Appendix H
Infrastructure Assessment

APPENDIX A
INFRASTRUCTURE ASSESSMENT

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LITHIUM VALLEY SPECIFIC PLAN

Planning a Renewable Future for Generations to Come

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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.

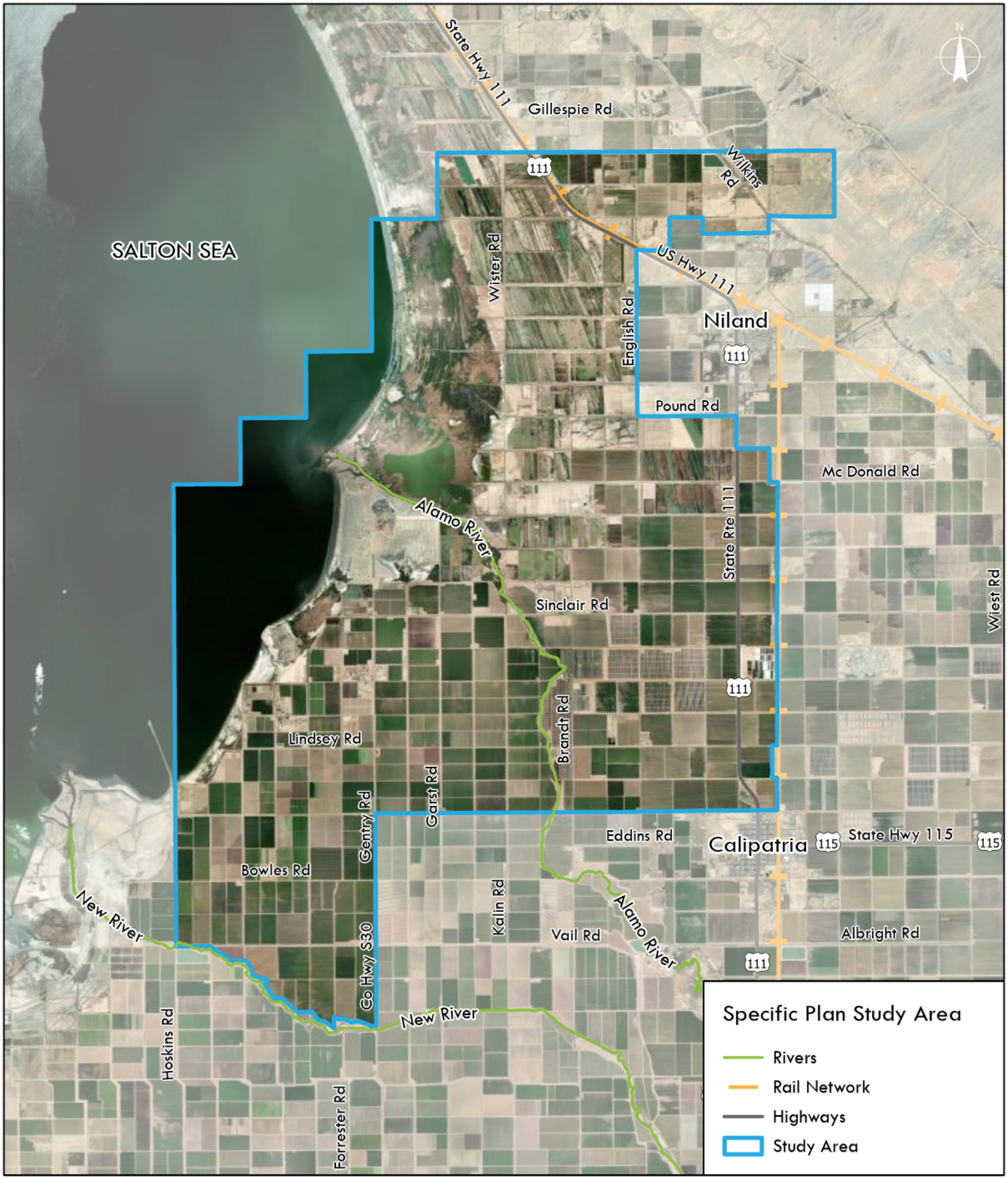
1.2 METHODOLOGY

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

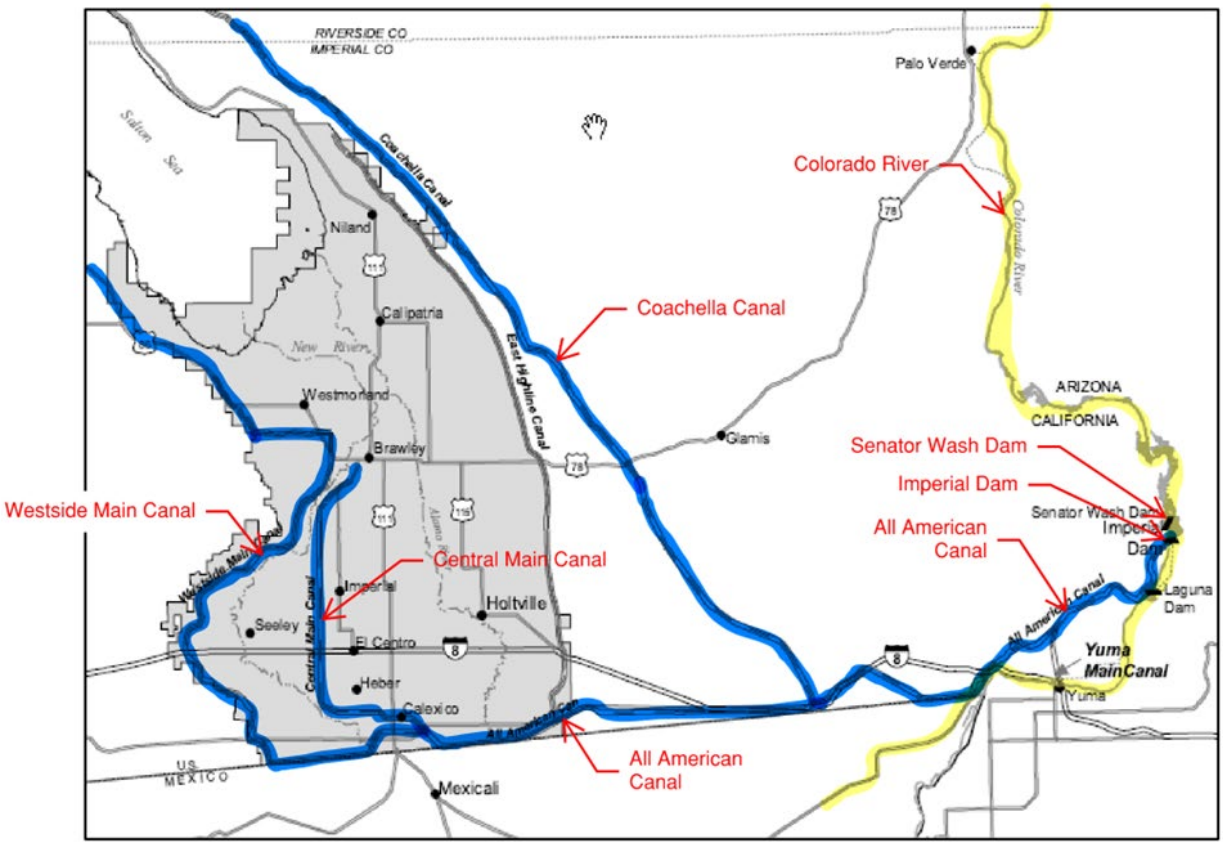
The principal source of water supply in Imperial County is Colorado River water from the All-American Canal and three main supply canals (East Highline, Central Main, and Westside Main) managed by Imperial Irrigation District (IID). Industrial users have equal access to the water as agricultural and 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.

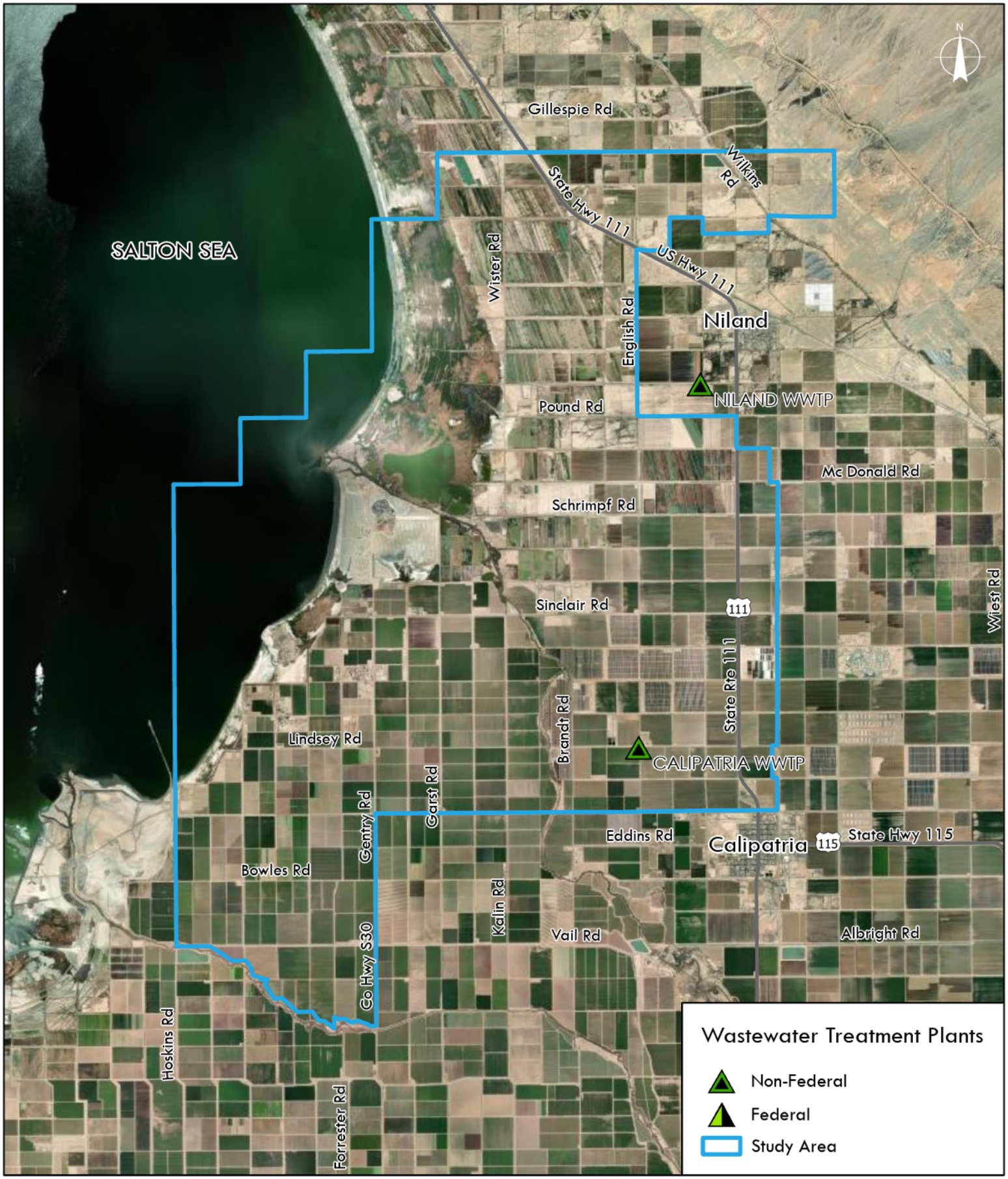
The City of Calipatria operates the publicly owned Wastewater Treatment plan on Lindsey Road. This facility has a capacity of 1,938 Acre-Feet per Year (AFY) and is secondary treatment facility that discharges into the "G" Drain/ Alamo River with drains to the Salton Sea. This plant is recommended to 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.



SOURCE: US Environmental Protection Agency

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.

