recreation facilities involve lands under oversight by federal or state agencies, FLPMA restrictions and County General Plan Land Use designations. Open space areas available for development of parks and recreation facilities are limited to areas outside of the County's jurisdiction.
- The Salton Sea Wildlife Refuge and Imperial National Wildlife Refuge are operated by the US Fish and Wildlife Service (FWS). FWS-managed lands within the Study Area contain critical habitat for wildlife and bird populations. Overall, current recreation facilities are financially supported and managed by the state and federal agencies which govern the area.
- The County General Plan designates Open Space land uses to preserve the existing agricultural, recreational, and industrial interests in the Study Area. Certain planned land use designations outlined are conducive with the intentions of renewable energy development and parks and recreation opportunities in the Study Area.
- The County General Plan Land Use Element recognizes that permitted uses on agricultural lands include Open Space/Recreation purposes.

7.2 PEDESTRIAN AND BICYCLE FACILITIES

7.2.1 Introduction

Active transportation refers to human-powered transport including walking and cycling, which are important to improving the overall quality of life for residents seeking more livable communities. The existing network of pedestrian and bicycle infrastructure in the Study Area is very limited, reflecting the overall state of active transportation infrastructure in unincorporated communities throughout the County. Unincorporated communities have similar active transportation networks, which include sporadic, non-compliant sidewalks, limited bicycle routes and minimal transit access.

7.2.2 Methodology and Sources

Existing roadway conditions, demographic information, and geographic information system (GIS) datasets were incorporated into the analysis to establish baseline. Data from cities, unincorporated communities and Indian Reservations within the County were leveraged to perform this analysis. Commute times, routes, and preferred modes of transportation represent the characteristics of the active transportation network used to determine the County's Level of Service (LOS) to the Study Area. LOS grades range from A through F, where LOS A represents the best operating conditions

and LOS F represents the worst operating conditions. In the context of active transportation, connectivity, convenience and efficiency of alternative mobility modes determine LOS to residents.

In 2018, the County received state funding to develop a Pedestrian Master Plan (ICPMP), focusing primarily on the six unincorporated communities of the County: Heber, Niland, Ocotillo, Salton City, Seeley, and Winterhaven. The findings of this effort were included to determine the existing inventory of pedestrian infrastructure in the Study Area for unincorporated communities.

7.2.3 Applicable Regulations

Revised in 2008, the Imperial County General Plan Circulation and Scenic Highway Element aims to provide safe and properly designed pedestrian facilities throughout the County. The circulation element is a mandatory element of the general plan pursuant to Section 65302(b) of the State Government Code and is prepared in accordance with the General Plan statutes and guidelines (County of Imperial, 2008).

Adopted by ICTC Commissioners in 2022, ICTC's Regional Active Transportation Plan (ATP) incorporates previous regional and local planning efforts to guide the development of alternative transportation projects and programs. The regional ATP incorporated the findings of applicable municipal planning efforts, while aligning with regional planning opportunities identified by ICTC and the County. Project recommendations provided by the regional ATP outline the implementable action items supported by the findings of the existing active transportation network analysis (ICTC, 2022).

7.2.4 Existing Inventory

The Study Area and several other unincorporated areas in Imperial County lack safe, established walking or bike paths. Agriculturally focused, there is little (if any) connected pedestrian or bicycle infrastructure along the miles of crop fields within the Study Area. Informal dirt paths are the most common form of pedestrian facilities found in the Study Area, while neighboring communities in Niland and Calipatria offer very limited pedestrian facilities.

There are no existing bicycle facilities within the Study Area and there are no existing bicycle facilities in the City of Calipatria and the community of Niland. The Imperial County Bicycle Master Plan Update, prepared in 2011, proposed bike routes which would connect the Study Area to Calipatria, Niland and Westmorland. This included routes from S30 to SH111, also leading to the Salton Sea. However, these bicycle facilities remain to be developed causing the Study Area to lack in opportunities for active transportation and connectivity between cities.

Refer to Section 8.1.4 in the Baseline Report for more details on the existing inventory of pedestrian and bicycle facilities in the Study Area.

7.2.5 Findings

Based on transportation data, descriptions, and analysis of existing conditions in the Study Area, several findings related to active mobility were identified as follows:

- As stated in the Circulation and Scenic Highway Element, the intent of the County is to provide a system of roads and streets that operate at a level of service (LOS) C or better (County of Imperial 2008). With little to no existing infrastructure dedicated for pedestrians in the Study Area, it was determined that the pedestrian and bicycle LOS in the Study Area is not conducive with the County's goal of maintaining a LOS "C" grade or better for the roadway network.
- The unincorporated community of Niland, located right outside of the Study Area, is generally lacking sidewalks except for a few street blocks near the local elementary school, and no bicycle facilities are currently provided.
- Most streets within the City of Calipatria and City of Westmorland either lack sidewalks or have sidewalks only provided along one side of the street. There are numerous gaps in sidewalk connectivity in both cities and there is an obvious lack of accessibility between bicycle/pedestrian facilities.
- There are currently no bicycle facilities in the Study Area except for a two-block segment of Center Street in the City of Westmorland, where Class II bike lanes are provided.
- Enhanced sidewalks have already been installed along several blocks of Highway 111 and Main Street in the City of Calipatria, and along Center Street in the City of Westmorland.
- Most of the roadway network is configured in a grid pattern, and the flat terrain provides less constraint for pedestrian infrastructure development and makes the area more bike-friendly.
- Roads often have insufficient shoulder to accommodate for pedestrian and bicycle uses and are often inaccessible to residents facing mobility challenges.
- Lack of pedestrian crossings create safety concerns for pedestrians and cyclists sharing the road along high-speed corridors which lack visibility, pedestrian facilities or dedicated bike lanes.

7.3 COMMUNITY RESOURCES (SHELTERS, COOL ZONES, ETC.)

7.3.1 Introduction

Governments can significantly improve the quality of life of their residents by increasing access to publicly funded community resources. Community health programs increase availability of preventative health services, provide lower cost medical options, improve access to behavioral health resources and help establish strong partnerships between governments and their communities.

Imperial County's Public Health Department (ICPHD) serves to protect and promote the overall health status of residents in their community through a variety of services and programs. ICPHD seeks to build a dialogue with County residents and strengthen their understanding of health-related issues regularly impacting the community. The County provides an array of services based on the necessity and demand presented by residents of jurisdictions they are serving. Health information

and resources are made available through ICPHD to address challenges consistently affecting the Imperial Valley community.

7.3.2 Methodology and Sources

To evaluate the level of service being provided to the Study Area by the County, utilization, availability and access to community resources were incorporated into this analysis. The County provides information to residents on their website, pointing them to community resources throughout Imperial Valley. The locations of these community facilities were incorporated into a GIS dataset, facilitating visualization of the availability and access to resources for residents throughout the County and near the Study Area. The level of service to residents was then characterized by the factors listed to assist in determining existing limitations, opportunities for improvement or potential for additional services. The locations of community resource centers, behavioral health services and various County-operated facilities were retrieved from County departments, their official website or staff (Imperial County Behavioral Health Services, 2020).

7.3.3 Applicable Regulations

While community resources are essential public services, there were no regulations applicable to the County's provision of these services identified through this assessment.

7.3.4 Existing Inventory

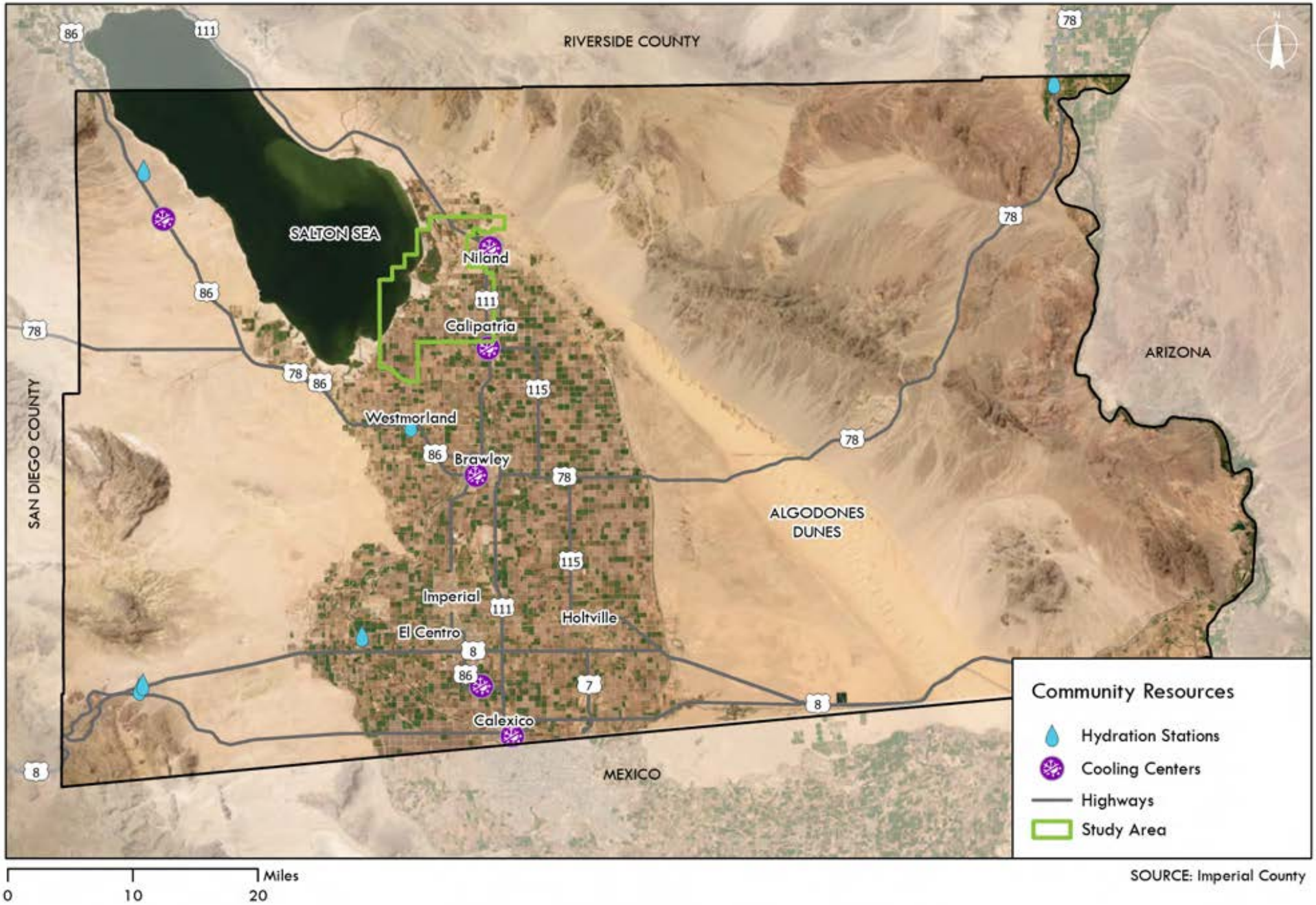
The County provides an array of public services and community resources to support residents in the region, ultimately contributing to their overall "quality of life." County residents often face similar challenges associated with their surrounding environment due to risks associated with climate, pollution and public safety. Provision of community resources like shelters, cooling centers and hydration centers can supplement areas of high need already experiencing limited access to necessary public services.

Imperial County regularly experiences extreme heat events during peak periods of the summer seasons. Maintaining community safety and providing adequate resources for residents to protect themselves from heat is a critical aspect of supporting public health in Imperial County.

As shown in Figure 7-1, Imperial County Community Resources, the Imperial County Public Health Department has established seven local Cool Centers available throughout Imperial County where individuals can cool off during the hottest parts of the day. This offers the opportunity for individuals to stay indoors with air conditioning during extreme hot weather at no cost. There are two cooling centers in Niland and one in Calipatria. As an agriculturally prominent area with a workforce population mostly working outdoors, these centers can be critical to maintaining labor productivity during peak harvesting seasons.

The County also oversees seven hydration stations also shown in Figure 7-1, Imperial County Community Resources. Hydration stations serve residents in a similar capacity, providing drinking water during extreme heat events. The locations and capacity of these centers are determined every summer, so each year there may be slight variations with the distribution of these facilities. Local

cities establish their own interventions for extreme heat events and can help to expand available services and alleviate demand on County-operated facilities.



INFRASTRUCTURE ASSESSMENT

FIGURE 7-1, Imperial County Community Resources

Other essential community resources are provided by Imperial County's Department of Behavioral Health Services, listing the name, address and telephone number for a variety of facilities including medical providers, substance use disorder treatment programs, family services, counseling services, emergency assistance, general information, support groups and transportation resources. Throughout the County, most public facilities providing a space for community resources are concentrated in urban areas of incorporated cities like El Centro, Brawley and Calexico.

Table 7-3 lists the available community resources offered by the County. It also highlights providers within a close proximity to the Study Area.

Table 7-3, Imperial County Community Resources

Name	Locations	<10 miles from Study Area
Behavioral Health Services	3	0
Medical Providers	17	5
Substance Use Disorder Treatment Programs	10	1
Children, Youth, Adult and Family Services	25	5
Counseling Services	6	0
Emergency Assistance – Shelter/Food/Clothing	14	2
General Information	8	0
Support Groups and Organizations	27	2
Transportation Resources	7	1

Source: Imperial County Behavioral Health Services

As an area with a propensity for respiratory illness due to air pollution, community resources can help affected residents seek medical care, access treatment options, and participate in programs to inform them of the collective issues and challenges being faced by County residents.

7.3.5 Findings

The County recognizes the systemic issues which are exacerbated by lack of access to public services and community resources. Cooling centers and hydration stations, while not permanent solutions, can serve as a central facility for residents experiencing heat-related discomfort to escape environmental conditions in a cost-friendly, publicly accessible setting. In the case of Imperial County and the Study Area, these community resources can be essential public services for County residents seeking to escape the heat, whether from the local workforce or resident population.

This review of the existing and available community resources included in this assessment offers the following findings:

- Providing access to community resources can serve as a critical intervention point for the County to identify, reduce and mitigate public health impacts being incurred throughout the region due to environmental or socioeconomic constraints.
- County-operated cooling centers are located in areas with varying populations from urban areas, such as Calipatria and Niland, extending service to residents in more rural communities.

- Unincorporated areas throughout the County lack access to community resources and must often seek distant support in comparison to their counterparts in neighboring cities.
- The County's provision of community resources is not motivated by state or federal regulations, rather it is the County's own familiarity with the challenges being faced by the community which drives the development of publicly accessible facilities and programs.
- The County resident population faces several environmental constraints associated with severe heat events, air and water pollution and demand on public health services. Supporting community resources' level of service to areas of high need would demonstrate the County's commitment to address the historic, socioeconomic and environmental inequities affecting the County population.

8. References

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The full report can be found in Appendix A-A, Airport Analysis of this document.

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APPENDIX B
TRANSPORTATION STUDIES

January 2024



PREPARED BY:

RICK ENGINEERING COMPANY

APPENDIX B, Part 1

TRAFFIC COUNTS

INTERSECTIONS

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: Highway 111
E/W: Davis Road
Weather: Clear

File Name : 01_CIM_111_Davis AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

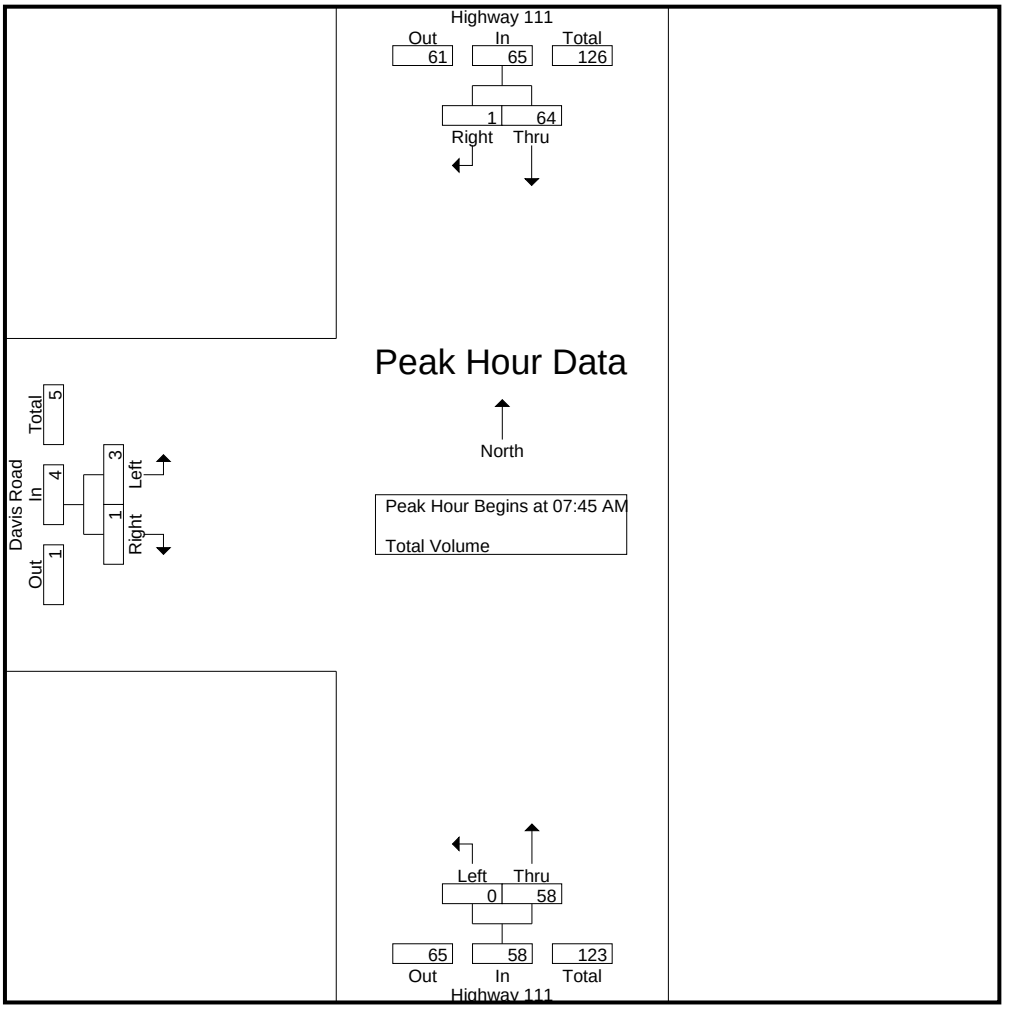
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Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	12	1	13	0	14	14	0	0	0	27
07:15 AM	15	0	15	0	9	9	0	1	1	25
07:30 AM	14	0	14	2	6	8	0	1	1	23
07:45 AM	9	0	9	0	18	18	2	0	2	29
Total	50	1	51	2	47	49	2	2	4	104
08:00 AM	16	1	17	0	15	15	0	0	0	32
08:15 AM	15	0	15	0	14	14	0	1	1	30
08:30 AM	24	0	24	0	11	11	1	0	1	36
08:45 AM	16	0	16	0	13	13	0	0	0	29
Total	71	1	72	0	53	53	1	1	2	127
Grand Total	121	2	123	2	100	102	3	3	6	231
Apprch %	98.4	1.6		2	98		50	50		
Total %	52.4	0.9	53.2	0.9	43.3	44.2	1.3	1.3	2.6	

	Highway 111 Southbound			Highway 111 Northbound			Davis Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	9	0	9	0	**18**	**18**	**2**	0	**2**	29
08:00 AM	16	**1**	17	0	15	15	0	0	0	32
08:15 AM	15	0	15	0	14	14	0	**1**	1	30
08:30 AM	**24**	0	**24**	0	11	11	1	0	1	**36**
Total Volume	64	1	65	0	58	58	3	1	4	127
% App. Total	98.5	1.5		0	100		75	25		
PHF	.667	.250	.677	.000	.806	.806	.375	.250	.500	.882

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: Highway 111
E/W: Davis Road
Weather: Clear

File Name : 01_CIM_111_Davis AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:45 AM			07:00 AM		
+0 mins.	16	**1**	17	0	**18**	**18**	0	0	0
+15 mins.	15	0	15	0	15	15	0	**1**	1
+30 mins.	**24**	0	**24**	0	14	14	0	1	1
+45 mins.	16	0	16	0	11	11	**2**	0	**2**
Total Volume	71	1	72	0	58	58	2	2	4
% App. Total	98.6	1.4		0	100		50	50	
PHF	.740	.250	.750	.000	.806	.806	.250	.500	.500

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County of Imperial
N/S: Highway 111
E/W: Davis Road
Weather: Clear

File Name : 01_CIM_111_Davis PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

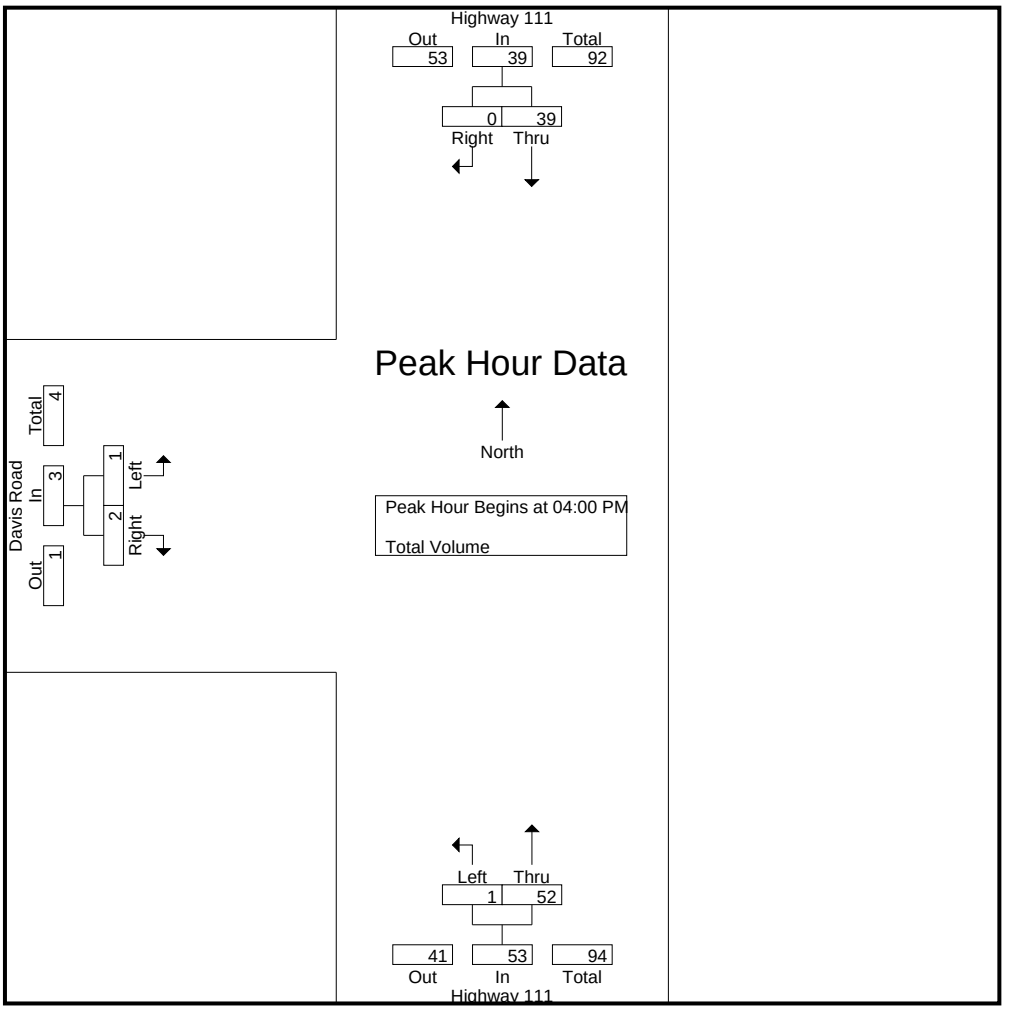
	Highway 111 Southbound			Highway 111 Northbound			Davis Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	14	0	14	0	10	10	0	0	0	24
04:15 PM	8	0	8	1	15	16	0	1	1	25
04:30 PM	8	0	8	0	15	15	0	0	0	23
04:45 PM	9	0	9	0	12	12	1	1	2	23
Total	39	0	39	1	52	53	1	2	3	95
05:00 PM	5	2	7	0	15	15	1	0	1	23
05:15 PM	9	0	9	0	14	14	3	0	3	26
05:30 PM	5	0	5	0	5	5	0	2	2	12
05:45 PM	2	0	2	0	15	15	0	0	0	17
Total	21	2	23	0	49	49	4	2	6	78
Grand Total	60	2	62	1	101	102	5	4	9	173
Apprch %	96.8	3.2		1	99		55.6	44.4		
Total %	34.7	1.2	35.8	0.6	58.4	59	2.9	2.3	5.2	

	Highway 111 Southbound			Highway 111 Northbound			Davis Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**14**	0	**14**	0	10	10	0	0	0	24
04:15 PM	8	0	8	**1**	**15**	**16**	0	**1**	1	**25**
04:30 PM	8	0	8	0	15	15	0	0	0	23
04:45 PM	9	0	9	0	12	12	**1**	1	**2**	23
Total Volume	39	0	39	1	52	53	1	2	3	95
% App. Total	100	0		1.9	98.1		33.3	66.7		
PHF	.696	.000	.696	.250	.867	.828	.250	.500	.375	.950

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County of Imperial
N/S: Highway 111
E/W: Davis Road
Weather: Clear

File Name : 01_CIM_111_Davis PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:15 PM			04:45 PM		
+0 mins.	**14**	0	**14**	**1**	**15**	**16**	1	1	2
+15 mins.	8	0	8	0	15	15	1	0	1
+30 mins.	8	0	8	0	12	12	**3**	0	**3**
+45 mins.	9	0	9	0	15	15	0	**2**	2
Total Volume	39	0	39	1	57	58	5	3	8
% App. Total	100	0		1.7	98.3		62.5	37.5	
PHF	.696	.000	.696	.250	.950	.906	.417	.375	.667

Location: County of Imperial
N/S: Highway 111
E/W: Davis Road

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Highway 111	East Leg Dead End	South Leg Highway 111	West Leg Davis Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Highway 111	East Leg Dead End	South Leg Highway 111	West Leg Davis Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: County of Imperial
N/S: Highway 111
E/W: Davis Road

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Highway 111			Westbound Dead End			Northbound Highway 111			Eastbound Davis Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Highway 111			Westbound Dead End			Northbound Highway 111			Eastbound Davis Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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(951)268-6268

County of Imperial
N/S: English Road
E/W: Highway 111
Weather: Clear

File Name : 08_CIM_Eng_111 AM
Site Code : 221001
Start Date : 11/17/2022
Page No : 1

Groups Printed- Total Volume

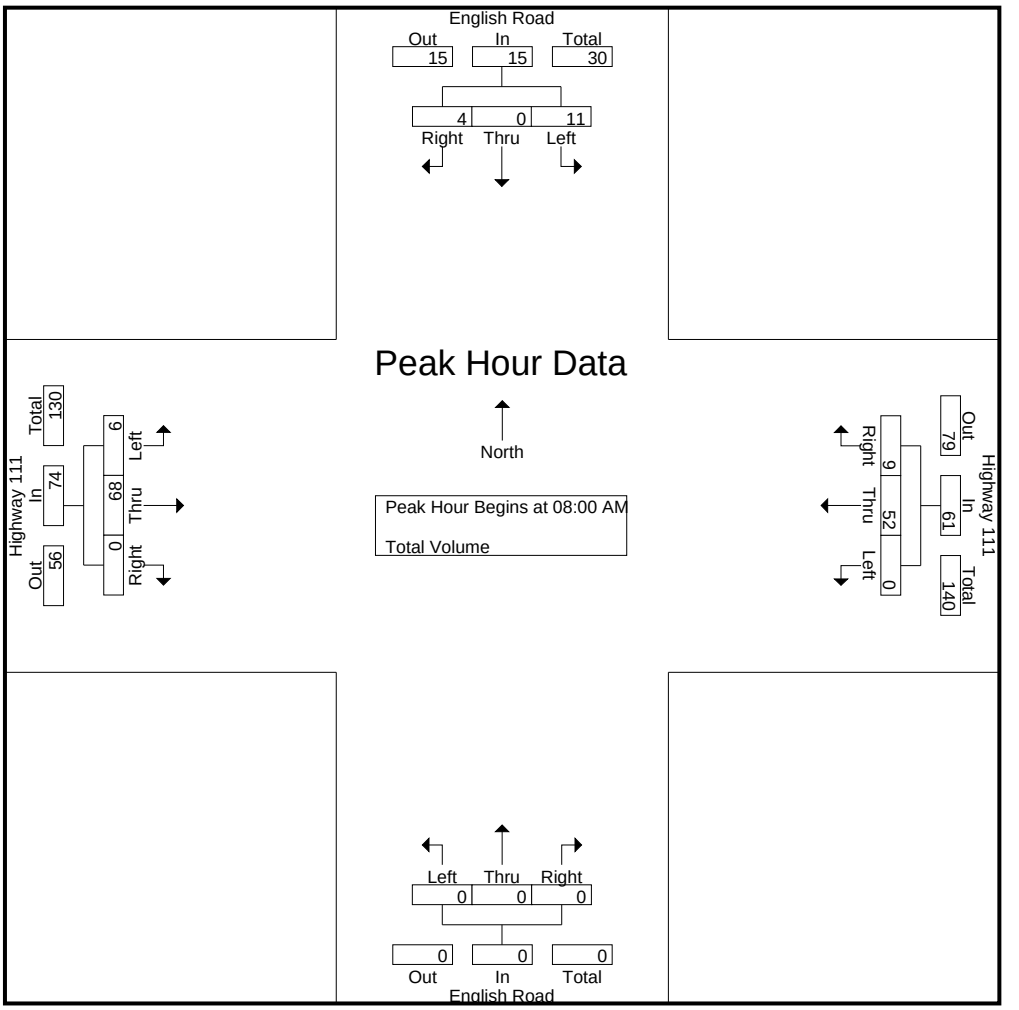
	English Road Southbound				Highway 111 Westbound				English Road Northbound				Highway 111 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	0	2	0	12	1	13	0	0	0	0	0	12	0	12	27
07:15 AM	0	0	0	0	0	9	3	12	0	0	0	0	1	16	0	17	29
07:30 AM	1	0	0	1	0	12	1	13	0	0	0	0	1	13	0	14	28
07:45 AM	0	0	0	0	0	17	7	24	0	0	0	0	1	11	0	12	36
Total	3	0	0	3	0	50	12	62	0	0	0	0	3	52	0	55	120
08:00 AM	4	0	0	4	0	16	0	16	0	0	0	0	0	16	0	16	36
08:15 AM	2	0	0	2	0	12	3	15	0	0	0	0	3	14	0	17	34
08:30 AM	1	0	0	1	0	14	2	16	0	0	0	0	1	21	0	22	39
08:45 AM	4	0	4	8	0	10	4	14	0	0	0	0	2	17	0	19	41
Total	11	0	4	15	0	52	9	61	0	0	0	0	6	68	0	74	150
Grand Total	14	0	4	18	0	102	21	123	0	0	0	0	9	120	0	129	270
Apprch %	77.8	0	22.2		0	82.9	17.1		0	0	0		7	93	0		
Total %	5.2	0	1.5	6.7	0	37.8	7.8	45.6	0	0	0	0	3.3	44.4	0	47.8	

	English Road Southbound				Highway 111 Westbound				English Road Northbound				Highway 111 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**4**	0	0	4	0	**16**	0	**16**	0	0	0	0	0	16	0	16	36
08:15 AM	2	0	0	2	0	12	3	15	0	0	0	0	**3**	14	0	17	34
08:30 AM	1	0	0	1	0	14	2	16	0	0	0	0	1	**21**	0	**22**	39
08:45 AM	4	0	**4**	**8**	0	10	**4**	14	0	0	0	0	2	17	0	19	**41**
Total Volume	11	0	4	15	0	52	9	61	0	0	0	0	6	68	0	74	150
% App. Total	73.3	0	26.7		0	85.2	14.8		0	0	0		8.1	91.9	0		
PHF	.688	.000	.250	.469	.000	.813	.563	.953	.000	.000	.000	.000	.500	.810	.000	.841	.915

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: English Road
E/W: Highway 111
Weather: Clear

File Name : 08_CIM_Eng_111 AM
Site Code : 221001
Start Date : 11/17/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:00 AM				08:00 AM			
+0 mins.	**4**	0	0	4	0	**17**	**7**	**24**	0	0	0	0	0	16	0	16
+15 mins.	2	0	0	2	0	16	0	16	0	0	0	0	**3**	14	0	17
+30 mins.	1	0	0	1	0	12	3	15	0	0	0	0	1	**21**	0	**22**
+45 mins.	4	0	**4**	**8**	0	14	2	16	0	0	0	0	2	17	0	19
Total Volume	11	0	4	15	0	59	12	71	0	0	0	0	6	68	0	74
% App. Total	73.3	0	26.7		0	83.1	16.9		0	0	0		8.1	91.9	0	
PHF	.688	.000	.250	.469	.000	.868	.429	.740	.000	.000	.000	.000	.500	.810	.000	.841

Counts Unlimited, Inc.
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(951)268-6268

File Name : 08_CIM_Eng_111 PM
Site Code : 221001
Start Date : 11/17/2022
Page No : 1

County of Imperial
N/S: English Road
E/W: Highway 111
Weather: Clear

Groups Printed- Total Volume

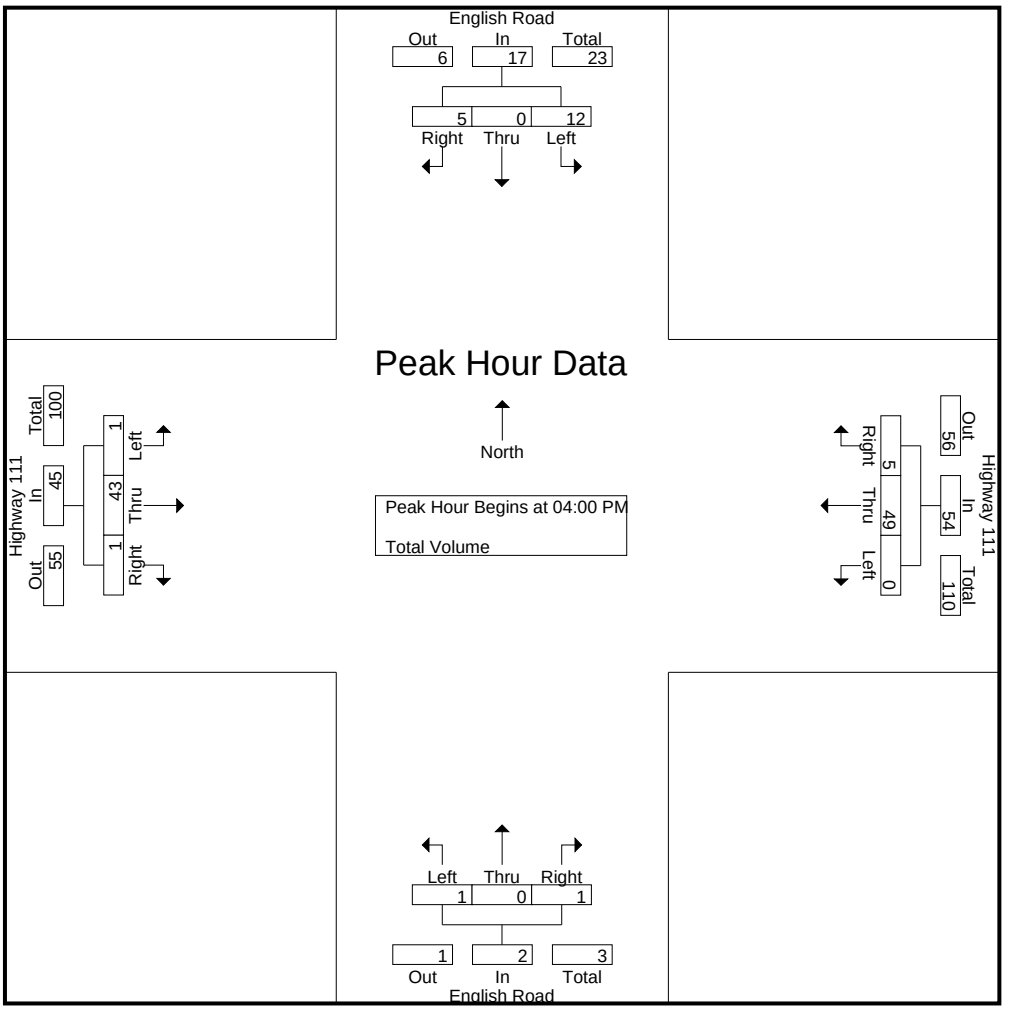
	English Road Southbound				Highway 111 Westbound				English Road Northbound				Highway 111 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	0	0	4	0	9	1	10	1	0	0	1	0	15	1	16	31
04:15 PM	4	0	2	6	0	14	1	15	0	0	0	0	1	8	0	9	30
04:30 PM	2	0	2	4	0	13	1	14	0	0	1	1	0	9	0	9	28
04:45 PM	2	0	1	3	0	13	2	15	0	0	0	0	0	11	0	11	29
Total	12	0	5	17	0	49	5	54	1	0	1	2	1	43	1	45	118
05:00 PM	2	0	0	2	0	14	0	14	0	0	0	0	0	4	0	4	20
05:15 PM	4	0	0	4	0	13	1	14	0	0	0	0	0	10	0	10	28
05:30 PM	0	0	0	0	0	11	1	12	0	0	0	0	0	7	0	7	19
05:45 PM	0	0	0	0	1	14	0	15	0	0	1	1	0	0	0	0	16
Total	6	0	0	6	1	52	2	55	0	0	1	1	0	21	0	21	83
Grand Total	18	0	5	23	1	101	7	109	1	0	2	3	1	64	1	66	201
Apprch %	78.3	0	21.7		0.9	92.7	6.4		33.3	0	66.7		1.5	97	1.5		
Total %	9	0	2.5	11.4	0.5	50.2	3.5	54.2	0.5	0	1	1.5	0.5	31.8	0.5	32.8	

	English Road Southbound				Highway 111 Westbound				English Road Northbound				Highway 111 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**4**	0	0	4	0	9	1	10	**1**	0	0	**1**	0	**15**	**1**	**16**	**31**
04:15 PM	4	0	**2**	**6**	0	**14**	1	**15**	0	0	0	0	**1**	8	0	9	30
04:30 PM	2	0	2	4	0	13	1	14	0	0	**1**	1	0	9	0	9	28
04:45 PM	2	0	1	3	0	13	**2**	15	0	0	0	0	0	11	0	11	29
Total Volume	12	0	5	17	0	49	5	54	1	0	1	2	1	43	1	45	118
% App. Total	70.6	0	29.4		0	90.7	9.3		50	0	50		2.2	95.6	2.2		
PHF	.750	.000	.625	.708	.000	.875	.625	.900	.250	.000	.250	.500	.250	.717	.250	.703	.952

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

File Name : 08_CIM_Eng_111 PM
Site Code : 221001
Start Date : 11/17/2022
Page No : 2

County of Imperial
N/S: English Road
E/W: Highway 111
Weather: Clear



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	**4**	0	0	4	0	**14**	1	**15**	**1**	0	0	**1**	0	**15**	**1**	**16**
+15 mins.	4	0	**2**	**6**	0	13	1	14	0	0	0	0	**1**	8	0	9
+30 mins.	2	0	2	4	0	13	**2**	15	0	0	**1**	1	0	9	0	9
+45 mins.	2	0	1	3	0	14	0	14	0	0	0	0	0	11	0	11
Total Volume	12	0	5	17	0	54	4	58	1	0	1	2	1	43	1	45
% App. Total	70.6	0	29.4		0	93.1	6.9		50	0	50		2.2	95.6	2.2	
PHF	.750	.000	.625	.708	.000	.964	.500	.967	.250	.000	.250	.500	.250	.717	.250	.703

Location: County of Imperial
N/S: English Road
E/W: Highway 111

Date: 11/17/2022
Day: Thursday

PEDESTRIANS

	North Leg English Road	East Leg Highway 111	South Leg English Road	West Leg Highway 111	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg English Road	East Leg Highway 111	South Leg English Road	West Leg Highway 111	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: County of Imperial
N/S: English Road
E/W: Highway 111

Date: 11/17/2022
Day: Thursday

BICYCLES

	Southbound English Road			Westbound Highway 111			Northbound English Road			Eastbound Highway 111			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound English Road			Westbound Highway 111			Northbound English Road			Eastbound Highway 111			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 02_CIM_111_Main AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

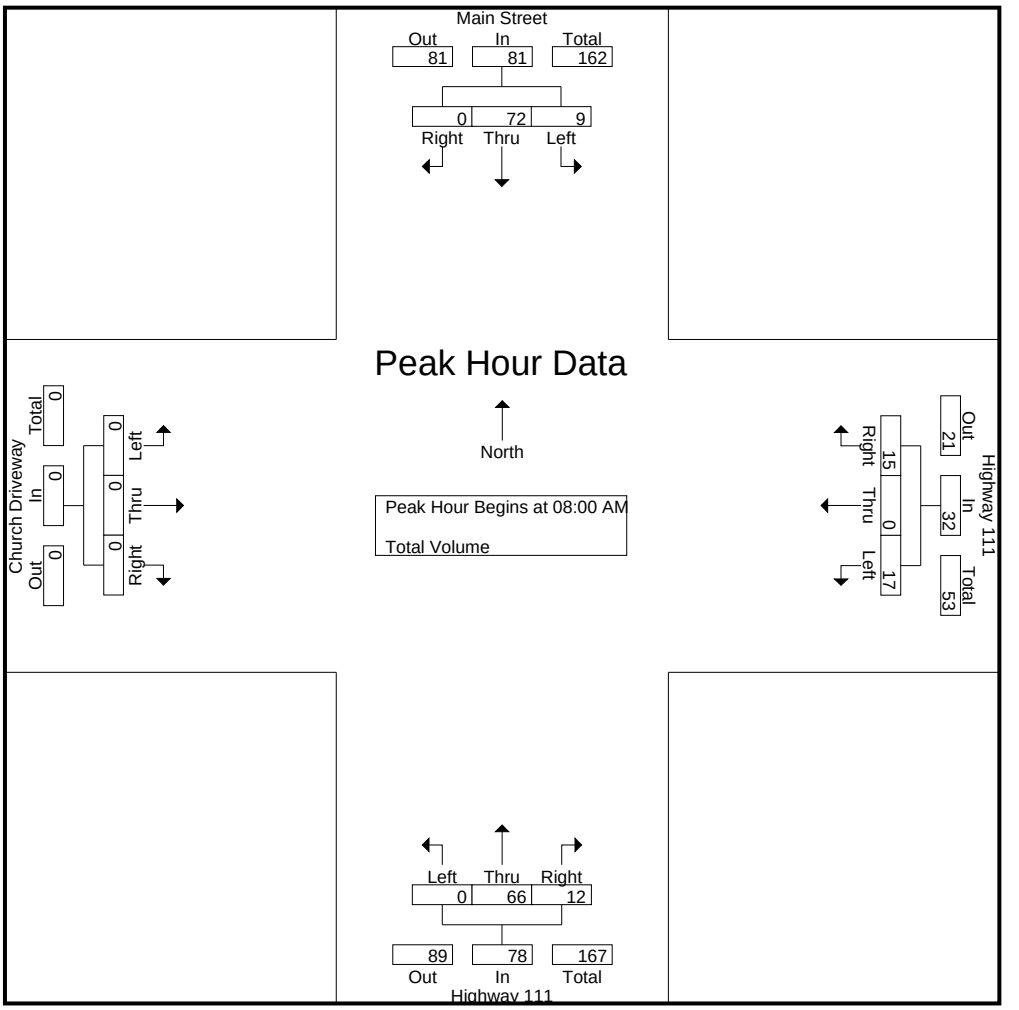
	Main Street Southbound				Highway 111 Westbound				Highway 111 Northbound				Church Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	13	0	13	0	0	0	0	0	8	1	9	0	0	0	0	22
07:15 AM	0	19	0	19	2	0	1	3	0	14	0	14	0	0	0	0	36
07:30 AM	1	18	0	19	2	0	0	2	0	17	1	18	0	0	0	0	39
07:45 AM	0	13	0	13	2	0	4	6	0	23	0	23	0	0	0	0	42
Total	1	63	0	64	6	0	5	11	0	62	2	64	0	0	0	0	139
08:00 AM	0	18	0	18	9	0	4	13	0	15	5	20	0	0	0	0	51
08:15 AM	2	14	0	16	2	0	3	5	0	14	4	18	0	0	0	0	39
08:30 AM	5	23	0	28	3	0	3	6	0	21	1	22	0	0	0	0	56
08:45 AM	2	17	0	19	3	0	5	8	0	16	2	18	0	0	0	0	45
Total	9	72	0	81	17	0	15	32	0	66	12	78	0	0	0	0	191
Grand Total	10	135	0	145	23	0	20	43	0	128	14	142	0	0	0	0	330
Apprch %	6.9	93.1	0		53.5	0	46.5		0	90.1	9.9		0	0	0		
Total %	3	40.9	0	43.9	7	0	6.1	13	0	38.8	4.2	43	0	0	0	0	