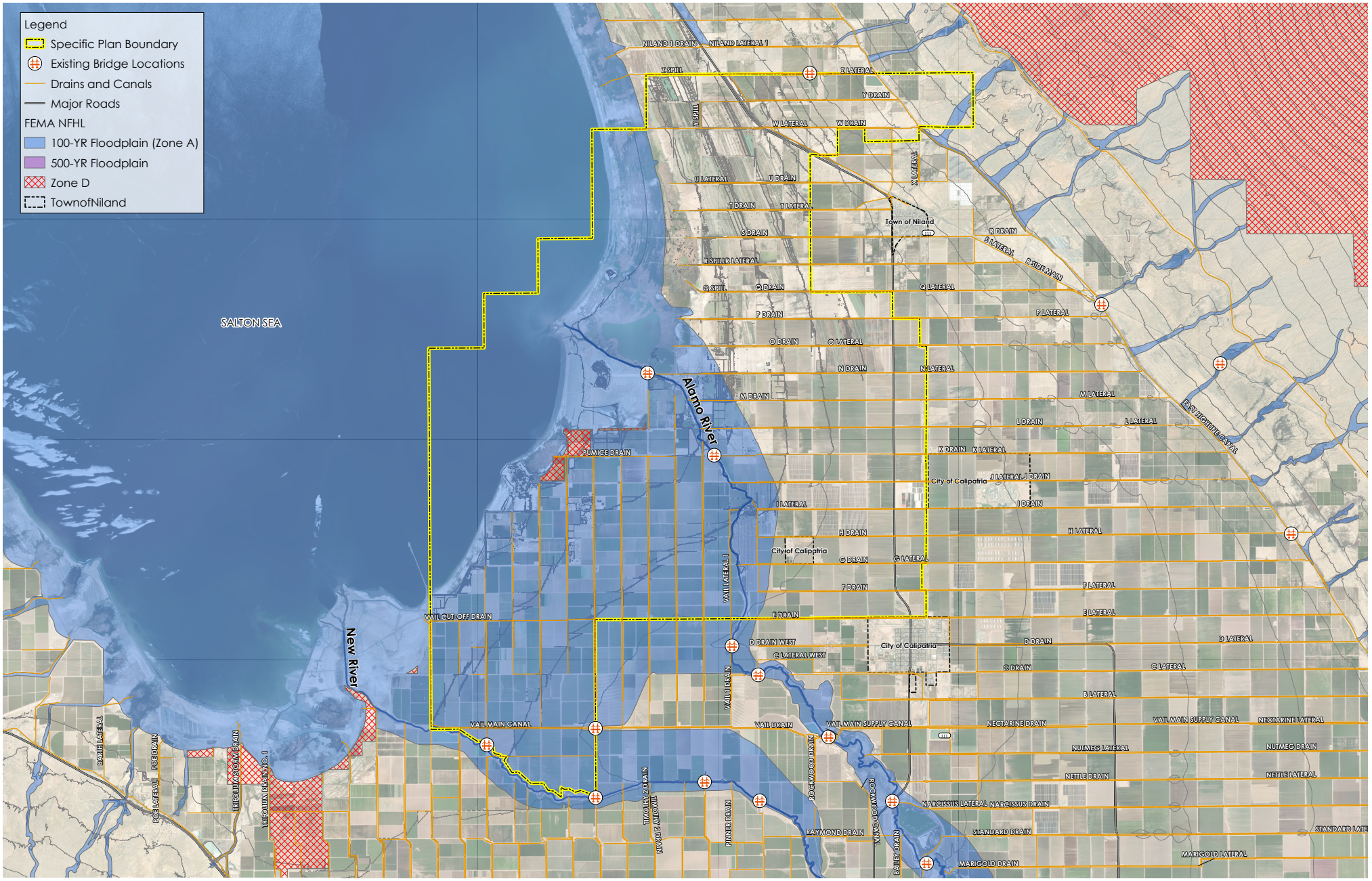
Regional Drainage

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

LITHIUM VALLEY SPECIFIC PLAN

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.

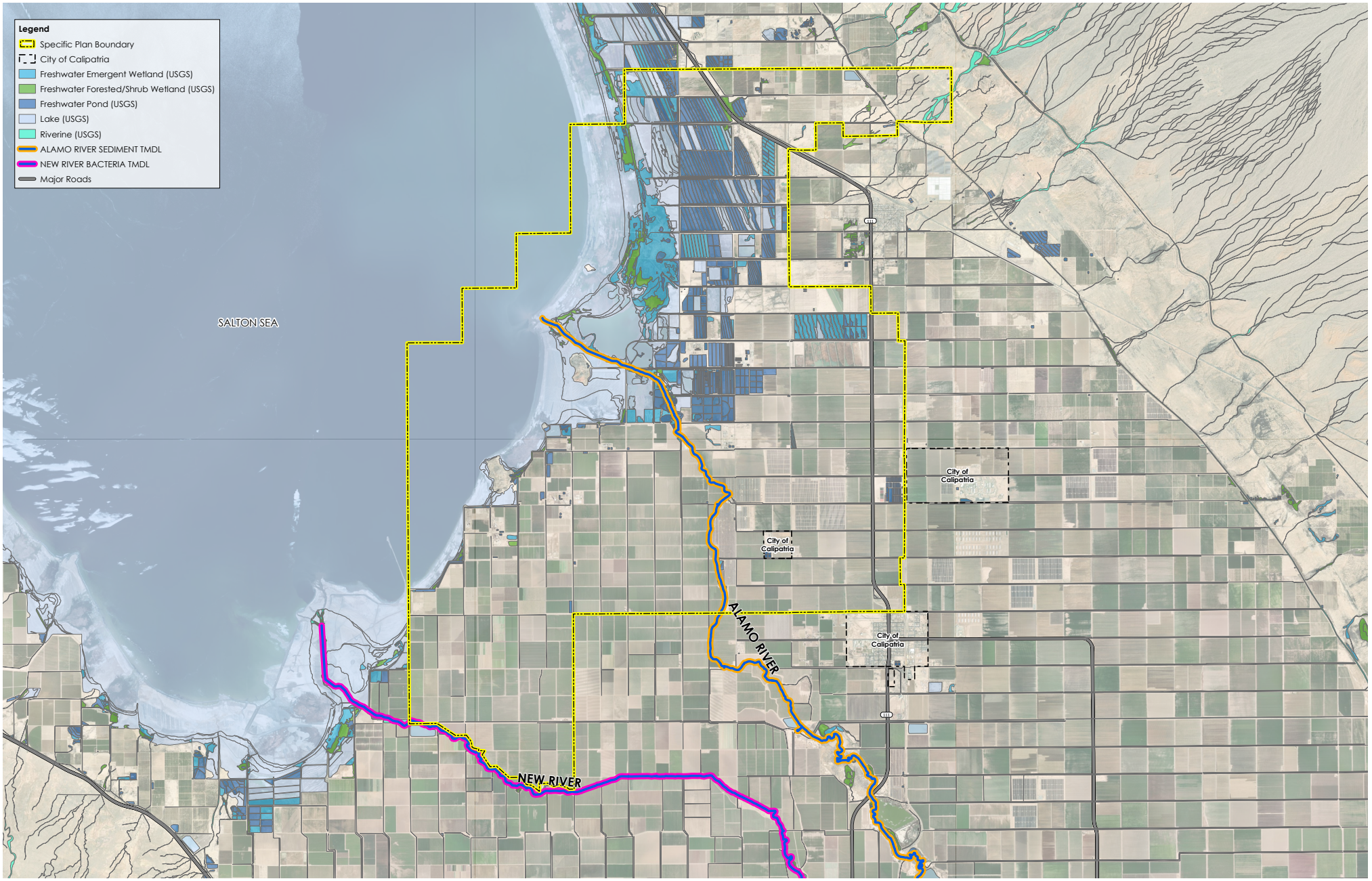
Water Quality Considerations

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:</td></tr>
<tr><td></td><td><u>Indicator Parameters</u>
Fecal Coliforms
E. Coli
Enterococci</td><td><u>30-Day Geometric Mean</u>[50]
200 MPN[51]/100 ml
126 MPN/100 ml
33 MPN/100 ml</td><td><u>Maximum</u>
[52]
400 MPN/100 ml
100 MPN/100 ml</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:</td></tr>
<tr><td></td><td><u>Indicator Parameters</u>
Fecal Coliforms
E. Coli
Enterococci</td><td><u>30-Day Geometric Mean</u>[50]
200 MPN[51]/100 ml
126 MPN/100 ml
33 MPN/100 ml</td><td><u>Maximum</u>
[52]
400 MPN/100 ml
100 MPN/100 ml</td></tr>
<tr><td></td><td colspan="3">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

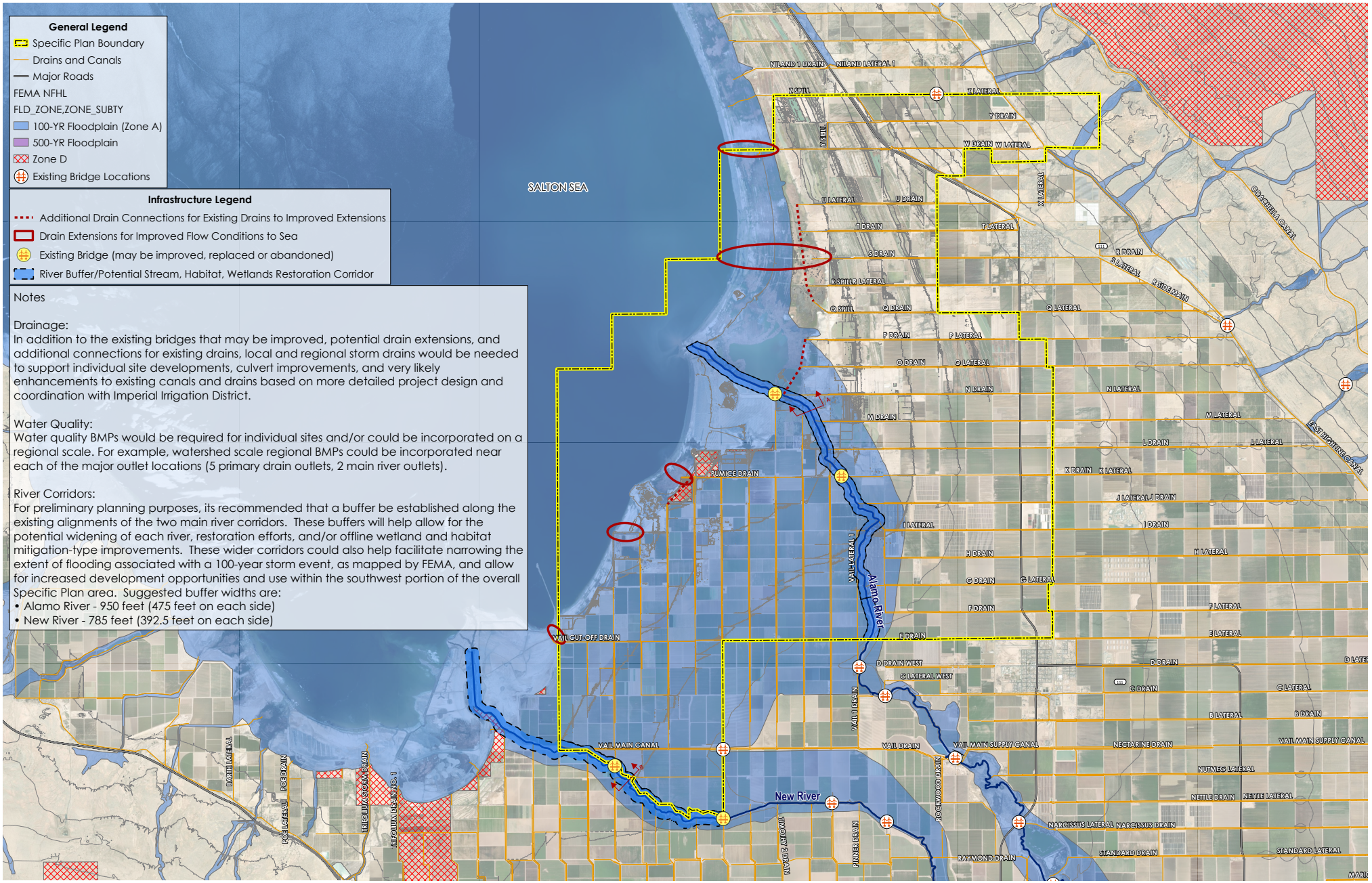
Floodplains and floodways should be considered in new developments and redevelopments. To protect new and existing communities and structures from flooding, properties should be constructed above the base flood elevation of the flood source (Alamo/New River). A floodplain buffer along the Alamo and New 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.



INFRASTRUCTURE ASSESSMENT

FIGURE 2-5, Drainage Infrastructure Opportunities

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.