	Main Street Southbound				Highway 111 Westbound				Highway 111 Northbound				Church Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	18	0	18	**9**	0	4	**13**	0	15	**5**	20	0	0	0	0	51
08:15 AM	2	14	0	16	2	0	3	5	0	14	4	18	0	0	0	0	39
08:30 AM	**5**	**23**	0	**28**	3	0	3	6	0	**21**	1	**22**	0	0	0	0	**56**
08:45 AM	2	17	0	19	3	0	**5**	8	0	16	2	18	0	0	0	0	45
Total Volume	9	72	0	81	17	0	15	32	0	66	12	78	0	0	0	0	191
% App. Total	11.1	88.9	0		53.1	0	46.9		0	84.6	15.4		0	0	0		
PHF	.450	.783	.000	.723	.472	.000	.750	.615	.000	.786	.600	.886	.000	.000	.000	.000	.853

Counts Unlimited, Inc.
PO Box 1178
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(951)268-6268

County of Imperial
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 02_CIM_111_Main AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	18	0	18	**9**	0	4	**13**	0	**23**	0	**23**	0	0	0	0
+15 mins.	2	14	0	16	2	0	3	5	0	15	**5**	20	0	0	0	0
+30 mins.	**5**	**23**	0	**28**	3	0	3	6	0	14	4	18	0	0	0	0
+45 mins.	2	17	0	19	3	0	**5**	8	0	21	1	22	0	0	0	0
Total Volume	9	72	0	81	17	0	15	32	0	73	10	83	0	0	0	0
% App. Total	11.1	88.9	0		53.1	0	46.9		0	88	12		0	0	0	
PHF	.450	.783	.000	.723	.472	.000	.750	.615	.000	.793	.500	.902	.000	.000	.000	.000

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County of Imperial
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 02_CIM_111_Main PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

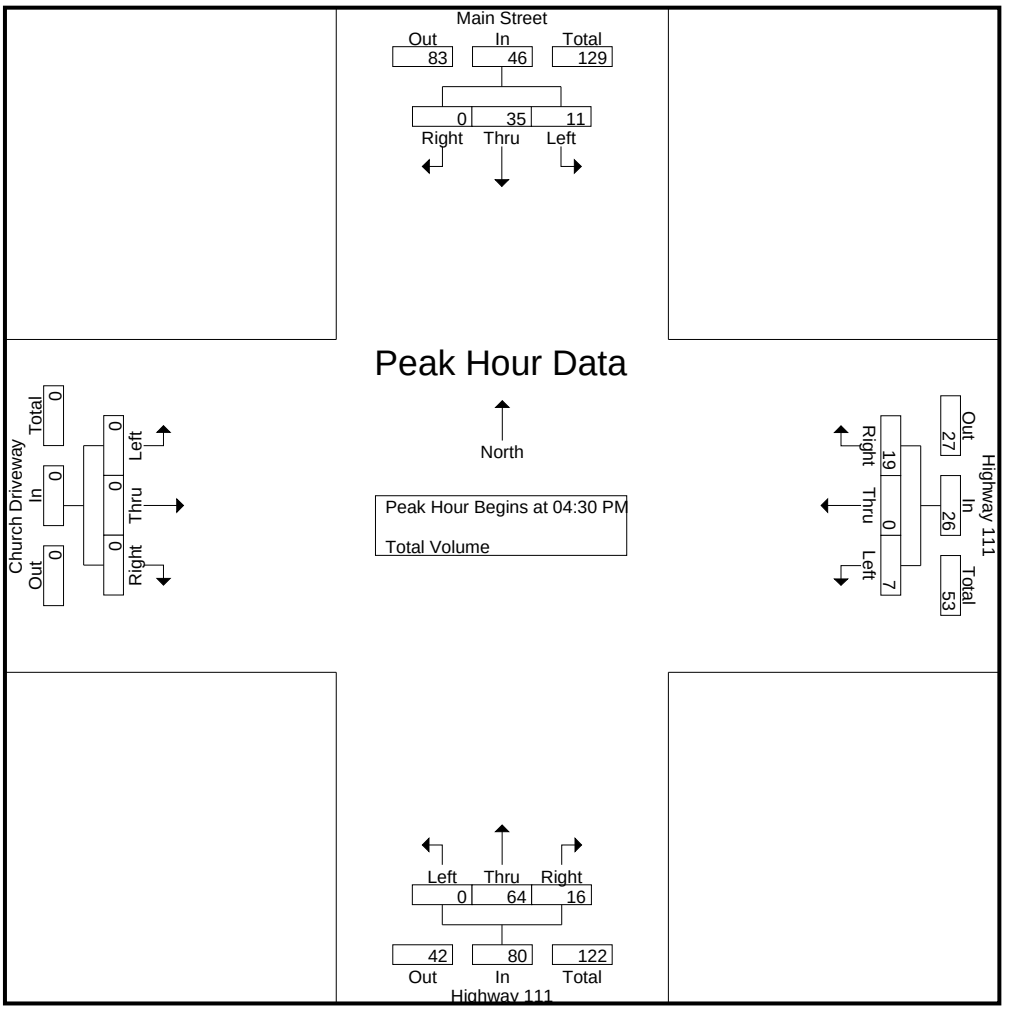
	Main Street Southbound				Highway 111 Westbound				Highway 111 Northbound				Church Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	20	0	22	4	0	6	10	0	10	0	10	0	0	0	0	42
04:15 PM	2	13	0	15	1	0	4	5	0	10	0	10	0	0	0	0	30
04:30 PM	4	6	0	10	0	0	8	8	0	11	3	14	0	0	0	0	32
04:45 PM	2	8	0	10	1	0	6	7	0	20	4	24	0	0	0	0	41
Total	10	47	0	57	6	0	24	30	0	51	7	58	0	0	0	0	145
05:00 PM	2	13	0	15	3	0	2	5	0	20	5	25	0	0	0	0	45
05:15 PM	3	8	0	11	3	0	3	6	0	13	4	17	0	0	0	0	34
05:30 PM	2	14	0	16	0	0	3	3	0	12	1	13	0	0	0	0	32
05:45 PM	0	1	0	1	1	0	4	5	0	17	0	17	0	0	0	0	23
Total	7	36	0	43	7	0	12	19	0	62	10	72	0	0	0	0	134
Grand Total	17	83	0	100	13	0	36	49	0	113	17	130	0	0	0	0	279
Apprch %	17	83	0		26.5	0	73.5		0	86.9	13.1		0	0	0		
Total %	6.1	29.7	0	35.8	4.7	0	12.9	17.6	0	40.5	6.1	46.6	0	0	0	0	

	Main Street Southbound				Highway 111 Westbound				Highway 111 Northbound				Church Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**4**	6	0	10	0	0	**8**	**8**	0	11	3	14	0	0	0	0	32
04:45 PM	2	8	0	10	1	0	6	7	0	**20**	4	24	0	0	0	0	41
05:00 PM	2	**13**	0	**15**	**3**	0	2	5	0	20	**5**	**25**	0	0	0	0	**45**
05:15 PM	3	8	0	11	3	0	3	6	0	13	4	17	0	0	0	0	34
Total Volume	11	35	0	46	7	0	19	26	0	64	16	80	0	0	0	0	152
% App. Total	23.9	76.1	0		26.9	0	73.1		0	80	20		0	0	0		
PHF	.688	.673	.000	.767	.583	.000	.594	.813	.000	.800	.800	.800	.000	.000	.000	.000	.844

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County of Imperial
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 02_CIM_111_Main PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	2	**20**	0	**22**	**4**	0	6	**10**	0	11	3	14	0	0	0	0
+15 mins.	2	13	0	15	1	0	4	5	0	**20**	4	24	0	0	0	0
+30 mins.	**4**	6	0	10	0	0	**8**	8	0	20	**5**	**25**	0	0	0	0
+45 mins.	2	8	0	10	1	0	6	7	0	13	4	17	0	0	0	0
Total Volume	10	47	0	57	6	0	24	30	0	64	16	80	0	0	0	0
% App. Total	17.5	82.5	0		20	0	80		0	80	20		0	0	0	
PHF	.625	.588	.000	.648	.375	.000	.750	.750	.000	.800	.800	.800	.000	.000	.000	.000

Location: County of Imperial
N/S: Highway 111
E/W: Main Street

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Highway 111	East Leg Main Street	South Leg Highway 111	West Leg Church Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	1	0	0	1
8:00 AM	2	1	0	0	3
8:15 AM	0	1	0	0	1
8:30 AM	1	3	1	0	5
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	3	6	1	0	10

	North Leg Highway 111	East Leg Main Street	South Leg Highway 111	West Leg Church Driveway	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	1	0	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	1	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	2

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951-268-6268

Location: County of Imperial
N/S: Highway 111
E/W: Main Street

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Highway 111			Westbound Main Street			Northbound Highway 111			Eastbound Church Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	1	0	0	0	0	0	0	1

	Southbound Highway 111			Westbound Main Street			Northbound Highway 111			Eastbound Church Driveway			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	1	0	0	0	0	0	0	1	0	0	0	0	2
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	1	0	0	0	1	0	1	0	0	0	0	4

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County of Imperial
N/S: Highway 111
E/W: Sinclair Road
Weather: Clear

File Name : 03_CIM_111_Sinc AM
Site Code : 221001
Start Date : 11/9/2022

Groups Printed- Total Volume

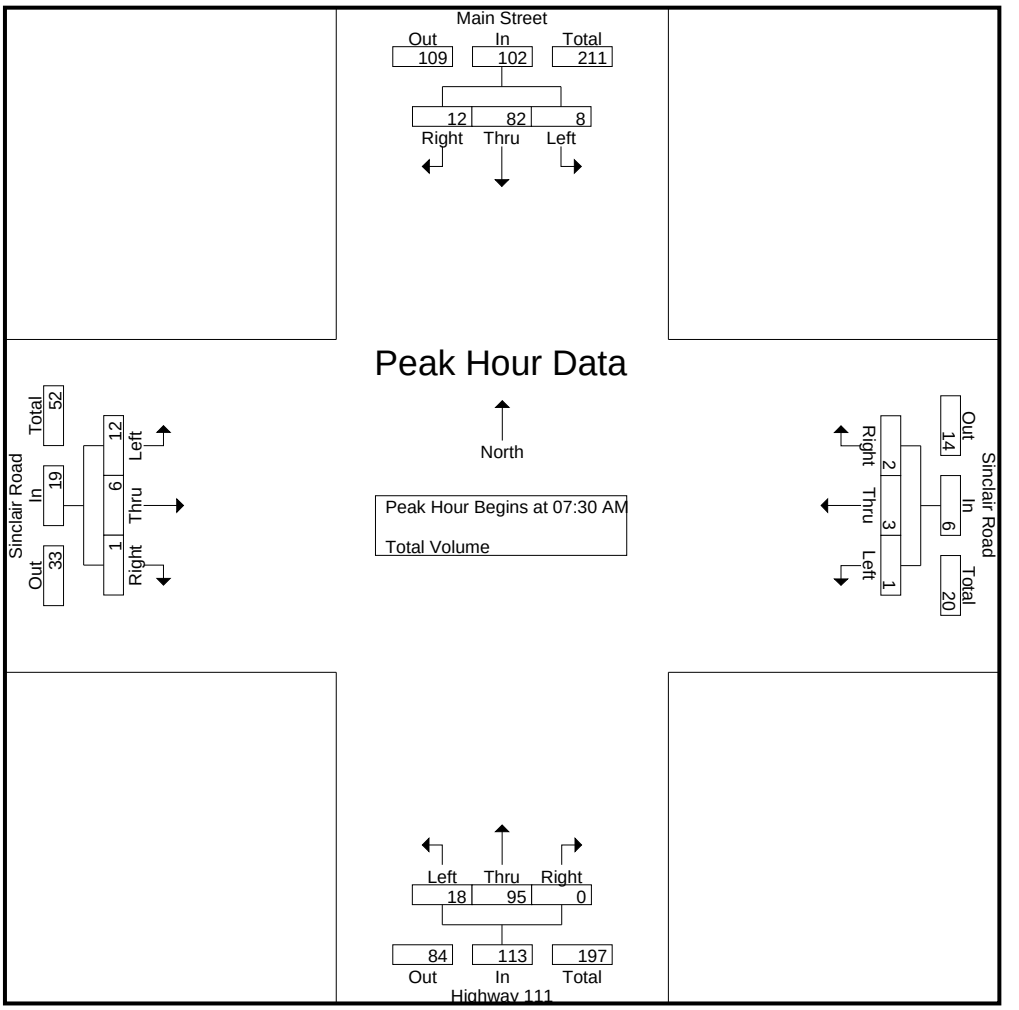
	Main Street Southbound				Sinclair Road Westbound				Highway 111 Northbound				Sinclair Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	15	1	19	0	0	0	0	0	16	0	16	6	1	0	7	42
07:15 AM	3	15	2	20	1	1	1	3	3	18	0	21	1	2	2	5	49
07:30 AM	3	21	2	26	0	0	1	1	11	19	0	30	4	2	0	6	63
07:45 AM	4	22	1	27	0	1	0	1	1	29	0	30	4	1	1	6	64
Total	13	73	6	92	1	2	2	5	15	82	0	97	15	6	3	24	218
08:00 AM	0	17	4	21	0	2	0	2	3	28	0	31	2	0	0	2	56
08:15 AM	1	22	5	28	1	0	1	2	3	19	0	22	2	3	0	5	57
08:30 AM	1	22	4	27	0	0	1	1	0	18	0	18	3	1	0	4	50
08:45 AM	0	29	2	31	0	1	2	3	0	14	1	15	2	0	0	2	51
Total	2	90	15	107	1	3	4	8	6	79	1	86	9	4	0	13	214
Grand Total	15	163	21	199	2	5	6	13	21	161	1	183	24	10	3	37	432
Apprch %	7.5	81.9	10.6		15.4	38.5	46.2		11.5	88	0.5		64.9	27	8.1		
Total %	3.5	37.7	4.9	46.1	0.5	1.2	1.4	3	4.9	37.3	0.2	42.4	5.6	2.3	0.7	8.6	

	Main Street Southbound				Sinclair Road Westbound				Highway 111 Northbound				Sinclair Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	21	2	26	0	0	**1**	1	**11**	19	0	30	**4**	2	0	**6**	63
07:45 AM	**4**	**22**	1	27	0	1	0	1	1	**29**	0	30	4	1	**1**	6	**64**
08:00 AM	0	17	4	21	0	**2**	0	**2**	3	28	0	**31**	2	0	0	2	56
08:15 AM	1	22	**5**	**28**	**1**	0	1	2	3	19	0	22	2	**3**	0	5	57
Total Volume	8	82	12	102	1	3	2	6	18	95	0	113	12	6	1	19	240
% App. Total	7.8	80.4	11.8		16.7	50	33.3		15.9	84.1	0		63.2	31.6	5.3		
PHF	.500	.932	.600	.911	.250	.375	.500	.750	.409	.819	.000	.911	.750	.500	.250	.792	.938

Counts Unlimited, Inc.
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County of Imperial
N/S: Highway 111
E/W: Sinclair Road
Weather: Clear

File Name : 03_CIM_111_Sinc AM
Site Code : 221001
Start Date : 11/9/2022



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:30 AM				07:00 AM			
+0 mins.	0	17	4	21	0	**2**	0	2	**11**	19	0	30	**6**	1	0	**7**
+15 mins.	**1**	22	**5**	28	**1**	0	1	2	1	**29**	0	30	1	**2**	**2**	5
+30 mins.	1	22	4	27	0	0	1	1	3	28	0	**31**	4	2	0	6
+45 mins.	0	**29**	2	**31**	0	1	**2**	**3**	3	19	0	22	4	1	1	6
Total Volume	2	90	15	107	1	3	4	8	18	95	0	113	15	6	3	24
% App. Total	1.9	84.1	14		12.5	37.5	50		15.9	84.1	0		62.5	25	12.5	
PHF	.500	.776	.750	.863	.250	.375	.500	.667	.409	.819	.000	.911	.625	.750	.375	.857

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County of Imperial
N/S: Highway 111
E/W: Sinclair Road
Weather: Clear

File Name : 03_CIM_111_Sinc PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

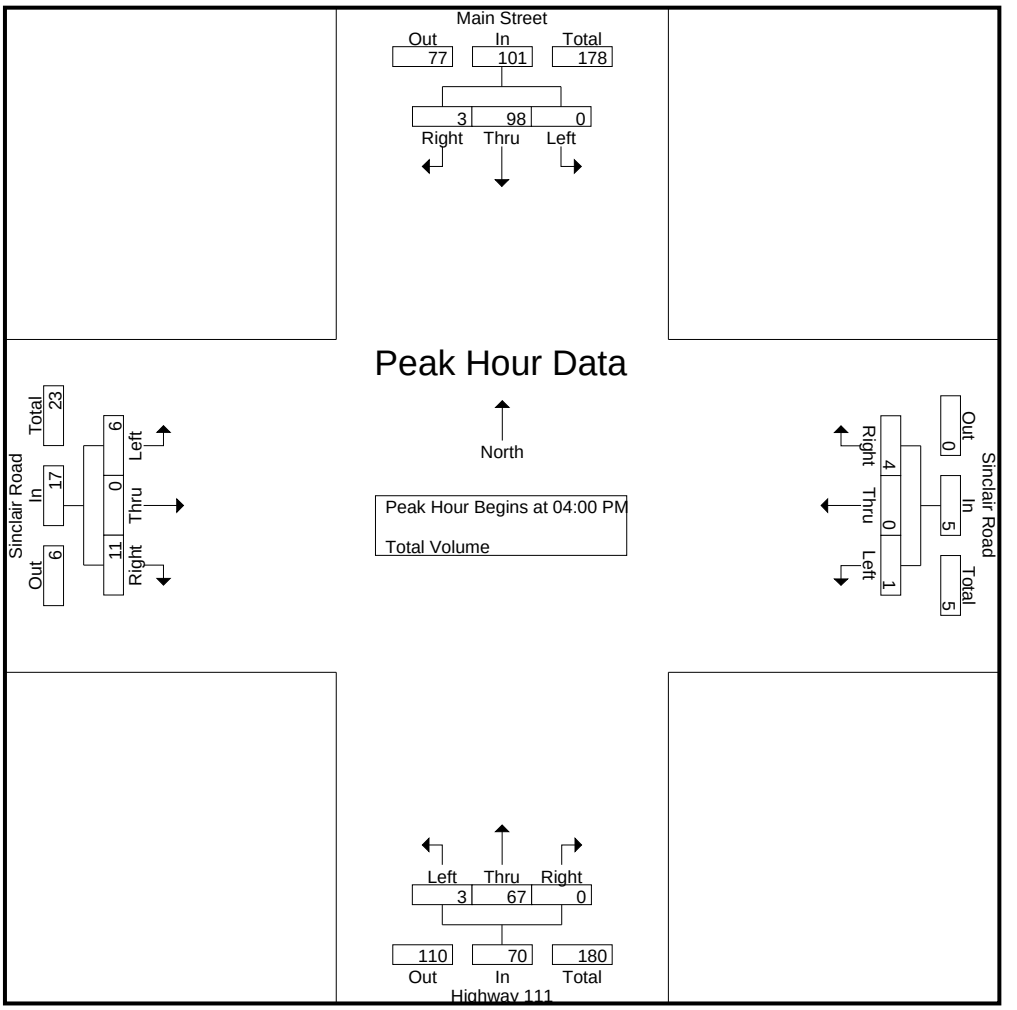
	Main Street Southbound				Sinclair Road Westbound				Highway 111 Northbound				Sinclair Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	34	1	35	1	0	1	2	0	17	0	17	1	0	6	7	61
04:15 PM	0	27	2	29	0	0	0	0	2	17	0	19	2	0	2	4	52
04:30 PM	0	16	0	16	0	0	0	0	0	14	0	14	2	0	2	4	34
04:45 PM	0	21	0	21	0	0	3	3	1	19	0	20	1	0	1	2	46
Total	0	98	3	101	1	0	4	5	3	67	0	70	6	0	11	17	193
05:00 PM	0	15	2	17	0	0	0	0	1	34	0	35	3	0	2	5	57
05:15 PM	0	19	1	20	0	0	0	0	1	16	0	17	2	1	1	4	41
05:30 PM	0	17	2	19	0	0	0	0	0	22	1	23	4	0	0	4	46
05:45 PM	0	14	1	15	0	1	0	1	0	19	0	19	2	0	1	3	38
Total	0	65	6	71	0	1	0	1	2	91	1	94	11	1	4	16	182
Grand Total	0	163	9	172	1	1	4	6	5	158	1	164	17	1	15	33	375
Apprch %	0	94.8	5.2		16.7	16.7	66.7		3	96.3	0.6		51.5	3	45.5		
Total %	0	43.5	2.4	45.9	0.3	0.3	1.1	1.6	1.3	42.1	0.3	43.7	4.5	0.3	4	8.8	

	Main Street Southbound				Sinclair Road Westbound				Highway 111 Northbound				Sinclair Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**34**	1	**35**	**1**	0	1	2	0	17	0	17	1	0	**6**	**7**	**61**
04:15 PM	0	27	**2**	29	0	0	0	0	**2**	17	0	19	**2**	0	2	4	52
04:30 PM	0	16	0	16	0	0	0	0	0	14	0	14	2	0	2	4	34
04:45 PM	0	21	0	21	0	0	**3**	**3**	1	**19**	0	**20**	1	0	1	2	46
Total Volume	0	98	3	101	1	0	4	5	3	67	0	70	6	0	11	17	193
% App. Total	0	97	3		20	0	80		4.3	95.7	0		35.3	0	64.7		
PHF	.000	.721	.375	.721	.250	.000	.333	.417	.375	.882	.000	.875	.750	.000	.458	.607	.791

Counts Unlimited, Inc.
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County of Imperial
N/S: Highway 111
E/W: Sinclair Road
Weather: Clear

File Name : 03_CIM_111_Sinc PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	0	**34**	1	**35**	**1**	0	1	2	**1**	19	0	20	1	0	**6**	**7**
+15 mins.	0	27	**2**	29	0	0	0	0	1	**34**	0	**35**	**2**	0	2	4
+30 mins.	0	16	0	16	0	0	0	0	1	16	0	17	2	0	2	4
+45 mins.	0	21	0	21	0	0	**3**	**3**	0	22	**1**	23	1	0	1	2
Total Volume	0	98	3	101	1	0	4	5	3	91	1	95	6	0	11	17
% App. Total	0	97	3		20	0	80		3.2	95.8	1.1		35.3	0	64.7	
PHF	.000	.721	.375	.721	.250	.000	.333	.417	.750	.669	.250	.679	.750	.000	.458	.607

Location: County of Imperial
N/S: Highway 111
E/W: Sinclair Road

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Highway 111	East Leg Sinclair Road	South Leg Highway 111	West Leg Sinclair Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Highway 111	East Leg Sinclair Road	South Leg Highway 111	West Leg Sinclair Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: County of Imperial
N/S: Highway 111
E/W: Sinclair Road

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Highway 111			Westbound Sinclair Road			Northbound Highway 111			Eastbound Sinclair Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Highway 111			Westbound Sinclair Road			Northbound Highway 111			Eastbound Sinclair Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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County of Calipatria
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 04_CPA_111_Main AM
Site Code : 221001
Start Date : 11/9/2022

Groups Printed- Total Volume

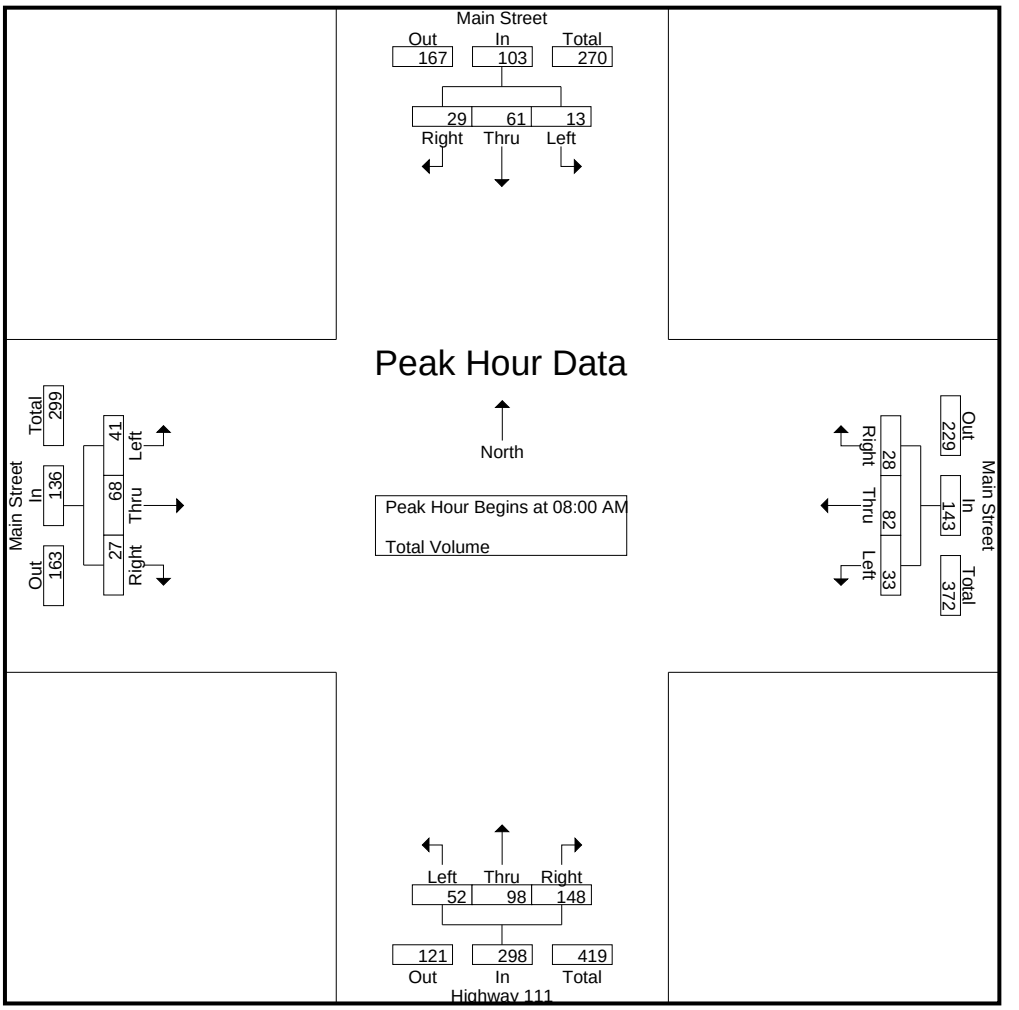
	Main Street Southbound				Main Street Westbound				Highway 111 Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	10	4	18	26	9	2	37	6	16	13	35	5	12	3	20	110
07:15 AM	5	7	5	17	13	5	4	22	3	9	13	25	7	7	2	16	80
07:30 AM	1	12	4	17	4	8	2	14	9	17	29	55	10	5	1	16	102
07:45 AM	2	19	5	26	7	11	4	22	5	20	56	81	5	13	4	22	151
Total	12	48	18	78	50	33	12	95	23	62	111	196	27	37	10	74	443
08:00 AM	1	17	3	21	6	5	4	15	7	14	15	36	11	9	2	22	94
08:15 AM	1	16	6	23	8	7	9	24	5	20	41	66	7	16	7	30	143
08:30 AM	6	15	7	28	7	23	6	36	13	34	37	84	12	13	4	29	177
08:45 AM	5	13	13	31	12	47	9	68	27	30	55	112	11	30	14	55	266
Total	13	61	29	103	33	82	28	143	52	98	148	298	41	68	27	136	680
Grand Total	25	109	47	181	83	115	40	238	75	160	259	494	68	105	37	210	1123
Apprch %	13.8	60.2	26		34.9	48.3	16.8		15.2	32.4	52.4		32.4	50	17.6		
Total %	2.2	9.7	4.2	16.1	7.4	10.2	3.6	21.2	6.7	14.2	23.1	44	6.1	9.3	3.3	18.7	

	Main Street Southbound				Main Street Westbound				Highway 111 Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	**17**	3	21	6	5	4	15	7	14	15	36	11	9	2	22	94
08:15 AM	1	16	6	23	8	7	**9**	24	5	20	41	66	7	16	7	30	143
08:30 AM	**6**	15	7	28	7	23	6	36	13	**34**	37	84	**12**	13	4	29	177
08:45 AM	5	13	**13**	**31**	**12**	**47**	9	**68**	**27**	30	**55**	**112**	11	**30**	**14**	**55**	**266**
Total Volume	13	61	29	103	33	82	28	143	52	98	148	298	41	68	27	136	680
% App. Total	12.6	59.2	28.2		23.1	57.3	19.6		17.4	32.9	49.7		30.1	50	19.9		
PHF	.542	.897	.558	.831	.688	.436	.778	.526	.481	.721	.673	.665	.854	.567	.482	.618	.639

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County of Calipatria
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 04_CPA_111_Main AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	1	**17**	3	21	6	5	4	15	7	14	15	36	11	9	2	22
+15 mins.	1	16	6	23	8	7	**9**	24	5	20	41	66	7	16	7	30
+30 mins.	**6**	15	7	28	7	23	6	36	13	**34**	37	84	**12**	13	4	29
+45 mins.	5	13	**13**	**31**	**12**	**47**	9	**68**	**27**	30	**55**	**112**	11	**30**	**14**	**55**
Total Volume	13	61	29	103	33	82	28	143	52	98	148	298	41	68	27	136
% App. Total	12.6	59.2	28.2		23.1	57.3	19.6		17.4	32.9	49.7		30.1	50	19.9	
PHF	.542	.897	.558	.831	.688	.436	.778	.526	.481	.721	.673	.665	.854	.567	.482	.618

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County of Calipatria
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 04_CPA_111_Main PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

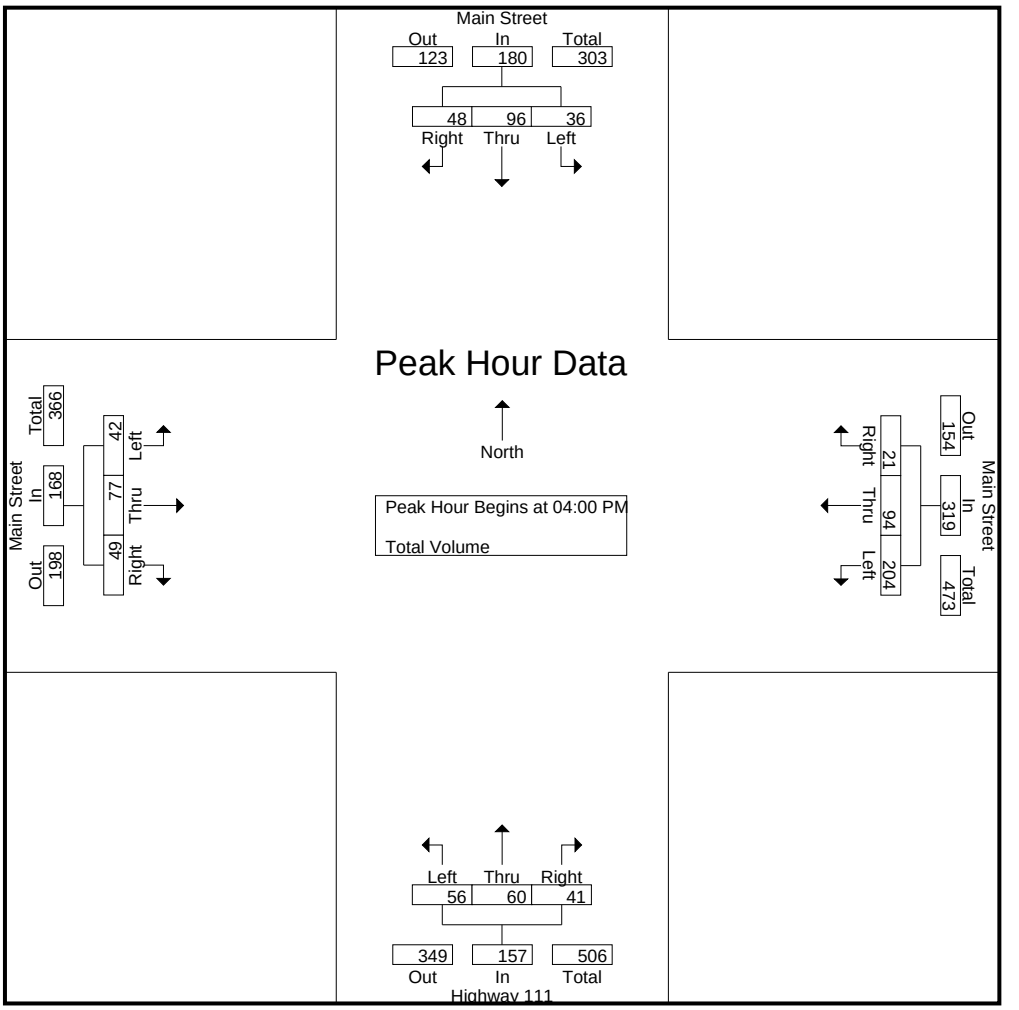
	Main Street Southbound				Main Street Westbound				Highway 111 Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	7	23	11	41	69	31	3	103	12	14	16	42	15	16	21	52	238
04:15 PM	9	32	18	59	41	19	5	65	18	10	8	36	9	19	10	38	198
04:30 PM	7	23	8	38	29	19	5	53	14	19	10	43	12	17	6	35	169
04:45 PM	13	18	11	42	65	25	8	98	12	17	7	36	6	25	12	43	219
Total	36	96	48	180	204	94	21	319	56	60	41	157	42	77	49	168	824
05:00 PM	9	45	4	58	48	24	6	78	17	14	7	38	4	16	14	34	208
05:15 PM	11	28	10	49	18	12	7	37	16	24	9	49	4	16	10	30	165
05:30 PM	8	33	11	52	29	21	3	53	17	19	11	47	11	20	8	39	191
05:45 PM	3	28	8	39	13	16	9	38	9	17	10	36	12	11	8	31	144
Total	31	134	33	198	108	73	25	206	59	74	37	170	31	63	40	134	708
Grand Total	67	230	81	378	312	167	46	525	115	134	78	327	73	140	89	302	1532
Apprch %	17.7	60.8	21.4		59.4	31.8	8.8		35.2	41	23.9		24.2	46.4	29.5		
Total %	4.4	15	5.3	24.7	20.4	10.9	3	34.3	7.5	8.7	5.1	21.3	4.8	9.1	5.8	19.7	

	Main Street Southbound				Main Street Westbound				Highway 111 Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	7	23	11	41	**69**	**31**	3	**103**	12	14	**16**	42	**15**	16	**21**	**52**	**238**
04:15 PM	9	**32**	**18**	**59**	41	19	5	65	**18**	10	8	36	9	19	10	38	198
04:30 PM	7	23	8	38	29	19	5	53	14	**19**	10	**43**	12	17	6	35	169
04:45 PM	**13**	18	11	42	65	25	**8**	98	12	17	7	36	6	**25**	12	43	219
Total Volume	36	96	48	180	204	94	21	319	56	60	41	157	42	77	49	168	824
% App. Total	20	53.3	26.7		63.9	29.5	6.6		35.7	38.2	26.1		25	45.8	29.2		
PHF	.692	.750	.667	.763	.739	.758	.656	.774	.778	.789	.641	.913	.700	.770	.583	.808	.866

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County of Calipatria
N/S: Highway 111
E/W: Main Street
Weather: Clear

File Name : 04_CPA_111_Main PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	**13**	18	**11**	42	**69**	**31**	3	**103**	12	17	7	36	**15**	16	**21**	**52**
+15 mins.	9	**45**	4	**58**	41	19	5	65	**17**	14	7	38	9	19	10	38
+30 mins.	11	28	10	49	29	19	5	53	16	**24**	9	**49**	12	17	6	35
+45 mins.	8	33	11	52	65	25	**8**	98	17	19	**11**	47	6	**25**	12	43
Total Volume	41	124	36	201	204	94	21	319	62	74	34	170	42	77	49	168
% App. Total	20.4	61.7	17.9		63.9	29.5	6.6		36.5	43.5	20		25	45.8	29.2	
PHF	.788	.689	.818	.866	.739	.758	.656	.774	.912	.771	.773	.867	.700	.770	.583	.808

Location: Calipatria
N/S: Highway 111
E/W: Main Street

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Highway 111 Pedestrians	East Leg Main Street Pedestrians	South Leg Highway 111 Pedestrians	West Leg Main Street Pedestrians	
7:00 AM	0	0	1	0	1
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	2	0	2
8:15 AM	0	0	2	0	2
8:30 AM	3	0	3	2	8
8:45 AM	0	0	6	2	8
TOTAL VOLUMES:	3	0	14	4	21

	North Leg Highway 111 Pedestrians	East Leg Main Street Pedestrians	South Leg Highway 111 Pedestrians	West Leg Main Street Pedestrians	
4:00 PM	0	0	0	2	2
4:15 PM	1	0	1	2	4
4:30 PM	0	0	0	2	2
4:45 PM	2	0	1	1	4
5:00 PM	1	0	0	0	1
5:15 PM	1	3	2	0	6
5:30 PM	1	2	3	0	6
5:45 PM	1	0	2	0	3
TOTAL VOLUMES:	7	5	9	7	28

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Location: Calipatria
N/S: Highway 111
E/W: Main Street

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Highway 111			Westbound Main Street			Northbound Highway 111			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	1	0	0	0	0	0	0	0	1

	Southbound Highway 111			Westbound Main Street			Northbound Highway 111			Eastbound Main Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	1	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	2	0	0	0	0	1	0	1	0	4

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County of Imperial
N/S: Lack Road
E/W: SR-78
Weather: Clear

File Name : 07_CIM_Lack_78 AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

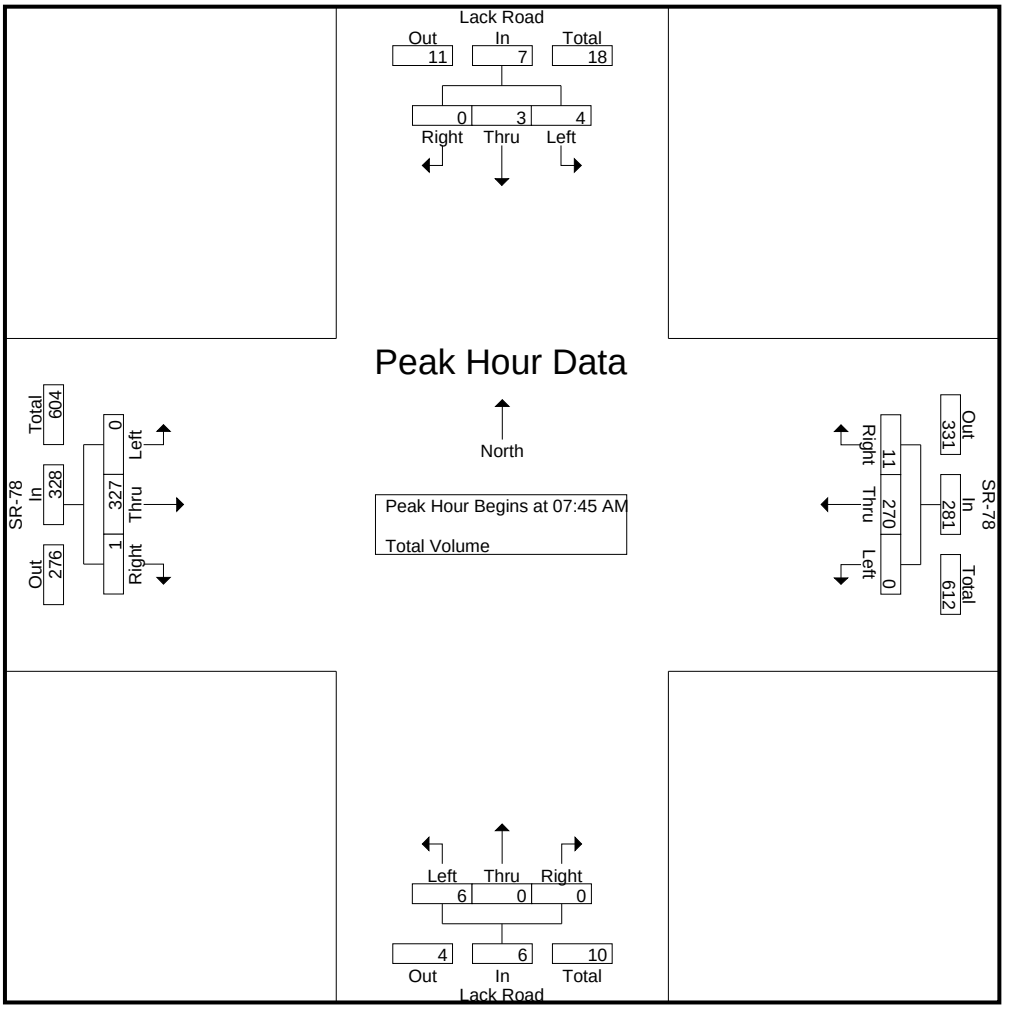
	Lack Road Southbound				SR-78 Westbound				Lack Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	1	2	0	69	1	70	2	3	0	5	0	53	0	53	130
07:15 AM	0	0	2	2	0	68	2	70	2	0	0	2	0	72	1	73	147
07:30 AM	0	1	0	1	0	85	1	86	1	0	0	1	1	63	0	64	152
07:45 AM	2	2	0	4	0	66	2	68	1	0	0	1	0	82	0	82	155
Total	3	3	3	9	0	288	6	294	6	3	0	9	1	270	1	272	584
08:00 AM	0	0	0	0	0	63	6	69	1	0	0	1	0	84	1	85	155
08:15 AM	1	1	0	2	0	65	3	68	3	0	0	3	0	78	0	78	151
08:30 AM	1	0	0	1	0	76	0	76	1	0	0	1	0	83	0	83	161
08:45 AM	1	1	0	2	0	64	3	67	2	2	0	4	0	70	0	70	143
Total	3	2	0	5	0	268	12	280	7	2	0	9	0	315	1	316	610
Grand Total	6	5	3	14	0	556	18	574	13	5	0	18	1	585	2	588	1194
Apprch %	42.9	35.7	21.4		0	96.9	3.1		72.2	27.8	0		0.2	99.5	0.3		
Total %	0.5	0.4	0.3	1.2	0	46.6	1.5	48.1	1.1	0.4	0	1.5	0.1	49	0.2	49.2	