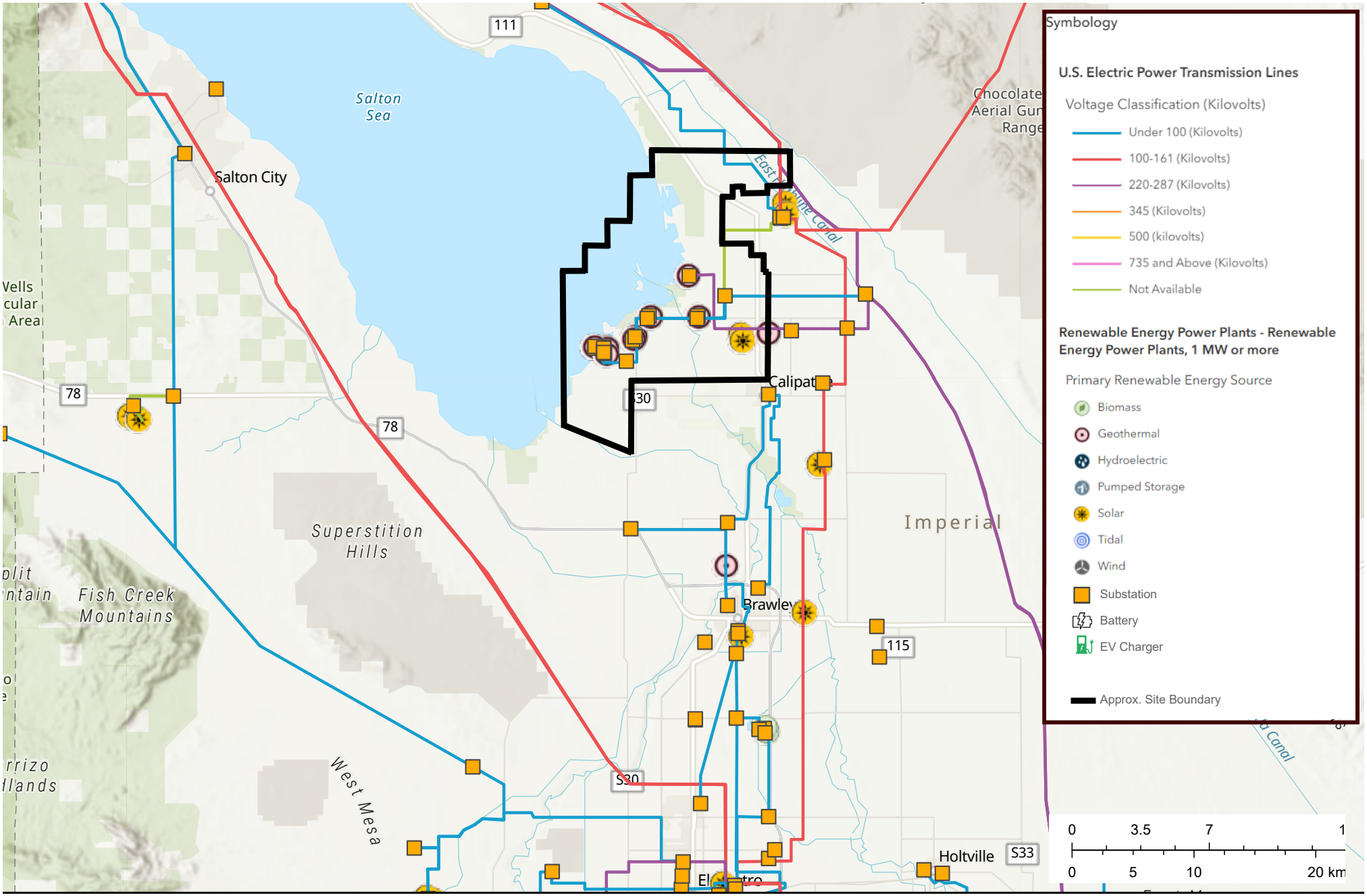
SB 1020

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).

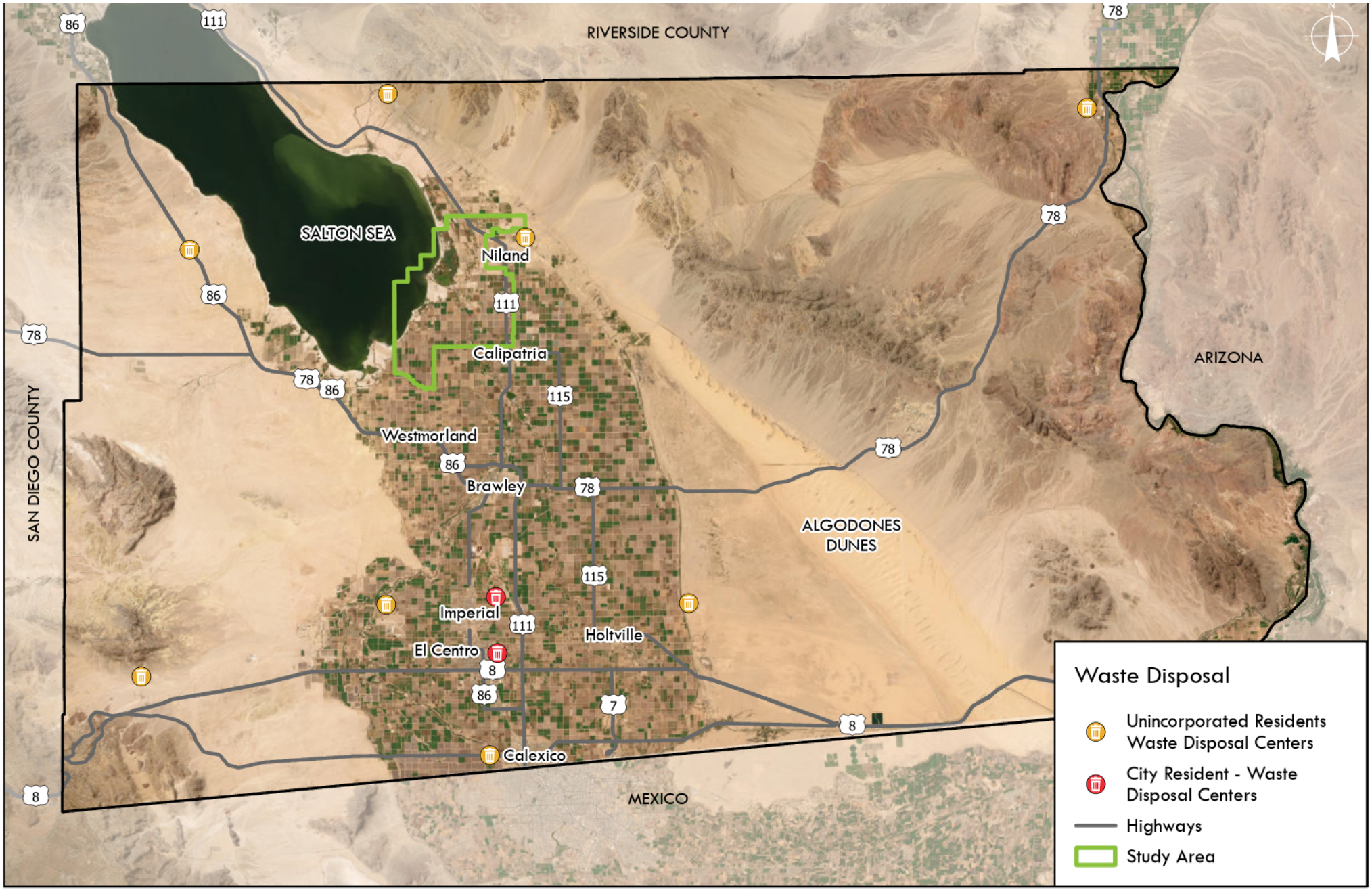
Transfer Station - Calexico Solid Waste Site

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

INFRASTRUCTURE ASSESSMENT
FIGURE 3-2, Waste Disposal Sites

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.

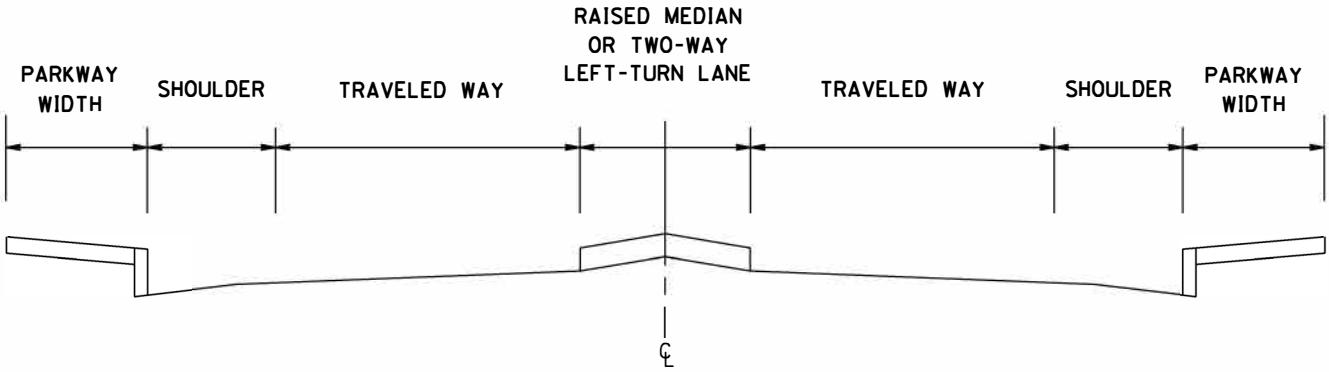
Minor Local Collector (Local Collector) – this is designed to connect local streets with the adjacent Collectors or arterial street system. Design standards include provision for two travel lanes and parking, except in specific locations where parking is removed to provide a turn lane at intersections. 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.

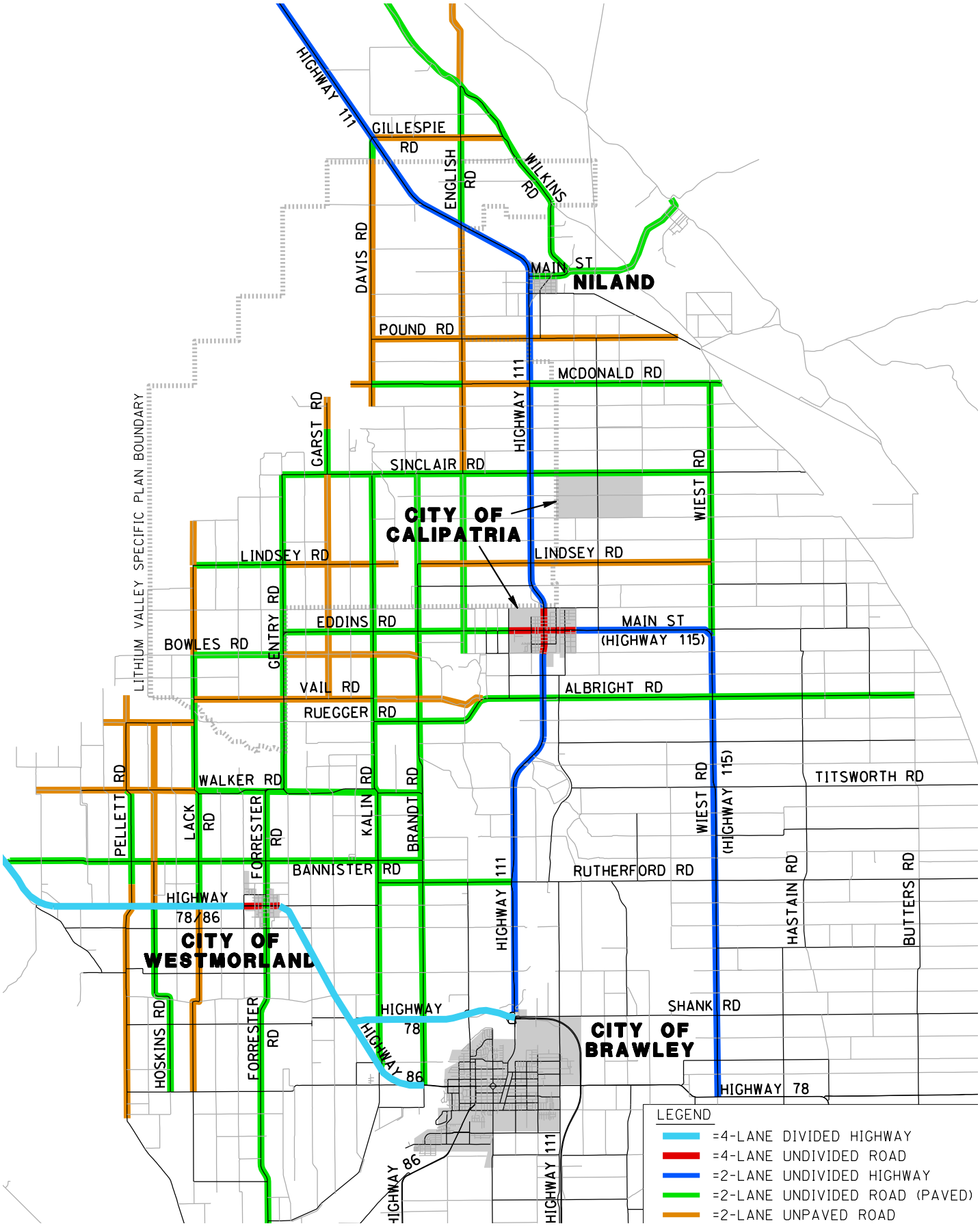


FIGURE 4-2, Existing Roadway Configurations in Transportation Study Area

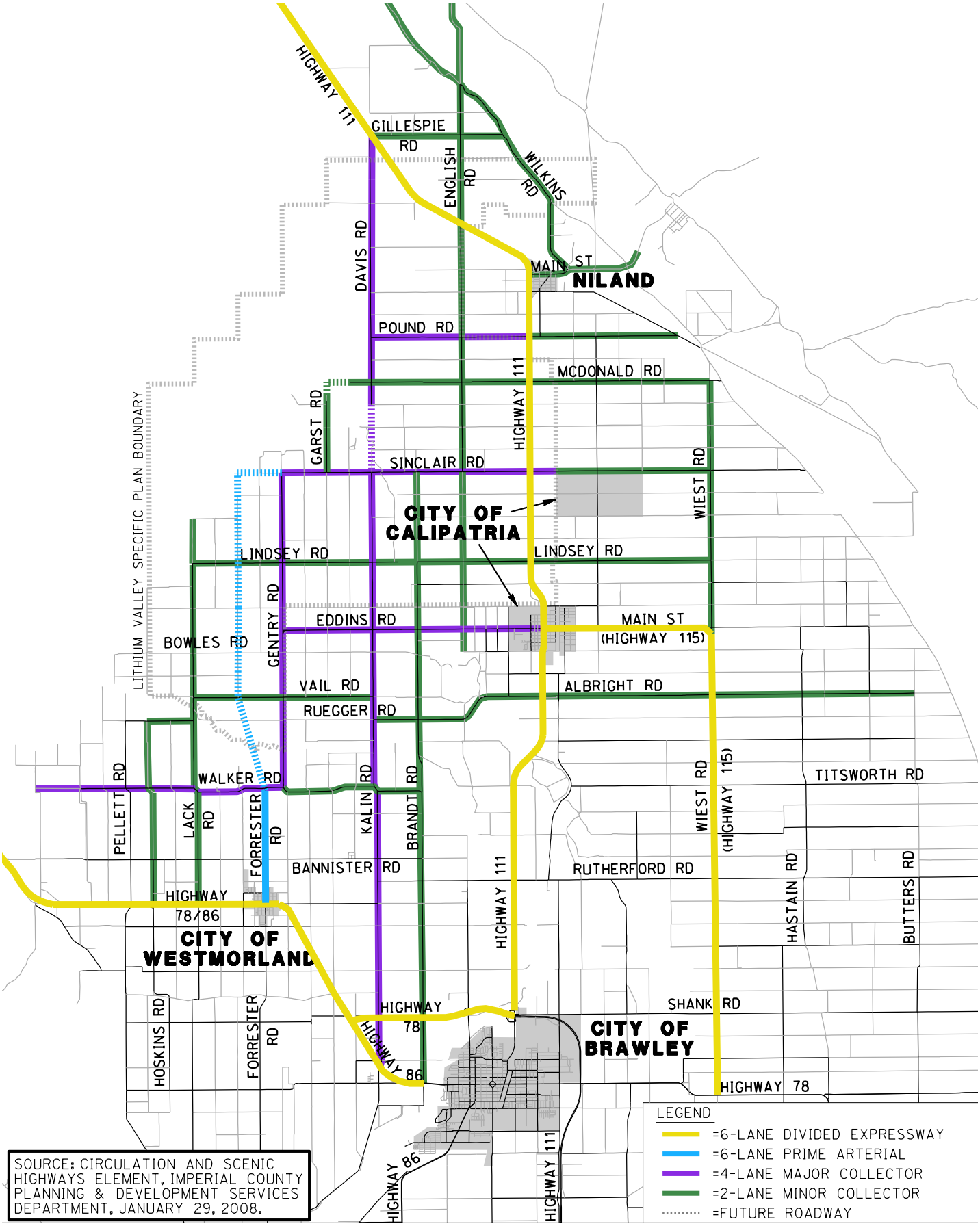
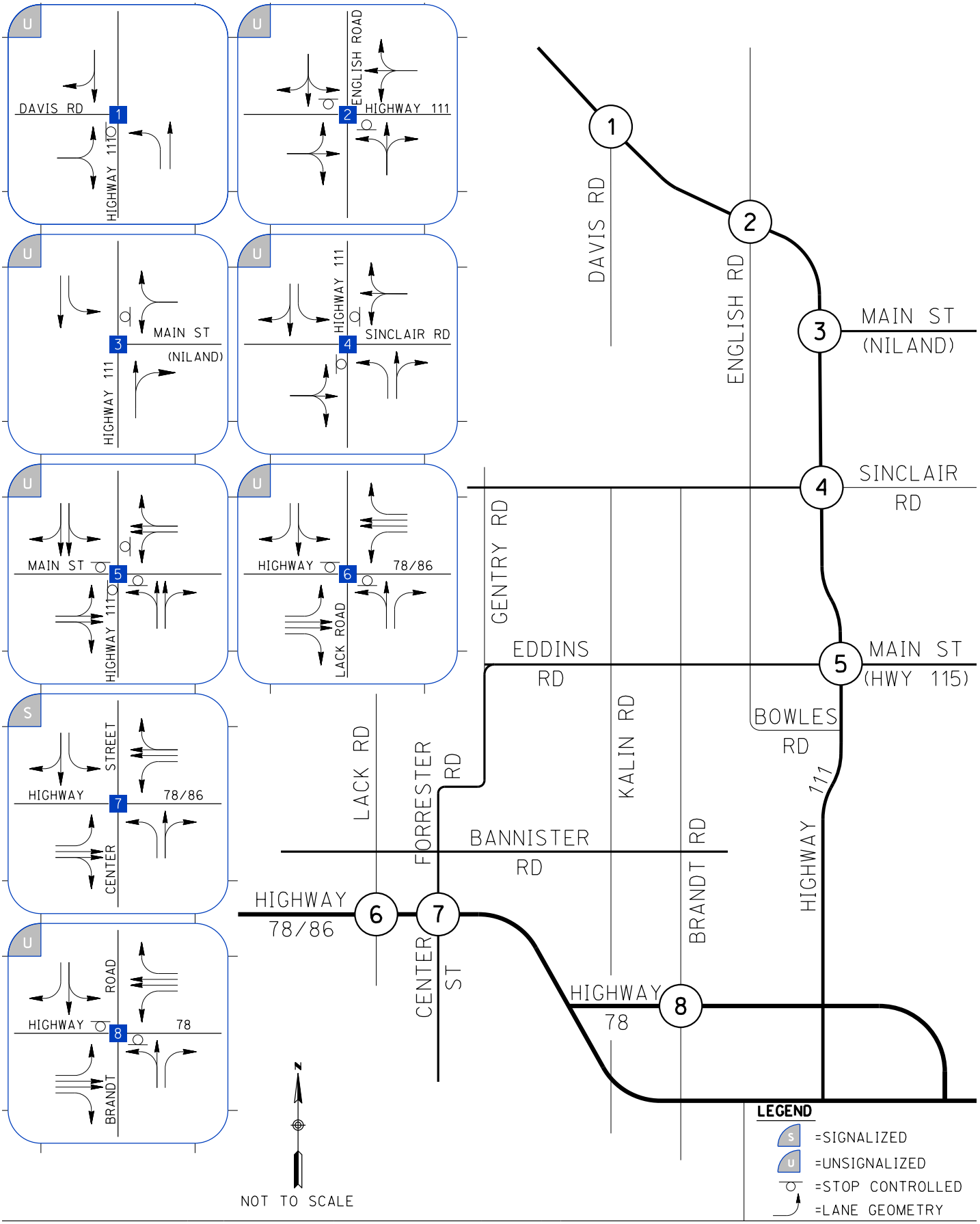


FIGURE 4-3, General Plan Circulation Element Roadway Classifications in Transportation Study Area


DAVIS RD
HIGHWAY 111
ENGLISH ROAD
HIGHWAY 111
MAIN ST
(NILAND)
HIGHWAY 111
HIGHWAY 111
SINCLAIR RD
MAIN ST
HIGHWAY 111
HIGHWAY
78/86
LACK ROAD
STREET
HIGHWAY
78/86
CENTER
ROAD
HIGHWAY
78
BRANDT
1
2
3
4
5
6
7
8
DAVIS RD
ENGLISH RD
MAIN ST
(NILAND)
SINCLAIR
RD
GENTRY RD
EDDINS
RD
MAIN ST
(HWY 115)
BOWLES
RD
KALIN RD
LACK RD
FORRESTER
RD
BANNISTER
RD
BRANDT RD
HIGHWAY
111
HIGHWAY
78/86
CENTER
ST
HIGHWAY
78
N
NOT TO SCALE
LEGEND
=SIGNALIZED
=UNSIGNALIZED
=STOP CONTROLLED
=LANE GEOMETRY

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:

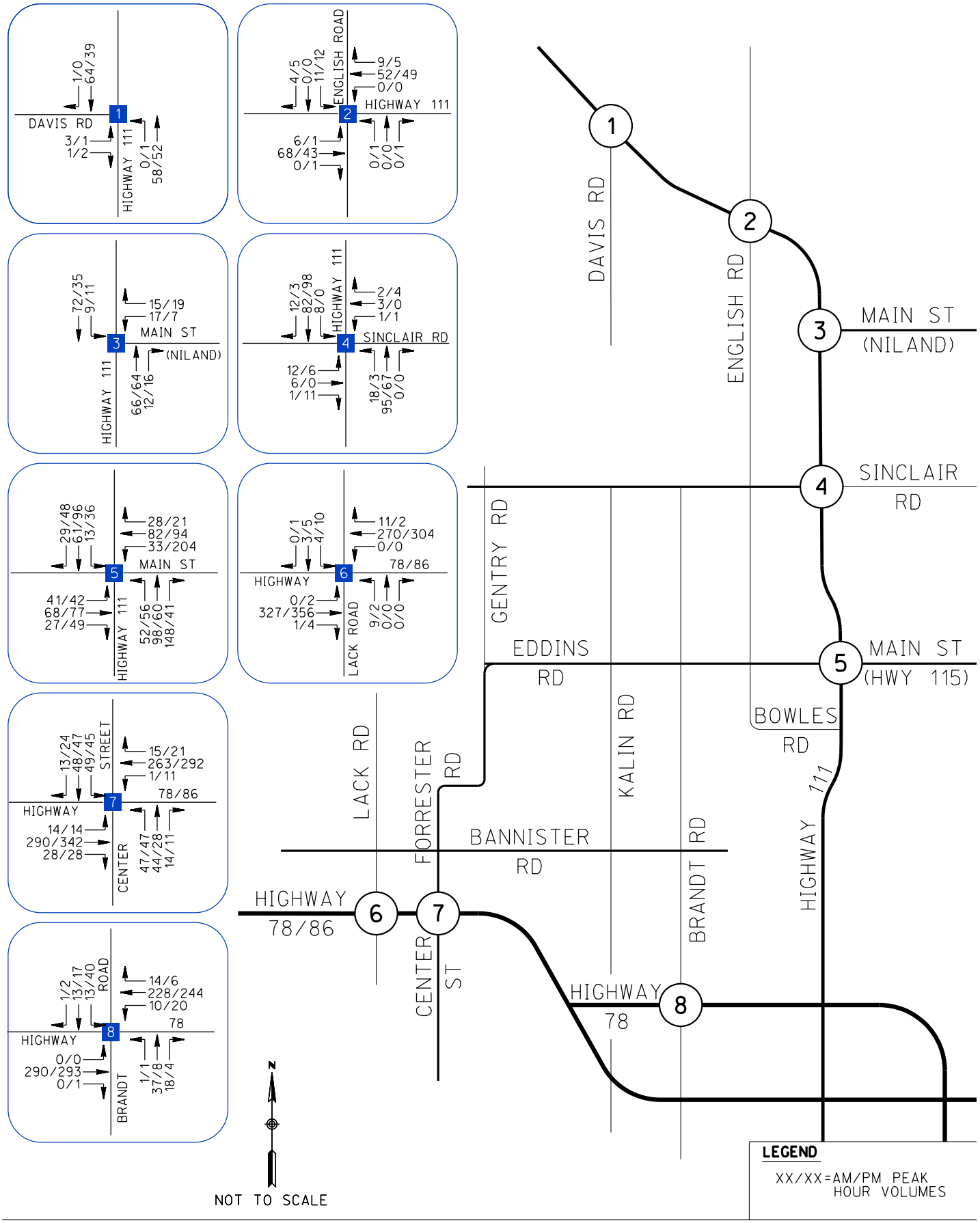
1. Highway 111 / Davis Road
2. Highway 111 / English Road
3. Highway 111 / Main Street (in Niland)
4. Highway 111 / Sinclair Road
5. Highway 111 / Main Street (in Calipatria)
6. Highway 78/86 / Lack Road
7. Highway 78/86 / Center Street (becomes Forrester Road inoutside of Westmorland)
8. Highway 78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