	Lack Road Southbound				SR-78 Westbound				Lack Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**2**	**2**	0	**4**	0	66	2	68	1	0	0	1	0	82	0	82	155
08:00 AM	0	0	0	0	0	63	**6**	69	1	0	0	1	0	**84**	**1**	**85**	155
08:15 AM	1	1	0	2	0	65	3	68	**3**	0	0	**3**	0	78	0	78	151
08:30 AM	1	0	0	1	0	**76**	0	**76**	1	0	0	1	0	83	0	83	**161**
Total Volume	4	3	0	7	0	270	11	281	6	0	0	6	0	327	1	328	622
% App. Total	57.1	42.9	0		0	96.1	3.9		100	0	0		0	99.7	0.3		
PHF	.500	.375	.000	.438	.000	.888	.458	.924	.500	.000	.000	.500	.000	.973	.250	.965	.966

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County of Imperial
N/S: Lack Road
E/W: SR-78
Weather: Clear

File Name : 07_CIM_Lack_78 AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	1	0	1	2	0	69	1	70	**2**	**3**	0	**5**	0	82	0	82
+15 mins.	0	0	**2**	2	0	68	**2**	70	2	0	0	2	0	**84**	**1**	**85**
+30 mins.	0	1	0	1	0	**85**	1	**86**	1	0	0	1	0	78	0	78
+45 mins.	**2**	**2**	0	**4**	0	66	2	68	1	0	0	1	0	83	0	83
Total Volume	3	3	3	9	0	288	6	294	6	3	0	9	0	327	1	328
% App. Total	33.3	33.3	33.3		0	98	2		66.7	33.3	0		0	99.7	0.3	
PHF	.375	.375	.375	.563	.000	.847	.750	.855	.750	.250	.000	.450	.000	.973	.250	.965

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County of Imperial
N/S: Lack Road
E/W: SR-78
Weather: Clear

File Name : 07_CIM_Lack_78 PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

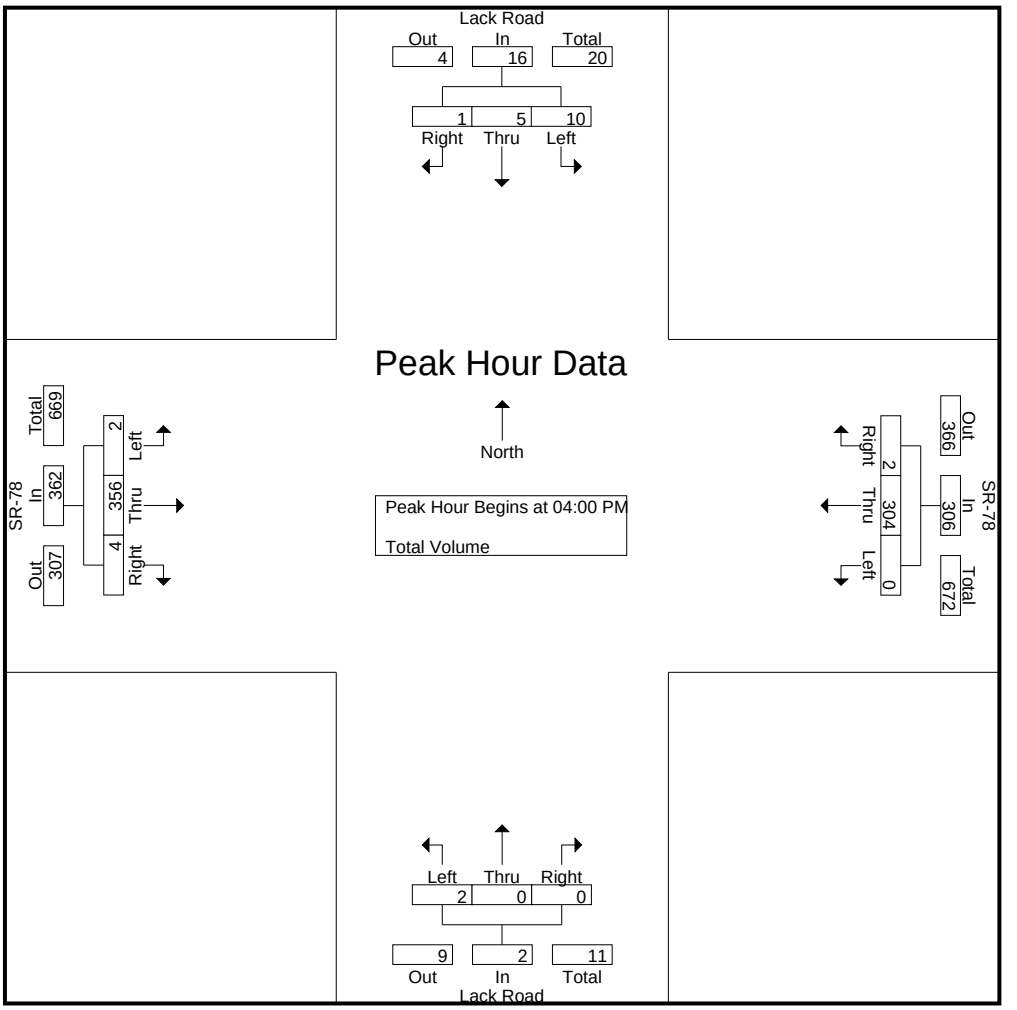
	Lack Road Southbound				SR-78 Westbound				Lack Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	2	0	8	0	91	0	91	0	0	0	0	1	94	1	96	195
04:15 PM	2	0	0	2	0	73	0	73	1	0	0	1	1	88	0	89	165
04:30 PM	0	1	1	2	0	85	1	86	0	0	0	0	0	79	1	80	168
04:45 PM	2	2	0	4	0	55	1	56	1	0	0	1	0	95	2	97	158
Total	10	5	1	16	0	304	2	306	2	0	0	2	2	356	4	362	686
05:00 PM	2	0	0	2	0	62	1	63	0	0	0	0	0	110	1	111	176
05:15 PM	0	1	0	1	0	65	1	66	0	0	0	0	0	74	4	78	145
05:30 PM	2	0	1	3	0	67	0	67	0	0	0	0	0	63	2	65	135
05:45 PM	2	0	0	2	0	53	0	53	0	1	0	1	0	77	0	77	133
Total	6	1	1	8	0	247	2	249	0	1	0	1	0	324	7	331	589
Grand Total	16	6	2	24	0	551	4	555	2	1	0	3	2	680	11	693	1275
Apprch %	66.7	25	8.3		0	99.3	0.7		66.7	33.3	0		0.3	98.1	1.6		
Total %	1.3	0.5	0.2	1.9	0	43.2	0.3	43.5	0.2	0.1	0	0.2	0.2	53.3	0.9	54.4	

	Lack Road Southbound				SR-78 Westbound				Lack Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**6**	**2**	0	**8**	0	**91**	0	**91**	0	0	0	0	**1**	94	1	96	**195**
04:15 PM	2	0	0	2	0	73	0	73	**1**	0	0	**1**	1	88	0	89	165
04:30 PM	0	1	**1**	2	0	85	**1**	86	0	0	0	0	0	79	1	80	168
04:45 PM	2	2	0	4	0	55	1	56	1	0	0	1	0	**95**	**2**	**97**	158
Total Volume	10	5	1	16	0	304	2	306	2	0	0	2	2	356	4	362	686
% App. Total	62.5	31.2	6.2		0	99.3	0.7		100	0	0		0.6	98.3	1.1		
PHF	.417	.625	.250	.500	.000	.835	.500	.841	.500	.000	.000	.500	.500	.937	.500	.933	.879

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County of Imperial
N/S: Lack Road
E/W: SR-78
Weather: Clear

File Name : 07_CIM_Lack_78 PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	**6**	**2**	0	**8**	0	**91**	0	**91**	0	0	0	0	**1**	88	0	89
+15 mins.	2	0	0	2	0	73	0	73	**1**	0	0	**1**	0	79	1	80
+30 mins.	0	1	**1**	2	0	85	**1**	86	0	0	0	0	0	95	**2**	97
+45 mins.	2	2	0	4	0	55	1	56	1	0	0	1	0	**110**	1	**111**
Total Volume	10	5	1	16	0	304	2	306	2	0	0	2	1	372	4	377
% App. Total	62.5	31.2	6.2		0	99.3	0.7		100	0	0		0.3	98.7	1.1	
PHF	.417	.625	.250	.500	.000	.835	.500	.841	.500	.000	.000	.500	.250	.845	.500	.849

Location: County of Imperial
N/S: Lack Road
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Lack Road	East Leg SR-78	South Leg Lack Road	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Lack Road	East Leg SR-78	South Leg Lack Road	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

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Location: County of Imperial
N/S: Lack Road
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Lack Road			Westbound SR-78			Northbound Lack Road			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Lack Road			Westbound SR-78			Northbound Lack Road			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of Westmorland
N/S: Center Street
E/W: SR-78 (Main Street)
Weather: Clear

File Name : 05_WMD_Cent_78 AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

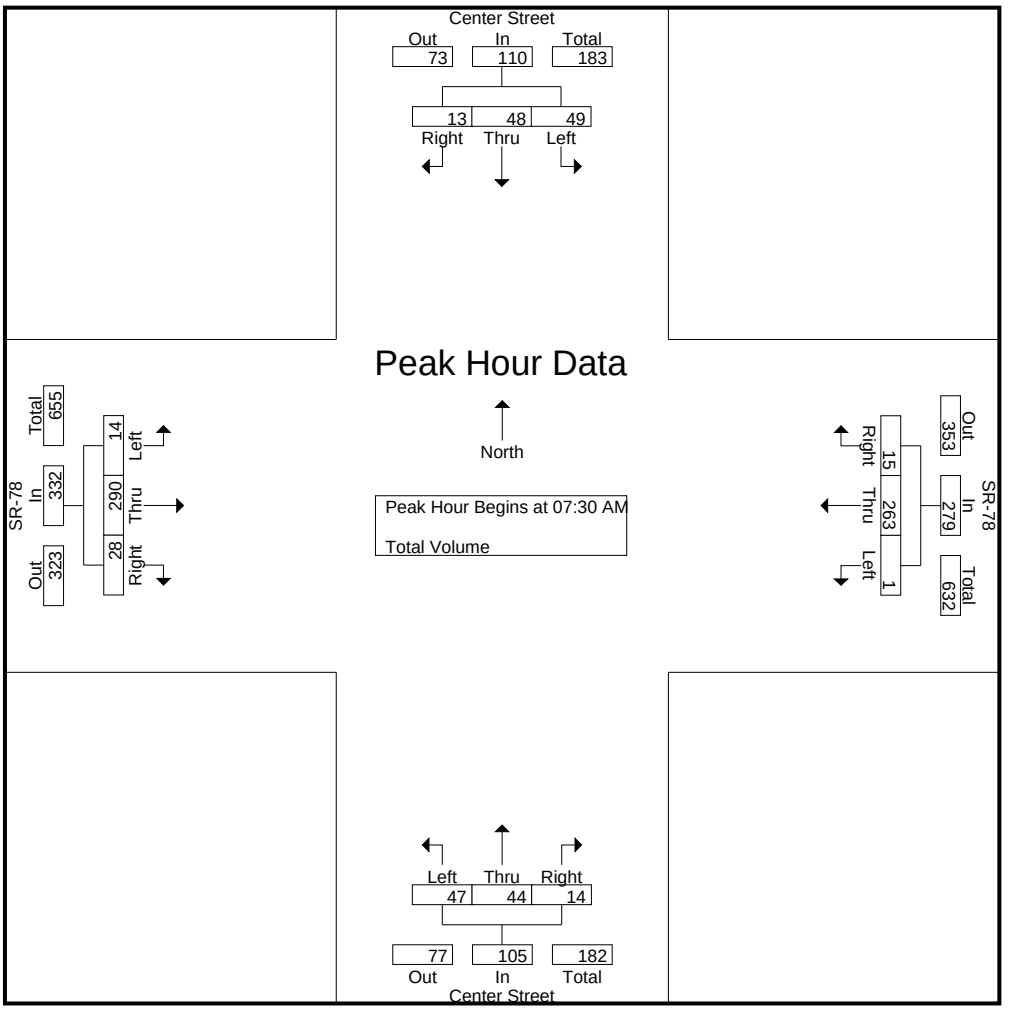
	Center Street Southbound				SR-78 Westbound				Center Street Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	11	9	5	25	0	65	5	70	9	2	3	14	9	61	10	80	189
07:15 AM	7	9	3	19	0	54	5	59	10	6	1	17	2	75	5	82	177
07:30 AM	10	10	3	23	0	69	4	73	18	13	2	33	2	54	6	62	191
07:45 AM	18	20	1	39	0	61	4	65	12	13	3	28	4	81	5	90	222
Total	46	48	12	106	0	249	18	267	49	34	9	92	17	271	26	314	779
08:00 AM	13	10	5	28	0	69	3	72	9	9	6	24	4	79	10	93	217
08:15 AM	8	8	4	20	1	64	4	69	8	9	3	20	4	76	7	87	196
08:30 AM	8	10	4	22	4	60	3	67	5	6	0	11	1	76	6	83	183
08:45 AM	7	6	1	14	2	51	6	59	9	5	3	17	6	61	5	72	162
Total	36	34	14	84	7	244	16	267	31	29	12	72	15	292	28	335	758
Grand Total	82	82	26	190	7	493	34	534	80	63	21	164	32	563	54	649	1537
Apprch %	43.2	43.2	13.7		1.3	92.3	6.4		48.8	38.4	12.8		4.9	86.7	8.3		
Total %	5.3	5.3	1.7	12.4	0.5	32.1	2.2	34.7	5.2	4.1	1.4	10.7	2.1	36.6	3.5	42.2	

	Center Street Southbound				SR-78 Westbound				Center Street Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	10	10	3	23	0	**69**	**4**	**73**	**18**	**13**	2	**33**	2	54	6	62	191
07:45 AM	**18**	**20**	1	**39**	0	61	4	65	12	13	3	28	**4**	**81**	5	90	**222**
08:00 AM	13	10	**5**	28	0	69	3	72	9	9	**6**	24	4	79	**10**	**93**	217
08:15 AM	8	8	4	20	**1**	64	4	69	8	9	3	20	4	76	7	87	196
Total Volume	49	48	13	110	1	263	15	279	47	44	14	105	14	290	28	332	826
% App. Total	44.5	43.6	11.8		0.4	94.3	5.4		44.8	41.9	13.3		4.2	87.3	8.4		
PHF	.681	.600	.650	.705	.250	.953	.938	.955	.653	.846	.583	.795	.875	.895	.700	.892	.930

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City of Westmorland
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File Name : 05_WMD_Cent_78 AM
Site Code : 221001
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:45 AM			
+0 mins.	10	10	3	23	0	**69**	**4**	**73**	**18**	**13**	2	**33**	**4**	**81**	5	90
+15 mins.	**18**	**20**	1	**39**	0	61	4	65	12	13	3	28	4	79	**10**	**93**
+30 mins.	13	10	**5**	28	0	69	3	72	9	9	**6**	24	4	76	7	87
+45 mins.	8	8	4	20	**1**	64	4	69	8	9	3	20	1	76	6	83
Total Volume	49	48	13	110	1	263	15	279	47	44	14	105	13	312	28	353
% App. Total	44.5	43.6	11.8		0.4	94.3	5.4		44.8	41.9	13.3		3.7	88.4	7.9	
PHF	.681	.600	.650	.705	.250	.953	.938	.955	.653	.846	.583	.795	.813	.963	.700	.949

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City of Westmorland
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Weather: Clear

File Name : 05_WMD_Cent_78 PM
Site Code : 221001
Start Date : 11/9/2022
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Groups Printed- Total Volume

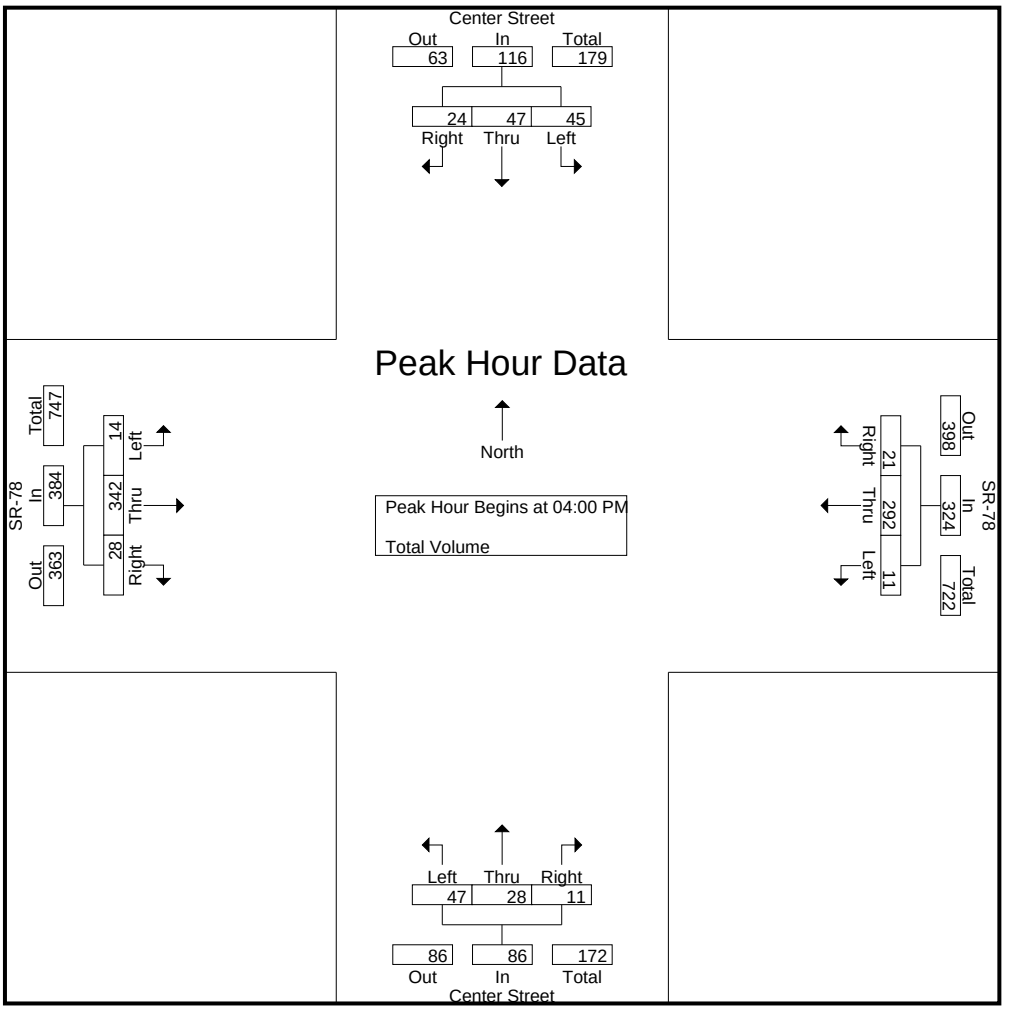
	Center Street Southbound				SR-78 Westbound				Center Street Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	9	10	9	28	4	84	1	89	13	10	1	24	4	98	10	112	253
04:15 PM	7	11	5	23	0	73	11	84	14	9	3	26	2	89	5	96	229
04:30 PM	16	13	4	33	1	65	7	73	10	5	4	19	3	69	10	82	207
04:45 PM	13	13	6	32	6	70	2	78	10	4	3	17	5	86	3	94	221
Total	45	47	24	116	11	292	21	324	47	28	11	86	14	342	28	384	910
05:00 PM	14	12	5	31	1	75	1	77	15	10	0	25	2	91	5	98	231
05:15 PM	14	11	3	28	1	68	6	75	10	5	3	18	3	80	9	92	213
05:30 PM	9	4	8	21	1	72	7	80	12	6	1	19	4	58	3	65	185
05:45 PM	16	8	5	29	1	71	3	75	6	10	2	18	5	73	2	80	202
Total	53	35	21	109	4	286	17	307	43	31	6	80	14	302	19	335	831
Grand Total	98	82	45	225	15	578	38	631	90	59	17	166	28	644	47	719	1741
Apprch %	43.6	36.4	20		2.4	91.6	6		54.2	35.5	10.2		3.9	89.6	6.5		
Total %	5.6	4.7	2.6	12.9	0.9	33.2	2.2	36.2	5.2	3.4	1	9.5	1.6	37	2.7	41.3	

	Center Street Southbound				SR-78 Westbound				Center Street Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	9	10	**9**	28	4	**84**	1	**89**	13	**10**	1	24	4	**98**	**10**	**112**	**253**
04:15 PM	7	11	5	23	0	73	**11**	84	**14**	9	3	**26**	2	89	5	96	229
04:30 PM	**16**	**13**	4	**33**	1	65	7	73	10	5	**4**	19	3	69	10	82	207
04:45 PM	13	13	6	32	**6**	70	2	78	10	4	3	17	**5**	86	3	94	221
Total Volume	45	47	24	116	11	292	21	324	47	28	11	86	14	342	28	384	910
% App. Total	38.8	40.5	20.7		3.4	90.1	6.5		54.7	32.6	12.8		3.6	89.1	7.3		
PHF	.703	.904	.667	.879	.458	.869	.477	.910	.839	.700	.688	.827	.700	.872	.700	.857	.899

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City of Westmorland
N/S: Center Street
E/W: SR-78 (Main Street)
Weather: Clear

File Name : 05_WMD_Cent_78 PM
Site Code : 221001
Start Date : 11/9/2022
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	**16**	**13**	4	**33**	4	**84**	1	**89**	14	9	3	**26**	4	**98**	**10**	**112**
+15 mins.	13	13	**6**	32	0	73	**11**	84	10	5	**4**	19	2	89	5	96
+30 mins.	14	12	5	31	1	65	7	73	10	4	3	17	3	69	10	82
+45 mins.	14	11	3	28	**6**	70	2	78	**15**	**10**	0	25	**5**	86	3	94
Total Volume	57	49	18	124	11	292	21	324	49	28	10	87	14	342	28	384
% App. Total	46	39.5	14.5		3.4	90.1	6.5		56.3	32.2	11.5		3.6	89.1	7.3	
PHF	.891	.942	.750	.939	.458	.869	.477	.910	.817	.700	.625	.837	.700	.872	.700	.857

Location: Westmorland
N/S: Center Street
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Center Street	East Leg SR-78	South Leg Center Street	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	1	1
7:15 AM	0	2	0	1	3
7:30 AM	0	0	0	4	4
7:45 AM	0	4	0	16	20
8:00 AM	0	2	0	0	2
8:15 AM	0	0	0	1	1
8:30 AM	0	0	0	3	3
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	8	0	26	34

	North Leg Center Street	East Leg SR-78	South Leg Center Street	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	4	0	0	7	11
4:15 PM	0	1	0	0	1
4:30 PM	0	1	0	1	2
4:45 PM	0	0	0	2	2
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1
5:30 PM	0	0	0	0	0
5:45 PM	0	2	0	1	3
TOTAL VOLUMES:	4	4	0	12	20

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Location: Westmorland
N/S: Center Street
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Center Street			Westbound SR-78			Northbound Center Street			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	0	0	1	0	0	0	0	0	0	0	1

	Southbound Center Street			Westbound SR-78			Northbound Center Street			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	1	1	2

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County of Imperial
N/S: Brandt Road
E/W: SR-78
Weather: Clear

File Name : 06_CIM_Bran_78 AM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

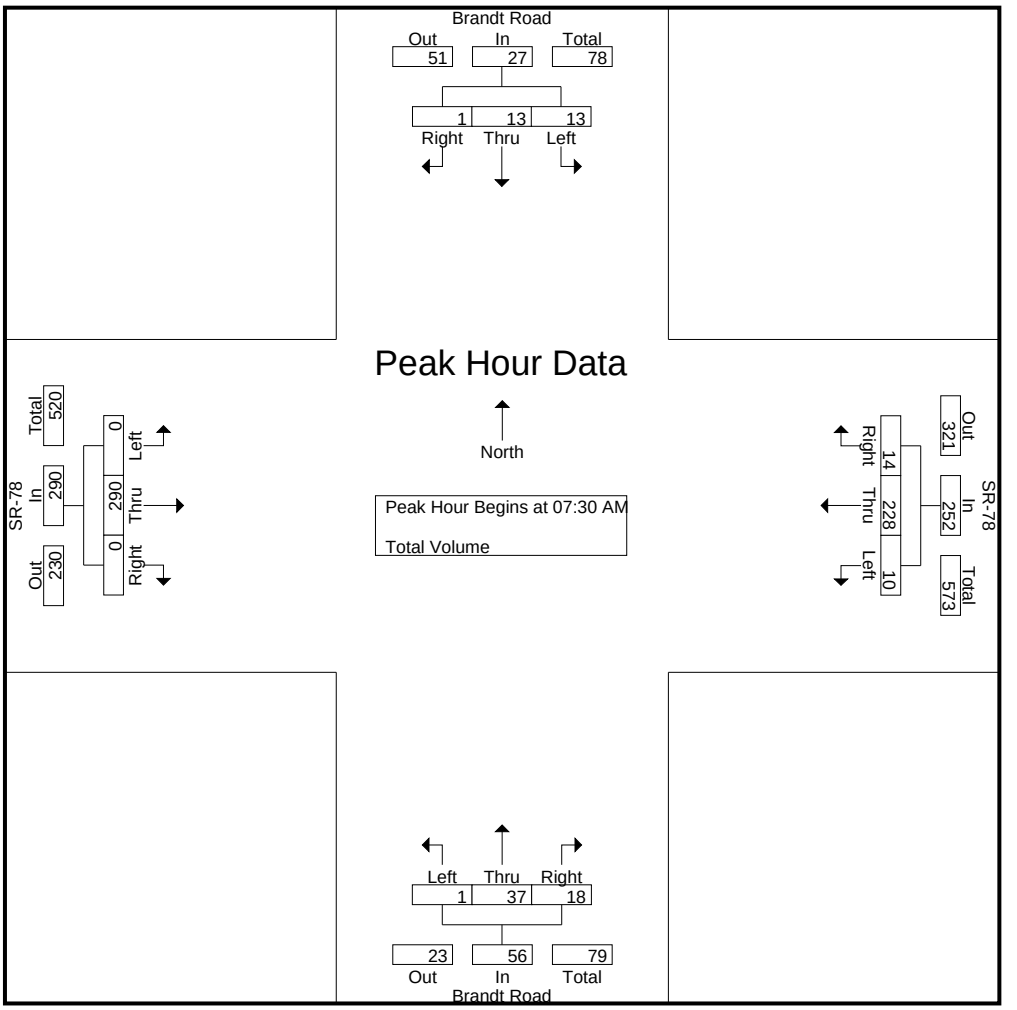
	Brandt Road Southbound				SR-78 Westbound				Brandt Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	0	0	3	1	54	2	57	0	4	2	6	0	60	0	60	126
07:15 AM	1	1	0	2	1	57	2	60	0	10	3	13	1	66	0	67	142
07:30 AM	3	1	0	4	0	57	0	57	1	13	1	15	0	63	0	63	139
07:45 AM	2	1	0	3	0	59	10	69	0	15	9	24	0	88	0	88	184
Total	9	3	0	12	2	227	14	243	1	42	15	58	1	277	0	278	591
08:00 AM	7	3	0	10	3	58	2	63	0	8	7	15	0	70	0	70	158
08:15 AM	1	8	1	10	7	54	2	63	0	1	1	2	0	69	0	69	144
08:30 AM	4	1	0	5	4	56	2	62	1	3	1	5	1	56	0	57	129
08:45 AM	3	4	0	7	2	54	3	59	1	5	2	8	0	53	0	53	127
Total	15	16	1	32	16	222	9	247	2	17	11	30	1	248	0	249	558
Grand Total	24	19	1	44	18	449	23	490	3	59	26	88	2	525	0	527	1149
Apprch %	54.5	43.2	2.3		3.7	91.6	4.7		3.4	67	29.5		0.4	99.6	0		
Total %	2.1	1.7	0.1	3.8	1.6	39.1	2	42.6	0.3	5.1	2.3	7.7	0.2	45.7	0	45.9	

	Brandt Road Southbound				SR-78 Westbound				Brandt Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	1	0	4	0	57	0	57	**1**	13	1	15	0	63	0	63	139
07:45 AM	2	1	0	3	0	**59**	**10**	**69**	0	**15**	**9**	**24**	0	**88**	0	**88**	**184**
08:00 AM	**7**	3	0	**10**	3	58	2	63	0	8	7	15	0	70	0	70	158
08:15 AM	1	**8**	**1**	10	**7**	54	2	63	0	1	1	2	0	69	0	69	144
Total Volume	13	13	1	27	10	228	14	252	1	37	18	56	0	290	0	290	625
% App. Total	48.1	48.1	3.7		4	90.5	5.6		1.8	66.1	32.1		0	100	0		
PHF	.464	.406	.250	.675	.357	.966	.350	.913	.250	.617	.500	.583	.000	.824	.000	.824	.849

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County of Imperial
N/S: Brandt Road
E/W: SR-78
Weather: Clear

File Name : 06_CIM_Bran_78 AM
Site Code : 221001
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:15 AM				07:30 AM			
+0 mins.	**7**	3	0	**10**	0	**59**	**10**	**69**	0	10	3	13	0	63	0	63
+15 mins.	1	**8**	**1**	10	3	58	2	63	**1**	13	1	15	0	**88**	0	**88**
+30 mins.	4	1	0	5	**7**	54	2	63	0	**15**	**9**	**24**	0	70	0	70
+45 mins.	3	4	0	7	4	56	2	62	0	8	7	15	0	69	0	69
Total Volume	15	16	1	32	14	227	16	257	1	46	20	67	0	290	0	290
% App. Total	46.9	50	3.1		5.4	88.3	6.2		1.5	68.7	29.9		0	100	0	
PHF	.536	.500	.250	.800	.500	.962	.400	.931	.250	.767	.556	.698	.000	.824	.000	.824

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County of Imperial
N/S: Brandt Road
E/W: SR-78
Weather: Clear

File Name : 06_CIM_Bran_78 PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 1

Groups Printed- Total Volume

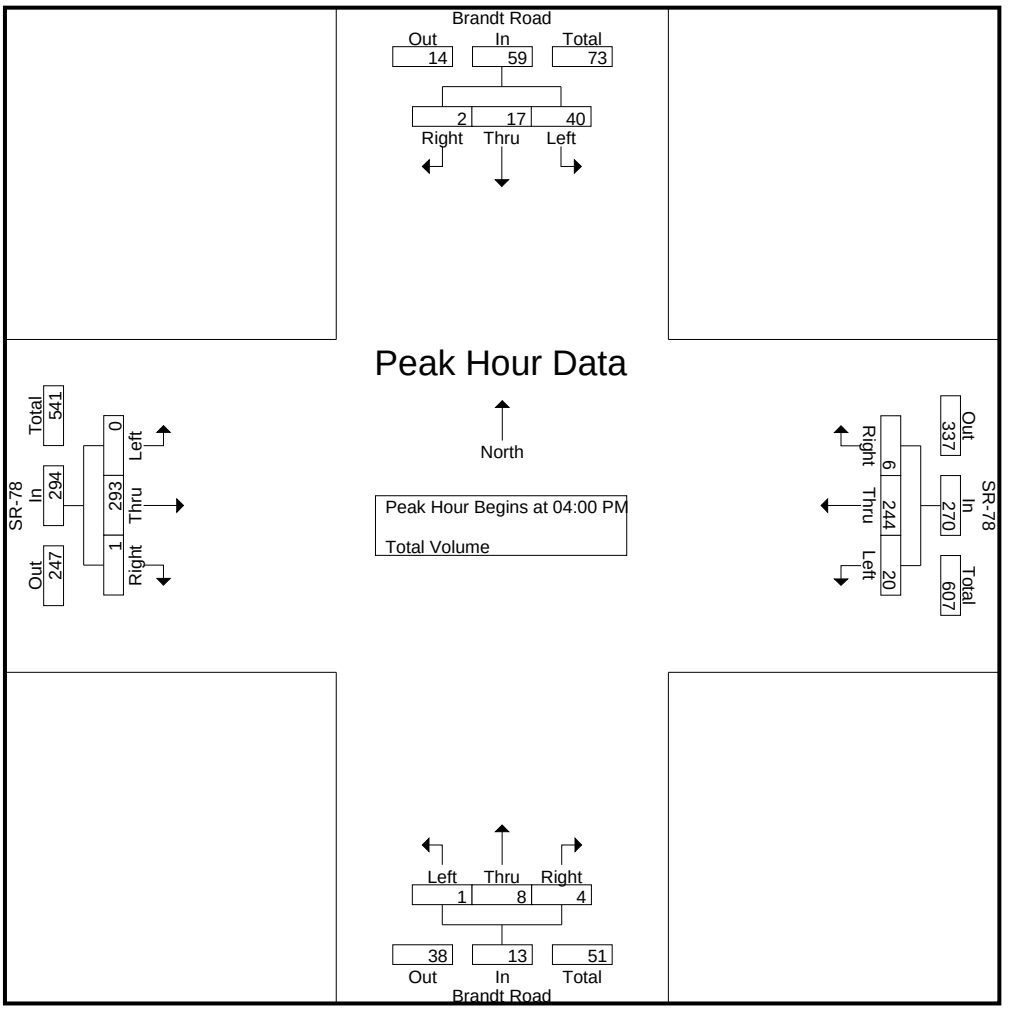
	Brandt Road Southbound				SR-78 Westbound				Brandt Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	3	0	13	3	68	1	72	1	3	1	5	0	89	1	90	180
04:15 PM	9	5	1	15	3	58	3	64	0	4	2	6	0	69	0	69	154
04:30 PM	14	5	1	20	6	66	2	74	0	0	1	1	0	59	0	59	154
04:45 PM	7	4	0	11	8	52	0	60	0	1	0	1	0	76	0	76	148
Total	40	17	2	59	20	244	6	270	1	8	4	13	0	293	1	294	636
05:00 PM	1	5	0	6	4	61	1	66	0	1	2	3	0	84	0	84	159
05:15 PM	2	2	0	4	4	58	0	62	0	1	2	3	0	62	0	62	131
05:30 PM	0	3	0	3	2	58	3	63	0	3	1	4	0	63	0	63	133
05:45 PM	3	2	0	5	2	69	2	73	0	1	2	3	0	55	0	55	136
Total	6	12	0	18	12	246	6	264	0	6	7	13	0	264	0	264	559
Grand Total	46	29	2	77	32	490	12	534	1	14	11	26	0	557	1	558	1195
Apprch %	59.7	37.7	2.6		6	91.8	2.2		3.8	53.8	42.3		0	99.8	0.2		
Total %	3.8	2.4	0.2	6.4	2.7	41	1	44.7	0.1	1.2	0.9	2.2	0	46.6	0.1	46.7	

	Brandt Road Southbound				SR-78 Westbound				Brandt Road Northbound				SR-78 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	10	3	0	13	3	**68**	1	72	**1**	3	1	5	0	**89**	**1**	**90**	**180**
04:15 PM	9	**5**	**1**	15	3	58	**3**	64	0	**4**	**2**	**6**	0	69	0	69	154
04:30 PM	**14**	5	1	**20**	6	66	2	**74**	0	0	1	1	0	59	0	59	154
04:45 PM	7	4	0	11	**8**	52	0	60	0	1	0	1	0	76	0	76	148
Total Volume	40	17	2	59	20	244	6	270	1	8	4	13	0	293	1	294	636
% App. Total	67.8	28.8	3.4		7.4	90.4	2.2		7.7	61.5	30.8		0	99.7	0.3		
PHF	.714	.850	.500	.738	.625	.897	.500	.912	.250	.500	.500	.542	.000	.823	.250	.817	.883

Counts Unlimited, Inc.
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County of Imperial
N/S: Brandt Road
E/W: SR-78
Weather: Clear

File Name : 06_CIM_Bran_78 PM
Site Code : 221001
Start Date : 11/9/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	10	3	0	13	3	**68**	1	72	**1**	3	1	5	0	**89**	**1**	**90**
+15 mins.	9	**5**	**1**	15	3	58	**3**	64	0	**4**	**2**	**6**	0	69	0	69
+30 mins.	**14**	5	1	**20**	6	66	2	**74**	0	0	1	1	0	59	0	59
+45 mins.	7	4	0	11	**8**	52	0	60	0	1	0	1	0	76	0	76
Total Volume	40	17	2	59	20	244	6	270	1	8	4	13	0	293	1	294
% App. Total	67.8	28.8	3.4		7.4	90.4	2.2		7.7	61.5	30.8		0	99.7	0.3	
PHF	.714	.850	.500	.738	.625	.897	.500	.912	.250	.500	.500	.542	.000	.823	.250	.817

Location: County of Imperial
N/S: Brandt Road
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

PEDESTRIANS

	North Leg Brandt Road	East Leg SR-78	South Leg Brandt Road	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Brandt Road	East Leg SR-78	South Leg Brandt Road	West Leg SR-78	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Counts Unlimited, Inc.
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951-268-6268

Location: County of Imperial
N/S: Brandt Road
E/W: SR-78

Date: 11/9/2022
Day: Wednesday

BICYCLES

	Southbound Brandt Road			Westbound SR-78			Northbound Brandt Road			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Brandt Road			Westbound SR-78			Northbound Brandt Road			Eastbound SR-78			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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ROADWAY SEGMENTS

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County of Imperial
Beal Raod
B/ Commercial Avenue - Railroad Tracks
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001B

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	3	2	**1**	0	**1**	0	**2**	0	0	0	0	0	9
05:00	0	0	5	0	0	0	0	0	1	0	0	0	0	6
06:00	0	5	7	0	3	0	0	0	1	0	0	0	0	16
07:00	0	4	11	0	2	0	0	2	1	0	0	0	0	20
08:00	0	9	8	1	**8**	1	0	1	0	0	0	0	0	28
09:00	0	7	10	0	2	1	0	0	1	0	0	0	0	21
10:00	1	5	8	0	0	0	0	1	**2**	0	0	0	0	17
11:00	**3**	**24**	**21**	0	5	1	0	0	1	0	0	0	0	**55**
12 PM	0	16	**16**	0	5	0	0	**4**	**2**	0	0	0	0	**43**
13:00	0	8	13	0	2	**1**	0	1	1	0	0	0	0	26
14:00	**1**	14	10	0	0	0	0	1	0	0	0	0	0	26
15:00	1	13	7	**1**	5	1	0	0	0	0	0	0	0	28
16:00	0	**17**	12	0	**7**	0	0	0	0	0	0	0	0	36
17:00	0	8	7	0	3	0	0	0	0	0	0	0	0	18
18:00	0	2	5	0	0	0	0	0	0	0	0	0	0	7
19:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
20:00	0	1	3	0	0	0	0	0	0	0	0	0	0	4
21:00	0	3	3	0	1	0	0	0	0	0	0	0	0	7
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	3	2	0	2	0	0	1	0	0	0	0	0	8
Total	6	155	152	3	46	6	0	13	10	0	0	0	0	391
Percent	1.5%	39.6%	38.9%	0.8%	11.8%	1.5%	0.0%	3.3%	2.6%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	04:00	08:00	04:00		04:00	10:00					11:00
Vol.	3	24	21	1	8	1		2	2					55
PM Peak	14:00	16:00	12:00	15:00	16:00	13:00		12:00	12:00					12:00
Vol.	1	17	16	1	7	1		4	2					43
Grand Total	6	155	152	3	46	6	0	13	10	0	0	0	0	391
Percent	1.5%	39.6%	38.9%	0.8%	11.8%	1.5%	0.0%	3.3%	2.6%	0.0%	0.0%	0.0%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
Beal Raod
B/ Commercial Avenue - Railroad Tracks
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001B

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	1	2	4	0	1	**1**	0	0	0	0	0	0	0	9
06:00	0	0	3	0	3	0	0	0	**1**	0	0	0	0	7
07:00	**2**	6	3	0	4	1	0	0	0	0	0	0	0	16
08:00	0	8	10	0	6	0	0	1	0	0	0	0	0	25
09:00	1	8	12	**2**	8	1	0	1	0	0	0	0	0	33
10:00	1	11	**16**	0	**14**	1	0	**3**	1	0	0	0	0	**47**
11:00	0	**13**	10	1	4	1	0	2	1	0	0	0	0	32
12 PM	0	13	**13**	0	6	**1**	0	**1**	**1**	0	0	0	0	35
13:00	0	12	9	0	**10**	0	0	1	1	0	0	0	0	33
14:00	**1**	**14**	13	0	7	0	0	1	0	0	0	0	0	**36**
15:00	0	12	11	0	8	0	0	0	0	0	**1**	0	0	32
16:00	0	5	7	**1**	5	0	0	0	0	0	0	0	0	18
17:00	0	10	3	0	8	0	0	0	0	0	0	0	0	21
18:00	0	5	2	0	4	0	0	0	0	0	0	0	0	11
19:00	0	4	3	0	6	0	0	0	0	0	0	0	0	13
20:00	0	1	2	1	0	0	0	0	0	0	0	0	0	4
21:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3
22:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
23:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Total	7	133	126	5	94	6	0	10	5	0	1	0	0	387
Percent	1.8%	34.4%	32.6%	1.3%	24.3%	1.6%	0.0%	2.6%	1.3%	0.0%	0.3%	0.0%	0.0%	
AM Peak	07:00	11:00	10:00	09:00	10:00	05:00		10:00	06:00					10:00
Vol.	2	13	16	2	14	1		3	1					47
PM Peak	14:00	14:00	12:00	16:00	13:00	12:00		12:00	12:00		15:00			14:00
Vol.	1	14	13	1	10	1		1	1		1			36
Grand Total	7	133	126	5	94	6	0	10	5	0	1	0	0	387
Percent	1.8%	34.4%	32.6%	1.3%	24.3%	1.6%	0.0%	2.6%	1.3%	0.0%	0.3%	0.0%	0.0%	

Counts Unlimited, Inc.