1
DAVIS RD
1/0
64/39
3/1
1/2
HIGHWAY 111
0/1
58/52
2
ENGLISH ROAD
HIGHWAY 111
4/5
0/0
11/12
9/5
52/49
0/0
6/1
68/43
0/1
0/1
0/0
0/1
3
MAIN ST
(NILAND)
72/35
9/11
15/19
17/7
HIGHWAY 111
66/64
12/16
4
SINCLAIR RD
HIGHWAY 111
12/3
82/98
8/0
2/4
3/0
1/1
12/6
6/0
1/11
18/3
95/67
0/0
5
MAIN ST
29/48
61/96
13/36
28/21
82/94
33/204
41/42
68/77
27/49
HIGHWAY 111
52/56
98/60
148/41
6
HIGHWAY
LACK ROAD
0/1
3/5
4/10
11/2
270/304
0/0
78/86
0/2
327/356
1/4
9/2
0/0
0/0
7
HIGHWAY
CENTER STREET
13/24
48/47
49/45
15/21
263/292
1/11
78/86
14/14
290/342
28/28
47/47
44/28
14/11
8
HIGHWAY
BRANDT ROAD
1/2
13/17
13/40
14/6
228/244
10/20
78
0/0
290/293
0/1
1/1
37/8
18/4
DAVIS RD
ENGLISH RD
MAIN ST
(NILAND)
SINCLAIR
RD
GENTRY RD
EDDINS
RD
MAIN ST
(HWY 115)
BOWLES
RD
KALIN RD
LACK RD
FORRESTER
RD
BANNISTER
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BRANDT RD
HIGHWAY 111
HIGHWAY
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CENTER
ST
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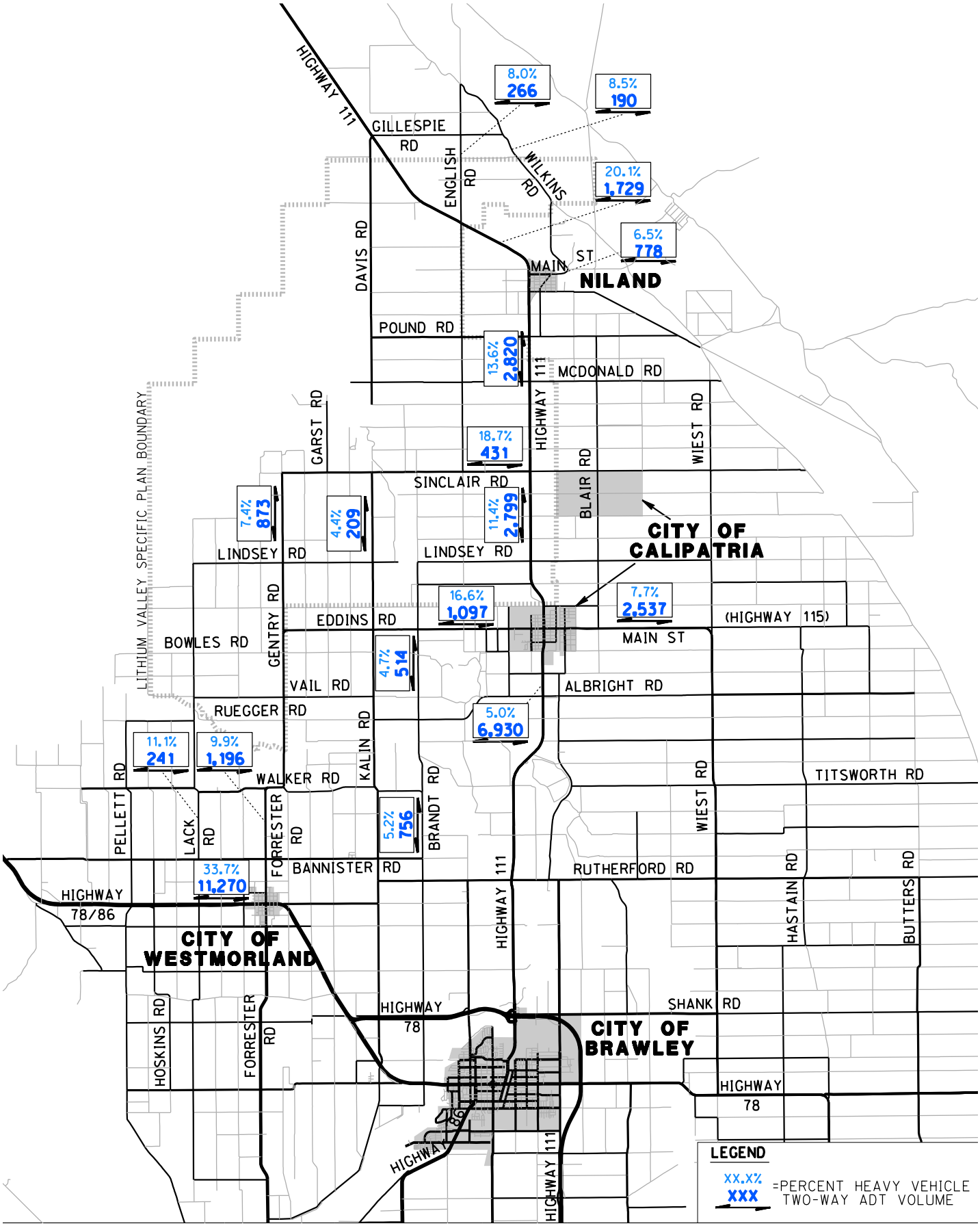
78
N
NOT TO SCALE
LEGEND
XX/XX=AM/PM PEAK
HOUR VOLUMES



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

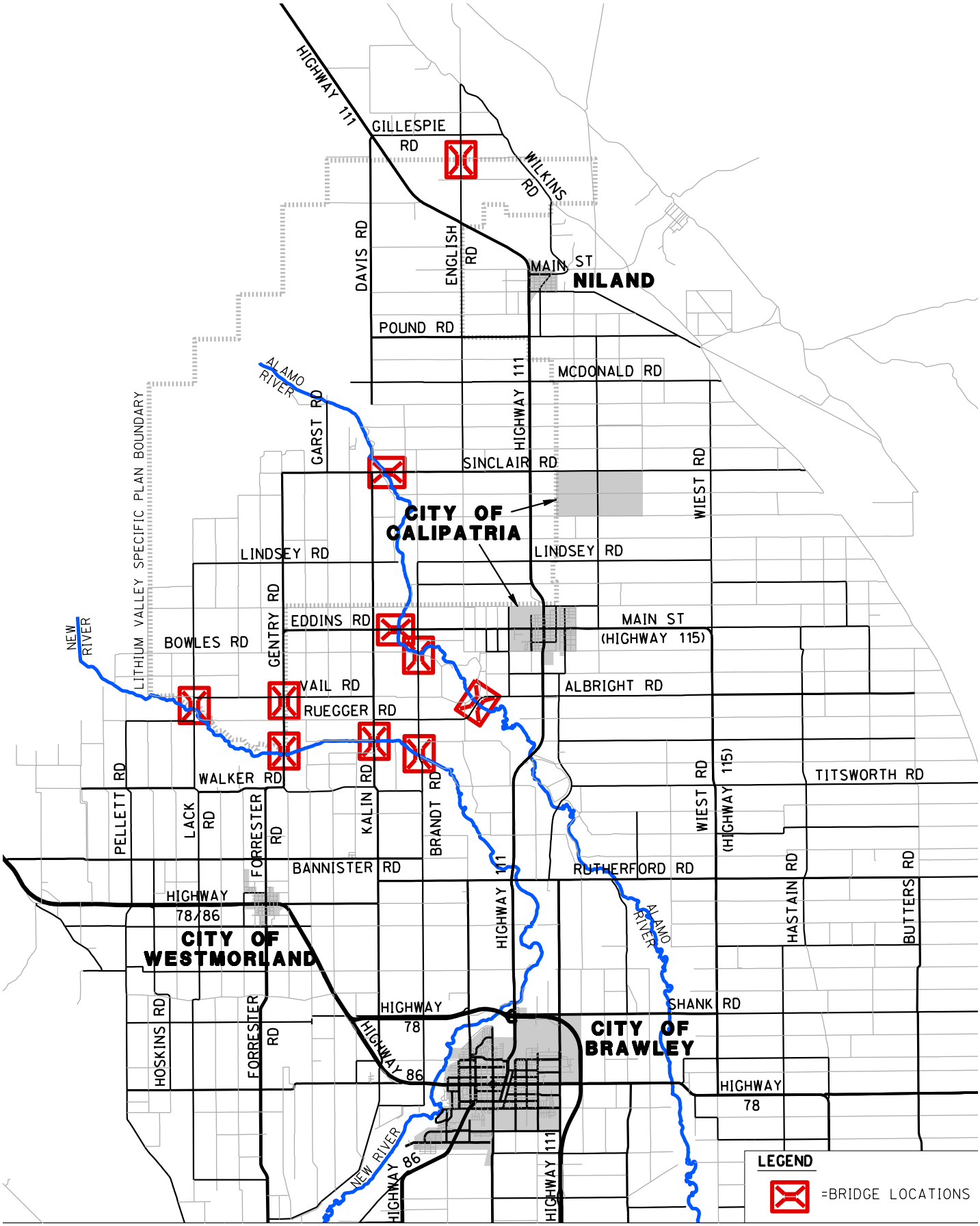
Bridges Crossing Z Lateral Canal

- 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.


HIGHWAY 111
GILLESPIE RD
WILKINS RD
DAVIS RD
ENGLISH RD
MAIN ST
NILAND
POUND RD
MCDONALD RD
ALAMO RIVER
GARST RD
HIGHWAY 111
SINCLAIR RD
WIEST RD
CITY OF CALIPATRIA
LINDSEY RD
LINDSEY RD
LITHIUM VALLEY SPECIFIC PLAN BOUNDARY
NEW RIVER
GENTRY RD
EDDINS RD
MAIN ST (HIGHWAY 115)
BOWLES RD
VAIL RD
ALBRIGHT RD
RUEGGER RD
WALKER RD
TITSWORTH RD
PELLETT RD
LACK RD
FORRESTER RD
KALIN RD
BRANDT RD
WIEST RD (HIGHWAY 115)
BANNISTER RD
RUTHERFORD RD
HASTAIN RD
BUTTERS RD
HIGHWAY 78/86
CITY OF WESTMORLAND
HIGHWAY 111
ALAMO RIVER
HOSKINS RD
FORRESTER RD
HIGHWAY 78
SHANK RD
CITY OF BRAWLEY
HIGHWAY 86
HIGHWAY 78
NEW RIVER
HIGHWAY 86
HIGHWAY 111
LEGEND
=BRIDGE LOCATIONS

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

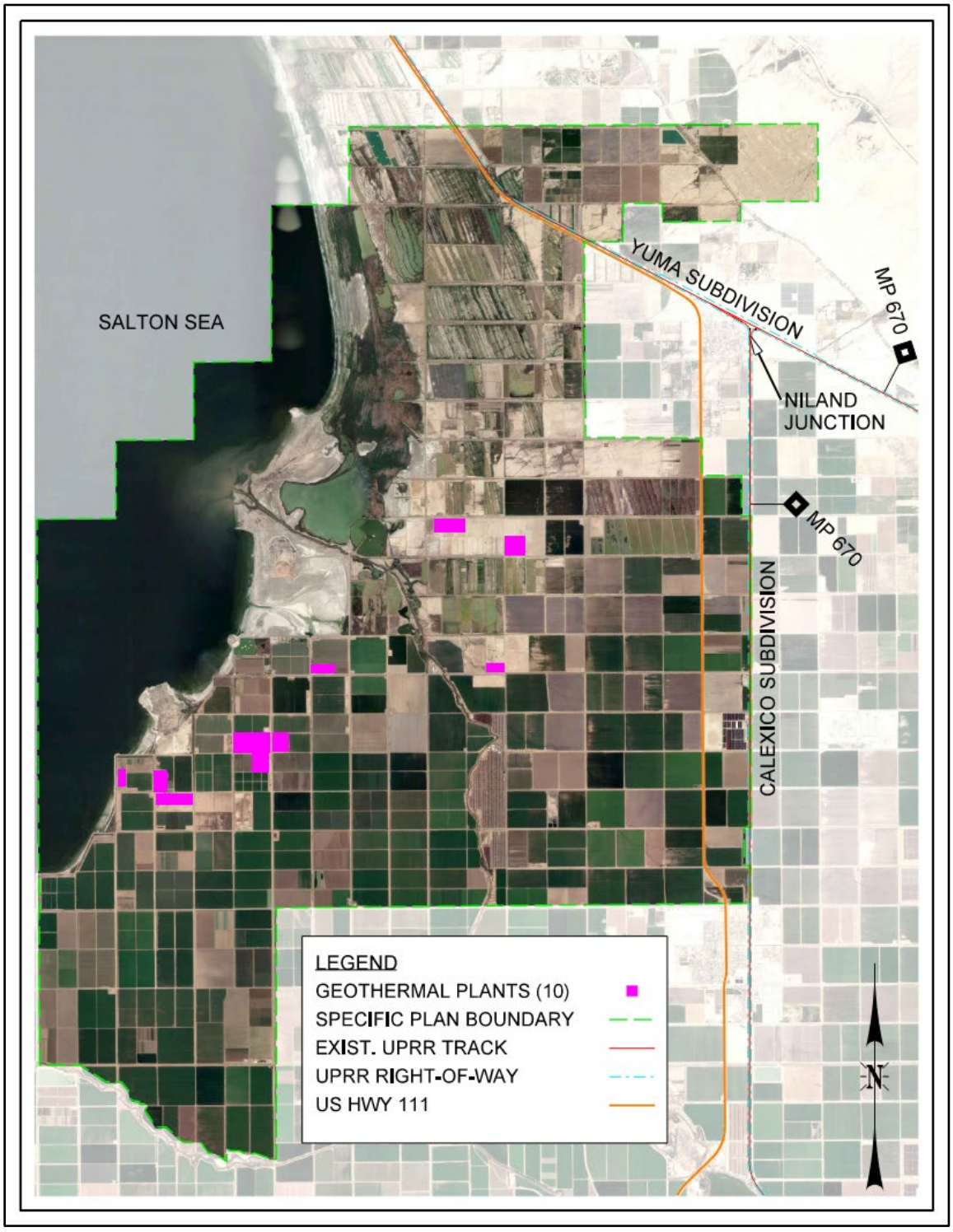
Union Pacific Railroad (UPRR) is a US Class 1 railway that currently has two operational railroad corridors that traverse the northern and eastern limits of the Study Area, the Yuma and Calexico Subdivisions (Subs). An example of the containers and export materials is shown in Figure 5-1, UPRR Intermodal 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.

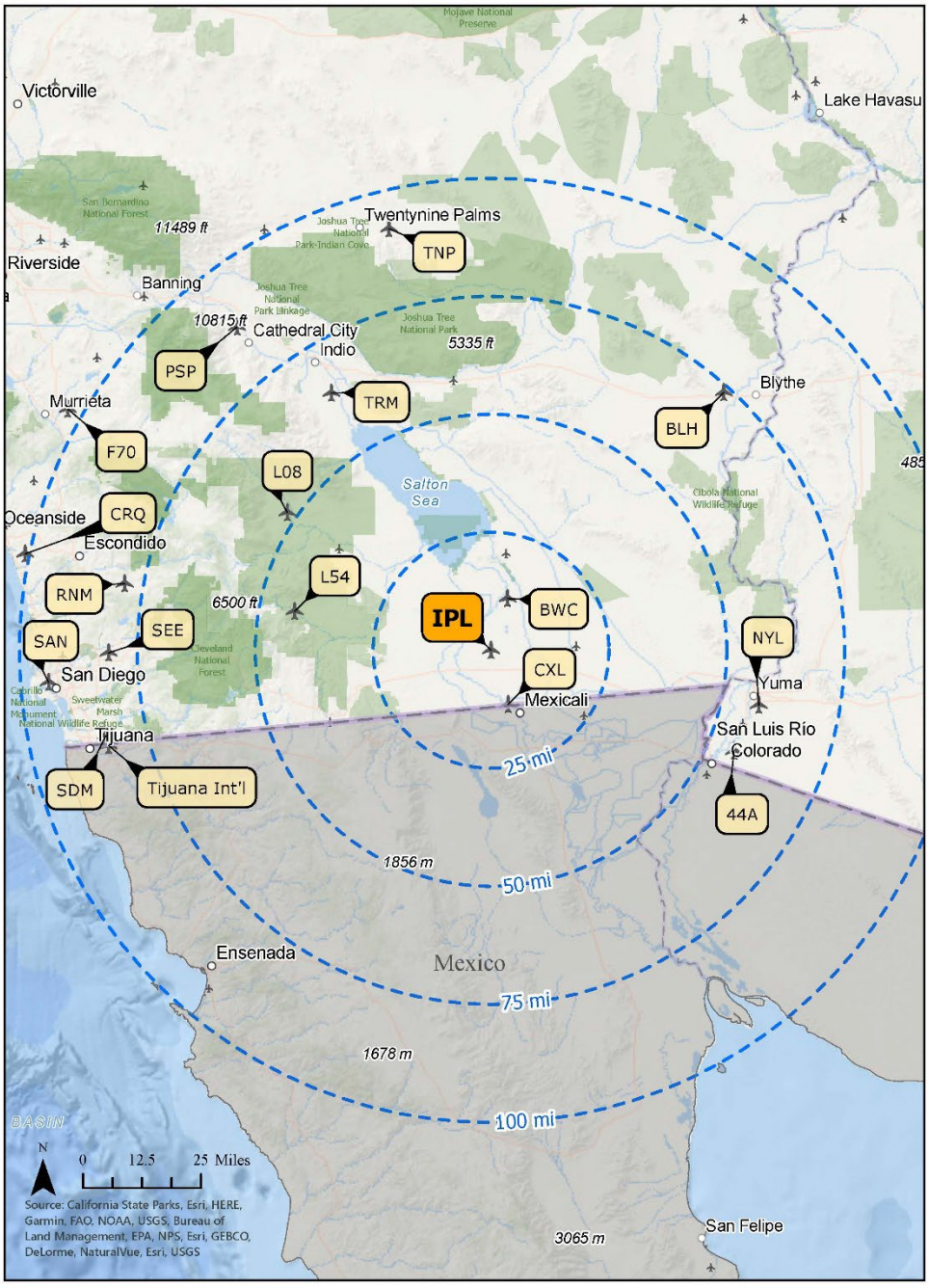
UPRR has an established process to allow for new industrial projects through which the railroad has set policies, processes, and criteria for the development of new infrastructure per Union Pacific Railroad's website "https://www.up.com". Per Union Pacific (UPRR), the applicant will be contacted by an 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.

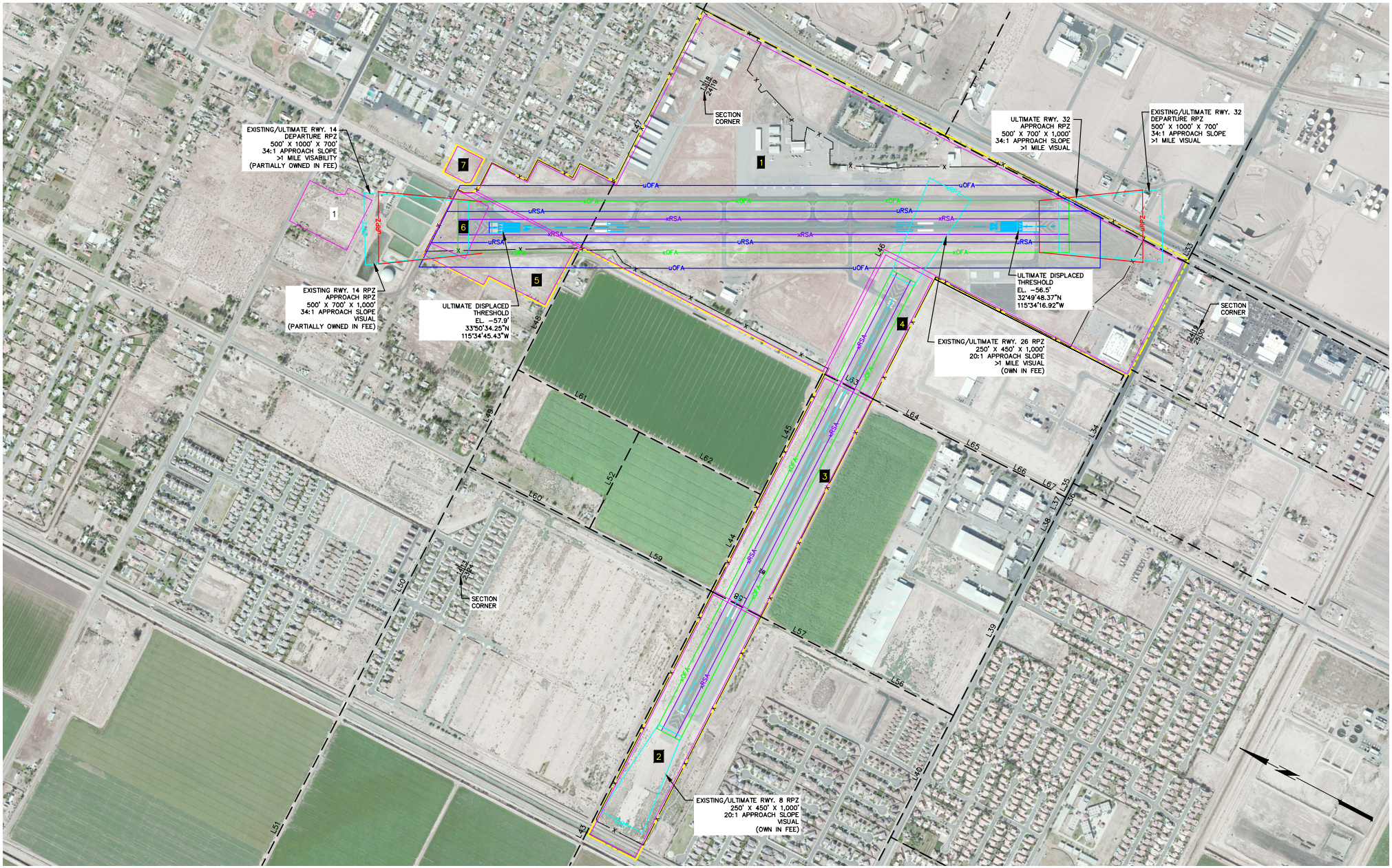
This capacity analysis (analysis) will document the existing conditions at IPL and BWC which will include:

- 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

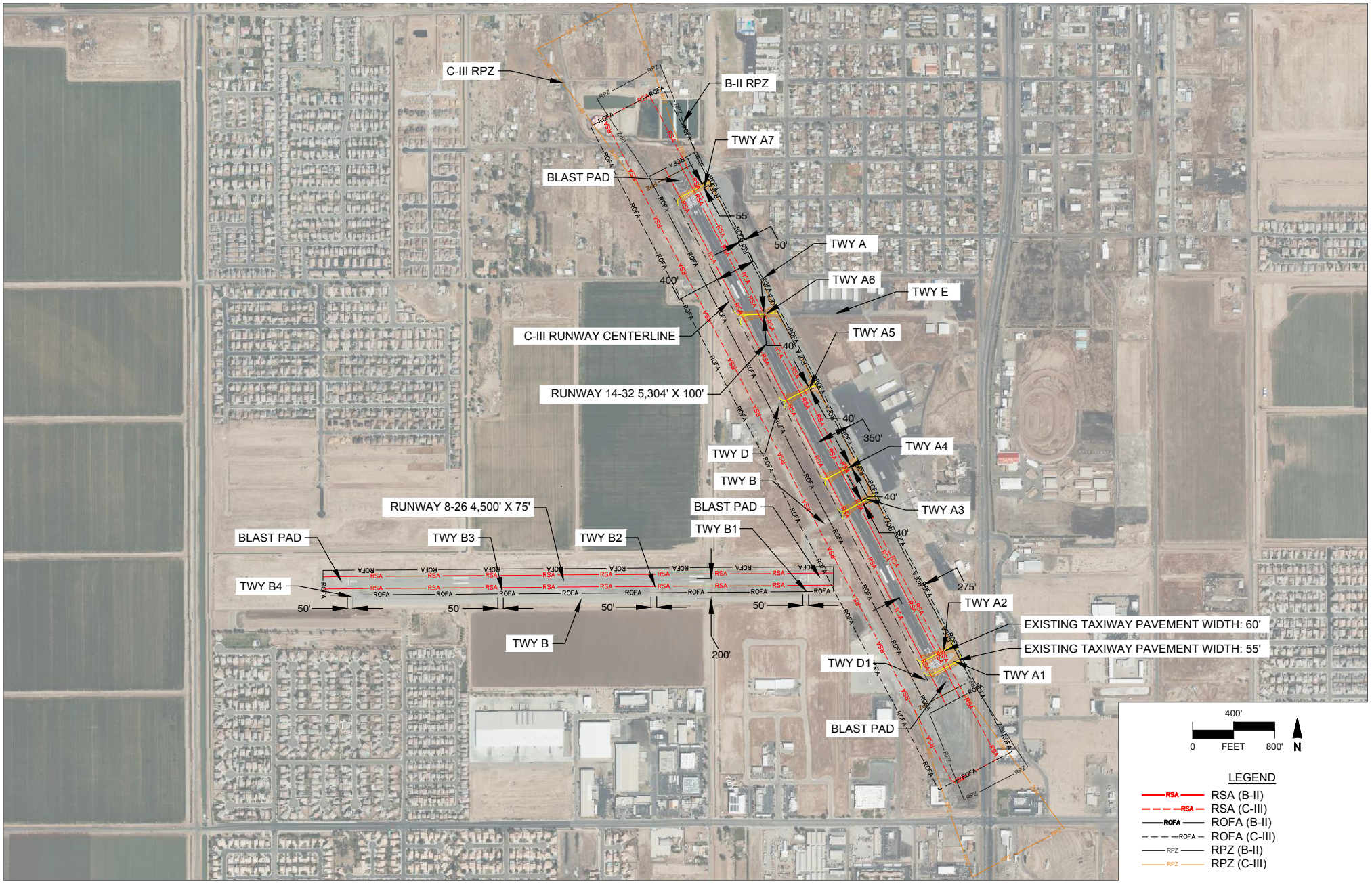
The 2014 Imperial County Airport Pavement Management Update Final Report (APMR) and the Imperial County FAA Airports Capital Improvement Plan (ACIP) (2017-2021) were used to assess the current condition of the pavement at IPL. The ACIP recommended projects in 2017 on Runway 14/32 included crack repairs 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