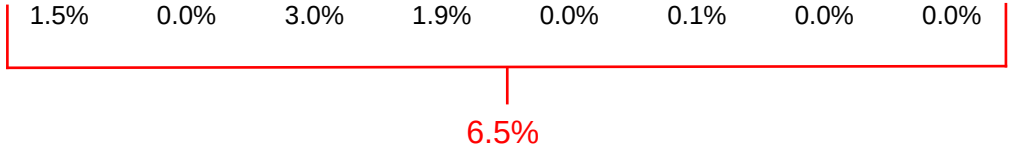
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County of Imperial
Beal Raod
B/ Commercial Avenue - Railroad Tracks
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001B

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
03:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	2	1	0	1	0	2	0	0	0	0	0	9
05:00	1	2	9	0	1	1	0	0	1	0	0	0	0	15
06:00	0	5	10	0	6	0	0	0	2	0	0	0	0	23
07:00	2	10	14	0	6	1	0	2	1	0	0	0	0	36
08:00	0	17	18	1	**14**	1	0	2	0	0	0	0	0	53
09:00	1	15	22	**2**	10	**2**	0	1	1	0	0	0	0	54
10:00	2	16	24	0	14	1	0	**4**	**3**	0	0	0	0	64
11:00	**3**	**37**	**31**	1	9	2	0	2	2	0	0	0	0	**87**
12 PM	0	**29**	**29**	0	11	**1**	0	**5**	**3**	0	0	0	0	**78**
13:00	0	20	22	0	12	1	0	2	2	0	0	0	0	59
14:00	**2**	28	23	0	7	0	0	2	0	0	0	0	0	62
15:00	1	25	18	**1**	**13**	1	0	0	0	0	**1**	0	0	60
16:00	0	22	19	1	12	0	0	0	0	0	0	0	0	54
17:00	0	18	10	0	11	0	0	0	0	0	0	0	0	39
18:00	0	7	7	0	4	0	0	0	0	0	0	0	0	18
19:00	0	14	4	0	6	0	0	0	0	0	0	0	0	24
20:00	0	2	5	1	0	0	0	0	0	0	0	0	0	8
21:00	0	4	5	0	1	0	0	0	0	0	0	0	0	10
22:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
23:00	0	7	2	0	2	0	0	1	0	0	0	0	0	12
Total	13	288	278	8	140	12	0	23	15	0	1	0	0	778
Percent	1.7%	37.0%	35.7%	1.0%	18.0%	1.5%	0.0%	3.0%	1.9%	0.0%	0.1%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	09:00	08:00	09:00		10:00	10:00					11:00
Vol.	3	37	31	2	14	2		4	3					87
PM Peak	14:00	12:00	12:00	15:00	15:00	12:00		12:00	12:00		15:00			12:00
Vol.	2	29	29	1	13	1		5	3		1			78
Grand Total	13	288	278	8	140	12	0	23	15	0	1	0	0	778
Percent	1.7%	37.0%	35.7%	1.0%	18.0%	1.5%	0.0%	3.0%	1.9%	0.0%	0.1%	0.0%	0.0%	



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County of Imperial
Brandt Road
B/ Swink Road - Hovley Road
24 Hour Directional Classification Count

CIM006
Site Code: 125-221001B

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	5	1	0	0	0	0	0	0	0	0	0	0	6
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	3	0	0	0	0	0	0	1	0	0	0	0	4
06:00	0	5	6	0	1	0	0	0	0	0	0	0	0	12
07:00	0	2	8	0	1	0	0	0	**2**	0	0	0	0	13
08:00	0	**7**	11	0	0	0	0	0	1	0	0	0	0	19
09:00	0	3	10	**3**	1	0	0	0	0	0	0	0	0	17
10:00	0	5	8	3	0	0	0	0	0	0	0	0	0	16
11:00	0	4	**13**	0	**3**	0	0	**1**	1	0	0	0	0	**22**
12 PM	0	3	17	0	0	**8**	**1**	0	1	0	0	0	0	30
13:00	0	16	11	0	0	1	0	0	0	0	0	0	0	28
14:00	0	**40**	**25**	0	0	0	0	0	0	0	0	0	0	**65**
15:00	0	11	12	0	**5**	0	0	0	**2**	0	0	0	0	30
16:00	0	16	6	0	1	0	0	0	0	0	0	0	0	23
17:00	0	11	2	0	0	0	0	0	0	0	0	0	0	13
18:00	0	12	0	0	0	0	0	0	0	0	0	0	0	12
19:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
20:00	0	2	0	0	0	0	0	0	1	0	0	0	0	3
21:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
Total	0	164	132	6	12	9	1	1	9	0	0	0	0	334
Percent	0.0%	49.1%	39.5%	1.8%	3.6%	2.7%	0.3%	0.3%	2.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak		08:00	11:00	09:00	11:00			11:00	07:00					11:00
Vol.		7	13	3	3			1	2					22
PM Peak		14:00	14:00		15:00	12:00	12:00		15:00					14:00
Vol.		40	25		5	8	1		2					65
Grand Total	0	164	132	6	12	9	1	1	9	0	0	0	0	334
Percent	0.0%	49.1%	39.5%	1.8%	3.6%	2.7%	0.3%	0.3%	2.7%	0.0%	0.0%	0.0%	0.0%	

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County of Imperial
Brandt Road
B/ Swink Road - Hovley Road
24 Hour Directional Classification Count

CIM006
Site Code: 125-221001B

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
04:00	0	33	0	0	0	0	0	0	0	0	0	0	0	33
05:00	0	**66**	18	0	1	0	0	0	**3**	0	0	0	0	**88**
06:00	0	14	14	0	2	0	0	0	0	**1**	0	0	0	31
07:00	0	24	**19**	0	0	**2**	0	**1**	0	0	0	0	0	46
08:00	0	9	18	0	**3**	1	0	0	1	0	0	0	0	32
09:00	0	4	10	0	1	0	0	1	2	0	0	0	0	18
10:00	0	4	11	0	2	0	0	0	2	0	0	0	0	19
11:00	0	3	7	0	2	1	0	0	0	0	0	0	0	13
12 PM	0	4	11	0	**2**	0	0	0	0	0	0	0	0	17
13:00	0	4	**16**	0	0	**1**	0	**1**	0	0	0	0	0	**22**
14:00	0	5	12	0	0	0	0	0	0	0	0	0	0	17
15:00	0	4	9	0	0	0	0	0	**2**	0	0	0	0	15
16:00	0	**13**	9	0	0	0	0	0	0	0	0	0	0	22
17:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
18:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
19:00	**1**	1	1	0	0	0	0	0	1	0	0	0	0	4
20:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
21:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Total	1	230	158	0	13	5	0	3	11	1	0	0	0	422
Percent	0.2%	54.5%	37.4%	0.0%	3.1%	1.2%	0.0%	0.7%	2.6%	0.2%	0.0%	0.0%	0.0%	
AM Peak		05:00	07:00		08:00	07:00		07:00	05:00	06:00				05:00
Vol.		66	19		3	2		1	3	1				88
PM Peak	19:00	16:00	13:00		12:00	13:00		13:00	15:00					13:00
Vol.	1	13	16		2	1		1	2					22
Grand Total	1	230	158	0	13	5	0	3	11	1	0	0	0	422
Percent	0.2%	54.5%	37.4%	0.0%	3.1%	1.2%	0.0%	0.7%	2.6%	0.2%	0.0%	0.0%	0.0%	

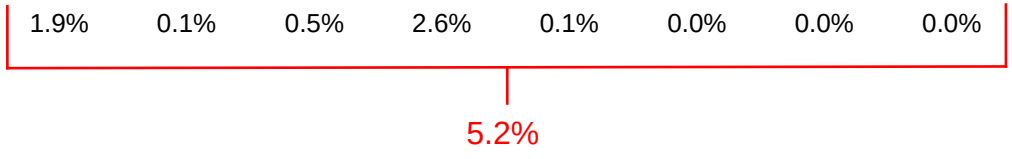
Counts Unlimited, Inc.

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County of Imperial
Brandt Road
B/ Swink Road - Hovley Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM006
Site Code: 125-221001B

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	6	1	0	0	0	0	0	0	0	0	0	0	7
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
04:00	0	35	0	0	0	0	0	0	0	0	0	0	0	35
05:00	0	**69**	18	0	1	0	0	0	**4**	0	0	0	0	**92**
06:00	0	19	20	0	3	0	0	0	0	**1**	0	0	0	43
07:00	0	26	27	0	1	**2**	0	**1**	2	0	0	0	0	59
08:00	0	16	**29**	0	3	1	0	0	2	0	0	0	0	51
09:00	0	7	20	**3**	2	0	0	1	2	0	0	0	0	35
10:00	0	9	19	3	2	0	0	0	2	0	0	0	0	35
11:00	0	7	20	0	**5**	1	0	1	1	0	0	0	0	35
12 PM	0	7	28	0	2	**8**	**1**	0	1	0	0	0	0	47
13:00	0	20	27	0	0	2	0	**1**	0	0	0	0	0	50
14:00	0	**45**	**37**	0	0	0	0	0	0	0	0	0	0	**82**
15:00	0	15	21	0	**5**	0	0	0	**4**	0	0	0	0	45
16:00	0	29	15	0	1	0	0	0	0	0	0	0	0	45
17:00	0	20	3	0	0	0	0	0	0	0	0	0	0	23
18:00	0	16	1	0	0	0	0	0	0	0	0	0	0	17
19:00	**1**	5	3	0	0	0	0	0	1	0	0	0	0	10
20:00	0	5	0	0	0	0	0	0	1	0	0	0	0	6
21:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
22:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
23:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
Total	1	394	290	6	25	14	1	4	20	1	0	0	0	756
Percent	0.1%	52.1%	38.4%	0.8%	3.3%	1.9%	0.1%	0.5%	2.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak		05:00	08:00	09:00	11:00	07:00		07:00	05:00	06:00				05:00
Vol.		69	29	3	5	2		1	4	1				92
PM Peak	19:00	14:00	14:00		15:00	12:00	12:00	13:00	15:00					14:00
Vol.	1	45	37		5	8	1	1	4					82
Grand Total	1	394	290	6	25	14	1	4	20	1	0	0	0	756
Percent	0.1%	52.1%	38.4%	0.8%	3.3%	1.9%	0.1%	0.5%	2.6%	0.1%	0.0%	0.0%	0.0%	



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County of Imperial
Brandt Road
N/ Vail Road
24 Hour Directional Classification Count

CIM005
Site Code: 125-221001B

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	25	0	0	0	0	0	0	0	0	0	0	0	25
05:00	0	**40**	9	0	0	**1**	0	0	**1**	0	0	0	0	**51**
06:00	0	7	**15**	0	0	0	0	0	0	**1**	0	0	0	23
07:00	0	18	9	0	0	0	0	0	0	0	0	0	0	27
08:00	0	8	12	0	**2**	1	0	0	1	0	0	0	0	24
09:00	0	5	10	0	0	0	0	**1**	1	0	0	0	0	17
10:00	0	1	10	0	1	0	0	1	1	0	0	0	0	14
11:00	0	2	6	0	0	1	0	0	0	0	0	0	0	9
12 PM	0	2	2	0	0	0	0	0	0	0	0	0	0	4
13:00	0	4	**12**	0	**1**	**1**	0	0	0	0	0	0	0	**18**
14:00	0	3	7	0	1	0	0	0	0	0	0	0	0	11
15:00	0	1	10	0	0	0	0	0	0	0	0	0	0	11
16:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
17:00	0	**8**	0	0	0	0	0	0	0	0	0	0	0	8
18:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
19:00	0	4	0	0	0	0	0	0	**1**	0	0	0	0	5
20:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
21:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	160	106	0	5	4	0	2	5	1	0	0	0	283
Percent	0.0%	56.5%	37.5%	0.0%	1.8%	1.4%	0.0%	0.7%	1.8%	0.4%	0.0%	0.0%	0.0%	
AM Peak		05:00	06:00		08:00	05:00		09:00	05:00	06:00				05:00
Vol.		40	15		2	1		1	1	1				51
PM Peak		17:00	13:00		13:00	13:00			19:00					13:00
Vol.		8	12		1	1			1					18
Grand Total	0	160	106	0	5	4	0	2	5	1	0	0	0	283
Percent	0.0%	56.5%	37.5%	0.0%	1.8%	1.4%	0.0%	0.7%	1.8%	0.4%	0.0%	0.0%	0.0%	

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County of Imperial
Brandt Road
N/ Vail Road
24 Hour Directional Classification Count

CIM005
Site Code: 125-221001B

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	3	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	4	0	0	0	0	0	0	0	0	**1**	0	0	5
06:00	0	**6**	7	0	0	0	0	0	0	0	0	0	0	13
07:00	0	1	4	0	**1**	0	0	0	0	0	1	0	0	7
08:00	0	5	**10**	0	0	0	0	0	**1**	0	0	0	0	**16**
09:00	0	2	7	0	0	0	0	0	0	0	0	0	0	9
10:00	0	2	5	0	0	0	0	1	0	0	0	0	0	8
11:00	0	3	7	0	1	0	0	**2**	1	0	0	0	0	14
12 PM	0	4	11	0	0	0	**1**	0	1	0	0	0	0	17
13:00	0	16	8	0	0	**1**	0	0	0	0	0	0	0	25
14:00	0	**19**	**12**	0	**1**	0	0	0	0	0	0	0	0	**32**
15:00	0	10	11	0	1	0	0	0	**2**	0	0	0	0	24
16:00	0	13	10	0	0	0	0	0	0	0	0	0	0	23
17:00	0	5	5	0	0	0	0	0	0	0	0	0	0	10
18:00	0	2	8	0	0	0	0	0	0	0	0	0	0	10
19:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	108	106	0	5	1	1	3	5	0	2	0	0	231
Percent	0.0%	46.8%	45.9%	0.0%	2.2%	0.4%	0.4%	1.3%	2.2%	0.0%	0.9%	0.0%	0.0%	
AM Peak		06:00	08:00		07:00			11:00	08:00		05:00			08:00
Vol.		6	10		1			2	1		1			16
PM Peak		14:00	14:00		14:00	13:00	12:00		15:00					14:00
Vol.		19	12		1	1	1		2					32
Grand Total	0	108	106	0	5	1	1	3	5	0	2	0	0	231
Percent	0.0%	46.8%	45.9%	0.0%	2.2%	0.4%	0.4%	1.3%	2.2%	0.0%	0.9%	0.0%	0.0%	

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County of Imperial
Brandt Road
N/ Vail Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM005
Site Code: 125-221001B

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	4	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	27	0	0	0	0	0	0	0	0	0	0	0	27
05:00	0	**44**	9	0	0	**1**	0	0	1	0	**1**	0	0	**56**
06:00	0	13	**22**	0	0	0	0	0	0	**1**	0	0	0	36
07:00	0	19	13	0	1	0	0	0	0	0	1	0	0	34
08:00	0	13	22	0	**2**	1	0	0	**2**	0	0	0	0	40
09:00	0	7	17	0	0	0	0	1	1	0	0	0	0	26
10:00	0	3	15	0	1	0	0	**2**	1	0	0	0	0	22
11:00	0	5	13	0	1	1	0	2	1	0	0	0	0	23
12 PM	0	6	13	0	0	0	**1**	0	1	0	0	0	0	21
13:00	0	20	20	0	1	**2**	0	0	0	0	0	0	0	**43**
14:00	0	**22**	19	0	**2**	0	0	0	0	0	0	0	0	43
15:00	0	11	**21**	0	1	0	0	0	**2**	0	0	0	0	35
16:00	0	19	12	0	0	0	0	0	0	0	0	0	0	31
17:00	0	13	5	0	0	0	0	0	0	0	0	0	0	18
18:00	0	7	8	0	0	0	0	0	0	0	0	0	0	15
19:00	0	6	1	0	1	0	0	0	1	0	0	0	0	9
20:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
21:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
Total	0	268	212	0	10	5	1	5	10	1	2	0	0	514
Percent	0.0%	52.1%	41.2%	0.0%	1.9%	1.0%	0.2%	1.0%	1.9%	0.2%	0.4%	0.0%	0.0%	
AM Peak		05:00	06:00		08:00	05:00		10:00	08:00	06:00	05:00			05:00
Vol.		44	22		2	1		2	2	1	1			56
PM Peak		14:00	15:00		14:00	13:00	12:00		15:00					13:00
Vol.		22	21		2	2	1		2					43
Grand Total	0	268	212	0	10	5	1	5	10	1	2	0	0	514
Percent	0.0%	52.1%	41.2%	0.0%	1.9%	1.0%	0.2%	1.0%	1.9%	0.2%	0.4%	0.0%	0.0%	

4.7%

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County of Imperial
English Road
N/ Highway 111
24 Hour Directional Classification Count

CIM007
Site Code: 125-221001B

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	**1**	0	0	0	0	0	0	0	0	2
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	**11**	2	0	0	0	0	0	0	0	0	0	0	13
06:00	0	4	10	0	0	0	0	0	0	0	0	0	0	14
07:00	0	4	5	0	1	**4**	0	0	**1**	0	0	0	0	**15**
08:00	0	3	**12**	0	0	0	0	0	0	0	0	0	0	15
09:00	0	2	9	0	0	0	0	0	0	0	0	0	0	11
10:00	0	6	8	0	0	0	0	0	0	0	0	0	0	14
11:00	0	2	3	0	0	0	0	0	0	0	0	0	0	5
12 PM	0	**9**	4	0	0	0	0	0	**1**	0	0	0	0	**14**
13:00	0	3	2	0	0	**1**	0	0	1	0	0	0	0	7
14:00	0	2	2	0	0	0	0	0	1	0	0	0	0	5
15:00	0	2	**5**	0	**1**	0	0	0	0	0	0	0	0	8
16:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
18:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
19:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	67	63	0	4	5	0	0	4	0	0	0	0	143
Percent	0.0%	46.9%	44.1%	0.0%	2.8%	3.5%	0.0%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	
AM Peak		05:00	08:00		02:00	07:00			07:00					07:00
Vol.		11	12		1	4			1					15
PM Peak		12:00	15:00		15:00	13:00			12:00					12:00
Vol.		9	5		1	1			1					14
Grand Total	0	67	63	0	4	5	0	0	4	0	0	0	0	143
Percent	0.0%	46.9%	44.1%	0.0%	2.8%	3.5%	0.0%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	

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County of Imperial
English Road
N/ Highway 111
24 Hour Directional Classification Count

CIM007
Site Code: 125-221001B

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	1	0	0	0	0	2
04:00	0	1	1	0	0	0	0	0	**2**	0	0	0	0	4
05:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	2	0	0	0	0	0	0	1	0	0	0	0	3
08:00	0	**7**	5	0	0	0	0	0	1	0	0	0	0	**13**
09:00	0	4	3	0	**1**	0	0	**1**	0	0	0	0	0	9
10:00	0	4	6	0	0	**1**	0	0	0	0	0	0	0	11
11:00	0	1	**7**	0	1	0	0	0	0	**1**	0	0	0	10
12 PM	0	3	1	0	0	0	0	0	0	0	0	0	0	4
13:00	0	2	6	**1**	**1**	0	0	**1**	0	0	0	0	0	11
14:00	0	3	4	0	0	**3**	0	0	0	0	0	0	0	10
15:00	0	7	8	0	1	0	0	0	0	0	0	0	0	16
16:00	0	**8**	**9**	0	0	0	0	0	0	0	0	0	0	**17**
17:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
18:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
19:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	53	53	1	4	4	0	2	5	1	0	0	0	123
Percent	0.0%	43.1%	43.1%	0.8%	3.3%	3.3%	0.0%	1.6%	4.1%	0.8%	0.0%	0.0%	0.0%	
AM Peak		08:00	11:00		09:00	10:00		09:00	04:00	11:00				08:00
Vol.		7	7		1	1		1	2	1				13
PM Peak		16:00	16:00	13:00	13:00	14:00		13:00						16:00
Vol.		8	9	1	1	3		1						17
Grand Total	0	53	53	1	4	4	0	2	5	1	0	0	0	123
Percent	0.0%	43.1%	43.1%	0.8%	3.3%	3.3%	0.0%	1.6%	4.1%	0.8%	0.0%	0.0%	0.0%	

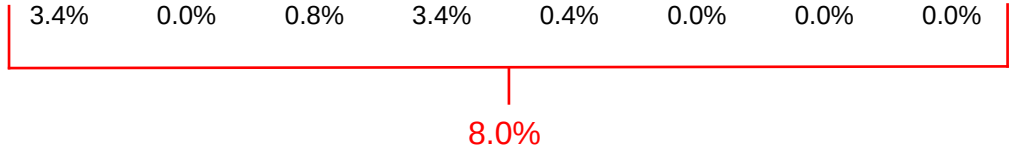
Counts Unlimited, Inc.

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County of Imperial
English Road
N/ Highway 111
24 Hour Directional Classification Count
Northbound, Southbound

CIM007
Site Code: 125-221001B

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	1	0	**1**	0	0	0	0	0	0	0	0	3
03:00	0	2	1	0	0	0	0	0	1	0	0	0	0	4
04:00	0	3	1	0	0	0	0	0	**2**	0	0	0	0	6
05:00	0	**13**	2	0	0	0	0	0	0	0	0	0	0	15
06:00	0	4	10	0	0	0	0	0	0	0	0	0	0	14
07:00	0	6	5	0	1	**4**	0	0	2	0	0	0	0	18
08:00	0	10	**17**	0	0	0	0	0	1	0	0	0	0	**28**
09:00	0	6	12	0	1	0	0	**1**	0	0	0	0	0	20
10:00	0	10	14	0	0	1	0	0	0	0	0	0	0	25
11:00	0	3	10	0	1	0	0	0	0	**1**	0	0	0	15
12 PM	0	12	5	0	0	0	0	0	**1**	0	0	0	0	18
13:00	0	5	8	**1**	1	1	0	**1**	1	0	0	0	0	18
14:00	0	5	6	0	0	**3**	0	0	1	0	0	0	0	15
15:00	0	9	**13**	0	**2**	0	0	0	0	0	0	0	0	**24**
16:00	0	**14**	9	0	0	0	0	0	0	0	0	0	0	23
17:00	0	5	2	0	1	0	0	0	0	0	0	0	0	8
18:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
19:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
20:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	120	116	1	8	9	0	2	9	1	0	0	0	266
Percent	0.0%	45.1%	43.6%	0.4%	3.0%	3.4%	0.0%	0.8%	3.4%	0.4%	0.0%	0.0%	0.0%	
AM Peak		05:00	08:00		02:00	07:00		09:00	04:00	11:00				08:00
Vol.		13	17		1	4		1	2	1				28
PM Peak		16:00	15:00	13:00	15:00	14:00		13:00	12:00					15:00
Vol.		14	13	1	2	3		1	1					24
Grand Total	0	120	116	1	8	9	0	2	9	1	0	0	0	266
Percent	0.0%	45.1%	43.6%	0.4%	3.0%	3.4%	0.0%	0.8%	3.4%	0.4%	0.0%	0.0%	0.0%	



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County of Imperial
Forrester Road
B/ New River - Bannister Road
24 Hour Directional Classification Count

CIM008
Site Code: 22100100812805

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	1	0	2	0	0	0	0	0	0	0	0	3
01:00	0	4	6	0	0	0	0	0	1	0	0	0	0	11
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	2	0	5	0	0	0	0	0	0	0	0	9
04:00	0	16	13	**2**	5	0	0	0	0	0	0	0	0	36
05:00	0	**51**	**29**	0	**26**	**1**	0	2	0	0	0	0	0	**109**
06:00	0	24	8	2	12	0	0	0	1	0	0	**3**	0	50
07:00	0	21	12	1	8	0	0	**4**	**3**	**1**	1	0	0	51
08:00	**1**	9	10	1	7	0	0	2	1	0	**3**	0	0	34
09:00	0	9	9	1	12	0	0	3	0	0	1	2	0	37
10:00	0	7	9	0	8	1	0	1	1	1	1	0	0	29
11:00	0	14	9	0	8	0	0	1	0	0	1	1	0	34
12 PM	0	12	4	**1**	9	0	0	0	**2**	0	0	0	0	28
13:00	0	10	**15**	1	4	0	0	0	0	**1**	0	0	0	**31**
14:00	0	1	6	1	3	0	0	**2**	2	0	0	0	0	15
15:00	0	10	8	0	5	0	0	0	1	0	0	0	0	24
16:00	0	**14**	2	1	**12**	0	0	1	0	0	**1**	0	0	31
17:00	0	13	1	1	3	0	0	0	1	0	0	0	0	19
18:00	0	6	4	1	3	0	0	0	0	0	0	0	0	14
19:00	0	5	2	0	0	0	0	0	0	0	0	0	0	7
20:00	0	1	0	1	0	0	0	0	0	0	0	0	0	2
21:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	3	0	1	0	0	0	0	0	0	0	0	5
Total	1	234	155	14	133	2	0	16	13	3	8	6	0	585
Percent	0.2%	40.0%	26.5%	2.4%	22.7%	0.3%	0.0%	2.7%	2.2%	0.5%	1.4%	1.0%	0.0%	
AM Peak	08:00	05:00	05:00	04:00	05:00	05:00		07:00	07:00	07:00	08:00	06:00		05:00
Vol.	1	51	29	2	26	1		4	3	1	3	3		109
PM Peak		16:00	13:00	12:00	16:00			14:00	12:00	13:00	16:00			13:00
Vol.		14	15	1	12			2	2	1	1			31
Grand Total	1	234	155	14	133	2	0	16	13	3	8	6	0	585
Percent	0.2%	40.0%	26.5%	2.4%	22.7%	0.3%	0.0%	2.7%	2.2%	0.5%	1.4%	1.0%	0.0%	

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County of Imperial
Forrester Road
B/ New River - Bannister Road
24 Hour Directional Classification Count

CIM008
Site Code: 22100100812805

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	0	0	1	0	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
04:00	0	9	4	0	2	0	0	0	0	0	0	0	0	15
05:00	0	**16**	6	0	0	0	0	0	1	0	0	0	0	23
06:00	0	11	8	**1**	5	0	0	1	1	0	**3**	**2**	0	32
07:00	0	8	9	1	4	**1**	0	0	1	0	1	1	0	26
08:00	0	8	10	0	4	0	0	0	**4**	**1**	1	2	0	30
09:00	0	4	13	0	**15**	1	0	2	3	0	2	1	0	**41**
10:00	**1**	9	9	1	6	1	0	**3**	1	0	1	2	0	34
11:00	0	7	**17**	0	10	0	0	1	3	0	0	1	0	39
12 PM	0	15	**21**	**1**	6	0	0	**2**	**3**	0	**3**	**2**	0	53
13:00	0	14	8	0	5	0	0	2	1	0	1	1	0	32
14:00	**1**	35	17	0	2	0	0	0	1	0	0	1	0	57
15:00	1	25	19	0	9	**1**	0	2	1	0	1	1	0	60
16:00	1	**40**	16	0	**10**	1	0	0	1	0	0	0	0	**69**
17:00	0	21	10	1	6	0	0	1	0	0	1	0	0	40
18:00	0	5	4	1	5	0	0	0	0	0	1	0	0	16
19:00	1	5	2	0	3	0	0	0	0	0	0	0	0	11
20:00	0	3	3	0	0	0	0	0	0	0	0	0	0	6
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	6	3	0	2	0	0	0	0	0	0	0	0	11
23:00	0	1	2	0	1	0	0	0	1	0	0	0	0	5
Total	5	250	182	6	97	5	0	14	22	1	15	14	0	611
Percent	0.8%	40.9%	29.8%	1.0%	15.9%	0.8%	0.0%	2.3%	3.6%	0.2%	2.5%	2.3%	0.0%	
AM Peak	10:00	05:00	11:00	06:00	09:00	07:00		10:00	08:00	08:00	06:00	06:00		09:00
Vol.	1	16	17	1	15	1		3	4	1	3	2		41
PM Peak	14:00	16:00	12:00	12:00	16:00	15:00		12:00	12:00		12:00	12:00		16:00
Vol.	1	40	21	1	10	1		2	3		3	2		69
Grand Total	5	250	182	6	97	5	0	14	22	1	15	14	0	611
Percent	0.8%	40.9%	29.8%	1.0%	15.9%	0.8%	0.0%	2.3%	3.6%	0.2%	2.5%	2.3%	0.0%	

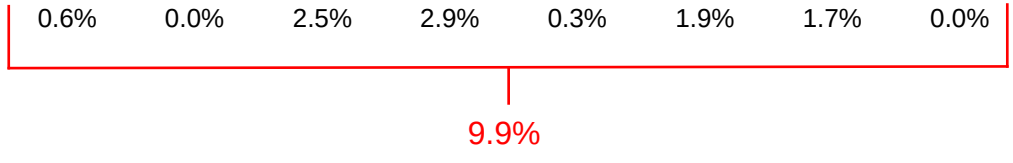
Counts Unlimited, Inc.

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County of Imperial
Forrester Road
B/ New River - Bannister Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM008
Site Code: 22100100812805

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	1	0	3	0	0	0	0	0	0	0	0	5
01:00	0	4	6	0	0	0	0	0	1	0	0	0	0	11
02:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
03:00	0	4	3	0	6	0	0	0	0	0	0	0	0	13
04:00	0	25	17	2	7	0	0	0	0	0	0	0	0	51
05:00	0	**67**	**35**	0	26	1	0	2	1	0	0	0	0	**132**
06:00	0	35	16	**3**	17	0	0	1	2	0	3	**5**	0	82
07:00	0	29	21	2	12	1	0	4	4	**1**	2	1	0	77
08:00	**1**	17	20	1	11	0	0	2	**5**	1	**4**	2	0	64
09:00	0	13	22	1	**27**	1	0	**5**	3	0	3	3	0	78
10:00	1	16	18	1	14	**2**	0	4	2	1	2	2	0	63
11:00	0	21	26	0	18	0	0	2	3	0	1	2	0	73
12 PM	0	27	25	**2**	15	0	0	**2**	**5**	0	**3**	**2**	0	81
13:00	0	24	23	1	9	0	0	2	1	**1**	1	1	0	63
14:00	**1**	36	23	1	5	0	0	2	3	0	0	1	0	72
15:00	1	35	**27**	0	14	**1**	0	2	2	0	1	1	0	84
16:00	1	**54**	18	1	**22**	1	0	1	1	0	1	0	0	**100**
17:00	0	34	11	2	9	0	0	1	1	0	1	0	0	59
18:00	0	11	8	2	8	0	0	0	0	0	1	0	0	30
19:00	1	10	4	0	3	0	0	0	0	0	0	0	0	18
20:00	0	4	3	1	0	0	0	0	0	0	0	0	0	8
21:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
22:00	0	7	3	0	2	0	0	0	0	0	0	0	0	12
23:00	0	2	5	0	2	0	0	0	1	0	0	0	0	10
Total	6	484	337	20	230	7	0	30	35	4	23	20	0	1196
Percent	0.5%	40.5%	28.2%	1.7%	19.2%	0.6%	0.0%	2.5%	2.9%	0.3%	1.9%	1.7%	0.0%	
AM Peak	08:00	05:00	05:00	06:00	09:00	10:00		09:00	08:00	07:00	08:00	06:00		05:00
Vol.	1	67	35	3	27	2		5	5	1	4	5		132
PM Peak	14:00	16:00	15:00	12:00	16:00	15:00		12:00	12:00	13:00	12:00	12:00		16:00
Vol.	1	54	27	2	22	1		2	5	1	3	2		100
Grand Total	6	484	337	20	230	7	0	30	35	4	23	20	0	1196
Percent	0.5%	40.5%	28.2%	1.7%	19.2%	0.6%	0.0%	2.5%	2.9%	0.3%	1.9%	1.7%	0.0%	



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County of Imperial
Gentry Road
B/ West Sinclair Road - West Eddins Road
24 Hour Directional Classification Count

CIM007
Site Code: 125-221001

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	2	0	1	0	0	0	1	0	0	0	0	4
01:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
02:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	5	0	0	2	1	0	0	0	0	8
04:00	0	10	5	1	11	0	0	0	0	0	0	0	0	27
05:00	0	**25**	**16**	**6**	**31**	0	0	1	1	0	0	0	0	**80**
06:00	0	17	16	1	8	0	0	2	1	0	0	0	0	45
07:00	0	20	9	1	15	0	0	**5**	1	0	0	0	0	51
08:00	0	6	5	2	6	0	0	1	**3**	0	0	0	0	23
09:00	0	3	6	0	19	**1**	0	1	0	0	**1**	0	0	31
10:00	0	4	3	0	12	0	0	0	2	0	0	0	0	21
11:00	0	3	3	0	8	1	**1**	0	1	0	0	0	0	17
12 PM	0	6	**11**	0	**8**	0	0	0	**1**	0	0	0	0	**26**
13:00	0	3	2	0	5	0	0	0	0	0	0	0	0	10
14:00	0	2	5	0	3	0	0	**1**	0	0	0	0	0	11
15:00	0	3	3	0	8	0	0	0	0	0	0	0	0	14
16:00	0	**11**	3	0	6	0	0	1	0	0	0	0	0	21
17:00	0	10	2	0	4	0	0	0	1	0	0	0	0	17
18:00	0	2	5	0	2	0	0	0	0	0	0	0	0	9
19:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
20:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
21:00	0	0	0	0	1	0	0	0	1	0	0	0	0	2
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	1	0	0	0	1	0	0	0	0	3
Total	0	136	100	11	155	2	1	14	15	0	1	0	0	435
Percent	0.0%	31.3%	23.0%	2.5%	35.6%	0.5%	0.2%	3.2%	3.4%	0.0%	0.2%	0.0%	0.0%	
AM Peak		05:00	05:00	05:00	05:00	09:00	11:00	07:00	08:00		09:00			05:00
Vol.		25	16	6	31	1	1	5	3		1			80
PM Peak		16:00	12:00		12:00			14:00	12:00					12:00
Vol.		11	11		8			1	1					26
Grand Total	0	136	100	11	155	2	1	14	15	0	1	0	0	435
Percent	0.0%	31.3%	23.0%	2.5%	35.6%	0.5%	0.2%	3.2%	3.4%	0.0%	0.2%	0.0%	0.0%	

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County of Imperial
Gentry Road
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24 Hour Directional Classification Count

CIM007
Site Code: 125-221001

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	**13**	7	0	2	0	0	0	0	0	0	0	0	22
05:00	0	9	3	0	1	0	0	0	0	0	0	0	0	13
06:00	0	1	4	0	5	0	0	0	0	0	0	0	0	10
07:00	**1**	5	5	1	6	1	0	1	0	0	0	0	0	20
08:00	0	7	8	**3**	7	0	0	0	1	0	0	0	0	**26**
09:00	0	2	5	0	**10**	**3**	0	**3**	1	0	0	0	0	24
10:00	0	5	**9**	0	5	0	0	0	**2**	0	0	0	0	21
11:00	1	6	8	0	5	1	0	1	2	0	**1**	0	0	25
12 PM	1	6	10	0	9	**1**	**1**	1	0	0	0	0	0	29
13:00	0	11	6	**1**	2	0	0	0	0	0	0	0	0	20
14:00	1	22	15	0	5	1	0	**3**	0	0	0	0	0	47
15:00	**2**	11	16	0	6	1	0	1	0	0	0	0	0	37
16:00	0	**48**	**18**	0	**10**	0	0	0	0	0	0	0	0	**76**
17:00	0	13	9	0	5	0	0	1	0	0	**1**	0	0	29
18:00	0	4	4	0	2	0	0	0	0	0	1	0	0	11
19:00	0	2	1	0	2	0	0	0	0	0	0	0	0	5
20:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
21:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
22:00	0	3	2	0	3	0	0	0	0	0	0	0	0	8
23:00	1	0	1	0	0	1	0	0	**1**	0	0	0	0	4
Total	7	176	133	5	86	9	1	11	7	0	3	0	0	438
Percent	1.6%	40.2%	30.4%	1.1%	19.6%	2.1%	0.2%	2.5%	1.6%	0.0%	0.7%	0.0%	0.0%	
AM Peak	07:00	04:00	10:00	08:00	09:00	09:00		09:00	10:00		11:00			08:00
Vol.	1	13	9	3	10	3		3	2		1			26
PM Peak	15:00	16:00	16:00	13:00	16:00	12:00	12:00	14:00	23:00		17:00			16:00
Vol.	2	48	18	1	10	1	1	3	1		1			76
Grand Total	7	176	133	5	86	9	1	11	7	0	3	0	0	438
Percent	1.6%	40.2%	30.4%	1.1%	19.6%	2.1%	0.2%	2.5%	1.6%	0.0%	0.7%	0.0%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
Gentry Road
B/ West Sinclair Road - West Eddins Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM007
Site Code: 125-221001

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	2	0	1	0	0	0	1	0	0	0	0	4
01:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
02:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
03:00	0	1	0	0	5	0	0	2	1	0	0	0	0	9
04:00	0	23	12	1	13	0	0	0	0	0	0	0	0	49
05:00	0	**34**	19	**6**	**32**	0	0	1	1	0	0	0	0	**93**
06:00	0	18	**20**	1	13	0	0	2	1	0	0	0	0	55
07:00	**1**	25	14	2	21	1	0	**6**	1	0	0	0	0	71
08:00	0	13	13	5	13	0	0	1	**4**	0	0	0	0	49
09:00	0	5	11	0	29	**4**	0	4	1	0	**1**	0	0	55
10:00	0	9	12	0	17	0	0	0	4	0	0	0	0	42
11:00	1	9	11	0	13	2	**1**	1	3	0	1	0	0	42
12 PM	1	12	**21**	0	**17**	**1**	**1**	1	1	0	0	0	0	55
13:00	0	14	8	**1**	7	0	0	0	0	0	0	0	0	30
14:00	1	24	20	0	8	1	0	**4**	0	0	0	0	0	58
15:00	**2**	14	19	0	14	1	0	1	0	0	0	0	0	51
16:00	0	**59**	21	0	16	0	0	1	0	0	0	0	0	**97**
17:00	0	23	11	0	9	0	0	1	1	0	**1**	0	0	46
18:00	0	6	9	0	4	0	0	0	0	0	1	0	0	20
19:00	0	4	2	0	2	0	0	0	0	0	0	0	0	8
20:00	0	3	2	0	1	0	0	0	0	0	0	0	0	6
21:00	0	2	0	0	2	0	0	0	1	0	0	0	0	5
22:00	0	3	2	0	3	0	0	0	0	0	0	0	0	8
23:00	1	1	1	0	1	1	0	0	**2**	0	0	0	0	7
Total	7	312	233	16	241	11	2	25	22	0	4	0	0	873
Percent	0.8%	35.7%	26.7%	1.8%	27.6%	1.3%	0.2%	2.9%	2.5%	0.0%	0.5%	0.0%	0.0%	
AM Peak	07:00	05:00	06:00	05:00	05:00	09:00	11:00	07:00	08:00		09:00			05:00
Vol.	1	34	20	6	32	4	1	6	4		1			93
PM Peak	15:00	16:00	12:00	13:00	12:00	12:00	12:00	14:00	23:00		17:00			16:00
Vol.	2	59	21	1	17	1	1	4	2		1			97
Grand Total	7	312	233	16	241	11	2	25	22	0	4	0	0	873
Percent	0.8%	35.7%	26.7%	1.8%	27.6%	1.3%	0.2%	2.9%	2.5%	0.0%	0.5%	0.0%	0.0%	

7.4%

Counts Unlimited, Inc.

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County of Imperial
Highway 78
B/ Lack Road - Forrester Road
24 Hour Directional Classification Count

CIM010
Site Code: 125-221001

Easatbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	49	1	0	1	0	0	0	63	0	0	0	0	114
01:00	0	25	3	0	2	0	0	0	45	0	2	0	0	77
02:00	0	22	1	0	2	0	0	0	48	0	2	0	0	75
03:00	0	35	3	0	3	0	0	0	47	0	2	0	0	90
04:00	0	33	0	0	4	0	0	0	56	0	0	0	0	93
05:00	0	74	11	0	5	1	0	0	55	0	4	0	0	150
06:00	0	60	44	**2**	5	**4**	0	3	81	1	**24**	3	0	227
07:00	0	125	53	0	9	4	0	1	65	0	12	5	**1**	275
08:00	1	**153**	74	0	**17**	2	0	7	58	1	11	2	0	**326**
09:00	**3**	151	70	1	6	1	0	**9**	51	**2**	2	3	0	299
10:00	0	137	61	0	8	0	0	7	75	1	16	5	0	310
11:00	2	119	**77**	0	12	3	0	9	**83**	2	4	**6**	0	317
12 PM	10	137	82	0	8	**5**	0	11	**125**	2	8	3	0	391
13:00	6	176	82	0	10	1	1	14	111	1	6	**4**	0	412
14:00	5	195	70	0	10	4	**10**	7	87	**3**	5	1	0	397
15:00	9	204	**86**	1	2	3	1	**17**	93	1	**11**	1	0	**429**
16:00	2	178	75	**7**	**12**	2	0	5	79	0	6	1	**1**	368
17:00	**20**	**218**	33	3	2	0	0	7	57	0	6	0	0	346
18:00	0	151	18	3	4	0	0	6	54	0	3	0	0	239
19:00	0	115	16	0	1	0	0	7	44	0	4	0	0	187
20:00	0	98	15	0	1	2	0	4	56	0	2	0	0	178
21:00	0	108	19	0	1	0	0	6	53	0	6	0	0	193
22:00	0	83	15	0	2	0	0	7	62	0	5	1	0	175
23:00	0	66	9	0	0	1	0	9	57	0	0	1	0	143
Total	58	2712	918	17	127	33	12	136	1605	14	141	36	2	5811
Percent	1.0%	46.7%	15.8%	0.3%	2.2%	0.6%	0.2%	2.3%	27.6%	0.2%	2.4%	0.6%	0.0%	
AM Peak	09:00	08:00	11:00	06:00	08:00	06:00		09:00	11:00	09:00	06:00	11:00	07:00	08:00
Vol.	3	153	77	2	17	4		9	83	2	24	6	1	326
PM Peak	17:00	17:00	15:00	16:00	16:00	12:00	14:00	15:00	12:00	14:00	15:00	13:00	16:00	15:00
Vol.	20	218	86	7	12	5	10	17	125	3	11	4	1	429
Grand Total	58	2712	918	17	127	33	12	136	1605	14	141	36	2	5811
Percent	1.0%	46.7%	15.8%	0.3%	2.2%	0.6%	0.2%	2.3%	27.6%	0.2%	2.4%	0.6%	0.0%	

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County of Imperial
Highway 78
B/ Lack Road - Forrester Road
24 Hour Directional Classification Count

CIM010
Site Code: 125-221001

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	**3**	44	0	0	2	6	0	0	33	0	0	0	**1**	89
01:00	0	15	0	0	5	2	0	0	40	0	0	0	0	62
02:00	1	31	0	0	3	1	0	0	32	0	5	0	0	73
03:00	2	53	2	0	2	2	0	0	40	0	7	0	0	108
04:00	0	97	10	1	7	1	0	0	56	0	9	0	0	181
05:00	0	**211**	12	0	2	3	0	0	59	0	**15**	0	0	**302**
06:00	1	121	**79**	0	11	6	**1**	5	48	**2**	9	0	0	283
07:00	0	108	70	**9**	**17**	5	1	6	76	0	6	0	0	298
08:00	0	108	51	3	10	**8**	0	4	**83**	0	11	**4**	0	282
09:00	0	112	47	0	13	4	0	3	54	0	8	3	0	244
10:00	1	108	64	0	15	4	0	**7**	73	0	6	2	0	280
11:00	0	112	67	0	8	6	0	3	74	0	2	2	0	274
12 PM	**2**	128	73	0	6	2	0	**6**	70	0	6	1	0	294
13:00	0	158	55	0	14	3	0	2	68	0	**8**	3	0	311
14:00	2	154	**92**	**1**	**21**	0	0	3	67	0	1	5	0	**346**
15:00	0	163	63	0	8	4	0	3	77	0	1	2	0	321
16:00	1	**170**	55	0	9	2	0	6	79	0	2	1	0	325
17:00	0	159	11	0	10	**6**	0	1	78	0	0	0	0	265
18:00	0	165	5	0	10	1	0	2	95	0	3	3	0	284
19:00	0	122	1	0	9	2	0	2	**99**	0	0	7	0	242
20:00	0	105	0	0	8	0	0	1	94	0	0	7	0	215
21:00	0	84	6	0	6	0	0	1	69	0	0	**8**	0	174
22:00	0	56	0	0	0	1	**1**	0	39	0	7	4	0	108
23:00	0	58	0	0	2	0	0	2	29	**1**	4	2	0	98
Total	13	2642	763	14	198	69	3	57	1532	3	110	54	1	5459
Percent	0.2%	48.4%	14.0%	0.3%	3.6%	1.3%	0.1%	1.0%	28.1%	0.1%	2.0%	1.0%	0.0%	
AM Peak	00:00	05:00	06:00	07:00	07:00	08:00	06:00	10:00	08:00	06:00	05:00	08:00	00:00	05:00
Vol.	3	211	79	9	17	8	1	7	83	2	15	4	1	302
PM Peak	12:00	16:00	14:00	14:00	14:00	17:00	22:00	12:00	19:00	23:00	13:00	21:00		14:00
Vol.	2	170	92	1	21	6	1	6	99	1	8	8		346
Grand Total	13	2642	763	14	198	69	3	57	1532	3	110	54	1	5459
Percent	0.2%	48.4%	14.0%	0.3%	3.6%	1.3%	0.1%	1.0%	28.1%	0.1%	2.0%	1.0%	0.0%	

Counts Unlimited, Inc.

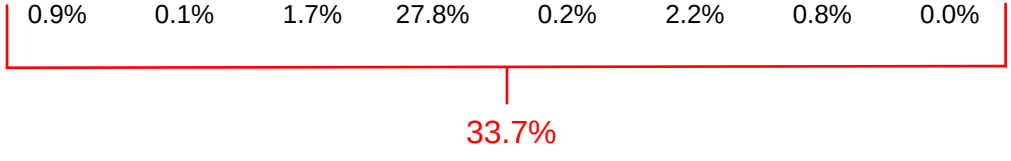
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County of Imperial
Highway 78
B/ Lack Road - Forrester Road
24 Hour Directional Classification Count

CIM010
Site Code: 125-221001

Easatbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	**3**	93	1	0	3	6	0	0	96	0	0	0	**1**	203
01:00	0	40	3	0	7	2	0	0	85	0	2	0	0	139
02:00	1	53	1	0	5	1	0	0	80	0	7	0	0	148
03:00	2	88	5	0	5	2	0	0	87	0	9	0	0	198
04:00	0	130	10	1	11	1	0	0	112	0	9	0	0	274
05:00	0	**285**	23	0	7	4	0	0	114	0	19	0	0	452
06:00	1	181	123	2	16	**10**	**1**	8	129	**3**	**33**	3	0	510
07:00	0	233	123	**9**	26	9	1	7	141	0	18	5	1	573
08:00	1	261	125	3	**27**	10	0	11	141	1	22	6	0	**608**
09:00	3	263	117	1	19	5	0	12	105	2	10	6	0	543
10:00	1	245	125	0	23	4	0	**14**	148	1	22	7	0	590
11:00	2	231	**144**	0	20	9	0	12	**157**	2	6	**8**	0	591
12 PM	12	265	155	0	14	**7**	0	17	**195**	2	**14**	4	0	685
13:00	6	334	137	0	24	4	1	16	179	1	14	7	0	723
14:00	7	349	**162**	1	**31**	4	**10**	10	154	**3**	6	6	0	743
15:00	9	367	149	1	10	7	1	**20**	170	1	12	3	0	**750**
16:00	3	348	130	**7**	21	4	0	11	158	0	8	2	**1**	693
17:00	**20**	**377**	44	3	12	6	0	8	135	0	6	0	0	611
18:00	0	316	23	3	14	1	0	8	149	0	6	3	0	523
19:00	0	237	17	0	10	2	0	9	143	0	4	7	0	429
20:00	0	203	15	0	9	2	0	5	150	0	2	7	0	393
21:00	0	192	25	0	7	0	0	7	122	0	6	**8**	0	367
22:00	0	139	15	0	2	1	1	7	101	0	12	5	0	283
23:00	0	124	9	0	2	1	0	11	86	1	4	3	0	241
Total	71	5354	1681	31	325	102	15	193	3137	17	251	90	3	11270
Percent	0.6%	47.5%	14.9%	0.3%	2.9%	0.9%	0.1%	1.7%	27.8%	0.2%	2.2%	0.8%	0.0%	
AM Peak	00:00	05:00	11:00	07:00	08:00	06:00	06:00	10:00	11:00	06:00	06:00	11:00	00:00	08:00
Vol.	3	285	144	9	27	10	1	14	157	3	33	8	1	608
PM Peak	17:00	17:00	14:00	16:00	14:00	12:00	14:00	15:00	12:00	14:00	12:00	21:00	16:00	15:00
Vol.	20	377	162	7	31	7	10	20	195	3	14	8	1	750
Grand Total	71	5354	1681	31	325	102	15	193	3137	17	251	90	3	11270
Percent	0.6%	47.5%	14.9%	0.3%	2.9%	0.9%	0.1%	1.7%	27.8%	0.2%	2.2%	0.8%	0.0%	



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County of Imperial
Highway 111
B/ Davis Road - Main Street
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	6	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	3	1	0	0	0	0	0	2	0	0	0	0	6
03:00	0	7	0	0	1	0	0	0	1	0	0	0	0	9
04:00	0	7	1	0	2	0	0	0	2	0	0	0	0	12
05:00	0	19	0	0	0	0	0	0	3	0	2	0	0	24
06:00	0	11	8	0	0	0	0	0	7	0	9	**2**	**1**	38
07:00	0	19	17	**1**	1	0	0	**1**	5	0	7	1	0	52
08:00	0	**38**	12	0	1	**1**	0	0	**11**	0	8	1	0	**72**
09:00	0	23	14	0	1	0	0	0	4	0	**12**	0	0	54
10:00	0	32	**24**	0	1	0	0	0	7	0	8	0	0	72
11:00	**1**	20	17	0	**4**	1	0	1	5	**1**	8	0	0	58
12 PM	0	26	17	0	**5**	**3**	**2**	**1**	**13**	0	1	0	0	**68**
13:00	0	27	14	1	3	0	0	1	9	0	0	0	0	55
14:00	**1**	34	17	0	1	3	0	0	6	0	**2**	0	0	64
15:00	0	**40**	**22**	**2**	1	0	0	0	1	0	1	**1**	0	68
16:00	0	34	15	0	2	0	0	1	3	0	0	0	0	55
17:00	0	22	3	1	0	0	0	0	2	0	0	0	0	28
18:00	0	23	0	0	0	0	0	0	2	0	0	0	0	25
19:00	0	15	0	0	0	0	0	0	4	0	0	0	0	19
20:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
21:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
22:00	0	9	1	0	0	0	0	0	0	0	1	0	0	11
23:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Total	2	439	183	5	23	8	2	5	87	1	59	5	1	820
Percent	0.2%	53.5%	22.3%	0.6%	2.8%	1.0%	0.2%	0.6%	10.6%	0.1%	7.2%	0.6%	0.1%	
AM Peak	11:00	08:00	10:00	07:00	11:00	08:00		07:00	08:00	11:00	09:00	06:00	06:00	08:00
Vol.	1	38	24	1	4	1		1	11	1	12	2	1	72
PM Peak	14:00	15:00	15:00	15:00	12:00	12:00	12:00	12:00	12:00		14:00	15:00		12:00
Vol.	1	40	22	2	5	3	2	1	13		2	1		68
Grand Total	2	439	183	5	23	8	2	5	87	1	59	5	1	820
Percent	0.2%	53.5%	22.3%	0.6%	2.8%	1.0%	0.2%	0.6%	10.6%	0.1%	7.2%	0.6%	0.1%	

Counts Unlimited, Inc.

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County of Imperial
Highway 111
B/ Davis Road - Main Street
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	4	0	0	0	0	0	0	1	0	0	0	0	5
01:00	0	3	0	0	0	0	0	0	2	0	0	0	0	5
02:00	0	8	0	0	1	0	0	0	2	0	1	0	0	12
03:00	0	12	1	0	0	0	0	0	1	0	0	0	0	14
04:00	0	18	1	0	0	0	0	0	0	0	0	0	0	19
05:00	1	**32**	3	0	0	0	0	0	5	0	1	0	0	42
06:00	0	24	16	**1**	0	0	0	0	7	0	2	0	0	50
07:00	0	20	14	1	**4**	**7**	**1**	0	**10**	0	4	1	0	62
08:00	0	17	**23**	1	0	0	0	**6**	5	0	7	**2**	0	61
09:00	0	15	18	0	1	0	0	2	8	0	4	1	0	49
10:00	**2**	24	22	0	0	1	0	1	5	0	3	0	0	58
11:00	1	29	19	0	0	0	0	0	8	0	**9**	0	0	**66**
12 PM	**1**	23	16	0	**3**	0	0	0	8	0	1	**2**	0	54
13:00	0	32	17	0	0	1	0	1	9	0	0	0	0	60
14:00	0	**48**	**24**	**1**	1	0	0	**2**	6	0	1	1	0	**84**
15:00	0	33	22	0	3	0	0	2	3	0	**4**	0	0	67
16:00	0	37	9	0	0	**2**	0	0	5	0	1	0	0	54
17:00	0	40	3	0	2	0	0	0	**10**	0	0	0	0	55
18:00	1	28	0	0	1	0	0	0	6	0	0	0	0	36
19:00	0	15	0	0	0	0	0	0	1	0	0	0	0	16
20:00	0	12	0	0	0	0	0	0	2	0	0	0	0	14
21:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
22:00	0	14	0	0	0	0	0	0	0	0	0	0	0	14
23:00	0	2	0	0	0	0	0	0	2	0	0	0	0	4
Total	6	498	208	4	16	11	1	14	106	0	38	7	0	909
Percent	0.7%	54.8%	22.9%	0.4%	1.8%	1.2%	0.1%	1.5%	11.7%	0.0%	4.2%	0.8%	0.0%	
AM Peak	10:00	05:00	08:00	06:00	07:00	07:00	07:00	08:00	07:00		11:00	08:00		11:00
Vol.	2	32	23	1	4	7	1	6	10		9	2		66
PM Peak	12:00	14:00	14:00	14:00	12:00	16:00		14:00	17:00		15:00	12:00		14:00
Vol.	1	48	24	1	3	2		2	10		4	2		84
Grand Total	6	498	208	4	16	11	1	14	106	0	38	7	0	909
Percent	0.7%	54.8%	22.9%	0.4%	1.8%	1.2%	0.1%	1.5%	11.7%	0.0%	4.2%	0.8%	0.0%	

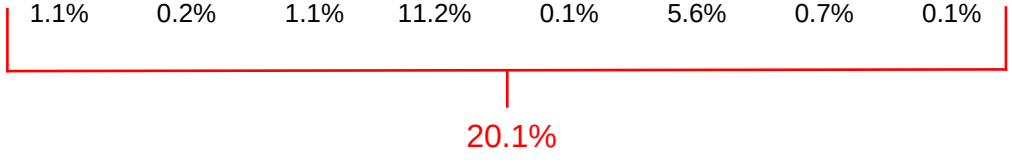
Counts Unlimited, Inc.
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County of Imperial
Highway 111
B/ Davis Road - Main Street
24 Hour Directional Classification Count

CIM001
Site Code: 125-221001

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	10	0	0	0	0	0	0	1	0	0	0	0	11
01:00	0	7	0	0	0	0	0	0	2	0	0	0	0	9
02:00	0	11	1	0	1	0	0	0	4	0	1	0	0	18
03:00	0	19	1	0	1	0	0	0	2	0	0	0	0	23
04:00	0	25	2	0	2	0	0	0	2	0	0	0	0	31
05:00	1	51	3	0	0	0	0	0	8	0	3	0	0	66
06:00	0	35	24	1	0	0	0	0	14	0	11	2	**1**	88
07:00	0	39	31	**2**	**5**	**7**	**1**	1	15	0	11	2	0	114
08:00	0	55	35	1	1	1	0	**6**	**16**	0	15	**3**	0	**133**
09:00	0	38	32	0	2	0	0	2	12	0	16	1	0	103
10:00	**2**	**56**	**46**	0	1	1	0	1	12	0	11	0	0	130
11:00	2	49	36	0	4	1	0	1	13	**1**	**17**	0	0	124
12 PM	**1**	49	33	0	**8**	**3**	**2**	1	**21**	0	2	**2**	0	122
13:00	0	59	31	1	3	1	0	**2**	18	0	0	0	0	115
14:00	1	**82**	41	1	2	3	0	2	12	0	3	1	0	**148**
15:00	0	73	**44**	**2**	4	0	0	2	4	0	**5**	1	0	135
16:00	0	71	24	0	2	2	0	1	8	0	1	0	0	109
17:00	0	62	6	1	2	0	0	0	12	0	0	0	0	83
18:00	1	51	0	0	1	0	0	0	8	0	0	0	0	61
19:00	0	30	0	0	0	0	0	0	5	0	0	0	0	35
20:00	0	19	0	0	0	0	0	0	2	0	0	0	0	21
21:00	0	17	0	0	0	0	0	0	0	0	0	0	0	17
22:00	0	23	1	0	0	0	0	0	0	0	1	0	0	25
23:00	0	6	0	0	0	0	0	0	2	0	0	0	0	8
Total	8	937	391	9	39	19	3	19	193	1	97	12	1	1729
Percent	0.5%	54.2%	22.6%	0.5%	2.3%	1.1%	0.2%	1.1%	11.2%	0.1%	5.6%	0.7%	0.1%	
AM Peak	10:00	10:00	10:00	07:00	07:00	07:00	07:00	08:00	08:00	11:00	11:00	08:00	06:00	08:00
Vol.	2	56	46	2	5	7	1	6	16	1	17	3	1	133
PM Peak	12:00	14:00	15:00	15:00	12:00	12:00	12:00	13:00	12:00		15:00	12:00		14:00
Vol.	1	82	44	2	8	3	2	2	21		5	2		148
Grand Total	8	937	391	9	39	19	3	19	193	1	97	12	1	1729
Percent	0.5%	54.2%	22.6%	0.5%	2.3%	1.1%	0.2%	1.1%	11.2%	0.1%	5.6%	0.7%	0.1%	



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County of Imperial
Highway 111
B/ Main Street - Sinclair Road
24 Hour Directional Classification Count

CIM002
Site Code: 125-221001

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	6	0	0	0	0	0	0	1	0	0	0	0	7
01:00	0	8	0	1	0	0	0	0	1	0	0	0	0	10
02:00	0	11	0	0	0	0	0	0	2	0	0	0	0	13
03:00	0	15	0	0	1	0	0	0	1	0	0	0	0	17
04:00	0	25	0	0	0	0	0	0	2	0	0	0	0	27
05:00	1	46	9	1	0	1	0	0	7	0	2	0	0	67
06:00	0	34	22	**4**	2	1	0	0	6	0	3	**2**	0	74
07:00	1	40	23	4	**5**	**7**	**1**	2	**11**	0	4	1	0	**99**
08:00	0	39	**32**	1	0	0	0	1	7	0	8	2	0	90
09:00	**2**	30	23	2	5	2	0	**5**	4	0	8	1	0	82
10:00	1	42	31	0	1	1	0	3	6	0	4	2	0	91
11:00	1	**51**	18	0	2	0	0	1	5	0	**15**	0	0	93
12 PM	0	47	18	1	3	0	0	1	5	0	**4**	0	0	79
13:00	**1**	59	22	**3**	**5**	2	0	**2**	**10**	0	1	0	0	105
14:00	0	**79**	**33**	2	1	0	0	0	6	0	1	0	0	**122**
15:00	0	51	22	2	3	0	0	0	4	0	2	0	0	84
16:00	1	55	9	1	2	**3**	0	1	5	0	1	0	0	78
17:00	1	75	14	1	0	0	0	0	7	0	2	0	0	100
18:00	0	46	3	1	0	0	0	0	5	0	0	0	0	55
19:00	0	38	1	0	1	0	0	0	2	0	0	0	0	42
20:00	0	25	1	0	0	0	0	0	2	0	0	0	0	28
21:00	0	25	1	0	0	0	0	0	0	0	0	0	0	26
22:00	0	19	0	0	0	0	0	0	0	0	0	0	0	19
23:00	1	9	1	0	0	1	0	0	2	0	0	0	0	14
Total	10	875	283	24	31	18	1	16	101	0	55	8	0	1422
Percent	0.7%	61.5%	19.9%	1.7%	2.2%	1.3%	0.1%	1.1%	7.1%	0.0%	3.9%	0.6%	0.0%	
AM Peak	09:00	11:00	08:00	06:00	07:00	07:00	07:00	09:00	07:00		11:00	06:00		07:00
Vol.	2	51	32	4	5	7	1	5	11		15	2		99
PM Peak	13:00	14:00	14:00	13:00	13:00	16:00		13:00	13:00		12:00			14:00
Vol.	1	79	33	3	5	3		2	10		4			122
Grand Total	10	875	283	24	31	18	1	16	101	0	55	8	0	1422
Percent	0.7%	61.5%	19.9%	1.7%	2.2%	1.3%	0.1%	1.1%	7.1%	0.0%	3.9%	0.6%	0.0%	

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County of Imperial
Highway 111
B/ Main Street - Sinclair Road
24 Hour Directional Classification Count

CIM002
Site Code: 125-221001

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	7	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	8	0	0	0	0	0	0	1	0	0	0	0	9
03:00	0	9	2	0	0	0	0	0	1	0	0	0	0	12
04:00	0	25	0	0	0	1	0	0	0	0	1	0	0	27
05:00	0	42	8	0	1	0	0	0	3	0	4	0	0	58
06:00	0	24	16	3	0	0	0	0	5	0	7	**2**	0	57
07:00	0	53	20	**4**	1	0	0	0	8	0	7	0	0	93
08:00	0	**61**	20	1	3	**2**	0	**2**	10	0	6	1	0	106
09:00	**1**	46	**31**	1	3	0	0	2	9	0	**8**	0	**1**	102
10:00	0	60	30	0	1	1	0	0	**13**	0	5	0	0	**110**
11:00	1	52	23	2	**6**	2	0	2	3	0	6	1	0	98
12 PM	0	47	**40**	1	**5**	**5**	**2**	0	**9**	0	4	0	0	113
13:00	1	55	23	0	5	1	0	0	5	0	**6**	**2**	0	98
14:00	**2**	54	35	3	4	3	0	0	4	0	1	0	0	106
15:00	0	**73**	27	**4**	4	2	0	0	3	0	1	0	0	**114**
16:00	1	56	27	1	2	0	0	**1**	3	0	0	0	0	91
17:00	0	47	11	1	1	4	0	1	2	0	0	0	**1**	68
18:00	0	35	4	1	2	0	0	0	1	0	0	0	0	43
19:00	0	24	7	0	1	0	0	0	2	0	0	0	0	34
20:00	0	15	0	0	0	0	0	0	1	0	0	0	0	16
21:00	0	13	1	0	0	0	0	0	0	0	0	0	0	14
22:00	0	10	1	0	0	0	0	0	1	0	0	0	0	12
23:00	0	4	0	0	0	0	0	0	0	0	1	0	0	5
Total	6	825	326	22	39	21	2	8	84	0	57	6	2	1398
Percent	0.4%	59.0%	23.3%	1.6%	2.8%	1.5%	0.1%	0.6%	6.0%	0.0%	4.1%	0.4%	0.1%	
AM Peak	09:00	08:00	09:00	07:00	11:00	08:00		08:00	10:00		09:00	06:00	09:00	10:00
Vol.	1	61	31	4	6	2		2	13		8	2	1	110
PM Peak	14:00	15:00	12:00	15:00	12:00	12:00	12:00	16:00	12:00		13:00	13:00	17:00	15:00
Vol.	2	73	40	4	5	5	2	1	9		6	2	1	114
Grand Total	6	825	326	22	39	21	2	8	84	0	57	6	2	1398
Percent	0.4%	59.0%	23.3%	1.6%	2.8%	1.5%	0.1%	0.6%	6.0%	0.0%	4.1%	0.4%	0.1%	

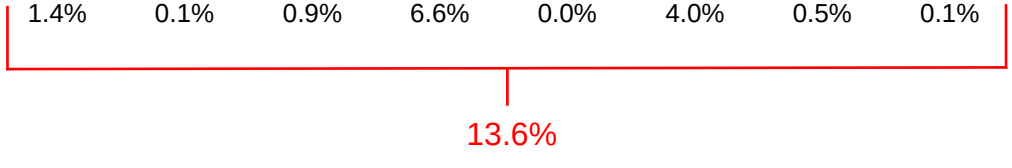
Counts Unlimited, Inc.

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County of Imperial
Highway 111
B/ Main Street - Sinclair Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM002
Site Code: 125-221001

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	13	0	0	0	0	0	0	1	0	0	0	0	14
01:00	0	13	0	1	0	0	0	0	1	0	0	0	0	15
02:00	0	19	0	0	0	0	0	0	3	0	0	0	0	22
03:00	0	24	2	0	1	0	0	0	2	0	0	0	0	29
04:00	0	50	0	0	0	1	0	0	2	0	1	0	0	54
05:00	1	88	17	1	1	1	0	0	10	0	6	0	0	125
06:00	0	58	38	7	2	1	0	0	11	0	10	**4**	0	131
07:00	1	93	43	**8**	6	**7**	**1**	2	**19**	0	11	1	0	192
08:00	0	100	52	2	3	2	0	3	17	0	14	3	0	196
09:00	**3**	76	54	3	**8**	2	0	**7**	13	0	16	1	**1**	184
10:00	1	102	**61**	0	2	2	0	3	19	0	9	2	0	**201**
11:00	2	**103**	41	2	8	2	0	3	8	0	**21**	1	0	191
12 PM	0	94	58	2	8	**5**	**2**	1	14	0	**8**	0	0	192
13:00	**2**	114	45	3	**10**	3	0	**2**	**15**	0	7	**2**	0	203
14:00	2	**133**	**68**	5	5	3	0	0	10	0	2	0	0	**228**
15:00	0	124	49	**6**	7	2	0	0	7	0	3	0	0	198
16:00	2	111	36	2	4	3	0	2	8	0	1	0	0	169
17:00	1	122	25	2	1	4	0	1	9	0	2	0	**1**	168
18:00	0	81	7	2	2	0	0	0	6	0	0	0	0	98
19:00	0	62	8	0	2	0	0	0	4	0	0	0	0	76
20:00	0	40	1	0	0	0	0	0	3	0	0	0	0	44
21:00	0	38	2	0	0	0	0	0	0	0	0	0	0	40
22:00	0	29	1	0	0	0	0	0	1	0	0	0	0	31
23:00	1	13	1	0	0	1	0	0	2	0	1	0	0	19
Total	16	1700	609	46	70	39	3	24	185	0	112	14	2	2820
Percent	0.6%	60.3%	21.6%	1.6%	2.5%	1.4%	0.1%	0.9%	6.6%	0.0%	4.0%	0.5%	0.1%	
AM Peak	09:00	11:00	10:00	07:00	09:00	07:00	07:00	09:00	07:00		11:00	06:00	09:00	10:00
Vol.	3	103	61	8	8	7	1	7	19		21	4	1	201
PM Peak	13:00	14:00	14:00	15:00	13:00	12:00	12:00	13:00	13:00		12:00	13:00	17:00	14:00
Vol.	2	133	68	6	10	5	2	2	15		8	2	1	228
Grand Total	16	1700	609	46	70	39	3	24	185	0	112	14	2	2820
Percent	0.6%	60.3%	21.6%	1.6%	2.5%	1.4%	0.1%	0.9%	6.6%	0.0%	4.0%	0.5%	0.1%	



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County of Imperial
Highway 111
B/ Sinclair Road - Main Street
24 Hour Directional Classification Count

CIM003
Site Code: 125-221001

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	5	0	0	0	0	0	0	1	0	0	0	0	6
01:00	0	6	0	0	0	0	0	0	1	0	0	0	0	7
02:00	0	9	0	0	0	2	0	0	2	0	0	0	0	13
03:00	0	18	0	0	0	1	0	0	2	0	0	0	0	21
04:00	0	36	0	0	0	1	0	0	1	0	3	0	0	41
05:00	**3**	**78**	9	1	0	0	0	0	2	0	**11**	0	0	104
06:00	1	39	25	**4**	0	1	0	0	3	0	4	1	0	78
07:00	1	48	33	4	2	**5**	**1**	2	**7**	0	1	1	0	**105**
08:00	0	42	34	1	3	0	0	1	5	0	6	**2**	0	94
09:00	3	29	26	2	**4**	2	0	**4**	4	0	6	1	0	81
10:00	1	42	**37**	0	2	1	0	2	4	0	3	2	0	94
11:00	0	49	20	0	1	0	0	0	6	0	9	2	0	87
12 PM	0	47	19	2	**2**	0	0	1	**10**	0	**4**	**1**	0	86
13:00	1	57	25	**3**	2	1	0	**2**	10	0	1	0	0	**102**
14:00	0	61	**28**	2	0	0	0	0	7	0	2	0	0	100
15:00	0	52	19	1	1	0	0	1	3	0	1	0	0	78
16:00	0	44	10	1	2	**3**	0	1	4	0	1	0	0	66
17:00	**2**	**77**	4	1	1	0	0	0	6	0	1	0	0	92
18:00	0	45	4	1	0	0	0	0	4	0	0	0	0	54
19:00	0	34	4	0	1	0	0	0	1	0	0	0	0	40
20:00	0	23	1	0	0	0	0	0	2	0	0	0	0	26
21:00	0	23	1	0	0	0	0	0	0	0	0	0	0	24
22:00	0	16	0	0	0	0	0	0	0	0	0	0	0	16
23:00	0	9	1	0	0	0	0	0	2	0	0	0	0	12
Total	12	889	300	23	21	17	1	14	87	0	53	10	0	1427
Percent	0.8%	62.3%	21.0%	1.6%	1.5%	1.2%	0.1%	1.0%	6.1%	0.0%	3.7%	0.7%	0.0%	
AM Peak	05:00	05:00	10:00	06:00	09:00	07:00	07:00	09:00	07:00		05:00	08:00		07:00
Vol.	3	78	37	4	4	5	1	4	7		11	2		105
PM Peak	17:00	17:00	14:00	13:00	12:00	16:00		13:00	12:00		12:00	12:00		13:00
Vol.	2	77	28	3	2	3		2	10		4	1		102
Grand Total	12	889	300	23	21	17	1	14	87	0	53	10	0	1427
Percent	0.8%	62.3%	21.0%	1.6%	1.5%	1.2%	0.1%	1.0%	6.1%	0.0%	3.7%	0.7%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
Highway 111
B/ Sinclair Road - Main Street
24 Hour Directional Classification Count

CIM003
Site Code: 125-221001

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	9	0	0	0	0	0	0	0	0	0	0	0	9
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	9	0	0	0	0	0	0	1	0	0	0	0	10
03:00	0	7	1	0	0	0	0	0	1	0	0	0	0	9
04:00	0	15	0	0	1	0	0	0	1	0	1	0	0	18
05:00	0	20	5	0	0	0	0	0	2	0	0	0	0	27
06:00	0	18	16	2	2	0	0	1	5	0	**7**	**1**	0	52
07:00	0	42	18	**4**	1	0	0	2	5	0	2	1	0	75
08:00	0	51	24	1	3	1	0	1	7	0	3	1	0	92
09:00	**1**	44	23	1	5	0	0	**3**	6	0	6	1	0	90
10:00	0	**55**	**31**	0	4	1	0	2	**9**	0	5	0	0	**107**
11:00	1	47	19	0	**12**	**2**	0	2	4	0	3	1	0	91
12 PM	0	47	30	1	5	**3**	**1**	**2**	5	0	3	0	0	97
13:00	1	61	26	0	6	1	0	0	**8**	0	**6**	**2**	0	111
14:00	**3**	68	35	**3**	**9**	2	0	0	3	0	1	0	0	**124**
15:00	0	78	27	3	4	0	0	0	3	0	0	0	0	115
16:00	1	**83**	**37**	1	0	0	0	1	0	0	0	0	0	123
17:00	0	58	15	0	3	0	0	0	2	0	0	0	0	78
18:00	0	50	1	2	0	0	0	0	0	0	1	0	0	54
19:00	0	36	3	0	2	0	0	0	1	0	0	0	0	42
20:00	0	13	0	0	0	0	0	0	0	0	0	0	0	13
21:00	0	14	0	0	0	0	0	0	0	0	0	0	0	14
22:00	0	11	1	0	0	0	0	0	0	0	1	0	0	13
23:00	0	4	0	0	0	0	0	0	0	0	1	0	0	5
Total	7	843	312	18	57	10	1	14	63	0	40	7	0	1372
Percent	0.5%	61.4%	22.7%	1.3%	4.2%	0.7%	0.1%	1.0%	4.6%	0.0%	2.9%	0.5%	0.0%	
AM Peak	09:00	10:00	10:00	07:00	11:00	11:00		09:00	10:00		06:00	06:00		10:00
Vol.	1	55	31	4	12	2		3	9		7	1		107
PM Peak	14:00	16:00	16:00	14:00	14:00	12:00	12:00	12:00	13:00		13:00	13:00		14:00
Vol.	3	83	37	3	9	3	1	2	8		6	2		124
Grand Total	7	843	312	18	57	10	1	14	63	0	40	7	0	1372
Percent	0.5%	61.4%	22.7%	1.3%	4.2%	0.7%	0.1%	1.0%	4.6%	0.0%	2.9%	0.5%	0.0%	

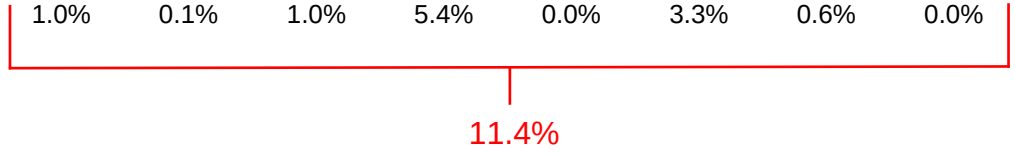
Counts Unlimited, Inc.

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County of Imperial
Highway 111
B/ Sinclair Road - Main Street
24 Hour Directional Classification Count
Northbound, Southbound

CIM003
Site Code: 125-221001

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	14	0	0	0	0	0	0	1	0	0	0	0	15
01:00	0	9	0	0	0	0	0	0	1	0	0	0	0	10
02:00	0	18	0	0	0	2	0	0	3	0	0	0	0	23
03:00	0	25	1	0	0	1	0	0	3	0	0	0	0	30
04:00	0	51	0	0	1	1	0	0	2	0	4	0	0	59
05:00	3	**98**	14	1	0	0	0	0	4	0	11	0	0	131
06:00	1	57	41	6	2	1	0	1	8	0	11	2	0	130
07:00	1	90	51	**8**	3	**5**	**1**	4	12	0	3	2	0	180
08:00	0	93	58	2	6	1	0	2	12	0	9	**3**	0	186
09:00	**4**	73	49	3	9	2	0	**7**	10	0	**12**	2	0	171
10:00	1	97	**68**	0	6	2	0	4	**13**	0	8	2	0	**201**
11:00	1	96	39	0	**13**	2	0	2	10	0	12	3	0	178
12 PM	0	94	49	3	7	**3**	**1**	**3**	15	0	**7**	1	0	183
13:00	2	118	51	3	8	2	0	2	**18**	0	7	**2**	0	213
14:00	**3**	129	**63**	**5**	**9**	2	0	0	10	0	3	0	0	**224**
15:00	0	130	46	4	5	0	0	1	6	0	1	0	0	193
16:00	1	127	47	2	2	3	0	2	4	0	1	0	0	189
17:00	2	**135**	19	1	4	0	0	0	8	0	1	0	0	170
18:00	0	95	5	3	0	0	0	0	4	0	1	0	0	108
19:00	0	70	7	0	3	0	0	0	2	0	0	0	0	82
20:00	0	36	1	0	0	0	0	0	2	0	0	0	0	39
21:00	0	37	1	0	0	0	0	0	0	0	0	0	0	38
22:00	0	27	1	0	0	0	0	0	0	0	1	0	0	29
23:00	0	13	1	0	0	0	0	0	2	0	1	0	0	17
Total	19	1732	612	41	78	27	2	28	150	0	93	17	0	2799
Percent	0.7%	61.9%	21.9%	1.5%	2.8%	1.0%	0.1%	1.0%	5.4%	0.0%	3.3%	0.6%	0.0%	
AM Peak	09:00	05:00	10:00	07:00	11:00	07:00	07:00	09:00	10:00		09:00	08:00		10:00
Vol.	4	98	68	8	13	5	1	7	13		12	3		201
PM Peak	14:00	17:00	14:00	14:00	14:00	12:00	12:00	12:00	13:00		12:00	13:00		14:00
Vol.	3	135	63	5	9	3	1	3	18		7	2		224
Grand Total	19	1732	612	41	78	27	2	28	150	0	93	17	0	2799
Percent	0.7%	61.9%	21.9%	1.5%	2.8%	1.0%	0.1%	1.0%	5.4%	0.0%	3.3%	0.6%	0.0%	



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County of Imperial
Highway 111
B/ Yocum Road - Ruegger Road
24 Hour Directional Classification Count

CIM004
Site Code: 125-221001B

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	20	0	0	0	0	0	0	0	0	0	0	0	20
01:00	0	12	0	0	0	0	0	0	0	0	0	0	0	12
02:00	0	20	0	0	2	0	0	0	1	0	0	0	0	23
03:00	0	38	0	0	4	0	0	0	0	0	3	0	0	45
04:00	0	58	1	0	4	0	0	1	0	0	4	0	0	68
05:00	**2**	**249**	12	1	0	0	0	2	9	0	**12**	0	0	287
06:00	0	123	**65**	2	3	3	0	0	5	0	2	0	0	203
07:00	1	223	58	1	**6**	**4**	**1**	3	**13**	0	0	1	0	**311**
08:00	0	98	45	**3**	3	0	0	**4**	6	0	0	0	0	159
09:00	0	67	33	0	4	2	0	2	11	**1**	4	1	0	125
10:00	1	79	40	0	3	1	0	2	6	0	5	**3**	0	140
11:00	0	96	47	0	6	0	0	1	8	0	6	0	0	164
12 PM	0	110	30	**2**	5	0	**1**	0	**7**	0	**1**	**2**	0	158
13:00	**2**	169	**59**	0	**6**	**1**	0	1	4	0	0	0	0	**242**
14:00	0	136	44	1	0	0	0	0	5	0	0	1	0	187
15:00	0	138	59	1	1	0	0	**5**	1	0	0	0	0	205
16:00	1	151	46	0	6	0	0	0	3	0	0	0	0	207
17:00	0	**171**	20	0	1	0	0	0	5	0	1	0	0	198
18:00	1	139	16	0	0	0	0	1	3	0	0	0	0	160
19:00	0	113	6	0	0	0	0	0	1	0	0	0	0	120
20:00	0	106	1	0	0	0	0	0	1	0	0	0	0	108
21:00	0	126	5	0	0	0	0	0	0	0	0	0	0	131
22:00	0	62	1	0	0	1	0	0	0	0	0	0	0	64
23:00	0	59	0	0	1	0	0	0	0	0	0	0	0	60
Total	8	2563	588	11	55	12	2	22	89	1	38	8	0	3397
Percent	0.2%	75.4%	17.3%	0.3%	1.6%	0.4%	0.1%	0.6%	2.6%	0.0%	1.1%	0.2%	0.0%	
AM Peak	05:00	05:00	06:00	08:00	07:00	07:00	07:00	08:00	07:00	09:00	05:00	10:00		07:00
Vol.	2	249	65	3	6	4	1	4	13	1	12	3		311
PM Peak	13:00	17:00	13:00	12:00	13:00	13:00	12:00	15:00	12:00		12:00	12:00		13:00
Vol.	2	171	59	2	6	1	1	5	7		1	2		242
Grand Total	8	2563	588	11	55	12	2	22	89	1	38	8	0	3397
Percent	0.2%	75.4%	17.3%	0.3%	1.6%	0.4%	0.1%	0.6%	2.6%	0.0%	1.1%	0.2%	0.0%	

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County of Imperial
Highway 111
B/ Yocum Road - Ruegger Road
24 Hour Directional Classification Count

CIM004
Site Code: 125-221001B

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	10	2	0	1	0	0	0	0	0	0	0	0	13
01:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	20	1	0	0	0	0	0	1	0	0	0	0	22
03:00	0	16	0	0	0	0	0	0	0	0	0	0	0	16
04:00	0	38	2	0	0	0	0	0	1	0	1	0	0	42
05:00	0	97	8	0	1	**2**	0	0	0	0	2	0	0	110
06:00	0	97	31	0	2	0	0	0	4	0	**5**	0	0	139
07:00	0	139	24	**2**	1	1	0	2	11	0	1	0	0	181
08:00	0	**168**	**50**	1	2	2	**1**	1	10	0	0	**1**	0	**236**
09:00	0	117	48	1	4	2	0	0	**15**	**1**	0	0	0	188
10:00	0	103	46	0	1	2	1	2	11	1	4	1	0	172
11:00	**1**	102	40	0	**8**	1	0	**5**	2	0	5	1	0	165
12 PM	2	92	71	0	**12**	3	**1**	2	**12**	0	3	0	0	198
13:00	1	165	52	0	7	1	0	**5**	5	0	**9**	**1**	0	246
14:00	**3**	265	81	1	8	0	0	0	4	0	2	0	0	364
15:00	1	**283**	**82**	**2**	6	**4**	0	1	2	0	2	0	0	**383**
16:00	1	260	47	2	6	0	0	1	0	0	1	0	0	318
17:00	0	152	53	0	0	2	0	1	4	0	0	0	0	212
18:00	1	125	31	0	1	1	0	0	2	0	0	0	**1**	162
19:00	0	108	22	0	0	0	0	0	0	0	0	0	0	130
20:00	0	50	8	0	0	0	0	0	2	0	0	0	0	60
21:00	0	63	12	0	0	0	0	0	0	0	0	0	0	75
22:00	0	74	6	0	1	0	0	0	0	0	0	0	0	81
23:00	0	16	0	0	0	0	0	0	0	0	0	0	0	16
Total	10	2564	717	9	61	21	3	20	86	2	35	4	1	3533
Percent	0.3%	72.6%	20.3%	0.3%	1.7%	0.6%	0.1%	0.6%	2.4%	0.1%	1.0%	0.1%	0.0%	
AM Peak	11:00	08:00	08:00	07:00	11:00	05:00	08:00	11:00	09:00	09:00	06:00	08:00		08:00
Vol.	1	168	50	2	8	2	1	5	15	1	5	1		236
PM Peak	14:00	15:00	15:00	15:00	12:00	15:00	12:00	13:00	12:00		13:00	13:00	18:00	15:00
Vol.	3	283	82	2	12	4	1	5	12		9	1	1	383
Grand Total	10	2564	717	9	61	21	3	20	86	2	35	4	1	3533
Percent	0.3%	72.6%	20.3%	0.3%	1.7%	0.6%	0.1%	0.6%	2.4%	0.1%	1.0%	0.1%	0.0%	

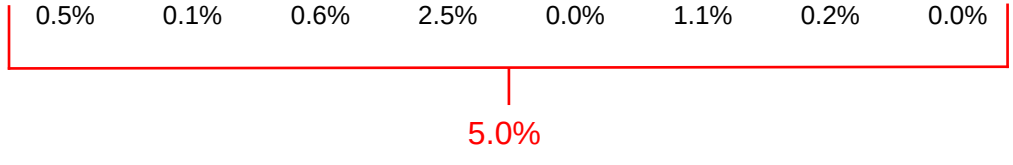
Counts Unlimited, Inc.