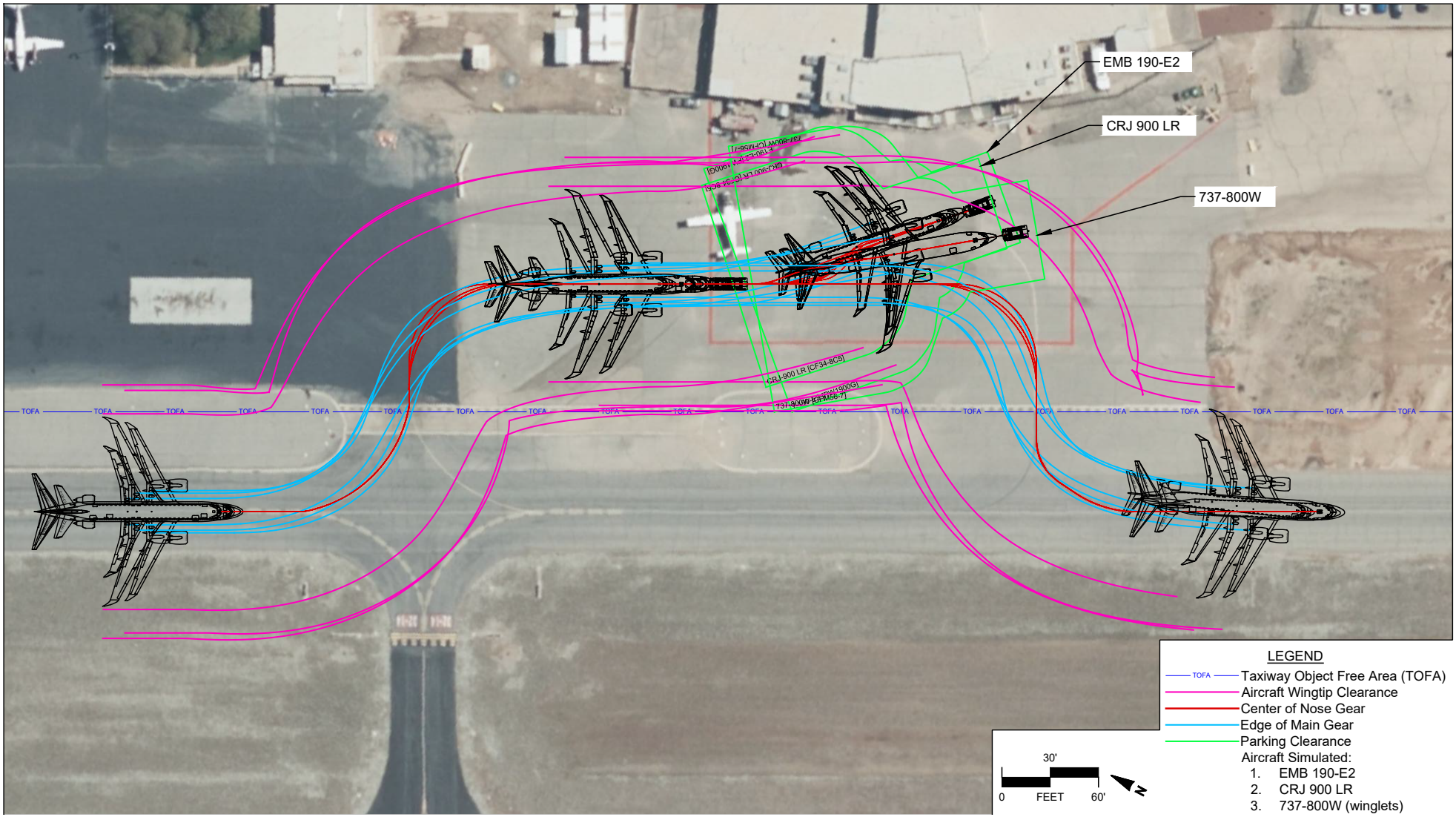
There is one (1) instrument flight procedure for IPL. Considering the average weather conditions for IPL, the approach is functional but airlines providing commercial air service may desire lower minima in reduced visibility scenarios.

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
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

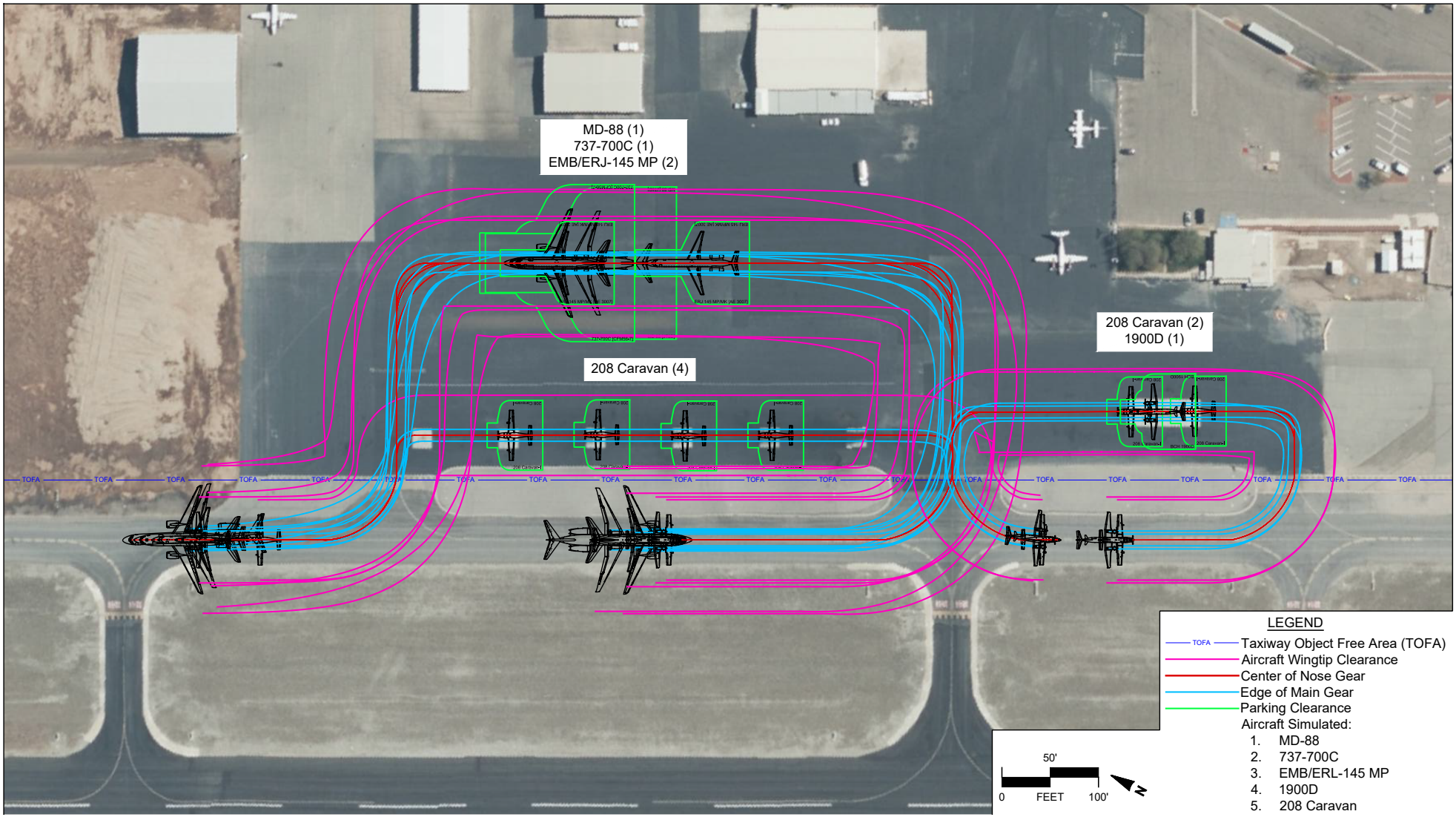
This amounts to approximately 8,020 annual enplaned passengers. The sample data period of 2021 had some restrictions based on COVID-19 protocol, so interpolation was used to derive the average number of enplaned passengers.

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
TOFA 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'
N

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

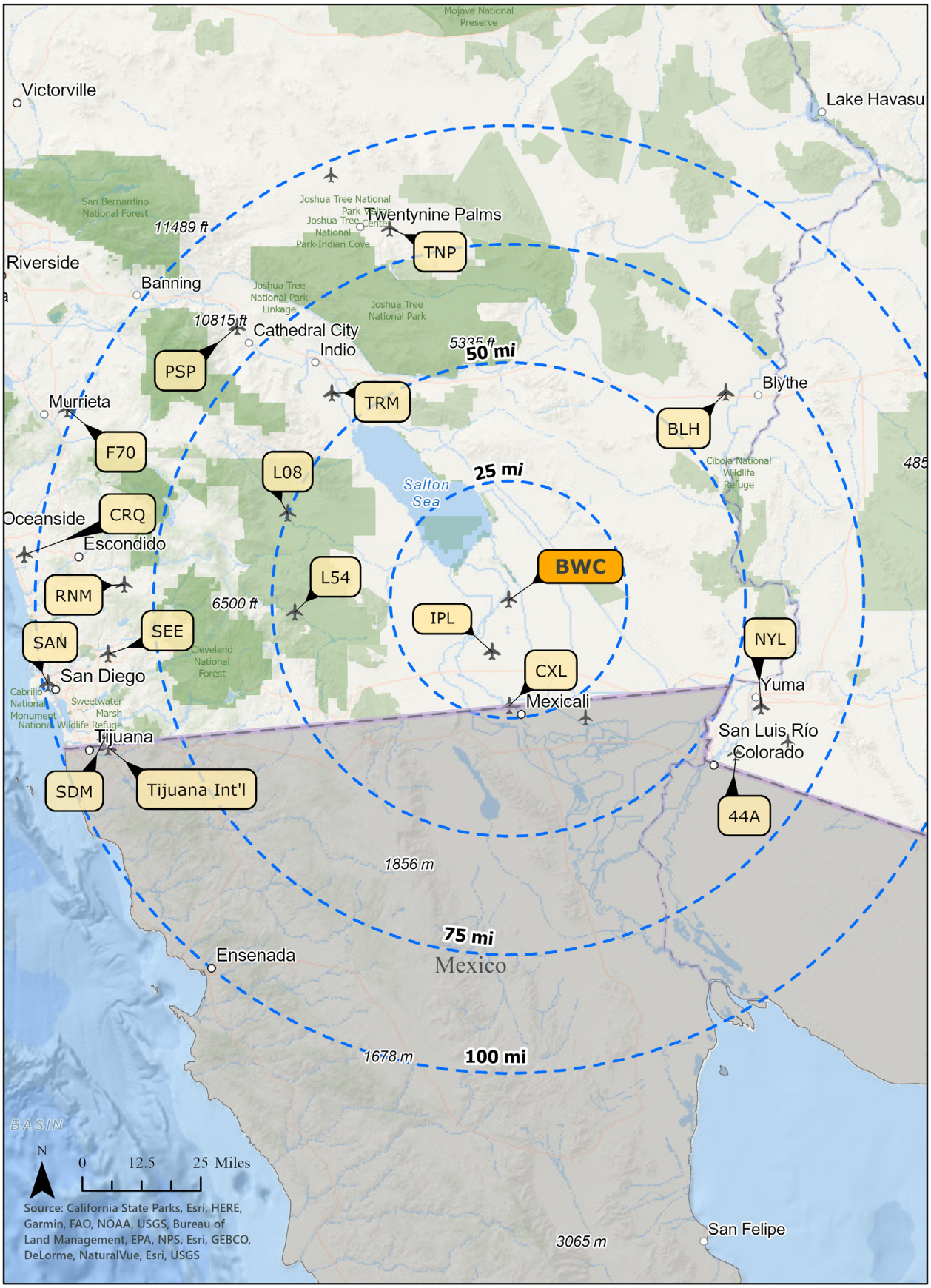
The closest airport which is comparable to BWC in terms of size and annual operations is Cliff Hatfield Memorial Airport (CLR). Similarly, CLR has one (1) runway, Runway 08/35, which like BWC is orientated east to west and had less than 2,500 operations and no enplanements. Figure 6-7, Airports within 100 Miles of BWC, depicts other airports that may serve the needs of the regional traveler.

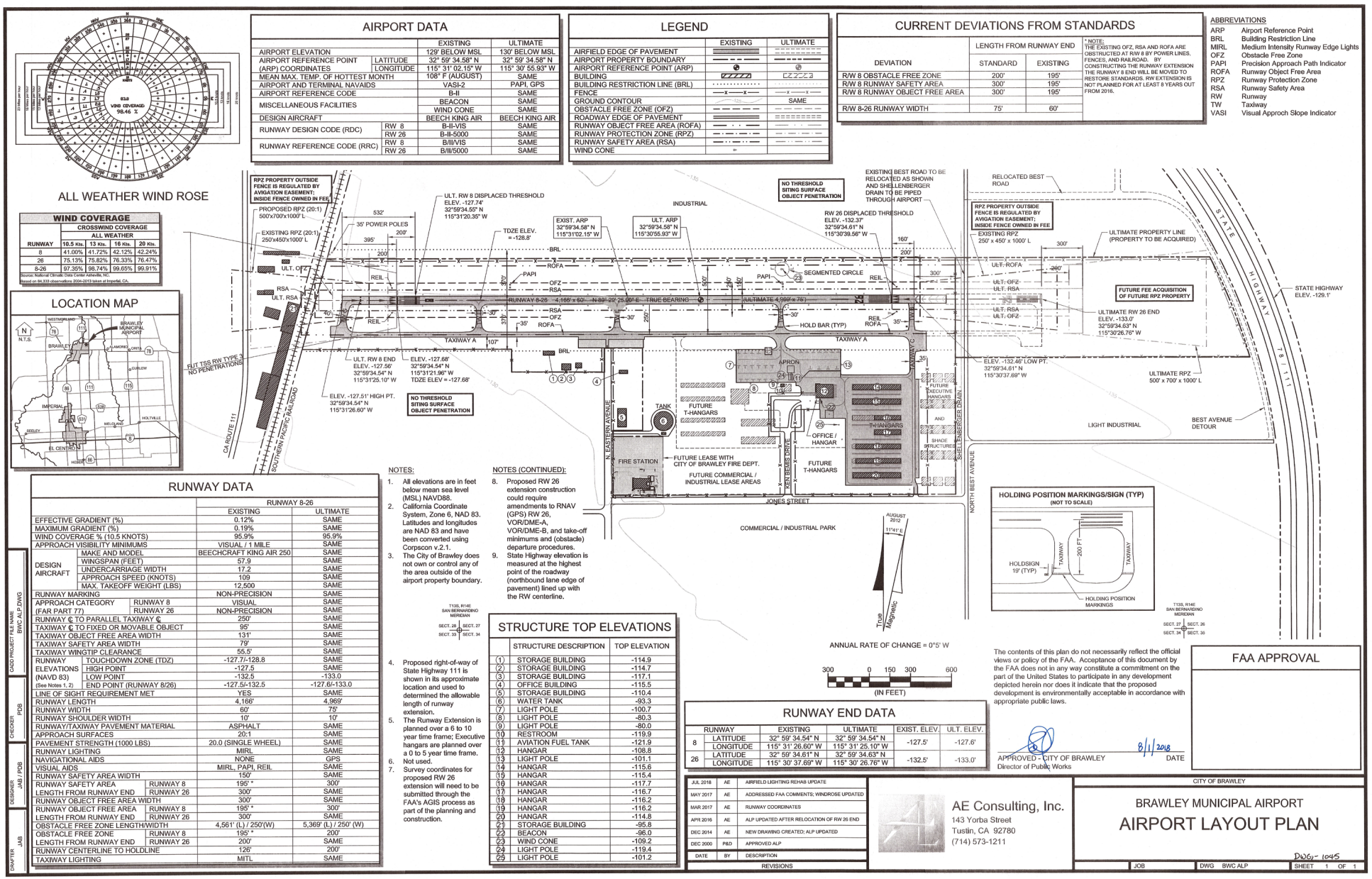
6.2.2 Methodology and Sources

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
Riverside
Banning
Twentynine Palms
TNP
11489 ft
10815 ft
Cathedral City
Indio
PSP
TRM
50 mi
25 mi
Murrieta
F70
Blythe
BLH
L08
Salton Sea
Oceanside
CRQ
Escondido
BWC
L54
RNM
6500 ft
IPL
SAN
SEE
San Diego
CXL
NYL
Yuma
Mexicali
San Luis Río Colorado
Tijuana
SDM
Tijuana Int'l
44A
1856 m
75 mi
Ensenada
Mexico
1678 m
100 mi
San Felipe
3065 m
Mojave National Preserve
San Bernardino National Forest
Joshua Tree National Park
Joshua Tree National Park Linkage
Cibola National Wildlife Refuge
Cleveland National Forest
Cabrillo National Monument
Sweetwater Marsh National Wildlife Refuge
BASIN
N
0 12.5 25 Miles
Source: California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, Esri, GEBCO, DeLorme, NaturalVue, Esri, USGS



RUNWAY DATA

		RUNWAY 8-26 EXISTING	RUNWAY 8-26 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 (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	RUNWAY 8	195' *	300'
LENGTH FROM RUNWAY END	RUNWAY 26	300'	SAME
RUNWAY OBJECT FREE AREA WIDTH		300'	SAME
RUNWAY OBJECT FREE AREA	RUNWAY 8	195' *	300'
LENGTH FROM RUNWAY END	RUNWAY 26	300'	SAME
OBSTACLE FREE ZONE LENGTH/WIDTH		4,561' (L) / 250'(W)	5,369' (L) / 250' (W)
OBSTACLE FREE ZONE	RUNWAY 8	195' *	200'
LENGTH FROM RUNWAY END	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		

DATE	BY	DESCRIPTION
JUL 2018	AE	AIRFIELD LIGHTING REHAB UPDATE
MAY 2017	AE	ADDRESSED FAA COMMENTS; WINDROSE UPDATED
MAR 2017	AE	RUNWAY COORDINATES
APR 2016	AE	ALP UPDATED AFTER RELOCATION OF RW 26 END
DEC 2014	AE	NEW DRAWING CREATED; ALP UPDATED
DEC 2000	P&D	APPROVED ALP

REVISIONS

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 — DATE 8/1/2018

FAA APPROVAL

AE Consulting, Inc.
143 Yorba Street
Tustin, CA 92780
(714) 573-1211

CITY OF BRAWLEY

BRAWLEY MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN

Dwg- 1045

JOB | DWG BWC ALP | SHEET 1 OF 1

CADD PROJECT FILE NAME: BWC ALP.DWG
CHECKER: PDB
DESIGNER: JAB / PDB
DRAFTER: JAB

INFRASTRUCTURE ASSESSMENT
FIGURE 6-8, BWC Airport Layout Plan

LITHIUM VALLEY SPECIFIC PLAN

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.

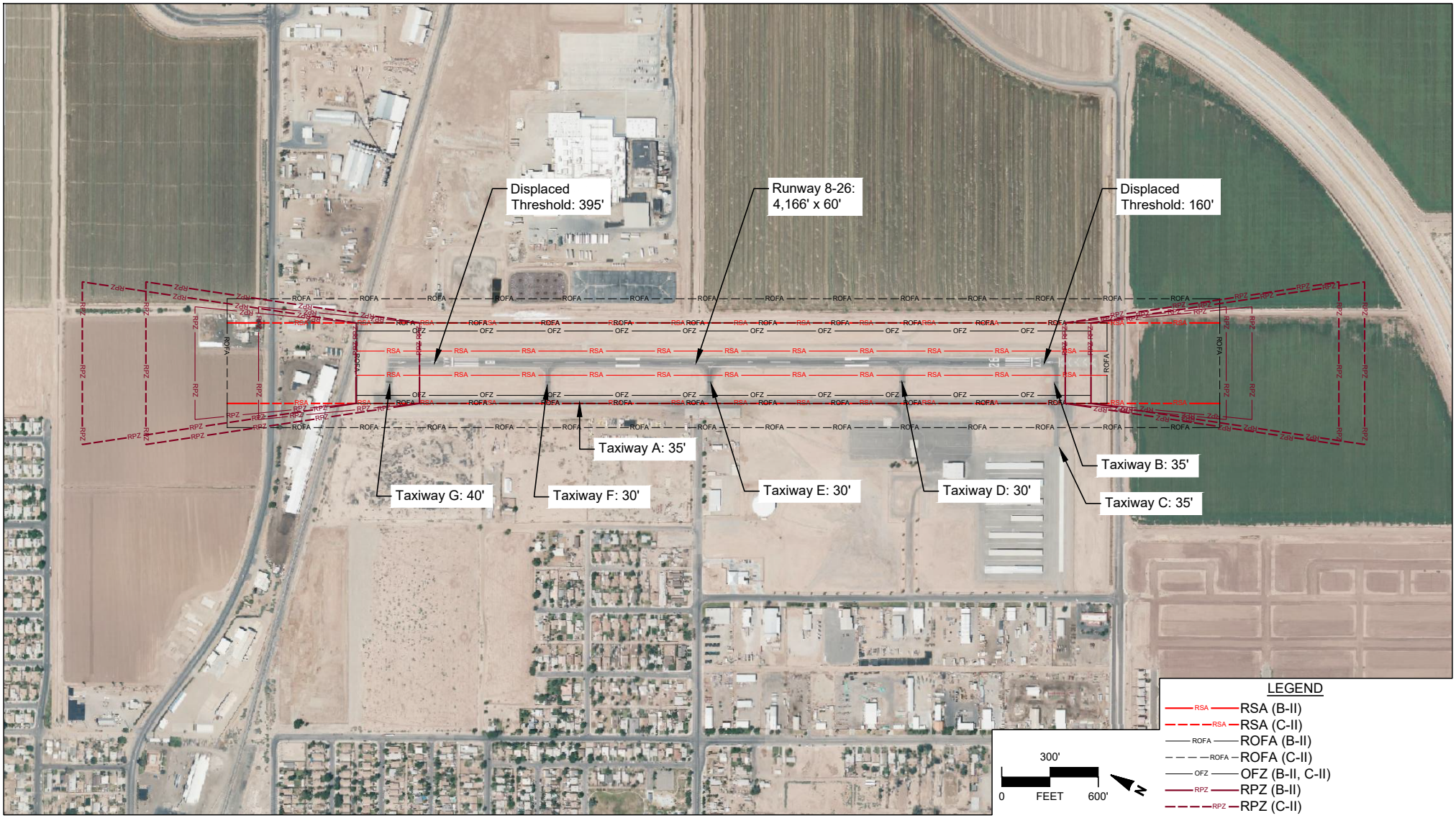


FIGURE 6-9, BWC Existing Critical Airport Runway and Taxiway Design Standards

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

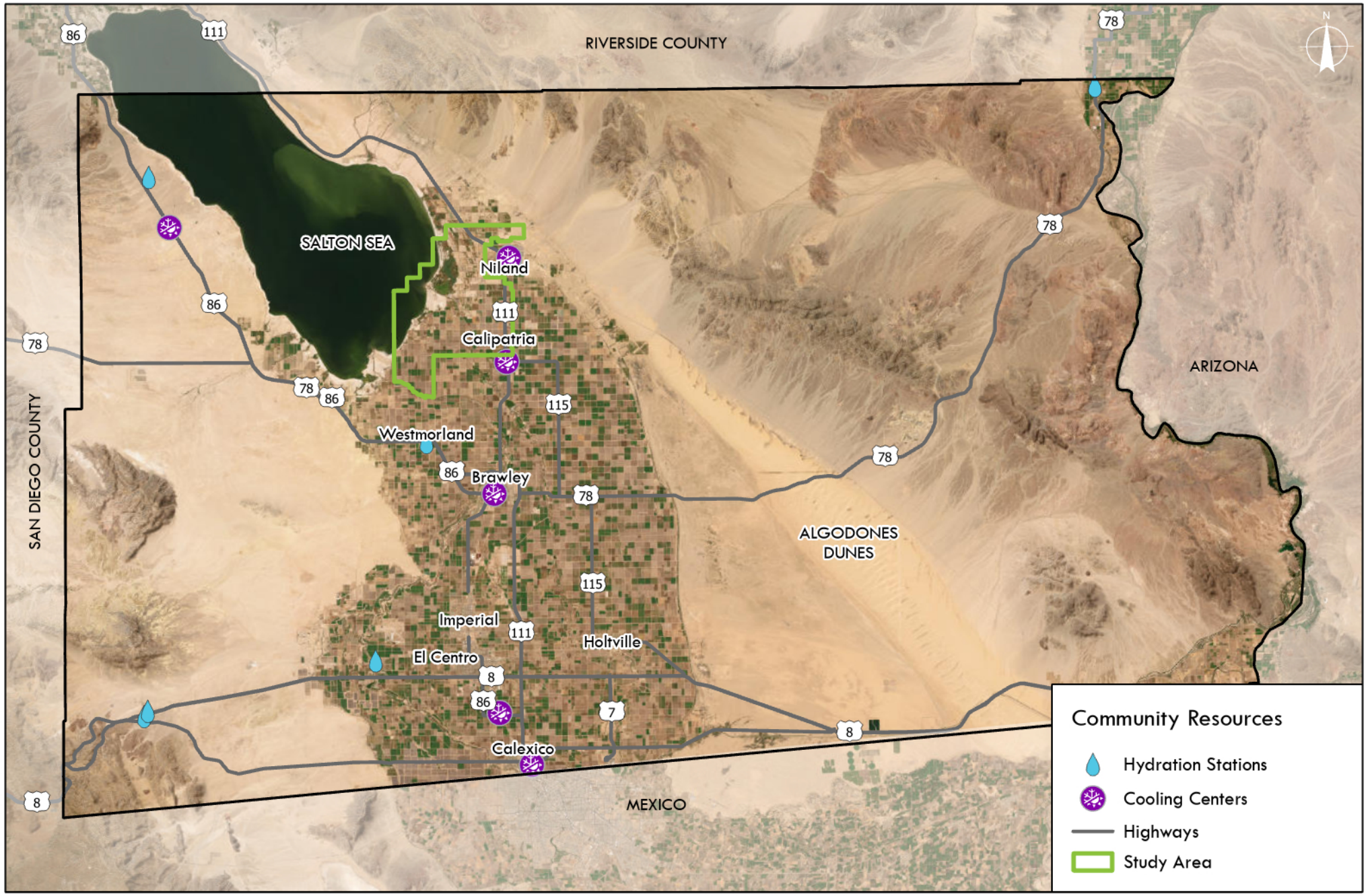
The County provides an array of public services and community resources to support residents in the region, ultimately contributing to their overall "quality of life." County residents often face similar challenges associated with their surrounding environment due to risks associated with climate, pollution 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.



SOURCE: Imperial County

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.

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The full report can be found in Appendix A-A, Airport Analysis of this document.

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