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County of Imperial
Highway 111
B/ Yocum Road - Ruegger Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM004
Site Code: 125-221001B

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	30	2	0	1	0	0	0	0	0	0	0	0	33
01:00	0	16	0	0	0	0	0	0	0	0	0	0	0	16
02:00	0	40	1	0	2	0	0	0	2	0	0	0	0	45
03:00	0	54	0	0	4	0	0	0	0	0	3	0	0	61
04:00	0	96	3	0	4	0	0	1	1	0	5	0	0	110
05:00	**2**	346	20	1	1	2	0	2	9	0	**14**	0	0	397
06:00	0	220	**96**	2	5	3	0	0	9	0	7	0	0	342
07:00	1	**362**	82	3	7	**5**	**1**	5	24	0	1	1	0	**492**
08:00	0	266	95	**4**	5	2	1	5	16	0	0	1	0	395
09:00	0	184	81	1	8	4	0	2	**26**	**2**	4	1	0	313
10:00	1	182	86	0	4	3	1	4	17	1	9	**4**	0	312
11:00	1	198	87	0	**14**	1	0	**6**	10	0	11	1	0	329
12 PM	2	202	101	2	**17**	3	**2**	2	**19**	0	4	**2**	0	356
13:00	**3**	334	111	0	13	2	0	**6**	9	0	**9**	1	0	488
14:00	3	401	125	2	8	0	0	0	9	0	2	1	0	551
15:00	1	**421**	**141**	**3**	7	**4**	0	6	3	0	2	0	0	**588**
16:00	2	411	93	2	12	0	0	1	3	0	1	0	0	525
17:00	0	323	73	0	1	2	0	1	9	0	1	0	0	410
18:00	2	264	47	0	1	1	0	1	5	0	0	0	**1**	322
19:00	0	221	28	0	0	0	0	0	1	0	0	0	0	250
20:00	0	156	9	0	0	0	0	0	3	0	0	0	0	168
21:00	0	189	17	0	0	0	0	0	0	0	0	0	0	206
22:00	0	136	7	0	1	1	0	0	0	0	0	0	0	145
23:00	0	75	0	0	1	0	0	0	0	0	0	0	0	76
Total	18	5127	1305	20	116	33	5	42	175	3	73	12	1	6930
Percent	0.3%	74.0%	18.8%	0.3%	1.7%	0.5%	0.1%	0.6%	2.5%	0.0%	1.1%	0.2%	0.0%	
AM Peak	05:00	07:00	06:00	08:00	11:00	07:00	07:00	11:00	09:00	09:00	05:00	10:00		07:00
Vol.	2	362	96	4	14	5	1	6	26	2	14	4		492
PM Peak	13:00	15:00	15:00	15:00	12:00	15:00	12:00	13:00	12:00		13:00	12:00	18:00	15:00
Vol.	3	421	141	3	17	4	2	6	19		9	2	1	588
Grand Total	18	5127	1305	20	116	33	5	42	175	3	73	12	1	6930
Percent	0.3%	74.0%	18.8%	0.3%	1.7%	0.5%	0.1%	0.6%	2.5%	0.0%	1.1%	0.2%	0.0%	



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County of Imperial
Kalin Road
B/ West Sinclair Road - West Eddins Road
24 Hour Directional Classification Count

CIM006
Site Code: 125-221001

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
05:00	0	**9**	**14**	0	**11**	0	0	0	0	0	0	0	0	**34**
06:00	0	5	4	0	1	0	0	**1**	0	0	0	0	0	11
07:00	0	4	2	0	3	0	0	0	0	0	0	0	0	9
08:00	0	6	2	0	5	0	0	0	0	0	0	0	0	13
09:00	0	2	1	0	4	**1**	0	0	0	0	0	0	0	8
10:00	0	0	1	**1**	2	0	0	0	0	0	0	0	0	4
11:00	0	1	1	1	1	0	0	0	0	0	0	0	0	4
12 PM	0	0	0	0	0	0	0	0	0	0	**1**	0	0	1
13:00	0	0	0	0	2	0	0	0	0	0	0	0	0	2
14:00	0	0	**1**	0	**4**	0	0	0	0	0	0	0	0	**5**
15:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
16:00	0	**1**	1	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	2	0	0	0	0	0	0	0	0	2
18:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
19:00	0	1	0	**1**	0	0	0	0	0	0	0	0	0	2
20:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	34	33	3	36	1	0	1	0	0	1	0	0	109
Percent	0.0%	31.2%	30.3%	2.8%	33.0%	0.9%	0.0%	0.9%	0.0%	0.0%	0.9%	0.0%	0.0%	
AM Peak		05:00	05:00	10:00	05:00	09:00		06:00						05:00
Vol.		9	14	1	11	1		1						34
PM Peak		16:00	14:00	19:00	14:00						12:00			14:00
Vol.		1	1	1	4						1			5
Grand Total	0	34	33	3	36	1	0	1	0	0	1	0	0	109
Percent	0.0%	31.2%	30.3%	2.8%	33.0%	0.9%	0.0%	0.9%	0.0%	0.0%	0.9%	0.0%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
Kalin Road
B/ West Sinclair Road - West Eddins Road
24 Hour Directional Classification Count

CIM006
Site Code: 125-221001

Southbound

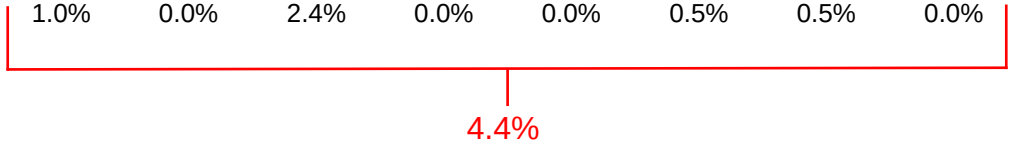
Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
05:00	0	**3**	0	0	1	0	0	0	0	0	0	0	0	4
06:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
07:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	2	0	0	3	0	0	**1**	0	0	0	0	0	6
09:00	0	0	1	0	0	**1**	0	0	0	0	0	0	0	2
10:00	0	2	**3**	0	2	0	0	0	0	0	0	0	0	**7**
11:00	0	0	2	0	**4**	0	0	0	0	0	0	0	0	6
12 PM	0	1	0	0	**3**	0	0	0	0	0	0	0	0	4
13:00	0	0	0	0	3	0	0	**1**	0	0	0	**1**	0	5
14:00	0	11	**7**	0	3	0	0	1	0	0	0	0	0	**22**
15:00	0	2	5	0	0	0	0	0	0	0	0	0	0	7
16:00	**1**	**12**	3	0	3	0	0	1	0	0	0	0	0	20
17:00	0	3	0	0	2	0	0	0	0	0	0	0	0	5
18:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
19:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	0	2	**1**	0	0	0	0	0	0	0	0	0	3
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	40	25	1	27	1	0	4	0	0	0	1	0	100
Percent	1.0%	40.0%	25.0%	1.0%	27.0%	1.0%	0.0%	4.0%	0.0%	0.0%	0.0%	1.0%	0.0%	
AM Peak		05:00	10:00		11:00	09:00		08:00						10:00
Vol.		3	3		4	1		1						7
PM Peak	16:00	16:00	14:00	20:00	12:00			13:00				13:00		14:00
Vol.	1	12	7	1	3			1				1		22
Grand Total	1	40	25	1	27	1	0	4	0	0	0	1	0	100
Percent	1.0%	40.0%	25.0%	1.0%	27.0%	1.0%	0.0%	4.0%	0.0%	0.0%	0.0%	1.0%	0.0%	

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County of Imperial
Kalin Road
B/ West Sinclair Road - West Eddins Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM006
Site Code: 125-221001

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	0	0	1	0	0	0	0	0	0	0	0	6
05:00	0	**12**	**14**	0	**12**	0	0	0	0	0	0	0	0	**38**
06:00	0	5	5	0	2	0	0	**1**	0	0	0	0	0	13
07:00	0	5	2	0	3	0	0	0	0	0	0	0	0	10
08:00	0	8	2	0	8	0	0	1	0	0	0	0	0	19
09:00	0	2	2	0	4	**2**	0	0	0	0	0	0	0	10
10:00	0	2	4	**1**	4	0	0	0	0	0	0	0	0	11
11:00	0	1	3	1	5	0	0	0	0	0	0	0	0	10
12 PM	0	1	0	0	3	0	0	0	0	0	**1**	0	0	5
13:00	0	0	0	0	5	0	0	**1**	0	0	0	**1**	0	7
14:00	0	11	**8**	0	**7**	0	0	1	0	0	0	0	0	**27**
15:00	0	2	6	0	1	0	0	0	0	0	0	0	0	9
16:00	**1**	**13**	4	0	3	0	0	1	0	0	0	0	0	22
17:00	0	3	0	0	4	0	0	0	0	0	0	0	0	7
18:00	0	1	2	0	1	0	0	0	0	0	0	0	0	4
19:00	0	3	0	**1**	0	0	0	0	0	0	0	0	0	4
20:00	0	0	3	1	0	0	0	0	0	0	0	0	0	4
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	74	58	4	63	2	0	5	0	0	1	1	0	209
Percent	0.5%	35.4%	27.8%	1.9%	30.1%	1.0%	0.0%	2.4%	0.0%	0.0%	0.5%	0.5%	0.0%	
AM Peak		05:00	05:00	10:00	05:00	09:00		06:00						05:00
Vol.		12	14	1	12	2		1						38
PM Peak	16:00	16:00	14:00	19:00	14:00			13:00			12:00	13:00		14:00
Vol.	1	13	8	1	7			1			1	1		27
Grand Total	1	74	58	4	63	2	0	5	0	0	1	1	0	209
Percent	0.5%	35.4%	27.8%	1.9%	30.1%	1.0%	0.0%	2.4%	0.0%	0.0%	0.5%	0.5%	0.0%	



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County of Imperial
Lack Road
B/ New River - Bannister Road
24 Hour Directional Classification Count

CIM009
Site Code: 125-221001

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:00	0	2	4	0	0	0	0	0	0	0	0	0	0	6
05:00	0	**11**	**6**	0	2	**1**	0	0	0	0	0	0	0	**20**
06:00	0	2	2	0	6	0	0	0	0	0	0	0	0	10
07:00	0	0	4	**1**	3	0	0	**3**	0	0	0	0	0	11
08:00	0	1	2	0	**8**	0	0	0	0	**1**	0	0	0	12
09:00	0	0	3	0	4	0	0	1	0	0	0	0	0	8
10:00	0	1	2	0	2	0	0	3	**1**	0	0	0	0	9
11:00	0	1	2	0	4	0	0	2	0	0	0	0	0	9
12 PM	0	0	0	0	**4**	0	0	1	0	0	0	0	0	5
13:00	0	**2**	**2**	0	4	0	0	**3**	0	0	0	0	0	**11**
14:00	0	0	0	0	4	**1**	0	0	0	0	**1**	0	0	6
15:00	0	1	0	0	2	0	0	0	0	0	0	0	0	3
16:00	0	0	0	0	2	0	0	0	0	0	0	0	0	2
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
18:00	0	1	2	0	1	0	0	0	0	0	0	0	0	4
19:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	26	29	1	50	2	0	13	1	1	1	0	0	124
Percent	0.0%	21.0%	23.4%	0.8%	40.3%	1.6%	0.0%	10.5%	0.8%	0.8%	0.8%	0.0%	0.0%	
AM Peak		05:00	05:00	07:00	08:00	05:00		07:00	10:00	08:00				05:00
Vol.		11	6	1	8	1		3	1	1				20
PM Peak		13:00	13:00		12:00	14:00		13:00			14:00			13:00
Vol.		2	2		4	1		3			1			11
Grand Total	0	26	29	1	50	2	0	13	1	1	1	0	0	124
Percent	0.0%	21.0%	23.4%	0.8%	40.3%	1.6%	0.0%	10.5%	0.8%	0.8%	0.8%	0.0%	0.0%	

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County of Imperial
Lack Road
B/ New River - Bannister Road
24 Hour Directional Classification Count

CIM009
Site Code: 125-221001

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
06:00	0	**1**	2	0	2	0	0	**1**	0	0	0	0	0	6
07:00	0	1	1	0	2	0	0	1	0	0	0	**1**	0	6
08:00	0	1	3	0	**3**	0	0	1	0	0	0	0	0	8
09:00	0	1	**4**	0	3	0	0	0	0	0	0	0	0	8
10:00	0	0	4	0	1	0	0	0	0	0	0	0	0	5
11:00	0	1	4	**1**	2	0	0	1	0	0	0	1	0	**10**
12 PM	0	3	5	0	1	0	0	0	0	0	0	0	0	9
13:00	0	6	4	0	1	0	0	0	0	0	0	0	0	11
14:00	0	**12**	5	0	1	**1**	0	0	0	0	0	0	0	**19**
15:00	0	3	3	0	**2**	0	0	0	0	0	0	0	0	8
16:00	0	1	**7**	0	2	0	0	0	**1**	0	0	0	0	11
17:00	0	3	2	0	2	0	0	0	0	0	0	0	0	7
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	1	0	0	1	0	0	**1**	0	0	0	0	0	3
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	37	46	1	24	1	0	5	1	0	0	2	0	117
Percent	0.0%	31.6%	39.3%	0.9%	20.5%	0.9%	0.0%	4.3%	0.9%	0.0%	0.0%	1.7%	0.0%	
AM Peak		06:00	09:00	11:00	08:00			06:00				07:00		11:00
Vol.		1	4	1	3			1				1		10
PM Peak		14:00	16:00		15:00	14:00		19:00	16:00					14:00
Vol.		12	7		2	1		1	1					19
Grand Total	0	37	46	1	24	1	0	5	1	0	0	2	0	117
Percent	0.0%	31.6%	39.3%	0.9%	20.5%	0.9%	0.0%	4.3%	0.9%	0.0%	0.0%	1.7%	0.0%	

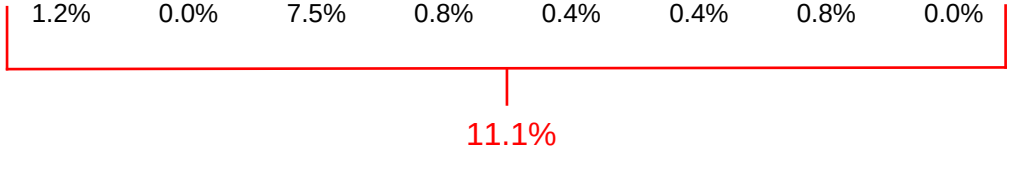
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County of Imperial
Lack Road
B/ New River - Bannister Road
24 Hour Directional Classification Count
Northbound, Southbound

CIM009
Site Code: 125-221001

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:00	0	2	5	0	0	0	0	0	0	0	0	0	0	7
05:00	0	**11**	6	0	3	**1**	0	0	0	0	0	0	0	**21**
06:00	0	3	4	0	8	0	0	1	0	0	0	0	0	16
07:00	0	1	5	**1**	5	0	0	**4**	0	0	0	**1**	0	17
08:00	0	2	5	0	**11**	0	0	1	0	**1**	0	0	0	20
09:00	0	1	**7**	0	7	0	0	1	0	0	0	0	0	16
10:00	0	1	6	0	3	0	0	3	**1**	0	0	0	0	14
11:00	0	2	6	1	6	0	0	3	0	0	0	1	0	19
12 PM	0	3	5	0	**5**	0	0	1	0	0	0	0	0	14
13:00	0	8	6	0	5	0	0	**3**	0	0	0	0	0	22
14:00	0	**12**	5	0	5	**2**	0	0	0	0	**1**	0	0	**25**
15:00	0	4	3	0	4	0	0	0	0	0	0	0	0	11
16:00	0	1	**7**	0	4	0	0	0	**1**	0	0	0	0	13
17:00	0	4	2	0	3	0	0	0	0	0	0	0	0	9
18:00	0	1	2	0	1	0	0	0	0	0	0	0	0	4
19:00	0	3	0	0	2	0	0	1	0	0	0	0	0	6
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
Total	0	63	75	2	74	3	0	18	2	1	1	2	0	241
Percent	0.0%	26.1%	31.1%	0.8%	30.7%	1.2%	0.0%	7.5%	0.8%	0.4%	0.4%	0.8%	0.0%	
AM Peak		05:00	09:00	07:00	08:00	05:00		07:00	10:00	08:00		07:00		05:00
Vol.		11	7	1	11	1		4	1	1		1		21
PM Peak		14:00	16:00		12:00	14:00		13:00	16:00		14:00			14:00
Vol.		12	7		5	2		3	1		1			25
Grand Total	0	63	75	2	74	3	0	18	2	1	1	2	0	241
Percent	0.0%	26.1%	31.1%	0.8%	30.7%	1.2%	0.0%	7.5%	0.8%	0.4%	0.4%	0.8%	0.0%	



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County of Imperial
Main Street
B/ Northeast Avenue - Blair Road
24 Hour Directional Classification Count

CIM003
Site Code: 125-221001B

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	1	0	0	0	0	0	0	0	0	0	0	2
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	7	0	0	0	0	0	0	3	0	0	0	0	10
03:00	0	25	0	0	0	0	0	0	3	0	0	0	0	28
04:00	0	31	7	0	1	0	0	0	0	0	0	0	0	39
05:00	**1**	**178**	**46**	0	0	0	0	0	0	0	0	0	0	**225**
06:00	0	98	38	**2**	2	1	0	1	6	0	0	0	0	148
07:00	0	159	42	0	2	**2**	0	0	6	0	0	0	0	211
08:00	1	45	30	1	3	0	0	0	6	0	0	0	0	86
09:00	1	20	11	0	3	1	0	1	**10**	0	0	0	0	47
10:00	0	23	14	0	3	2	0	**2**	7	0	0	0	0	51
11:00	0	22	20	0	**4**	1	0	0	9	0	0	0	0	56
12 PM	0	15	11	0	1	0	0	**1**	8	0	**2**	0	0	38
13:00	**1**	**92**	**33**	0	3	0	0	1	**11**	0	0	0	0	**141**
14:00	0	13	13	0	**4**	0	0	0	5	0	1	0	0	36
15:00	0	18	18	0	0	**1**	0	1	8	0	0	0	0	46
16:00	0	19	6	0	0	0	0	1	1	0	0	0	0	27
17:00	0	12	3	0	0	0	0	0	1	0	0	0	0	16
18:00	1	12	1	0	0	0	0	0	1	0	0	0	0	15
19:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
20:00	0	2	5	0	1	0	0	0	1	0	0	0	0	9
21:00	1	42	7	0	0	0	0	0	1	0	0	0	0	51
22:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	6	844	306	3	28	8	0	8	87	0	3	0	0	1293
Percent	0.5%	65.3%	23.7%	0.2%	2.2%	0.6%	0.0%	0.6%	6.7%	0.0%	0.2%	0.0%	0.0%	
AM Peak	05:00	05:00	05:00	06:00	11:00	07:00		10:00	09:00					05:00
Vol.	1	178	46	2	4	2		2	10					225
PM Peak	13:00	13:00	13:00		14:00	15:00		12:00	13:00		12:00			13:00
Vol.	1	92	33		4	1		1	11		2			141
Grand Total	6	844	306	3	28	8	0	8	87	0	3	0	0	1293
Percent	0.5%	65.3%	23.7%	0.2%	2.2%	0.6%	0.0%	0.6%	6.7%	0.0%	0.2%	0.0%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
Main Street
B/ Northeast Avenue - Blair Road
24 Hour Directional Classification Count

CIM003
Site Code: 125-221001B

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	1	1	0	0	0	0	0	1	0	0	0	0	3
01:00	0	3	0	0	0	0	0	0	1	0	0	0	0	4
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:00	0	12	1	0	1	0	0	0	0	0	0	0	0	14
05:00	0	31	9	0	0	0	0	0	0	0	0	0	0	40
06:00	0	**34**	15	0	1	1	0	1	4	0	0	0	0	**56**
07:00	0	13	16	**3**	1	0	0	0	5	0	0	0	0	38
08:00	0	13	19	0	**5**	**3**	0	**2**	**6**	0	0	0	0	48
09:00	**3**	16	19	0	1	1	0	0	1	0	0	0	0	41
10:00	0	16	12	0	2	2	0	0	5	0	0	0	0	37
11:00	0	17	**26**	0	3	1	0	1	5	0	0	0	0	53
12 PM	**1**	24	17	0	**2**	0	0	**2**	6	0	0	0	0	52
13:00	0	52	25	0	2	0	0	1	**11**	0	0	0	0	91
14:00	1	143	51	0	2	0	0	1	7	0	**3**	0	0	208
15:00	1	**162**	**53**	0	2	0	0	0	0	0	0	0	0	**218**
16:00	0	89	12	0	1	**4**	0	0	1	0	1	0	0	108
17:00	1	36	8	0	0	0	0	0	2	0	0	0	0	47
18:00	0	18	0	0	0	0	0	0	2	0	0	0	0	20
19:00	1	26	3	0	0	0	0	0	1	0	0	0	0	31
20:00	0	4	2	0	0	0	0	0	2	0	0	0	0	8
21:00	1	67	10	0	0	0	0	0	3	0	0	0	0	81
22:00	0	37	5	0	0	0	0	0	0	0	0	0	0	42
23:00	0	1	0	0	0	0	0	0	1	0	0	0	0	2
Total	9	815	304	3	24	12	0	8	65	0	4	0	0	1244
Percent	0.7%	65.5%	24.4%	0.2%	1.9%	1.0%	0.0%	0.6%	5.2%	0.0%	0.3%	0.0%	0.0%	
AM Peak	09:00	06:00	11:00	07:00	08:00	08:00		08:00	08:00					06:00
Vol.	3	34	26	3	5	3		2	6					56
PM Peak	12:00	15:00	15:00		12:00	16:00		12:00	13:00		14:00			15:00
Vol.	1	162	53		2	4		2	11		3			218
Grand Total	9	815	304	3	24	12	0	8	65	0	4	0	0	1244
Percent	0.7%	65.5%	24.4%	0.2%	1.9%	1.0%	0.0%	0.6%	5.2%	0.0%	0.3%	0.0%	0.0%	

Counts Unlimited, Inc.

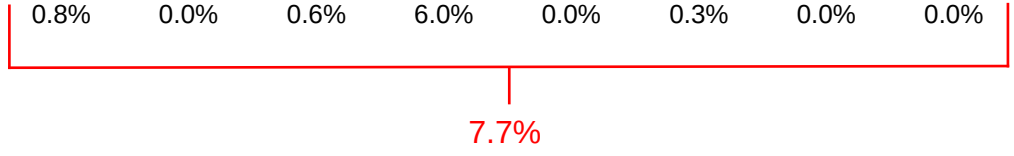
PO Box 1178
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County of Imperial
Main Street
B/ Northeast Avenue - Blair Road
24 Hour Directional Classification Count

CIM003
Site Code: 125-221001B

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	2	2	0	0	0	0	0	1	0	0	0	0	5
01:00	0	5	0	0	0	0	0	0	1	0	0	0	0	6
02:00	0	7	0	0	1	0	0	0	3	0	0	0	0	11
03:00	0	25	0	0	0	0	0	0	4	0	0	0	0	29
04:00	0	43	8	0	2	0	0	0	0	0	0	0	0	53
05:00	1	**209**	55	0	0	0	0	0	0	0	0	0	0	**265**
06:00	0	132	53	2	3	2	0	**2**	10	0	0	0	0	204
07:00	0	172	**58**	**3**	3	2	0	0	11	0	0	0	0	249
08:00	1	58	49	1	**8**	3	0	2	12	0	0	0	0	134
09:00	**4**	36	30	0	4	2	0	1	11	0	0	0	0	88
10:00	0	39	26	0	5	**4**	0	2	12	0	0	0	0	88
11:00	0	39	46	0	7	2	0	1	**14**	0	0	0	0	109
12 PM	1	39	28	0	3	0	0	**3**	14	0	2	0	0	90
13:00	1	144	58	0	5	0	0	2	**22**	0	0	0	0	232
14:00	1	156	64	0	**6**	0	0	1	12	0	**4**	0	0	244
15:00	1	**180**	**71**	0	2	1	0	1	8	0	0	0	0	**264**
16:00	0	108	18	0	1	**4**	0	1	2	0	1	0	0	135
17:00	1	48	11	0	0	0	0	0	3	0	0	0	0	63
18:00	1	30	1	0	0	0	0	0	3	0	0	0	0	35
19:00	1	31	3	0	0	0	0	0	1	0	0	0	0	36
20:00	0	6	7	0	1	0	0	0	3	0	0	0	0	17
21:00	**2**	109	17	0	0	0	0	0	4	0	0	0	0	132
22:00	0	39	5	0	1	0	0	0	0	0	0	0	0	45
23:00	0	2	0	0	0	0	0	0	1	0	0	0	0	3
Total	15	1659	610	6	52	20	0	16	152	0	7	0	0	2537
Percent	0.6%	65.4%	24.0%	0.2%	2.0%	0.8%	0.0%	0.6%	6.0%	0.0%	0.3%	0.0%	0.0%	
AM Peak	09:00	05:00	07:00	07:00	08:00	10:00		06:00	11:00					05:00
Vol.	4	209	58	3	8	4		2	14					265
PM Peak	21:00	15:00	15:00		14:00	16:00		12:00	13:00		14:00			15:00
Vol.	2	180	71		6	4		3	22		4			264
Grand Total	15	1659	610	6	52	20	0	16	152	0	7	0	0	2537
Percent	0.6%	65.4%	24.0%	0.2%	2.0%	0.8%	0.0%	0.6%	6.0%	0.0%	0.3%	0.0%	0.0%	



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County of Imperial
West Eddins Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM005
Site Code: 125-221001

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	2	4	0	0	0	0	0	0	0	0	0	0	6
01:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:00	0	5	1	0	3	0	0	0	0	0	3	0	0	12
05:00	0	9	1	0	6	0	0	0	0	0	7	0	0	23
06:00	0	5	6	1	5	0	0	2	0	0	6	**2**	0	27
07:00	0	**16**	**12**	1	9	0	0	0	**2**	0	8	0	0	**48**
08:00	**1**	11	6	**3**	**16**	0	0	1	1	0	5	1	0	45
09:00	0	7	5	1	8	**1**	0	3	2	0	**10**	1	0	38
10:00	0	7	9	0	12	0	0	**5**	0	0	8	0	0	41
11:00	0	7	3	0	8	0	0	0	1	0	6	1	0	26
12 PM	0	9	3	1	13	0	0	0	**1**	0	**2**	0	0	29
13:00	0	21	9	2	10	**1**	0	**1**	0	0	2	0	0	46
14:00	0	**23**	**16**	2	14	0	0	1	0	0	1	0	0	**57**
15:00	0	13	9	0	**21**	0	0	0	0	0	0	0	0	43
16:00	0	16	6	1	11	0	0	1	0	0	0	0	0	35
17:00	0	8	4	0	7	0	0	0	0	0	0	0	0	19
18:00	0	6	4	**3**	3	0	0	0	1	0	0	0	0	17
19:00	0	6	1	0	1	0	0	0	0	0	0	0	0	8
20:00	0	1	1	1	3	0	0	0	0	0	0	0	0	6
21:00	0	2	2	1	2	0	0	0	0	0	0	0	0	7
22:00	0	2	0	0	3	0	0	0	0	0	0	0	0	5
23:00	0	4	0	0	2	0	0	0	0	0	0	0	0	6
Total	1	181	103	17	158	2	0	14	9	0	58	5	0	548
Percent	0.2%	33.0%	18.8%	3.1%	28.8%	0.4%	0.0%	2.6%	1.6%	0.0%	10.6%	0.9%	0.0%	
AM Peak	08:00	07:00	07:00	08:00	08:00	09:00		10:00	07:00		09:00	06:00		07:00
Vol.	1	16	12	3	16	1		5	2		10	2		48
PM Peak		14:00	14:00	18:00	15:00	13:00		13:00	12:00		12:00			14:00
Vol.		23	16	3	21	1		1	1		2			57
Grand Total	1	181	103	17	158	2	0	14	9	0	58	5	0	548
Percent	0.2%	33.0%	18.8%	3.1%	28.8%	0.4%	0.0%	2.6%	1.6%	0.0%	10.6%	0.9%	0.0%	

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County of Imperial
West Eddins Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM005
Site Code: 125-221001

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	2	1	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
03:00	0	4	4	0	0	0	0	1	0	0	1	0	0	10
04:00	0	13	7	0	1	0	0	0	0	0	5	0	0	26
05:00	0	**33**	**25**	**4**	13	0	0	1	1	0	5	0	0	**82**
06:00	0	13	13	1	4	0	0	2	0	0	**8**	1	0	42
07:00	0	6	5	1	9	0	0	0	0	0	8	**2**	0	31
08:00	0	13	11	1	2	0	0	0	**2**	0	7	0	0	36
09:00	0	5	9	0	**14**	0	0	**3**	2	0	8	1	0	42
10:00	0	5	10	1	6	0	0	2	0	0	7	2	0	33
11:00	0	6	13	0	7	0	0	0	0	0	7	1	0	34
12 PM	0	12	9	**1**	**8**	**1**	0	**1**	**1**	0	**2**	**1**	0	**36**
13:00	0	7	9	1	3	1	0	1	0	0	1	1	0	24
14:00	**1**	8	**14**	1	2	0	0	1	0	0	0	0	0	27
15:00	0	15	12	0	5	0	0	1	0	0	1	0	0	34
16:00	0	**19**	5	0	2	0	0	0	1	0	0	0	0	27
17:00	0	7	5	1	5	0	0	0	0	0	0	0	0	18
18:00	0	5	6	1	2	0	0	0	0	0	0	0	0	14
19:00	1	7	1	1	2	0	0	1	0	0	0	0	0	13
20:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
21:00	0	1	0	0	2	0	0	0	1	0	0	0	0	4
22:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
Total	2	188	163	14	89	2	0	14	8	0	60	9	0	549
Percent	0.4%	34.2%	29.7%	2.6%	16.2%	0.4%	0.0%	2.6%	1.5%	0.0%	10.9%	1.6%	0.0%	
AM Peak		05:00	05:00	05:00	09:00			09:00	08:00		06:00	07:00		05:00
Vol.		33	25	4	14			3	2		8	2		82
PM Peak	14:00	16:00	14:00	12:00	12:00	12:00		12:00	12:00		12:00	12:00		12:00
Vol.	1	19	14	1	8	1		1	1		2	1		36
Grand Total	2	188	163	14	89	2	0	14	8	0	60	9	0	549
Percent	0.4%	34.2%	29.7%	2.6%	16.2%	0.4%	0.0%	2.6%	1.5%	0.0%	10.9%	1.6%	0.0%	

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County of Imperial
West Eddins Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM005
Site Code: 125-221001

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	4	5	0	0	0	0	0	0	0	0	0	0	9
01:00	0	1	0	0	0	0	0	0	1	0	0	0	0	2
02:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
03:00	0	4	4	0	1	0	0	1	0	0	1	0	0	11
04:00	0	18	8	0	4	0	0	0	0	0	8	0	0	38
05:00	0	**42**	**26**	**4**	19	0	0	1	1	0	12	0	0	**105**
06:00	0	18	19	2	9	0	0	4	0	0	14	**3**	0	69
07:00	0	22	17	2	18	0	0	0	2	0	16	2	0	79
08:00	**1**	24	17	4	18	0	0	1	3	0	12	1	0	81
09:00	0	12	14	1	**22**	**1**	0	6	**4**	0	**18**	2	0	80
10:00	0	12	19	1	18	0	0	**7**	0	0	15	2	0	74
11:00	0	13	16	0	15	0	0	0	1	0	13	2	0	60
12 PM	0	21	12	2	21	1	0	1	**2**	0	**4**	**1**	0	65
13:00	0	28	18	3	13	**2**	0	**2**	0	0	3	1	0	70
14:00	**1**	31	**30**	3	16	0	0	2	0	0	1	0	0	**84**
15:00	0	28	21	0	**26**	0	0	1	0	0	1	0	0	77
16:00	0	**35**	11	1	13	0	0	1	1	0	0	0	0	62
17:00	0	15	9	1	12	0	0	0	0	0	0	0	0	37
18:00	0	11	10	**4**	5	0	0	0	1	0	0	0	0	31
19:00	1	13	2	1	3	0	0	1	0	0	0	0	0	21
20:00	0	2	2	1	4	0	0	0	0	0	0	0	0	9
21:00	0	3	2	1	4	0	0	0	1	0	0	0	0	11
22:00	0	4	2	0	3	0	0	0	0	0	0	0	0	9
23:00	0	6	0	0	3	0	0	0	0	0	0	0	0	9
Total	3	369	266	31	247	4	0	28	17	0	118	14	0	1097
Percent	0.3%	33.6%	24.2%	2.8%	22.5%	0.4%	0.0%	2.6%	1.5%	0.0%	10.8%	1.3%	0.0%	
AM Peak	08:00	05:00	05:00	05:00	09:00	09:00		10:00	09:00		09:00	06:00		05:00
Vol.	1	42	26	4	22	1		7	4		18	3		105
PM Peak	14:00	16:00	14:00	18:00	15:00	13:00		13:00	12:00		12:00	12:00		14:00
Vol.	1	35	30	4	26	2		2	2		4	1		84
Grand Total	3	369	266	31	247	4	0	28	17	0	118	14	0	1097
Percent	0.3%	33.6%	24.2%	2.8%	22.5%	0.4%	0.0%	2.6%	1.5%	0.0%	10.8%	1.3%	0.0%	

16.6%

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County of Imperial
West Sinclair Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM004
Site Code: 125-221001

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	2	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	2	0	2	0	0	0	0	0	0	0	0	4
05:00	0	6	3	0	0	0	0	**1**	0	0	0	0	0	10
06:00	0	2	6	1	2	0	0	1	3	0	0	0	0	15
07:00	0	**8**	4	**5**	5	0	0	0	2	0	2	0	0	**26**
08:00	0	2	2	0	8	0	0	1	2	0	2	0	0	17
09:00	0	2	4	0	**10**	**1**	0	1	**4**	0	0	0	0	22
10:00	0	1	**8**	0	7	0	0	0	3	0	**3**	0	0	22
11:00	0	2	4	1	6	1	0	0	4	**1**	1	0	0	20
12 PM	0	3	2	0	4	0	0	0	**2**	0	**1**	0	0	12
13:00	0	2	3	0	7	0	0	0	0	0	0	0	0	12
14:00	**1**	5	**4**	0	**12**	0	0	0	0	0	0	0	0	**22**
15:00	0	2	3	0	3	0	0	0	0	0	0	0	0	8
16:00	0	**10**	4	0	5	0	0	0	0	0	0	0	0	19
17:00	0	3	3	0	3	0	0	0	1	0	0	0	0	10
18:00	0	3	0	0	0	0	0	0	1	0	0	0	0	4
19:00	0	2	0	0	2	0	0	0	0	0	0	0	0	4
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	55	55	7	78	2	0	4	22	1	9	0	0	234
Percent	0.4%	23.5%	23.5%	3.0%	33.3%	0.9%	0.0%	1.7%	9.4%	0.4%	3.8%	0.0%	0.0%	
AM Peak		07:00	10:00	07:00	09:00	09:00		05:00	09:00	11:00	10:00			07:00
Vol.		8	8	5	10	1		1	4	1	3			26
PM Peak	14:00	16:00	14:00		14:00				12:00		12:00			14:00
Vol.	1	10	4		12				2		1			22
Grand Total	1	55	55	7	78	2	0	4	22	1	9	0	0	234
Percent	0.4%	23.5%	23.5%	3.0%	33.3%	0.9%	0.0%	1.7%	9.4%	0.4%	3.8%	0.0%	0.0%	

Counts Unlimited, Inc.

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County of Imperial
West Sinclair Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM004
Site Code: 125-221001

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	2	0	1	0	0	0	0	0	0	0	0	3
04:00	0	3	3	0	5	0	0	0	0	0	1	0	0	12
05:00	0	4	5	1	7	0	0	0	2	0	0	0	0	19
06:00	**1**	**5**	0	0	4	0	0	1	2	0	1	0	0	14
07:00	0	2	2	0	1	0	0	0	**6**	0	0	0	0	11
08:00	0	3	3	**2**	5	**1**	0	**2**	2	0	2	0	0	**20**
09:00	0	0	4	0	3	0	0	0	2	0	2	0	0	11
10:00	0	3	5	0	**8**	0	0	0	3	0	0	0	0	19
11:00	0	1	**7**	0	6	0	0	0	1	0	**4**	0	0	19
12 PM	0	**3**	3	0	**11**	0	0	**1**	1	0	**1**	0	0	**20**
13:00	0	1	0	0	4	0	0	1	1	0	0	**1**	0	8
14:00	0	2	**4**	0	3	0	0	1	**2**	0	0	0	0	12
15:00	0	2	3	0	4	0	0	0	0	0	0	0	0	9
16:00	0	1	3	**1**	2	0	0	0	0	0	0	0	0	7
17:00	**1**	1	3	0	2	**1**	0	0	0	0	0	0	0	8
18:00	0	1	0	0	0	0	0	0	0	0	1	0	0	2
19:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	32	48	4	68	2	0	6	22	0	12	1	0	197
Percent	1.0%	16.2%	24.4%	2.0%	34.5%	1.0%	0.0%	3.0%	11.2%	0.0%	6.1%	0.5%	0.0%	
AM Peak	06:00	06:00	11:00	08:00	10:00	08:00		08:00	07:00		11:00			08:00
Vol.	1	5	7	2	8	1		2	6		4			20
PM Peak	17:00	12:00	14:00	16:00	12:00	17:00		12:00	14:00		12:00	13:00		12:00
Vol.	1	3	4	1	11	1		1	2		1	1		20
Grand Total	2	32	48	4	68	2	0	6	22	0	12	1	0	197
Percent	1.0%	16.2%	24.4%	2.0%	34.5%	1.0%	0.0%	3.0%	11.2%	0.0%	6.1%	0.5%	0.0%	

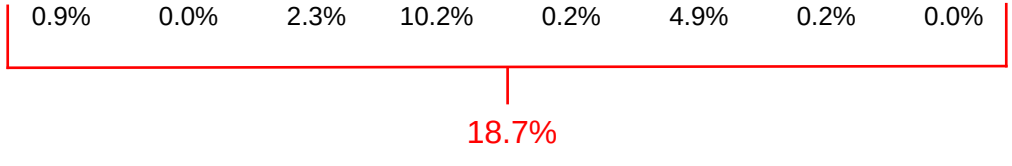
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County of Imperial
West Sinclair Road
B/ Brandt Road - Highway 111
24 Hour Directional Classification Count

CIM004
Site Code: 125-221001

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/09/22	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	2	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	1	0	2	0	0	0	0	0	0	0	0	3
03:00	0	0	2	0	1	0	0	0	0	0	0	0	0	3
04:00	0	3	5	0	7	0	0	0	0	0	1	0	0	16
05:00	0	**10**	8	1	7	0	0	1	2	0	0	0	0	29
06:00	**1**	7	6	1	6	0	0	2	5	0	1	0	0	29
07:00	0	10	6	**5**	6	0	0	0	**8**	0	2	0	0	37
08:00	0	5	5	2	13	**1**	0	**3**	4	0	4	0	0	37
09:00	0	2	8	0	13	1	0	1	6	0	2	0	0	33
10:00	0	4	**13**	0	**15**	0	0	0	6	0	3	0	0	**41**
11:00	0	3	11	1	12	1	0	0	5	**1**	**5**	0	0	39
12 PM	0	6	5	0	**15**	0	0	**1**	**3**	0	**2**	0	0	32
13:00	0	3	3	0	11	0	0	1	1	0	0	**1**	0	20
14:00	**1**	7	**8**	0	15	0	0	1	2	0	0	0	0	**34**
15:00	0	4	6	0	7	0	0	0	0	0	0	0	0	17
16:00	0	**11**	7	**1**	7	0	0	0	0	0	0	0	0	26
17:00	1	4	6	0	5	**1**	0	0	1	0	0	0	0	18
18:00	0	4	0	0	0	0	0	0	1	0	1	0	0	6
19:00	0	2	0	0	3	0	0	0	0	0	0	0	0	5
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	87	103	11	146	4	0	10	44	1	21	1	0	431
Percent	0.7%	20.2%	23.9%	2.6%	33.9%	0.9%	0.0%	2.3%	10.2%	0.2%	4.9%	0.2%	0.0%	
AM Peak	06:00	05:00	10:00	07:00	10:00	08:00		08:00	07:00	11:00	11:00			10:00
Vol.	1	10	13	5	15	1		3	8	1	5			41
PM Peak	14:00	16:00	14:00	16:00	12:00	17:00		12:00	12:00		12:00	13:00		14:00
Vol.	1	11	8	1	15	1		1	3		2	1		34
Grand Total	3	87	103	11	146	4	0	10	44	1	21	1	0	431
Percent	0.7%	20.2%	23.9%	2.6%	33.9%	0.9%	0.0%	2.3%	10.2%	0.2%	4.9%	0.2%	0.0%	



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County of Imperial
Wilkins Road
B/ Beal Road - Gillespie Road
24 Hour Directional Classification Count

CIM002
Site Code: 125-221001B

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	**1**	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	0	**3**	0	0	0	0	0	0	0	0	0	0	3
06:00	0	3	1	0	1	0	0	0	**1**	0	0	0	0	6
07:00	0	3	3	0	0	0	0	**1**	1	0	0	0	0	8
08:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3
09:00	0	**4**	1	0	1	0	0	0	1	0	0	0	0	7
10:00	0	2	1	0	0	0	0	0	1	0	0	0	0	4
11:00	0	4	3	0	1	0	0	0	1	0	0	0	0	**9**
12 PM	0	2	**5**	0	1	0	0	0	**1**	0	0	0	0	9
13:00	0	2	2	0	1	0	0	0	1	0	0	0	0	6
14:00	0	1	1	0	2	0	0	0	0	0	0	0	0	4
15:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
16:00	0	**4**	5	0	**4**	0	0	0	0	0	0	0	0	**13**
17:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
20:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
21:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	42	32	0	13	0	0	1	7	0	0	0	0	95
Percent	0.0%	44.2%	33.7%	0.0%	13.7%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak		09:00	05:00		02:00			07:00	06:00					11:00
Vol.		4	3		1			1	1					9
PM Peak		16:00	12:00		16:00				12:00					16:00
Vol.		4	5		4				1					13
Grand Total	0	42	32	0	13	0	0	1	7	0	0	0	0	95
Percent	0.0%	44.2%	33.7%	0.0%	13.7%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	

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County of Imperial
Wilkins Road
B/ Beal Road - Gillespie Road
24 Hour Directional Classification Count

CIM002
Site Code: 125-221001B

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
06:00	0	0	2	0	0	0	0	0	**1**	0	0	0	0	3
07:00	0	1	2	0	1	0	0	0	1	0	0	0	0	5
08:00	0	**6**	2	0	1	0	0	0	0	0	0	0	0	**9**
09:00	0	2	**4**	0	0	0	0	**1**	1	0	0	0	0	8
10:00	0	1	0	0	**3**	0	0	0	1	0	0	0	0	5
11:00	0	3	2	0	2	0	0	0	1	0	0	0	0	8
12 PM	0	1	2	0	1	0	0	0	**1**	0	0	0	0	5
13:00	0	3	3	0	0	0	0	0	1	0	0	0	0	7
14:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
15:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
16:00	0	3	**5**	0	0	0	0	0	0	0	0	0	0	8
17:00	0	**5**	4	0	2	0	0	0	0	0	0	0	0	**11**
18:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
19:00	0	2	0	0	**3**	0	0	0	0	0	0	0	0	5
20:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	41	31	0	15	0	0	1	7	0	0	0	0	95
Percent	0.0%	43.2%	32.6%	0.0%	15.8%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak		08:00	09:00		10:00			09:00	06:00					08:00
Vol.		6	4		3			1	1					9
PM Peak		17:00	16:00		19:00				12:00					17:00
Vol.		5	5		3				1					11
Grand Total	0	41	31	0	15	0	0	1	7	0	0	0	0	95
Percent	0.0%	43.2%	32.6%	0.0%	15.8%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	

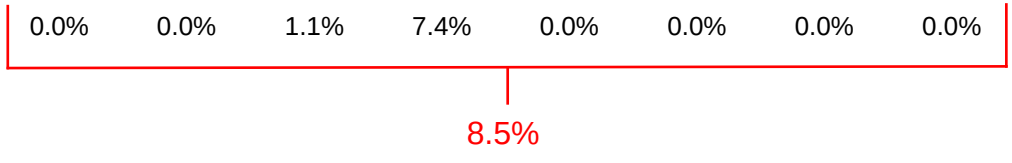
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24 Hour Directional Classification Count
Northbound, Southbound

CIM002
Site Code: 125-221001B

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	2	4	0	0	0	0	0	0	0	0	0	0	6
06:00	0	3	3	0	1	0	0	0	**2**	0	0	0	0	9
07:00	0	4	**5**	0	1	0	0	**1**	2	0	0	0	0	13
08:00	0	**7**	4	0	1	0	0	0	0	0	0	0	0	12
09:00	0	6	5	0	1	0	0	1	2	0	0	0	0	15
10:00	0	3	1	0	**3**	0	0	0	2	0	0	0	0	9
11:00	0	7	5	0	3	0	0	0	2	0	0	0	0	**17**
12 PM	0	3	7	0	2	0	0	0	**2**	0	0	0	0	14
13:00	0	5	5	0	1	0	0	0	2	0	0	0	0	13
14:00	0	4	3	0	2	0	0	0	0	0	0	0	0	9
15:00	0	6	1	0	1	0	0	0	0	0	0	0	0	8
16:00	0	**7**	**10**	0	**4**	0	0	0	0	0	0	0	0	**21**
17:00	0	7	5	0	2	0	0	0	0	0	0	0	0	14
18:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
19:00	0	6	0	0	3	0	0	0	0	0	0	0	0	9
20:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
21:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	83	63	0	28	0	0	2	14	0	0	0	0	190
Percent	0.0%	43.7%	33.2%	0.0%	14.7%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak		08:00	07:00		10:00			07:00	06:00					11:00
Vol.		7	5		3			1	2					17
PM Peak		16:00	16:00		16:00				12:00					16:00
Vol.		7	10		4				2					21
Grand Total	0	83	63	0	28	0	0	2	14	0	0	0	0	190
Percent	0.0%	43.7%	33.2%	0.0%	14.7%	0.0%	0.0%	1.1%	7.4%	0.0%	0.0%	0.0%	0.0%	



APPENDIX B, Part 2

EXISTING CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	0	58	64	1
Future Vol, veh/h	3	1	0	58	64	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	385	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	3	1	0	66	73	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	140	74	74	0	-	0
Stage 1	74	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	812	940	1419	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	812	940	1419	-	-	-
Mov Cap-2 Maneuver	785	-	-	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1419	-	819	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	0	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	68	0	0	52	9	0	0	0	11	0	4
Future Vol, veh/h	6	68	0	0	52	9	0	0	0	11	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20	8	8	8	8	8	8
Mvmt Flow	7	74	0	0	57	10	0	0	0	12	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	67	0	0	74	0	0	152	155	74	150	150	62
Stage 1	-	-	-	-	-	-	88	88	-	62	62	-
Stage 2	-	-	-	-	-	-	64	67	-	88	88	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.18	6.58	6.28	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.572	4.072	3.372	3.572	4.072	3.372
Pot Cap-1 Maneuver	1427	-	-	1419	-	-	802	726	971	804	731	986
Stage 1	-	-	-	-	-	-	905	810	-	934	832	-
Stage 2	-	-	-	-	-	-	932	827	-	905	810	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1427	-	-	1419	-	-	796	722	971	801	727	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	796	722	-	801	727	-
Stage 1	-	-	-	-	-	-	900	806	-	929	832	-
Stage 2	-	-	-	-	-	-	928	827	-	900	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	0	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1427	-	-	1419	-	-	843
HCM Lane V/C Ratio	-	0.005	-	-	-	-	-	0.019
HCM Control Delay (s)	0	7.5	0	-	0	-	-	9.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	15	66	12	9	72
Future Vol, veh/h	17	15	66	12	9	72
Conflicting Peds, #/hr	1	3	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	7	7	14	14	20	20
Mvmt Flow	20	18	78	14	11	85

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	198	93	0	0	97	0
Stage 1	90	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.47	6.27	-	-	4.3	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	-	-	2.38	-
Pot Cap-1 Maneuver	779	951	-	-	1391	-
Stage 1	921	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	768	944	-	-	1384	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	839	1384	-
HCM Lane V/C Ratio	-	-	0.045	0.008	-
HCM Control Delay (s)	-	-	9.5	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	6	1	1	3	2	18	95	0	8	82	12
Future Vol, veh/h	12	6	1	1	3	2	18	95	0	8	82	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	-	290	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	19	19	19	19	19	19	11	11	11	14	14	14
Mvmt Flow	13	6	1	1	3	2	19	101	0	9	87	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	254	251	94	254	257	101	100	0	0	101	0	0
Stage 1	112	112	-	139	139	-	-	-	-	-	-	-
Stage 2	142	139	-	115	118	-	-	-	-	-	-	-
Critical Hdwy	7.29	6.69	6.39	7.29	6.69	6.39	4.21	-	-	4.24	-	-
Critical Hdwy Stg 1	6.29	5.69	-	6.29	5.69	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.29	5.69	-	6.29	5.69	-	-	-	-	-	-	-
Follow-up Hdwy	3.671	4.171	3.471	3.671	4.171	3.471	2.299	-	-	2.326	-	-
Pot Cap-1 Maneuver	666	624	918	666	619	910	1438	-	-	1419	-	-
Stage 1	853	771	-	825	750	-	-	-	-	-	-	-
Stage 2	822	750	-	850	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	652	612	918	650	607	910	1438	-	-	1419	-	-
Mov Cap-2 Maneuver	652	612	-	650	607	-	-	-	-	-	-	-
Stage 1	842	766	-	814	740	-	-	-	-	-	-	-
Stage 2	806	740	-	837	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.3	1.2	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1438	-	-	649	691	1419	-	-
HCM Lane V/C Ratio	0.013	-	-	0.031	0.009	0.006	-	-
HCM Control Delay (s)	7.5	-	-	10.7	10.3	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	68	27	33	82	28	52	98	148	13	61	29
Future Vol, veh/h	41	68	27	33	82	28	52	98	148	13	61	29
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	17	17	17	8	8	8	5	5	5	11	11	11
Mvmt Flow	64	106	42	52	128	44	81	153	231	20	95	45
Number of Lanes	0	2	0	0	2	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.6	11.3	13.1	10.6
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	51%	0%	55%	0%	45%	0%	30%	0%
Vol Thru, %	49%	25%	45%	56%	55%	59%	70%	51%
Vol Right, %	0%	75%	0%	44%	0%	41%	0%	49%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	101	197	75	61	74	69	44	60
LT Vol	52	0	41	0	33	0	13	0
Through Vol	49	49	34	34	41	41	31	31
RT Vol	0	148	0	27	0	28	0	29
Lane Flow Rate	158	308	117	95	116	108	68	93
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.285	0.488	0.235	0.175	0.225	0.194	0.131	0.166
Departure Headway (Hd)	6.499	5.705	7.213	6.619	6.998	6.482	6.939	6.439
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	551	631	496	539	511	551	515	554
Service Time	4.256	3.461	4.98	4.386	4.764	4.248	4.713	4.212
HCM Lane V/C Ratio	0.287	0.488	0.236	0.176	0.227	0.196	0.132	0.168
HCM Control Delay	11.8	13.8	12.2	10.8	11.8	10.8	10.8	10.5
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.2	2.7	0.9	0.6	0.9	0.7	0.4	0.6

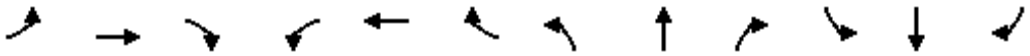
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	327	1	0	270	11	6	0	0	4	3	0
Future Vol, veh/h	0	327	1	0	270	11	6	0	0	4	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	665	-	590	665	-	575	-	-	30	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	34	34	34	34	34	34	11	11	11	11	11	11
Mvmt Flow	0	337	1	0	278	11	6	0	0	4	3	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	289	0	0	338	0	0	478	626	169	447	616	139
Stage 1	-	-	-	-	-	-	337	337	-	278	278	-
Stage 2	-	-	-	-	-	-	141	289	-	169	338	-
Critical Hdwy	4.78	-	-	4.78	-	-	7.72	6.72	7.12	7.72	6.72	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Follow-up Hdwy	2.54	-	-	2.54	-	-	3.61	4.11	3.41	3.61	4.11	3.41
Pot Cap-1 Maneuver	1067	-	-	1017	-	-	450	381	818	474	386	856
Stage 1	-	-	-	-	-	-	626	618	-	680	657	-
Stage 2	-	-	-	-	-	-	822	650	-	791	617	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1067	-	-	1017	-	-	447	381	818	474	386	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	381	-	474	386	-
Stage 1	-	-	-	-	-	-	626	618	-	680	657	-
Stage 2	-	-	-	-	-	-	818	650	-	791	617	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13.2	13.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	447	-	1067	-	-	1017	-	-	432	-
HCM Lane V/C Ratio	0.014	-	-	-	-	-	-	-	0.017	-
HCM Control Delay (s)	13.2	0	0	-	-	0	-	-	13.5	0
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	290	28	1	263	15	47	44	14	49	48	13
Future Volume (veh/h)	14	290	28	1	263	15	47	44	14	49	48	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1396	1396	1396	1396	1396	1396	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	15	312	30	1	283	16	51	47	15	53	52	14
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	34	34	34	34	34	34	10	10	10	10	10	10
Cap, veh/h	59	693	66	4	619	35	189	363	116	193	384	103
Arrive On Green	0.04	0.28	0.28	0.00	0.24	0.24	0.11	0.29	0.29	0.12	0.29	0.29
Sat Flow, veh/h	1330	2447	234	1330	2553	144	1668	1265	404	1668	1322	356
Grp Volume(v), veh/h	15	168	174	1	146	153	51	0	62	53	0	66
Grp Sat Flow(s),veh/h/ln	1330	1326	1354	1330	1326	1370	1668	0	1668	1668	0	1678
Q Serve(g_s), s	0.7	6.4	6.5	0.0	5.8	5.9	1.7	0.0	1.7	1.8	0.0	1.8
Cycle Q Clear(g_c), s	0.7	6.4	6.5	0.0	5.8	5.9	1.7	0.0	1.7	1.8	0.0	1.8
Prop In Lane	1.00		0.17	1.00		0.10	1.00		0.24	1.00		0.21
Lane Grp Cap(c), veh/h	59	376	383	4	322	332	189	0	479	193	0	487
V/C Ratio(X)	0.26	0.45	0.45	0.23	0.46	0.46	0.27	0.00	0.13	0.27	0.00	0.14
Avail Cap(c_a), veh/h	264	705	720	264	705	729	359	0	871	359	0	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	18.2	18.2	30.8	20.0	20.0	25.1	0.0	16.3	25.0	0.0	16.2
Incr Delay (d2), s/veh	2.3	0.8	0.8	24.4	1.0	1.0	0.8	0.0	0.1	0.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.9	1.9	0.0	1.7	1.8	0.7	0.0	0.6	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	19.0	19.1	55.1	21.0	21.0	25.9	0.0	16.4	25.7	0.0	16.4
LnGrp LOS	C	B	B	E	C	C	C	A	B	C	A	B
Approach Vol, veh/h		357			300			113			119	
Approach Delay, s/veh		19.6			21.1			20.7			20.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	22.6	11.7	22.6	7.4	20.1	11.9	22.5
Change Period (Y+Rc), s	* 4.7	5.1	* 4.7	* 4.7	* 4.7	5.1	* 4.7	* 4.7
Max Green Setting (Gmax), s	* 12	32.9	* 13	* 32	* 12	32.9	* 13	* 32
Max Q Clear Time (g_c+I1), s	2.0	8.5	3.7	3.8	2.7	7.9	3.8	3.7
Green Ext Time (p_c), s	0.0	2.0	0.1	0.3	0.0	1.7	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	290	0	10	228	14	1	37	18	13	13	1
Future Vol, veh/h	0	290	0	10	228	14	1	37	18	13	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	570	-	570	650	-	650	-	-	30	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	34	34	34	34	34	34	5	5	5	5	5	5
Mvmt Flow	0	341	0	12	268	16	1	44	21	15	15	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	284	0	0	341	0	0	507	649	171	485	633	134
Stage 1	-	-	-	-	-	-	341	341	-	292	292	-
Stage 2	-	-	-	-	-	-	166	308	-	193	341	-
Critical Hdwy	4.78	-	-	4.78	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.54	-	-	2.54	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	1073	-	-	1014	-	-	442	381	834	458	389	881
Stage 1	-	-	-	-	-	-	639	630	-	683	662	-
Stage 2	-	-	-	-	-	-	811	651	-	782	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1073	-	-	1014	-	-	424	376	834	403	384	881
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	376	-	403	384	-
Stage 1	-	-	-	-	-	-	639	630	-	683	654	-
Stage 2	-	-	-	-	-	-	782	643	-	709	630	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	13.7	14.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	377	834	1073	-	-	1014	-	-	393	881
HCM Lane V/C Ratio	0.119	0.025	-	-	-	0.012	-	-	0.078	0.001
HCM Control Delay (s)	15.8	9.4	0	-	-	8.6	-	-	14.9	9.1
HCM Lane LOS	C	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.4	0.1	0	-	-	0	-	-	0.3	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	1	52	39	0
Future Vol, veh/h	1	2	1	52	39	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	385	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	1	2	1	55	41	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	98	41	41	0	-	0
Stage 1	41	-	-	-	-	-
Stage 2	57	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	859	981	1460	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	858	981	1460	-	-	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1460	-	919	-	-
HCM Lane V/C Ratio	0.001	-	0.003	-	-
HCM Control Delay (s)	7.5	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	43	1	0	49	5	1	0	1	12	0	5
Future Vol, veh/h	1	43	1	0	49	5	1	0	1	12	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	20	20	20	20	20	20	8	8	8	8	8	8
Mvmt Flow	1	45	1	0	52	5	1	0	1	13	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	57	0	0	46	0	0	105	105	46	103	103	55
Stage 1	-	-	-	-	-	-	48	48	-	55	55	-
Stage 2	-	-	-	-	-	-	57	57	-	48	48	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.18	6.58	6.28	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.572	4.072	3.372	3.572	4.072	3.372
Pot Cap-1 Maneuver	1440	-	-	1454	-	-	861	774	1007	863	776	995
Stage 1	-	-	-	-	-	-	950	843	-	942	837	-
Stage 2	-	-	-	-	-	-	940	836	-	950	843	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1440	-	-	1454	-	-	856	773	1007	861	775	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	856	773	-	861	775	-
Stage 1	-	-	-	-	-	-	949	842	-	941	837	-
Stage 2	-	-	-	-	-	-	935	836	-	948	842	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	8.9	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	925	1440	-	-	1454	-	-	897
HCM Lane V/C Ratio	0.002	0.001	-	-	-	-	-	0.02
HCM Control Delay (s)	8.9	7.5	0	-	0	-	-	9.1
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	19	64	16	11	35
Future Vol, veh/h	7	19	64	16	11	35
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	7	7	14	14	20	20
Mvmt Flow	8	23	76	19	13	42

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	155	87	0	0	96	0
Stage 1	87	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.47	6.27	-	-	4.3	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	-	-	2.38	-
Pot Cap-1 Maneuver	825	958	-	-	1392	-
Stage 1	924	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	957	-	-	1391	-
Mov Cap-2 Maneuver	797	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	908	1391	-
HCM Lane V/C Ratio	-	-	0.034	0.009	-
HCM Control Delay (s)	-	-	9.1	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	6	0	11	1	0	4	3	67	0	0	98	3
Future Vol, veh/h	6	0	11	1	0	4	3	67	0	0	98	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	-	290	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	19	19	19	19	19	19	11	11	11	14	14	14
Mvmt Flow	8	0	14	1	0	5	4	85	0	0	124	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	222	219	126	226	221	85	128	0	0	85	0	0
Stage 1	126	126	-	93	93	-	-	-	-	-	-	-
Stage 2	96	93	-	133	128	-	-	-	-	-	-	-
Critical Hdwy	7.29	6.69	6.39	7.29	6.69	6.39	4.21	-	-	4.24	-	-
Critical Hdwy Stg 1	6.29	5.69	-	6.29	5.69	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.29	5.69	-	6.29	5.69	-	-	-	-	-	-	-
Follow-up Hdwy	3.671	4.171	3.471	3.671	4.171	3.471	2.299	-	-	2.326	-	-
Pot Cap-1 Maneuver	699	651	881	695	649	929	1404	-	-	1439	-	-
Stage 1	839	760	-	874	786	-	-	-	-	-	-	-
Stage 2	870	786	-	831	759	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	693	649	881	682	647	929	1404	-	-	1439	-	-
Mov Cap-2 Maneuver	693	649	-	682	647	-	-	-	-	-	-	-
Stage 1	836	760	-	871	784	-	-	-	-	-	-	-
Stage 2	863	784	-	818	759	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.2	0.3	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1404	-	-	804	866	1439	-	-
HCM Lane V/C Ratio	0.003	-	-	0.027	0.007	-	-	-
HCM Control Delay (s)	7.6	-	-	9.6	9.2	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	77	49	204	94	21	56	60	41	36	96	48
Future Vol, veh/h	42	77	49	204	94	21	56	60	41	36	96	48
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	17	17	17	8	8	8	5	5	5	11	11	11
Mvmt Flow	48	89	56	234	108	24	64	69	47	41	110	55
Number of Lanes	0	2	0	0	2	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.7	15	10.8	10.9
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	65%	0%	52%	0%	81%	0%	43%	0%
Vol Thru, %	35%	42%	48%	44%	19%	69%	57%	50%
Vol Right, %	0%	58%	0%	56%	0%	31%	0%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	86	71	81	88	251	68	84	96
LT Vol	56	0	42	0	204	0	36	0
Through Vol	30	30	39	39	47	47	48	48
RT Vol	0	41	0	49	0	21	0	48
Lane Flow Rate	99	82	93	101	289	78	97	110
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.192	0.141	0.176	0.173	0.526	0.129	0.186	0.194
Departure Headway (Hd)	6.976	6.234	6.866	6.203	6.569	5.939	6.918	6.345
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	513	573	521	576	548	603	518	564
Service Time	4.736	3.993	4.624	3.96	4.317	3.687	4.676	4.102
HCM Lane V/C Ratio	0.193	0.143	0.179	0.175	0.527	0.129	0.187	0.195
HCM Control Delay	11.4	10	11.1	10.3	16.4	9.6	11.3	10.6
HCM Lane LOS	B	A	B	B	C	A	B	B
HCM 95th-tile Q	0.7	0.5	0.6	0.6	3	0.4	0.7	0.7

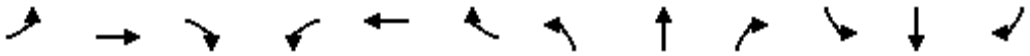
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	356	4	0	304	2	2	0	0	10	5	1
Future Vol, veh/h	2	356	4	0	304	2	2	0	0	10	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	665	-	590	665	-	575	-	-	30	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	34	34	34	34	34	34	11	11	11	11	11	11
Mvmt Flow	2	405	5	0	345	2	2	0	0	11	6	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	347	0	0	410	0	0	585	756	203	552	759	173
Stage 1	-	-	-	-	-	-	409	409	-	345	345	-
Stage 2	-	-	-	-	-	-	176	347	-	207	414	-
Critical Hdwy	4.78	-	-	4.78	-	-	7.72	6.72	7.12	7.72	6.72	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Follow-up Hdwy	2.54	-	-	2.54	-	-	3.61	4.11	3.41	3.61	4.11	3.41
Pot Cap-1 Maneuver	1008	-	-	947	-	-	376	319	777	398	318	813
Stage 1	-	-	-	-	-	-	567	572	-	620	613	-
Stage 2	-	-	-	-	-	-	783	611	-	750	569	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1008	-	-	947	-	-	370	318	777	397	317	813
Mov Cap-2 Maneuver	-	-	-	-	-	-	370	318	-	397	317	-
Stage 1	-	-	-	-	-	-	566	571	-	619	613	-
Stage 2	-	-	-	-	-	-	775	611	-	749	568	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.8	14.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	370	-	1008	-	-	947	-	-	366	813
HCM Lane V/C Ratio	0.006	-	0.002	-	-	-	-	-	0.047	0.001
HCM Control Delay (s)	14.8	0	8.6	-	-	0	-	-	15.3	9.4
HCM Lane LOS	B	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0	-	-	0.1	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	342	28	11	292	21	47	28	11	45	47	24
Future Volume (veh/h)	14	342	28	11	292	21	47	28	11	45	47	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1396	1396	1396	1396	1396	1396	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	16	380	31	12	324	23	52	31	12	50	52	27
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	34	34	34	34	34	34	10	10	10	10	10	10
Cap, veh/h	62	694	56	48	676	48	194	296	115	189	264	137
Arrive On Green	0.05	0.28	0.28	0.04	0.27	0.27	0.12	0.25	0.25	0.11	0.24	0.24
Sat Flow, veh/h	1330	2483	202	1330	2512	177	1668	1198	464	1668	1081	561
Grp Volume(v), veh/h	16	202	209	12	170	177	52	0	43	50	0	79
Grp Sat Flow(s),veh/h/ln	1330	1326	1358	1330	1326	1363	1668	0	1662	1668	0	1643
Q Serve(g_s), s	0.7	7.7	7.8	0.5	6.4	6.5	1.7	0.0	1.2	1.6	0.0	2.3
Cycle Q Clear(g_c), s	0.7	7.7	7.8	0.5	6.4	6.5	1.7	0.0	1.2	1.6	0.0	2.3
Prop In Lane	1.00		0.15	1.00		0.13	1.00		0.28	1.00		0.34
Lane Grp Cap(c), veh/h	62	371	380	48	357	367	194	0	411	189	0	401
V/C Ratio(X)	0.26	0.54	0.55	0.25	0.48	0.48	0.27	0.00	0.10	0.26	0.00	0.20
Avail Cap(c_a), veh/h	275	757	775	275	757	778	346	0	904	346	0	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.3	18.2	18.2	27.8	18.2	18.2	23.9	0.0	17.3	24.0	0.0	17.8
Incr Delay (d2), s/veh	2.1	1.2	1.2	2.6	1.0	1.0	0.7	0.0	0.1	0.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.2	2.3	0.2	1.8	1.9	0.7	0.0	0.4	0.7	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.4	19.4	19.4	30.5	19.2	19.2	24.7	0.0	17.4	24.8	0.0	18.0
LnGrp LOS	C	B	B	C	B	B	C	A	B	C	A	B
Approach Vol, veh/h		427			359			95			129	
Approach Delay, s/veh		19.8			19.6			21.4			20.7	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	21.7	11.6	19.2	7.5	21.1	11.4	19.4
Change Period (Y+Rc), s	* 4.7	5.1	* 4.7	* 4.7	* 4.7	5.1	* 4.7	* 4.7
Max Green Setting (Gmax), s	* 12	33.9	* 12	* 32	* 12	33.9	* 12	* 32
Max Q Clear Time (g_c+I1), s	2.5	9.8	3.7	4.3	2.7	8.5	3.6	3.2
Green Ext Time (p_c), s	0.0	2.4	0.1	0.4	0.0	2.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	293	1	20	244	6	1	8	4	40	17	2
Future Vol, veh/h	0	293	1	20	244	6	1	8	4	40	17	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	570	-	570	650	-	650	-	-	30	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	34	34	34	34	34	34	5	5	5	5	5	5
Mvmt Flow	0	333	1	23	277	7	1	9	5	45	19	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	284	0	0	334	0	0	527	663	167	494	657	139
Stage 1	-	-	-	-	-	-	333	333	-	323	323	-
Stage 2	-	-	-	-	-	-	194	330	-	171	334	-
Critical Hdwy	4.78	-	-	4.78	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.54	-	-	2.54	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	1073	-	-	1021	-	-	427	374	839	451	377	874
Stage 1	-	-	-	-	-	-	646	635	-	655	641	-
Stage 2	-	-	-	-	-	-	781	637	-	805	634	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1073	-	-	1021	-	-	402	365	839	433	368	874
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	365	-	433	368	-
Stage 1	-	-	-	-	-	-	646	635	-	655	626	-
Stage 2	-	-	-	-	-	-	738	622	-	789	634	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	13.2	15.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	839	1073	-	-	1021	-	-	411	874
HCM Lane V/C Ratio	0.028	0.005	-	-	-	0.022	-	-	0.158	0.003
HCM Control Delay (s)	15	9.3	0	-	-	8.6	-	-	15.4	9.1
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.1	-	-	0.6	0

APPENDIX B, Part 3

REGIONAL AND PROJECT AREA VMT DATA

4.0 Impact Analysis – Proposed Project (Alternative 1)

This chapter focuses on whether the Proposed Project would have a significant impact if proposed new residential, office, or retail land uses would in aggregate exceed the respective VMT by land use thresholds in Table 3.1.

4.1 VMT Impact Analysis

To establish a baseline understanding, **Table 4.1** displays both Imperial County and El Centro's resident and employee VMT efficiency metrics for the Base Year (2014) conditions. As shown, El Centro has more efficient VMT per capita for both residents and employees that are lower when compared to the region, at approximately 70% of the region's resident VMT/capita and just over 60% of region's employee VMT/employee.

Table 4.1 El Centro Base Year VMT Metrics for Transportation Impact Analysis

VMT Metric	Base Year (2014)		% of Regional Base Year
	Region	El Centro	El Centro
Resident VMT/Capita	13.76	9.62	70.0%
Employee VMT/Employee	18.59	11.35	61.1%

Source: ICTM, Iteris, Chen Ryan Associates (2020)

By 2040 with the implementation of the Proposed Project, the VMT efficiency of El Centro substantially improves. **Table 4.2** presents the El Centro average resident and employee VMT for the Proposed Project.

Table 4.2 El Centro Proposed Project VMT Efficiency Metrics for Transportation Impact Analysis of Residential and Employment Uses

VMT Metric	Imperial County Region - Base Year	El Centro - Proposed Project (Alternative 1)	% of Regional Base Year	Significant Impact?
Resident VMT / Capita	13.76	7.93	57.6% (< 85%)	No
Employee VMT / Employee	18.59	8.00	43.0% (< 85%)	No

Source: ICTM, Iteris, Chen Ryan Associates (2020)

Residential and Employment Land Uses Impact?

As shown in the table above, El Centro is projected to have an average Resident VMT per Capita at 7.93 and an average Employee VMT per Employee at 8.00, which are 57.6 percent and 43.0 percent, respectively, of the Base Year regional averages for these efficiency metrics. VMT associated with residential and employment land uses would not exceed the 85 percent thresholds at buildout of the Proposed Project. Therefore, impacts related to VMT for residential and employment land uses would be less than significant.

Retail Land Uses Impact?

Regarding VMT associated with retail land uses, the total regional VMT would increase from 5,507,484 miles under the Base Year conditions to 7,467,309 miles with the implementation of the Proposed Project, an increase of 1,959,825 miles. The VMT associated with retail (home-based shopping) also would increase from 331,912 miles under the base year to 494,465 miles with the implementation of the Proposed Project, an increase of 162,553 miles. According to OPR's recommendations, a retail impact is considered significant when there is a net increase in total regional VMT related to the new retail and commercial uses that could be developed with the adoption of the Proposed Project. Furthermore, the

TAZ	CNTY	RES	Res_VMT_(	Res_VMT_(	Res_VMT_(	Res_VMT_	GQ_VMT_(	GQ_VMT_(	GQ_VMT_:	GQ_VMT_(	Res_VMT	Res_per_capita_VMT
14013200	1	214	4076.198	1371.848	648.4141	47.91046	0	0	0	0	6144.371	28.71201
14013300	1	43	2362.989	146.9543	0	0	0	0	0	0	2509.943	58.37078
14016100	1	28	731.5819	137.2357	44.92497	0	0	0	0	0	913.7426	32.63366
14016200	1	75	1075.579	737.5247	138.6417	31.19205	0	0	0	0	1982.937	26.43916
14016300	1	77	1447.724	577.9738	166.5709	49.87041	0	0	0	0	2242.139	29.11868
14062100	1	1394	29476	7441.875	3719.908	225.1297	0	0	0	0	40862.91	29.31342
14064100	1	1860	27853.82	7734.097	3799.044	430.5063	0	0	0	0	39817.46	21.40724
14064200	1	1883	25634.34	6653.094	4077.718	825.6906	0	0	0	0	37190.84	19.75084
14086100	1	11	400.1472	75.97659	0	0	0	0	0	0	476.1238	43.28398
14088100	1	0	0	0	0	0	0	0	0	0	0	NA

32.11 Average VMT per capita for Specific Plan TAZs

APPENDIX B, Part 4

IMPERIAL VALLEY TRANSIT ROUTES AND SCHEDULES

2 SOUTH

Niland - Brawley - El Centro

Monday - Friday

Niland Hwy 111 & Main St.	Calipatria Hwy 111 & Main St.	Westmorland Hwy 86 & Center St.	Brawley E. St & Rio Vista Ave.	Brawley South Plaza	Brawley Main St. & Palm	Brawley Pioneers Hospital	Imperial Downtown	Imperial Transit Center	Imperial IVC	El Centro E. Evan Hewes & Dogwood Rd.	Imperial Aten & La Brucherie Rd.	El Centro Cruickshank Dr. & Walmart	El Centro State St. & 14th St.	El Centro State St. & 7th St.
6:00	6:10	6:22	6:37	6:40	6:50	7:00	7:12	7:13	7:35	7:45	--	--	--	7:55
7:28	7:38	7:50	8:05	8:07	8:15	8:25	8:37	8:38	8:50	--	8:58	9:00	9:10	9:20
--	--	--	9:19	9:21	9:25	9:35	9:47	9:48	10:00	--	10:08	10:10	10:20	10:30
9:48	9:58	10:10	10:25	10:27	10:35	10:45	10:57	10:58	11:10	--	11:18	11:20	11:30	11:40
--	--	--	11:39	11:41	11:45	11:55	12:07	12:08	12:20	--	12:28	12:30	12:40	12:50
12:18	12:28	12:40	12:55	12:57	1:05	1:15	1:27	1:28	1:40	--	1:48	1:50	2:00	2:10
--	--	--	1:59	2:01	2:05	2:15	2:27	2:28	2:40	--	2:48	2:50	3:00	3:10
2:28	2:38	2:50	3:05	3:07	3:15	3:25	3:37	3:38	3:50	--	3:58	4:00	4:10	4:20
--	--	--	4:19	4:21	4:25	4:35	4:47	4:48	5:00	--	5:08	5:10	5:20	5:30
5:00	5:10	5:22	5:37	5:39	5:47	5:57	6:09	6:10	6:22	--	6:30	6:32	6:42	6:50
6:10	6:20	6:32	6:47	6:49	7:00	7:10	7:22	7:23	7:35	--	7:43	7:45	7:55	8:00
									***10:00**	**--	***10:08**	***10:09**	***10:15**	***10:20**

Saturday

6:20	6:28	6:42	6:57	6:59	7:05	7:17	7:30	7:31	7:40	--	7:50	7:52	7:55	8:00
7:50	7:58	8:12	8:27	8:29	8:35	8:47	9:00	9:01	9:10	--	9:20	9:22	9:25	9:30
9:30	9:38	9:52	10:07	10:09	10:15	10:27	10:40	10:41	10:50	--	11:00	11:02	11:05	11:10
--	--	--	11:37	11:39	11:45	11:57	**12:10**	**12:11**	**12:20**	**--	**12:30**	**12:32**	**12:35**	**12:40**
12:10	**12:18**	**12:32**	**12:47**	**12:49**	**12:55**	**1:07**	**1:20**	**1:21**	**1:30**	**--	**1:40**	**1:42**	**1:45**	**1:50**
**--	**--	**--	**2:27**	**2:29**	**2:35**	**2:47**	**3:00**	**3:01**	**3:10**	**--	**3:20**	**3:22**	**3:25**	**3:30**
3:20	**3:28**	**3:42**	**3:57**	**3:59**	**4:05**	**4:17**	**4:30**	**4:31**	**4:40**	**--	**4:50**	**4:52**	**4:55**	**5:00**
**--	**--	**--	**5:17**	**5:19**	**5:25**	**5:37**	**5:50**	**5:51**	**6:0**	**--	**6:10**	**6:12**	**6:15**	**6:20**
6:00	**6:08**	**6:22**	**6:37**	**6:39**	**6:45**	**6:57**	**7:10**	**7:11**	**7:20**	**--	**7:30**	**7:32**	**7:35**	**7:40**

Sunday

--	--	--	7:15	7:20	7:25	7:35	7:45	7:50	--	--	8:00	8:05	8:10	8:15
--	--	--	9:30	9:35	9:40	9:50	10:00	10:05	--	--	10:15	10:20	10:25	10:30
**--	**--	**--	**12:30**	**12:35**	**12:40**	**12:50**	**1:00**	**1:05**	**--	**--	**1:15**	**1:20**	**1:25**	**1:30**
**--	**--	**--	**2:50**	**2:55**	**3:00**	**3:10**	**3:20**	**3:25**	**--	**--	**3:35**	**3:40**	**3:45**	**3:50**

**Only when IVC is in session.

(PM - Time is in color)






MAP NOT TO SCALE
SALTON SEA
Rockwood
N
NILAND
Main St.
111
CALIPATRIA
Forrester Rd.
WESTMORLAND
C St.
78
Center St.
BRAWLEY
Imperial Ave.
Rio Vista
E St.
Social Services
Innercare
2nd St.
3rd St.
South Plaza
5th St.
K St.
Senior Citizen Center
Legion Rd.
86
Pioneers Memorial Hospital
Worthington Rd.
IMPERIAL
Imperial Valley College
Aten Rd.
La Brucherie
Costco
Cruickshank Rd.
Waterman Ave.
Euclid Ave.
Adams Ave.
Commercial Ave.
Dogwood Rd.
E. Evan Hewes Hwy.
State St.
Valley Plaza
14th St.
12th St.
7th St.
4th St.
EL CENTRO
Regular Route.
Direction of the bus travel
Time Point
See schedule for the times bus departs this stop
Library
Post Office
City Hall
Hospital
School
Transit Center
Railroad Tracks
Imperial Irrigation District

2 NORTH

El Centro - Brawley - Niland

Monday-Friday

El Centro State St. & 7th St.	El Centro State St. & 14th St.	El Centro Walmart & Bradshaw	El Centro Aten Rd. & LaBrucherie	Imperial IVC	Imperial Transit Center	Imperial Downtown	Brawley Pioneers Hospital	Brawley South Plaza	Brawley Main & Palm	Brawley E St. & Rio Vista	Westmorland Hwy 86 & Center St.	Calipatria Hwy 111 & Main	Niland Hwy 111 & Main
5:45	5:47	5:52	5:55	6:05	6:11	6:13	6:25	6:29	6:33	6:42	6:52	7:07	7:20
8:10	8:12	8:17	8:20	8:30	8:36	8:38	8:50	8:54	8:58	9:07	9:17	9:32	9:45
9:30	9:32	9:37	9:40	9:50	9:56	9:58	10:10	10:14	10:18	10:27	--	--	--
10:40	10:42	10:47	10:50	11:00	11:06	11:08	11:20	11:24	11:28	11:37	11:47	12:02	12:15
11:50	11:52	11:57	12:00	12:10	12:16	12:18	12:30	12:34	12:38	12:47	--	--	--
12:50	12:52	12:57	1:00	1:10	1:16	1:18	1:30	1:34	1:38	1:47	1:57	2:12	2:25
2:10	2:12	2:17	2:20	2:30	2:36	2:38	2:50	2:54	2:58	3:07	--	--	--
3:20	3:22	3:27	3:30	3:40	3:46	3:48	4:00	4:04	4:08	4:17	4:27	4:42	4:55
4:35	4:37	4:42	4:45	4:55	5:01	5:03	5:15	5:19	5:23	5:32	5:42	5:57	6:10
5:40	5:42	5:47	5:50	6:00	6:06	6:08	6:20	6:24	6:28	6:37	--	--	--
6:50	6:52	6:57	7:00	7:10	7:16	7:18	7:30	7:34	7:38	7:47	7:59	8:15	8:25
**9:40	9:42	9:47	9:50	10:00	10:06	10:10	10:23	10:27	10:33	10:45	--	--	--

Saturday

6:00	6:02	6:07	6:10	6:20	6:26	6:28	6:40	6:44	6:48	7:00	7:10	8:26	7:28
7:20	7:22	7:27	7:30	7:40	7:46	7:48	8:00	8:04	8:08	8:20	8:30	8:46	9:00
9:20	9:22	9:27	9:30	9:40	9:46	9:48	10:00	10:04	10:08	10:20	--	--	--
10:20	10:22	10:27	10:30	10:40	10:46	10:48	11:00	11:04	11:08	11:20	11:30	11:46	11:58
11:50	11:52	11:57	12:00	12:10	12:16	12:18	12:30	12:34	12:38	12:50	--	--	--
1:30	1:32	1:37	1:40	1:50	1:56	1:58	2:10	2:14	2:18	2:30	2:40	2:56	3:08
3:00	3:02	3:07	3:10	3:20	3:26	3:28	3:40	3:44	3:48	4:00	--	--	--
4:10	4:12	4:17	4:20	4:30	4:36	4:38	4:50	4:54	4:58	5:10	5:20	5:36	5:48
5:50	5:52	5:57	6:00	6:10	6:16	6:18	6:30	6:34	6:38	6:50	7:00	7:16	7:28
7:20	7:22	7:27	7:30	7:40	7:46	7:48	7:48	8:00	8:08	8:20	--	--	--

Sunday

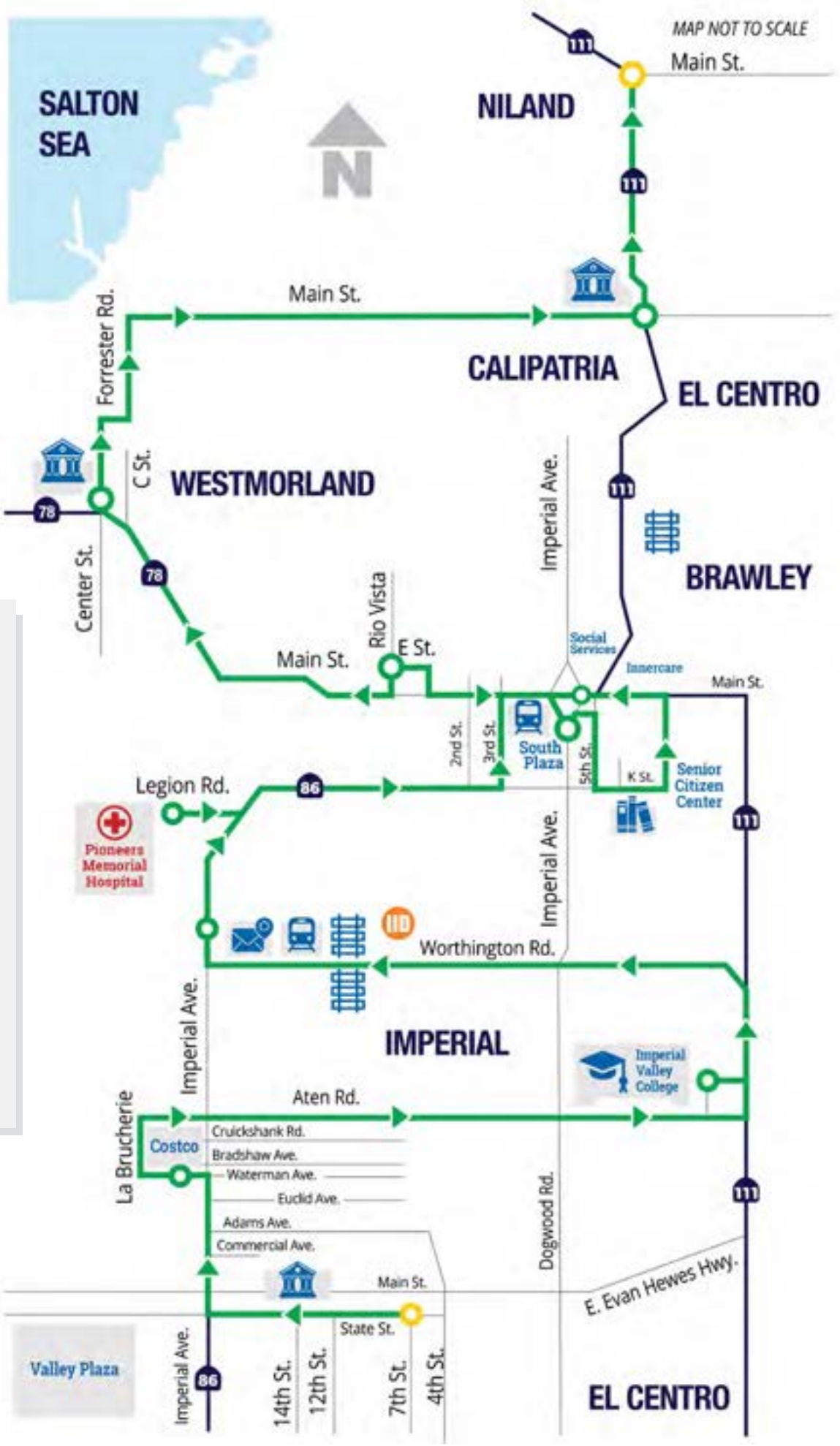
8:25	8:28	8:35	8:38	--	8:48	8:50	9:00	9:05	9:10	9:25	--	--	--
10:45	10:48	10:55	10:58	--	11:08	11:10	11:20	11:25	11:30	11:45	--	--	--
1:40	1:43	1:50	1:53	--	2:03	2:05	2:15	2:20	2:25	2:40	--	--	--
4:00	4:03	4:10	4:13	--	4:23	4:25	4:35	4:30	4:45	5:00	--	--	--

**Only when IVC is in session.

(PM - Time is in color)







- **Regular Route.** *Direction of the bus travel*
- **Time Point** *See schedule for the times bus departs this stop*
- **Library**
- **Post Office**
- **City Hall**
- **Hospital**
- **School**
- **Transit Center**
- **Railroad Tracks**
- **Imperial Irrigation District**

22 IVC EXPRESS

Niland - IVC

Only operates when IVC is in session.

AM

Niland Hwy 111 & Main	Calipatria Hwy 111 & Main	Westmorland Hwy 86 & Center St.	Brawley E St. & Rio Vista	Brawley Main & Palm	Imperial IVC
6:20	6:30	6:45	7:00	7:05	7:30
8:45	8:55	9:13	9:25	930	9:50

PM

Imperial IVC	Brawley Main & Palm	Brawley E St. & Rio Vista	Westmorland Hwy 86 & Center St.	Calipatria Hwy 111 & Main	Niland Hwy 111 & Main
2:00	**2:28**	**2:31**	**2:43**	**3:01**	**3:11**
4:00	**4:28**	**4:31**	**4:43**	**5:01**	**5:11**

(PM - Time is in color)



- **Regular Route.** *Direction of the bus travel*
- **Time Point** *See schedule for the times bus departs this stop*
- **Library**
- **City Hall**
- **School**
- **Railroad Tracks**
- **Imperial Irrigation District**



41S BRAWLEY FAST

Brawley - El Centro

Brawley South Plaza	Imperial Post Office	El Centro 7th St & State
6:42	6:55	7:10

41N BRAWLEY FAST

El Centro - Brawley

El Centro 7th St & State	Brawley South Plaza

45W HOLTVILLE FAST

Holtville - El Centro

Holtville 5th St & Holt	El Centro 7th St & State
6:40	7:00

45E HOLTVILLE FAST

El Centro - Holtville

El Centro 7th St & State	Holtville 5th St & Holt
--	--

51S SLAB CITY- BOMBAY BEACH - BRAWLEY

Thursdays Only

Slab City	Niland	Bombay Beach	Bashford Spa	Imperial Spa	Fountain of Youth Spa	Lark Spa	Niland Hwy 111 & Main	Calipatria Hwy 111 & Main	Brawley South Plaza
8:35	8:50	9:10	9:20	9:25	9:30	9:35	9:50	10:00	10:30

51N SLAB CITY- BOMBAY BEACH - BRAWLEY

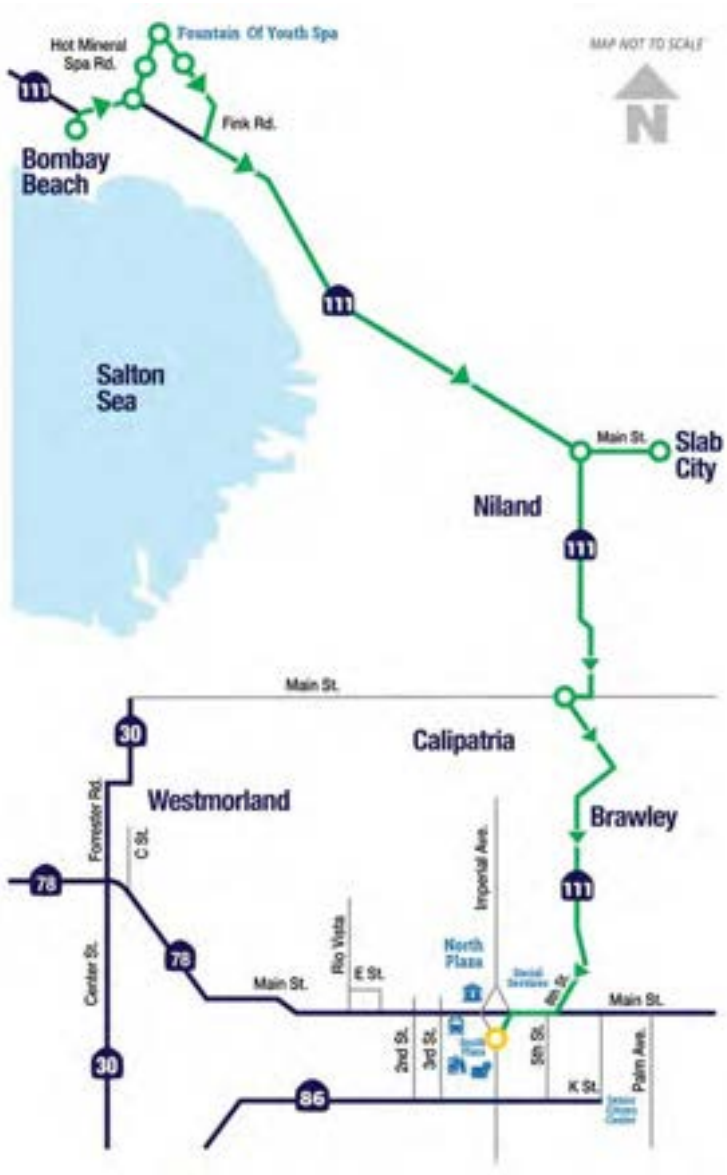
Thursdays Only

Brawley South Plaza	Calipatria Hwy 111 & Main	Niland Hwy 111 & Main	Lark Spa	Fountain of Youth Spa	Imperial Spa	Bashford Spa	Bombay Beach	Niland	Slab City
4:28	4:45	5:00	5:13	5:27	5:32	5:35	5:45	6:20	6:35

(PM - Time is in color)



51S SLAB CITY- BOMBAY BEACH - BRAWLEY



51N BRAWLEY - BOMBAY BEACH - SLAB CITY



Regular Route | Library | City Hall

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APPENDIX C
BIOLOGICAL STUDIES

January 2024



PREPARED BY:

DUDEK

Special-Status Plant Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Abronia villosa var. *aurita*	chaparral sand-verbena	None/None/1B.1	Chaparral, Coastal scrub, Desert dunes; Sandy/annual herb/(Jan)Mar–Sep/ 245–5,245	Not expected to occur. Suitable habitat is absent in the planning area, the planning area is outside of the species' known elevation range, and there are no CNDDB records in the planning area or 5-mile buffer.
Astragalus insularis var. *harwoodii*	Harwood's milk-vetch	None/None/2B.2	Desert dunes, Mojavean desert scrub; Gravelly (sometimes), Sandy (sometimes)/annual herb/Jan–May/0–2,325	High potential to occur in northeastern portion of the planning area; low potential to occur elsewhere in planning area. One CNDDB occurrence within the 5-mile buffer of the planning area.
Astragalus magdalenae var. *peirsonii*	Peirson's milk-vetch	FT/SE/1B.2	Desert dunes/perennial herb/Dec–Apr/195–740	Not expected to occur. No suitable desert dunes habitat in planning area and outside species' known elevation range. Known from the Algodones Dunes well southeast of the planning area. No CNDDB records in the planning area or 5-mile buffer.
Astragalus sabulonum	gravel milk-vetch	None/None/2B.2	Desert dunes, Mojavean desert scrub, Sonoran Desert scrub; Flats, Gravelly (sometimes), Roadsides, Sandy (usually), Washes/annual/perennial herb/Feb–June/-,200–3,050	Low potential to occur in northeastern portion of planning area; not expected elsewhere in planning area. Outside known species' known elevation range; one CNDDB occurrence (1906) within the 5-mile buffer of planning area.
Chylismia arenaria	sand evening-primrose	None/None/2B.2	Sonoran Desert scrub/annual/perennial herb/ Nov–May/-,230–3,000	Low potential to occur in northeastern portion of planning area; not expected elsewhere in planning area. Outside known species' known elevation range; several CNDDB occurrences east of planning area in the Chocolate Mountains.

Special-Status Plant Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Colubrina californica	Las Animas colubrina	None/None/2B.3	Mojavean desert scrub, Sonoran Desert scrub/perennial deciduous shrub/Apr–June/35–3,280	Low potential to occur in northeastern portion of planning area; not expected elsewhere in planning area. Several CNDDB occurrences well east of planning area in the Chocolate Mountains.
Cylindropuntia munzii	Munz's cholla	None/None/1B.3	Sonoran Desert scrub/perennial stem/ May/490–1,965	Low potential to occur in northeastern portion of planning area; not expected elsewhere in planning area. Suitable habitat exists but outside of the species' known elevation range. One large CNDDB occurrence in the Chocolate Mountains east of the Planning Area.
Ditaxis claryana	glandular ditaxis	None/None/2B.2	Mojavean desert scrub, Sonoran Desert scrub; Sandy/perennial herb/ Oct–Mar/0–1,525	Low potential to occur in northeastern portion of planning area; not expected elsewhere in planning area. One CNDDB occurrence (1978) east of the Planning Area.
Euphorbia abramsiana	Abrams' spurge	None/None/2B.2	Mojavean desert scrub, Sonoran Desert scrub; Sandy/annual herb/ (Aug)Sep–Nov/-15–4,295	Low potential to occur. Known from one CNDDB occurrence (1912) south of the planning area buffer in the Imperial Valley; possibly extirpated.
Euphorbia platysperma	flat-seeded spurge	None/None/1B.2	Desert dunes, Sonoran Desert scrub/annual herb/ Feb–Sep/215–330	Not expected to occur. Nearest CNDDB occurrence (1987) is in the Superstition Mountains well southwest of the planning area; planning area outside the species' known elevation range.
Malperia tenuis	brown turbans	None/None/2B.3	Sonoran Desert scrub/annual herb/(Feb)Mar–Apr/50–1,095	Not expected to occur. Nearest CNDDB occurrence (1926) is in the Fish Mountains well west of the

Special-Status Plant Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
				planning area; majority of planning area outside the species' known elevation range.
Petalonyx linearis	narrow-leaf sandpaper-plant	None/None/2B.3	Mojavean desert scrub, Sonoran Desert scrub; Rocky (sometimes), Sandy (sometimes)/perennial shrub/(Jan–Feb) Mar–May (June–Dec)/-80–3,655	Not expected to occur. Nearest CNDDB occurrence (1949) is in the Chocolate Mountains well north of the planning area; planning area outside the species' known elevation range.
Pholisma sonorae	sand food	None/None/1B.2	Desert dunes, Sonoran Desert scrub/perennial herb (parasitic)/(Mar)Apr–June/ 0–655	Not expected to occur. No suitable desert dunes habitat in planning area. Known from the Algodones Dunes well southeast of the planning area. No CNDDB records in the planning area or 5-mile buffer.
Salvia greatae	Orocopia sage	None/None/1B.3	Mojavean desert scrub, Sonoran Desert scrub/perennial evergreen shrub/Mar–Apr/-135–2,705	Low potential to occur in northeastern portion of the planning area; not expected elsewhere. Suitable habitat exists in northeastern portion of planning area but outside the species' known elevation range. Nearest CNDDB occurrence (1990) north of the planning area in the Chocolate Mountains.
Xylorhiza cognata	Mecca-aster	None/None/1B.2	Sonoran Desert scrub/perennial herb/ Jan–June/65–1,310	Not expected to occur. Nearest CNDDB occurrences well north of the planning area northeast of the Salton Sea; planning area outside the species' known elevation range.
Xylorhiza orcuttii	Orcutt's woody-aster	None/None/1B.2	Sonoran Desert scrub/perennial herb/ Mar–Apr/0–1,195	Not expected to occur. Nearest CNDDB occurrences well west of the planning area west of the Salton Sea.

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Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Amphibians				
Incilius alvarius	Sonoran desert toad	None/SSC	Desert and semi-arid habitats including desert scrub, semi-arid grasslands and woodlands; usually associated with large permanent streams	Not expected to occur. There is one CNDDB occurrence within the 5-mile buffer of the planning area from 1916. Likely extirpated from California.
Lithobates yavapaiensis	lowland (=Yavapai, San Sebastian and San Felipe) leopard frog	None/SSC	Streams, river side channels, springs, and artificial and natural ponds in desert scrub, grassland, woodland, and pinyon–juniper woodland	Not expected to occur. There is one CNDDB occurrence within the 5-mile buffer of the planning area from 1940. Likely extirpated from California.
Scaphiopus couchii	Couch's spadefoot	None/SSC	Desert and arid areas including desert washes, desert riparian, palm oasis, desert succulent scrub, and desert scrub habitats; also cultivated cropland	Moderate potential to occur in remanant desert scrub or adjacent agricultural lands. There is one CNDDB occurrence from 2007 within the planning area.
Birds				
Antigone canadensis canadensis (wintering)	lesser sandhill crane	None/SSC	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Moderate potential for wintering. No CNDDB/USFWS occurrences in the planning area or within 5 miles but suitable habitats are present.
Antigone canadensis tabida (nesting and wintering)	greater sandhill crane	None/FP, ST	Winter foraging in cropland, grazed and mowed grassland, pasture, alfalfa fields, and shallow wetlands; roosting sites are flooded and support several inches of water	Moderate potential for wintering. No CNDDB/USFWS occurrences in the planning area or within 5 miles but suitable habitats are present.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Asio flammeus (nesting)	short-eared owl	BCC/SSC	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Low potential to occur. Outside breeding range but potential during migration or as winter visitor. There is one CNDDB occurrence within the 5-mile buffer of the planning area.
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Occurs. There are 61 CNDDB occurrences within the planning area and 5-mile buffer.
Aythya americana (nesting)	redhead	None/SSC	Nests in deep (>3 ft) permanent or semi-permanent wetlands of at least 1 acre; 75% open water; emergent tules, *Scirpus* spp., and Typha spp. 3 feet in height; winters in coastal estuaries and large, deep ponds, lakes, and reservoirs of the interior	High potential for nesting and suitable habitat present in the planning area; however, no CNDDB/USFWS occurrence within the planning area or 5-mile buffer.
Buteo swainsoni (nesting)	Swainson's hawk	None/ST	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Low potential to occur. Outside breeding range but potential during migration. There are no CNDDB/USFWS occurrence within the planning area or 5-mile buffer.
Charadrius montanus (wintering)	mountain plover	BCC/SSC	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	High potential for wintering. There are 16 CNDDB occurrences within the planning area and 5-mile buffer, and suitable habitat is present.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Charadrius nivosus nivosus (nesting)	western snowy plover	FT (Pacific Coast population only), BCC/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	High potential to occur (interior population). Known from around the Salton Sea and suitable nesting habitat in the planning area. One CNDDB occurrence in the planning area.
Circus hudsonius (nesting)	northern harrier	BCC/SSC	Nests in open wetlands (marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Low potential to occur for breeding as planning area is outside the breeding range; however, species observed and winters in the planning area. No CNDDB/USFWS records in the planning area or 5-mile buffer
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT/SE	Nests in dense, wide riparian woodlands and forest with well-developed understories	Low potential to occur. No CNDDB/USFWS records in the planning area or 5-mile buffer; however, species may occur as occasional visitor and suitable habitat is present.
Dendrocygna bicolor (nesting)	fulvous whistling-duck	None/SSC	Nests in freshwater wetlands, especially shallow impoundments managed for rice production and temporarily flooded grasslands; also nests in pastures, haylands, and small grain fields adjacent to rice fields	Moderate potential to occur. There are no CNDDB/USFWS records in the planning area or 5-mile buffer, but suitable habitat is present and it was previously known to nest in the planning area.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Elanus leucurus (nesting)	white-tailed kite	None/FP	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Moderate potential to occur. There are no CNDDB/USFWS records in the planning area or 5-mile buffer, but suitable habitat is present.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Moderate potential to occur. There is only one CNDDB and one USFWS occurrence within the 5 mile buffer, and suitable habitat is present.
Falco peregrinus anatum (nesting)	American peregrine falcon	FPD/FP, SCD	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Low potential to occur. Suitable nesting sites are generally absent from the planning area and no CNDDB/USFWS records in the planning area or 5-mile buffer.
Gelochelidon nilotica (nesting colony)	gull-billed tern	BCC/SSC	Nests at the Salton Sea and in estuaries in San Diego County; forages in emergent wetland, lakes, mudflats, cropland, and grassland	High potential to occur. Suitable nesting colony habitat exists and there are four CNDDB occurrences within the planning area and 5-mile buffer.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FPD/FP, SE	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Moderate potential to occur. Suitable nesting habitat is absent, however, suitable foraging resources exist. No CNDDB/USFWS records occur in the planning area or 5-mile buffer.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Icteria virens (nesting)	yellow-breasted chat	None/SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Moderate potential to occur. Potentially suitable nesting habitat exists and there is one CNDDB occurrence within the 5-mile buffer of the planning area.
Ixobrychus exilis (nesting)	least bittern	None/SSC	Nests in freshwater and brackish marshes with dense, tall growth of aquatic and semi-aquatic vegetation	High potential to occur. Suitable nesting habitat exists. They are known from the Salton Sea basin; however, there are no CNDDB/USFWS records in the planning area or 5-mile buffer.
Lanius ludovicianus (nesting)	loggerhead shrike	None/SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches	High potential to occur. Suitable nesting habitat exists; however, there are no CNDDB/USFWS records in the planning area or 5-mile buffer.
Laterallus jamaicensis coturniculus	California black rail	None/FP, ST	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	High potential to occur. Known from suitable habitat areas along the southern edge of the Salton Sea and there are eight CNDDB occurrences within the planning area and 5-mile buffer.
Melanerpes uropygialis	Gila woodpecker	BCC/SE	Nests and forages in Saguaro cacti, riparian woodland, and residential areas	Low potential to occur. Suitable nesting trees limited in the planning area; there are three CNDDB occurrences (from 1946, 1949, and 1950) within the site and 5 mile buffer zone.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Mycteria americana	wood stork	None/SSC	Nests in freshwater and marine-estuarine forested habitats; forages in natural and artificial wetlands; roosts in trees, usually over water	Moderate potential to occur. Suitable foraging habitat is present but nesting habitat is limited or absent. No CNDDB/USFWS records in the planning area or 5-mile buffer.
Passerculus sandwichensis rostratus (wintering)	large-billed savannah sparrow	None/SSC	Nests and forages in open, low saltmarsh vegetation, including low halophytic scrub	High potential to occur. Suitable wintering habitat is present; however, there are no CNDDB/USFWS records in the planning area or 5-mile buffer.
Pelecanus erythrorhynchos (nesting colony)	American white pelican	BCC/SSC	Nests colonially on sandy, earthen, or rocky substrates on isolated islands in freshwater lakes; minimal disturbance from predators; access to foraging areas on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries	High potential to occur. Suitable nesting colony habitat is present and species is known from the Salton Sea; however, there are no CNDDB/USFWS records in the planning area or 5-mile buffer.
Pelecanus occidentalis californicus (nesting colonies and communal roosts)	California brown pelican	FPD/FP, SCD	Forages in warm coastal marine and estuarine environments; in California, nests on dry, rocky offshore islands	Moderate potential to occur. Suitable nesting colony habitat may occur in the planning area, and the species is known from the Salton Sea and there are four CNDDB occurrences within the planning area and 5-mile buffer.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Rallus obsoletus yumanensis	Yuma Ridgway's rail	FE/FP, ST	Freshwater marsh dominated by Typha spp., *Scirpus* spp., *Schoenoplectus* spp., and *Bolboschoenus* spp.; mix of riparian tree and shrub species along the marsh edge; many occupied areas are now man-made, such as managed ponds or effluent-supported marshes	High potential to occur. Known from suitable habitat areas along the southern edge of the Salton Sea and there are 13 CNDDB and 109 USFWS occurrences within the planning area and 5-mile buffer.
Rynchops niger (nesting colony)	black skimmer	BCC/SSC	Nests on barrier beaches, shell banks, spoil islands, and saltmarsh; forages over open water; roosts on sandy beaches and gravel bars	High potential to occur. Suitable nesting colony habitat exists and there are three CNDDB occurrences within the planning area.
Setophaga petechia (nesting)	yellow warbler	None/SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Moderate potential to occur. Suitable habitat exists and there is one CNDDB occurrence within the planning area.
Toxostoma crissale	Crissal thrasher	None/SSC	Nests and forages in desert riparian and desert wash; dense thickets of sagebrush and other shrubs such as mesquite, iron catclaw acacia, and arrowweed willow within juniper and pinyon–juniper woodlands	Moderate potential to occur. Limited suitable habitat exists and there are three CNDDB occurrences within the planning area and 5-mile buffer.
Toxostoma lecontei	LeConte's thrasher	BCC/SSC	Nests and forages in desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree habitats; nests in spiny shrubs or cactus	Moderate potential to occur. Limited suitable habitat exists and there are two CNDDB occurrences within the planning area and 5-mile buffer.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Moderate potential to occur. Suitable nesting habitat is present and there is one USFWS occurrence within the planning area.
Xanthocephalus xanthocephalus (nesting)	yellow-headed blackbird	None/SSC	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat	Moderate potential to occur. Suitable habitat exists; however, there are no CNDDB/USFWS records within the planning area.
Fishes				
Cyprinodon macularius	desert pupfish	FE/SE	Desert springs, small streams, and marshes below 1,515 meters (5,000 feet) above mean sea level; tolerates high salinities, high water temperatures, and low dissolved-oxygen concentrations	High potential to occur. Suitable habitat exists and there are 29 CNDDB and 18 USFWS occurrences within the planning area and 5-mile buffer.
Xyrauchen texanus	razorback sucker	FE/FP, SE	Found in the Colorado River bordering California	Low potential to occur. Extirpated from prior range. There are 5 CNDDB occurrences (1944, 1949, 1958, 1974, and 1994) within the planning area and 5-mile buffer. The latest observation was from a water impoundment off the East Highline Canal and were translocated out of the Imperial Valley.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Mammals				
Dasypterus xanthinus	western yellow bat	None/SSC	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Moderate potential to occur. Limited suitable habitat; there is CNDDB occurrence within the 5-mile buffer of the planning area.
Eumops perotis californicus	western mastiff bat	None/SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Low potential to occur. Limited suitable habitat and roost locations are absent; there is one CNDDB occurrence within the 5-mile buffer of the planning area.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	Low potential to occur. Limited suitable habitat and roost locations are absent; there is one CNDDB occurrence within the 5-mile buffer of the planning area.
Sigmodon hispidus eremicus	Yuma hispid cotton rat	None/SSC	Dense vegetation in moist and inundated wetlands, agricultural fields, and irrigation ditches.	Moderate potential to occur. There is suitable habitat and there are four CNDDB occurrences within the planning area and 5-mile buffer.
Taxidea taxus	American badger	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Low potential to occur. Suitable dry habitats are limited; there one CNDDB occurrence (1937) within the planning area.

Special-Status Wildlife Species Potential to Occur in the Planning Area

Scientific Name	Common Name	Status (Federal/ State)	Habitat	Potential to Occur
Reptiles				
Gopherus agassizii	Mojave desert tortoise	FT/ST, SCE	Arid and semi-arid habitats in Mojave and Sonoran Deserts, including sandy or gravelly locations along riverbanks, washes, sandy dunes, canyon bottoms, desert oases, rocky hillsides, creosote flats, and hillsides	Low potential to occur. Very limited suitable habitat in the northeastern most portion of the planning area; however, the nearest species occurrences are east of the Chocolate Mountains well east of the planning area and separated by the Coachella Canal.
Phrynosoma mcallii	flat-tailed horned lizard	None/SSC	Desert washes and flats with sparse low-diversity vegetation cover and sandy soils	Low potential to occur. There is limited suitable habitat in the northeastern most portion of the planning area; there is one CNDDB occurrence (1929) within the planning area 5-mile buffer.

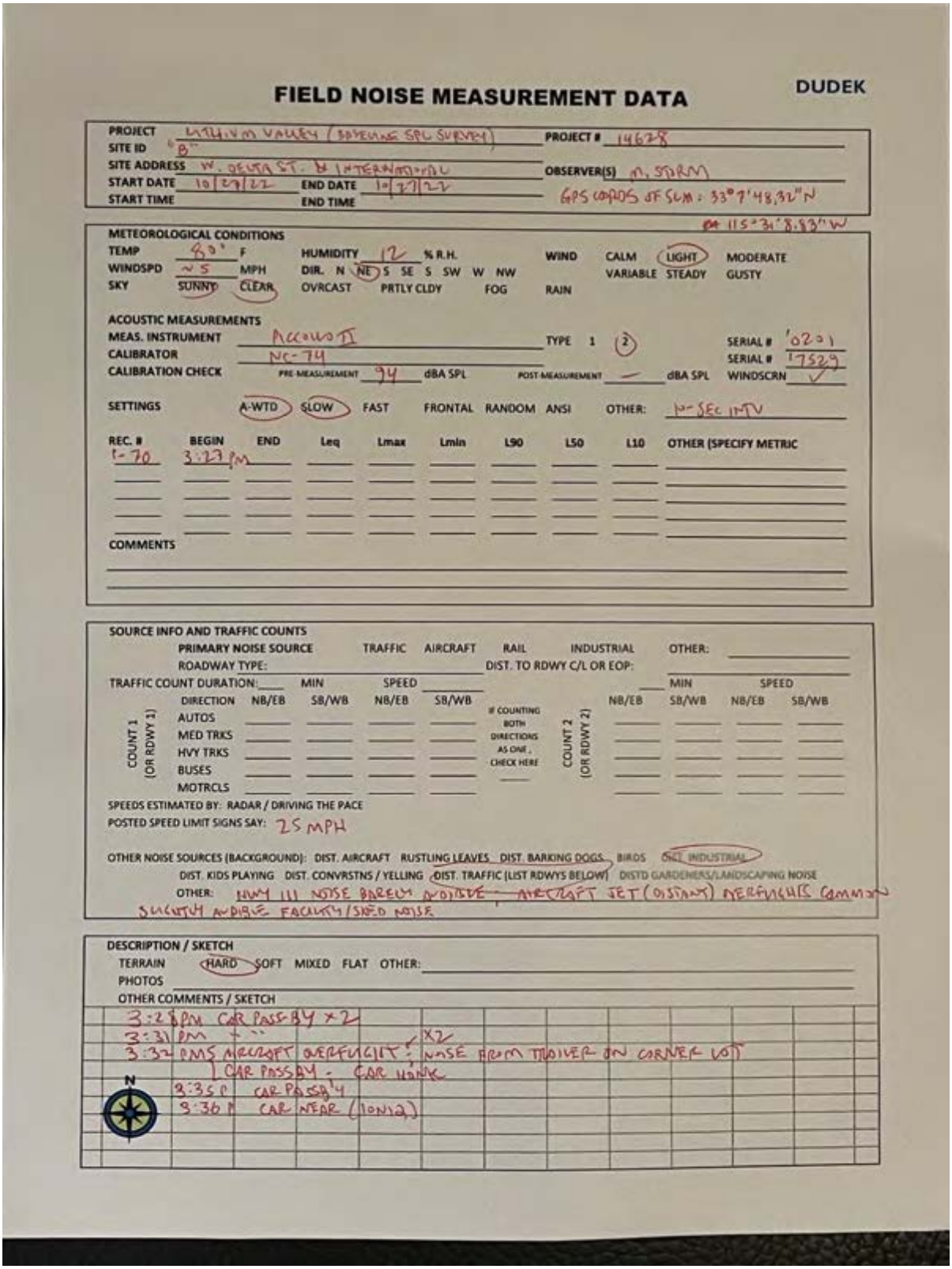
APPENDIX E
NOISE RESOURCES

January 2024



PREPARED BY:

DUDEK



FIELD NOISE MEASUREMENT DATA — DUDEK

PROJECT: LITHIUM VALLEY (BASELINE SPL SURVEY) — PROJECT #: 14628
SITE ID: "B"
SITE ADDRESS: W. DELTA ST. & INTERNATIONAL — OBSERVER(S): M. STORM
START DATE: 10/27/22 — END DATE: 10/27/22
START TIME: — END TIME: — GPS COORDS OF SLM: 33°7'48.32"N 115°34'8.83"W

METEOROLOGICAL CONDITIONS
TEMP: 80° F — HUMIDITY: 12 % R.H. — WIND: CALM (LIGHT) MODERATE
WINDSPD: ~5 MPH — DIR. N (NE) S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) — OVRCAST — PRTLY CLDY — FOG — RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: ACCUSOD II — TYPE 1 (2) — SERIAL #: '0201
CALIBRATOR: NC-74 — SERIAL #: 17529
CALIBRATION CHECK — PRE-MEASUREMENT: 94 dBA SPL — POST-MEASUREMENT: — dBA SPL — WINDSCRN: ✓

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI — OTHER: M-SEC INTV

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
1-70	3:23 PM								

COMMENTS

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: — DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN — SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 25 MPH

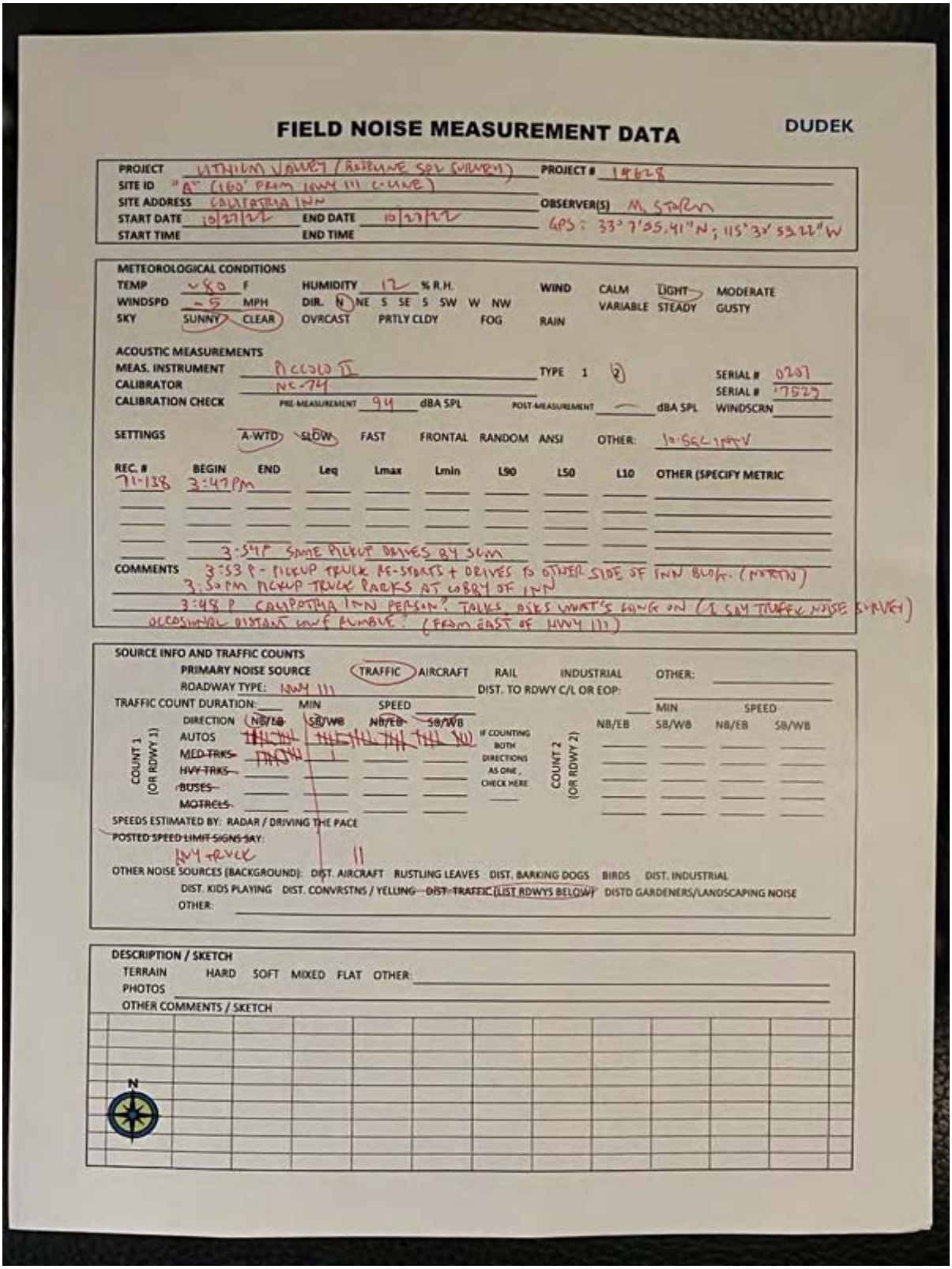
OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS (DIST. INDUSTRIAL)
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING (DIST. TRAFFIC (LIST RDWYS BELOW)) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: HWY 111 NOISE BARELY AUDIBLE, AIRCRAFT JET (DISTANT) OVERFLIGHTS COMMON SOUTH AUDIBLE FACILITY/SHED NOISE

DESCRIPTION / SKETCH
TERRAIN (HARD) SOFT MIXED FLAT OTHER:
PHOTOS
OTHER COMMENTS / SKETCH

3:29 PM CAR PASSBY X2
3:31 PM " "
3:32 PM AIRCRAFT OVERFLIGHT X2, NOISE FROM TRAILER ON CORNER LOT
CAR PASSBY - CAR HONK
3:35 P CAR PASSBY
3:36 P CAR NEAR (HONK)

N

10/27/22 – Fieldnotes at Survey Position **ST1** (West Delta Road)



FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: LITHIUM VALLEY (BASELINE SPL SURVEY) PROJECT #: 14628
SITE ID: "A" (160' FROM HWY 111 C-LINE)
SITE ADDRESS: CALIPATRIA INN OBSERVER(S): M. STARR
START DATE: 10/27/22 END DATE: 10/27/22 GPS: 33° 7'05.41"N; 115°31'53.22"W
START TIME: END TIME:

METEOROLOGICAL CONDITIONS
TEMP: ~80 F HUMIDITY: 12 % R.H. WIND: CALM LIGHT MODERATE
WINDSPD: ~5 MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
SKY: SUNNY CLEAR OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PIccolo II TYPE 1 2 SERIAL # 0207
CALIBRATOR: NC-74 SERIAL # 17529
CALIBRATION CHECK: PRE-MEASUREMENT 94 dBA SPL POST-MEASUREMENT — dBA SPL WINDSCRN:
SETTINGS: A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER: 1s SEC 1 PER V

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
71-138	3:47PM								
	3:54P	SAME PICKUP DRIVES BY SLOW							

COMMENTS: 3:53 P - PICKUP TRUCK RE-STARTS + DRIVES TO OTHER SIDE OF INN BLDG. (NORTH)
3:50PM PICKUP TRUCK PARKS AT LOBBY OF INN
3:48 P CALIPATRIA INN PERSON? TALKS, ASKS WHAT'S GOING ON (I SAY TRAFFIC NOISE SURVEY)
APPROXIMATE DISTANCE OF PLUMBUS (FROM EAST OF HWY 111)

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: HWY 111 DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN SPEED ___ MIN SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB
AUTOS	||| ||| ||| |||
MED TRKS	||||		
HVY TRKS				
BUSES				
MOTRCLS				

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE

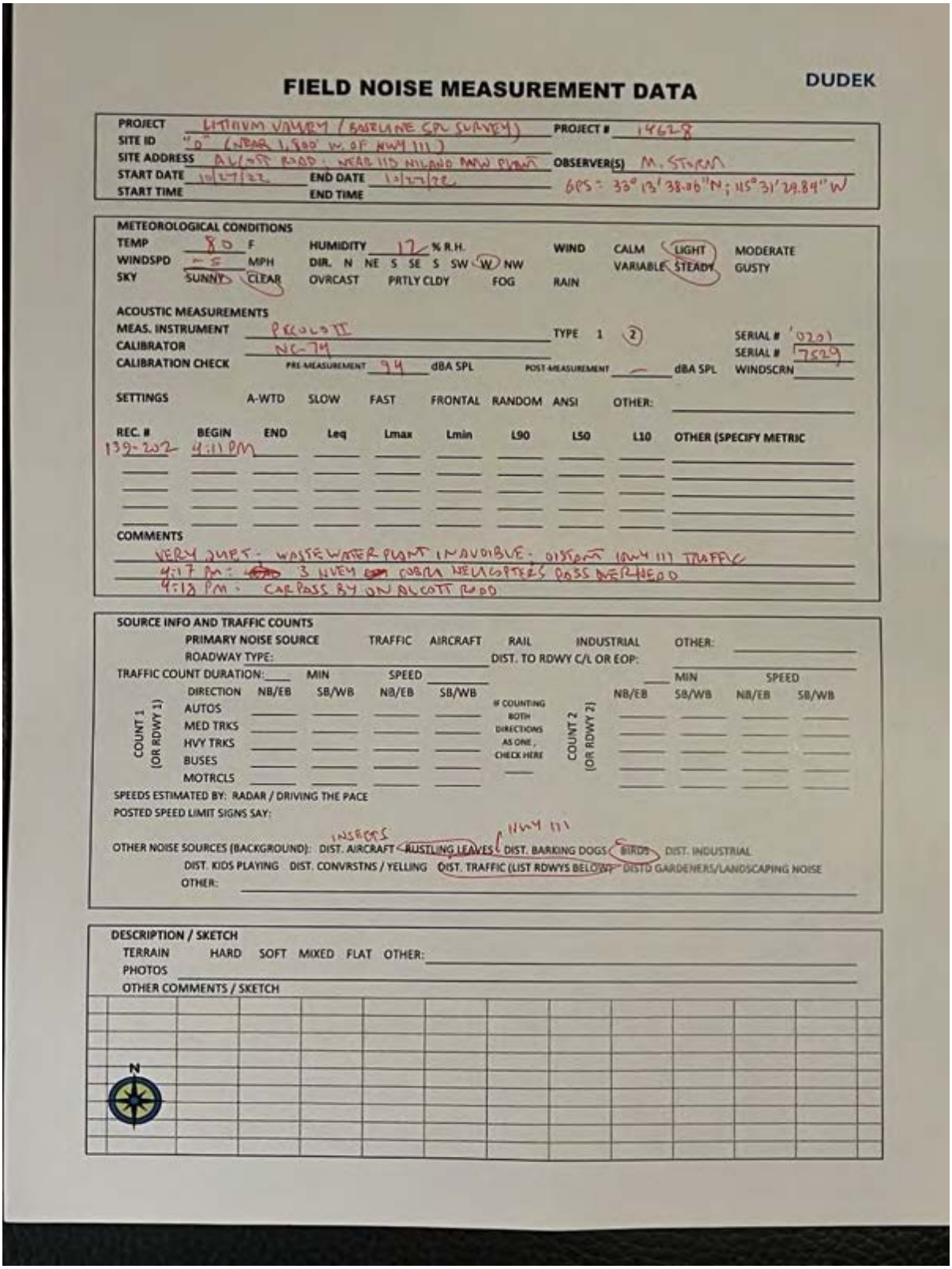
COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB	SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:
HWY TRUCK 11
OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH
TERRAIN HARD SOFT MIXED FLAT OTHER:
PHOTOS
OTHER COMMENTS / SKETCH

N

10/27/22 – Fieldnotes at Survey Position **ST2** (Calipatria Inn)



FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: LITHIUM VALLEY (BASELINE SPL SURVEY) — PROJECT #: 14628
SITE ID: "D" (~NEAR 1,800' W. OF HWY 111)
SITE ADDRESS: ALCOTT ROAD; NEAR IID NILAND MAIN PLANT — OBSERVER(S): M. STUCKEY
START DATE: 10/27/22 — END DATE: 10/27/22 — GPS: 33° 13' 38.06" N; 115° 31' 29.84" W
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 80 F — HUMIDITY: 17 % R.H. — WIND: CALM (LIGHT) MODERATE
WINDSPD: ~5 MPH — DIR. N NE S SE S SW (W) NW — VARIABLE (STEADY) GUSTY
SKY: SUNNY (CLEAR) — OVRCAST — PRTLY CLDY — FOG — RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PRO LOG II — TYPE 1 (2) — SERIAL # 0201
CALIBRATOR: NC-74 — SERIAL # 7529
CALIBRATION CHECK — PRE-MEASUREMENT: 94 dBA SPL — POST-MEASUREMENT: — dBA SPL — WINDSCRN:

SETTINGS: A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
139-202	4:11 PM								

COMMENTS:
VERY QUIET - WASTEWATER PLANT INAUDIBLE - DISTANT HWY 111 TRAFFIC
4:17 PM: 3 HUEY COBRA HELICOPTERS PASS OVERHEAD
4:18 PM - CAR PASS BY ON ALCOTT ROAD

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: — DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN — SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	SPEED NB/EB	SPEED SB/WB
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

COUNT 2 (OR RDWY 2)	MIN NB/EB	MIN SB/WB	SPEED NB/EB	SPEED SB/WB

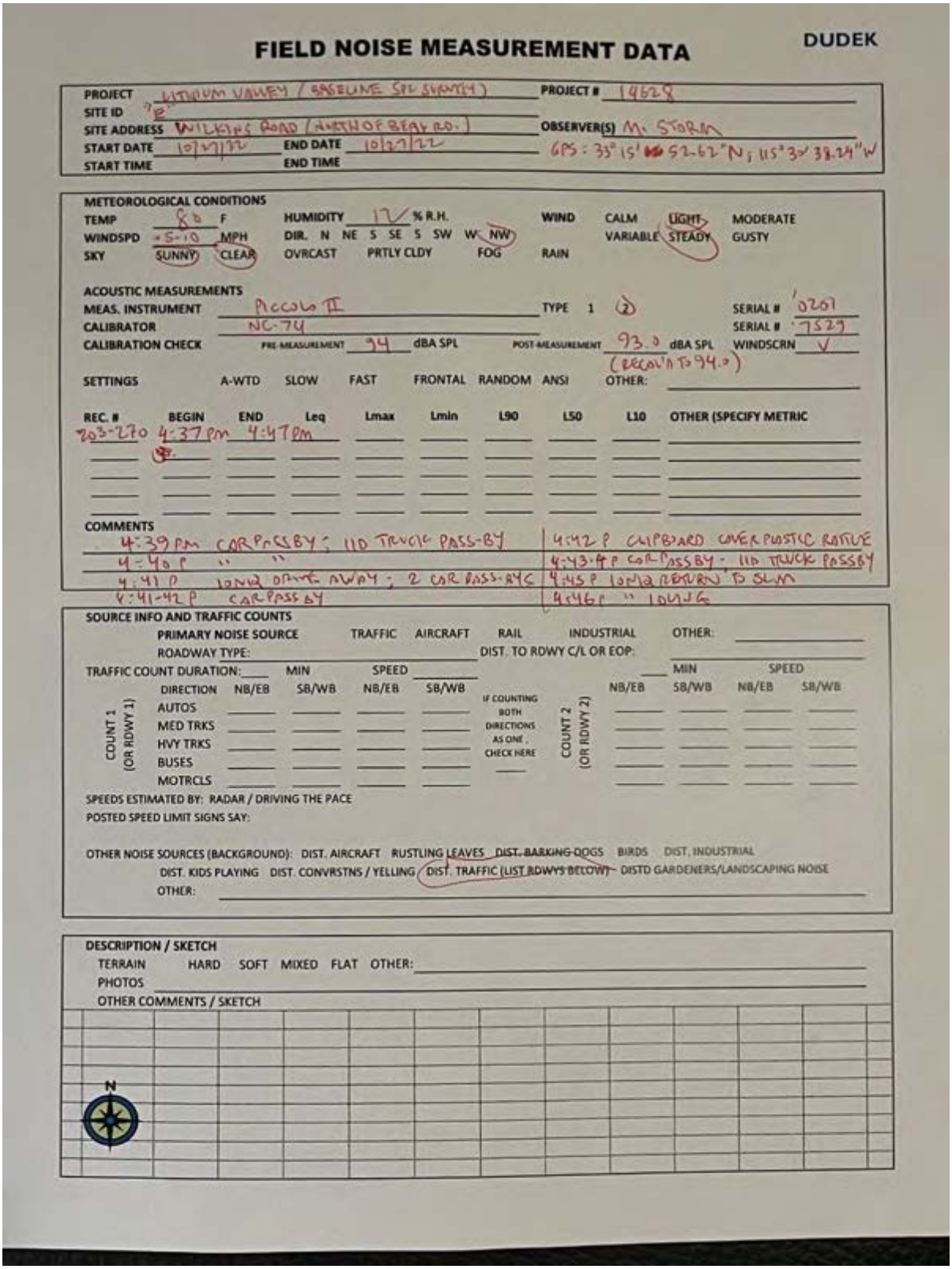
SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT (INSECTS) RUSTLING LEAVES DIST. TRAFFIC (LIST RDWYS BELOW) (HWY 111) DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH
TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH

N

10/27/22 – Fieldnotes at Survey Position **ST3** (Alcott Road)



FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: LITHIUM VALLEY (BASELINE SPL SURVEY) — PROJECT #: 14628
SITE ID: "B"
SITE ADDRESS: WILKINS ROAD (NORTH OF BEAL RD.) — OBSERVER(S): M. STORM
START DATE: 10/27/22 — END DATE: 10/27/22 — GPS: 33° 15' 52.62"N; 115° 30' 38.24"W
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS

TEMP: 80 F — HUMIDITY: 17 % R.H. — WIND: CALM / LIGHT / MODERATE
WINDSPD: 5-10 MPH — DIR. N NE E SE S SW W NW — VARIABLE / STEADY / GUSTY
SKY: SUNNY / CLEAR — OVRCAST — PRTLY CLDY — FOG — RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT: Piccolo II — TYPE 1 (2) — SERIAL # 0201
CALIBRATOR: NC-74 — SERIAL # 7529
CALIBRATION CHECK — PRE-MEASUREMENT: 94 dBA SPL — POST-MEASUREMENT: 93.9 dBA SPL (RECOV'D TO 94.0) — WINDSCRN: V

SETTINGS: A-WTD — SLOW — FAST — FRONTAL — RANDOM — ANSI — OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
203-270	4:37 PM	4:47 PM							

COMMENTS

4:39 PM CAR PASSBY; 11D TRUCK PASS-BY
4:40 P " "
4:41 P LONG DRIVE AWAY; 2 CAR PASS-BYS
4:41-42 P CAR PASSBY
4:42 P CLIPBOARD COVER PLASTIC RUSTLE
4:43-44 P CAR PASSBY; 11D TRUCK PASSBY
4:45 P LONG RETURN TO SLM
4:46 P " LONG

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE: TRAFFIC / AIRCRAFT / RAIL / INDUSTRIAL / OTHER:
ROADWAY TYPE: — DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN — SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
___ MIN				
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT — RUSTLING LEAVES — DIST. BARKING DOGS — BIRDS — DIST. INDUSTRIAL
DIST. KIDS PLAYING — DIST. CONVRSTNS / YELLING — DIST. TRAFFIC (LIST RDWYS BELOW) — DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH

TERRAIN: HARD / SOFT / MIXED / FLAT / OTHER:
PHOTOS
OTHER COMMENTS / SKETCH

N

10/27/22 – Fieldnotes at Survey Position **ST4** (Wilkins Road)



2333 - Looking north



2335 - Looking south

10/27/22 – Sound Level Meter (SLM) at Position **ST1** (West Delta Road)
(photo file ID# and view direction noted above; SLM encircled in yellow dashes)



2337 - Looking east



2338 - Looking south

10/27/22 – Sound Level Meter (SLM) at Position **ST2** (Calipatria Inn)
(photo file ID# and view direction noted above; SLM encircled in yellow dashes)



2341 - Looking east



2343 - Looking southwest

10/27/22 – Sound Level Meter (SLM) at Position **ST3** (Alcott Road)
(photo file ID# and view direction noted above; SLM encircled in yellow dashes)



2346 - Looking east



2345 - Looking northwest

10/27/22 – Sound Level Meter (SLM) at Position **ST4** (Wilkins Road)
(photo file ID# and view direction noted above; SLM encircled in yellow dashes)