DRAFT
ENVIRONMENTAL ASSESSMENT

PROPOSED LAS VEGAS MONORAIL EXTENSION
McCarran International Airport
Clark County, Nevada

Prepared For

Clark County Department of Aviation

U.S. Department of Transportation
Federal Aviation Administration
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

Prepared by
Ricondo & Associates, Inc.

October 2018

This Environmental Assessment becomes a Federal document when evaluated, signed and dated by the responsible FAA Official.

Responsible FAA Official **Date**

GENERAL INFORMATION ABOUT THIS DOCUMENT

WHAT'S IN THIS DOCUMENT? This document contains a Draft Environmental Assessment (EA) for the Las Vegas Monorail Company (LVMC) proposed Las Vegas Monorail Extension (Proposed Action). The Proposed Action includes an extension of the existing Las Vegas Monorail (LVM), construction of a new station at the Mandalay Bay Resort, and associated improvements. This document discloses the analysis and findings of the potential impacts associated with the Proposed Action and the No Action alternative.

BACKGROUND. The LVMC proposes a 1.14 mile extension of the existing Las Vegas Monorail (LVM) system from the MGM Grand Station, the current southern terminus of the system, to a new station at the Mandalay Bay Resort. The proposed LVM extension would provide an alternative to vehicular and pedestrian modes along the entire Las Vegas Strip, help alleviate congestion on and around the Strip, and improve the overall level of service and support increasing LVM ridership. A portion of the guideway would be on McCarran International Airport property, requiring a change to the Airport Layout Plan. This change is a federal action, requiring the preparation of this EA to meet the requirements of the National Environmental Policy Act.

The Draft EA was released on October 30, 2018. The notice of availability of the Draft EA was advertised in the Las Vegas Review Journal to inform the general public and other interested parties.

WHAT SHOULD YOU DO? Read the Draft EA to understand the actions the LVMC intends to take relative to the proposed LVM extension. Copies of this document are available for review at the FAA Phoenix Airports District Office, Clark County Library, Clark County Department of Aviation Administrative Offices, and LVMC Offices. Addresses of these locations are provided in Chapter 4 of this document. Anyone wishing to comment on the Draft EA may do so in writing through a letter or email. Written or electronic comments should be submitted by 5:00 p.m. on November 30, 2018 to:

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Please allow sufficient time for mailing. The Clark County Department of Aviation must receive your comments by the deadline, not simply postmarked by that date.

WHAT HAPPENS AFTER THIS? The Clark County Department of Aviation will prepare written responses to comments received on the adequacy of the information presented in this Draft EA and prepare a Final EA for transmittal to the FAA for the agency's review and acceptance. Following review of the Final EA, the FAA will either issue a Finding of No Significant Impact (FONSI) or decide to prepare an Environmental Impact Statement (EIS).

Before including your name, address, telephone number, email or other personal identifying information in your comment, be advised that your comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee we will be able to do so.

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LIST OF ACRONYMS

AC	Advisory Circular
ALP	Airport Layout Plan
APE	Area of Potential Effects
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_{2e}	Carbon Dioxide Equivalent
CCDAQ	Clark County Department of Air Quality
CCDOA	Clark County Department of Aviation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LAS	McCarran International Airport
LOS	Level of Service
LVCC	Las Vegas Convention Center
LVCVA	Las Vegas Convention and Visitors Authority
LVM	Las Vegas Monorail
LVMC	Las Vegas Monorail Company
MBCC	Mandalay Bay Convention Center
MSHCP	Multiple Species Habitat Conservation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
N_2O	Nitrous Oxide
NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide

LIST OF ACRONYMS (CONTINUED)

NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRS	Nevada Revised Statutes
O_3	Ozone
Pb	Lead
$PM_{2.5}$	Fine Particulate Matter
PM_{10}	Particulate Matter
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_x	Oxides of Sulfur
SO_2	Sulfur Dioxide
SNWA	Southern Nevada Water Authority
SWPPP	Stormwater Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
TPS	Traction Power Station
USC	United States Code
U.S. DOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

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1. PURPOSE AND NEED

1.1 INTRODUCTION

The Las Vegas Monorail Company (LVMC) proposes to extend the Las Vegas Monorail (LVM) system from the existing MGM Grand Station, the current southern terminus of the system, to the Mandalay Bay Resort where a new station would be constructed. A portion of the proposed extension would occur on McCarran International Airport (LAS or Airport) property. The Airport, located in Clark County, Nevada, is owned by Clark County and operated by the Clark County Department of Aviation (Sponsor or CCDOA). This project would require the CCDOA to update the Airport Layout Plan (ALP) to depict the portion of the extension that would be located on Airport property. The updated ALP must be approved by the Federal Aviation Administration (FAA), constituting a federal action. This Environmental Assessment (EA) analyzes the potential environmental effects of the proposed LVM extension and associated improvements (Proposed Action).

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] §§ 4321-4355), the Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the Airport and Airways Improvement Act of 1982 (Public Law 97-248), as amended. FAA is the lead federal agency to ensure compliance with the provisions of NEPA. Therefore, this EA has been prepared in accordance with FAA Order 1050.1F*, Environmental Impacts: Policies and Procedures*,[1] and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airports*.[2]

The purpose of this EA is to identify and assess the potential environmental impacts of the Proposed Action and reasonable alternatives to the Proposed Action. Depending upon whether certain environmental thresholds of significance are exceeded, this EA will lead either to a Finding of No Significant Impact (FONSI) or will require preparation of an Environmental Impact Statement (EIS).

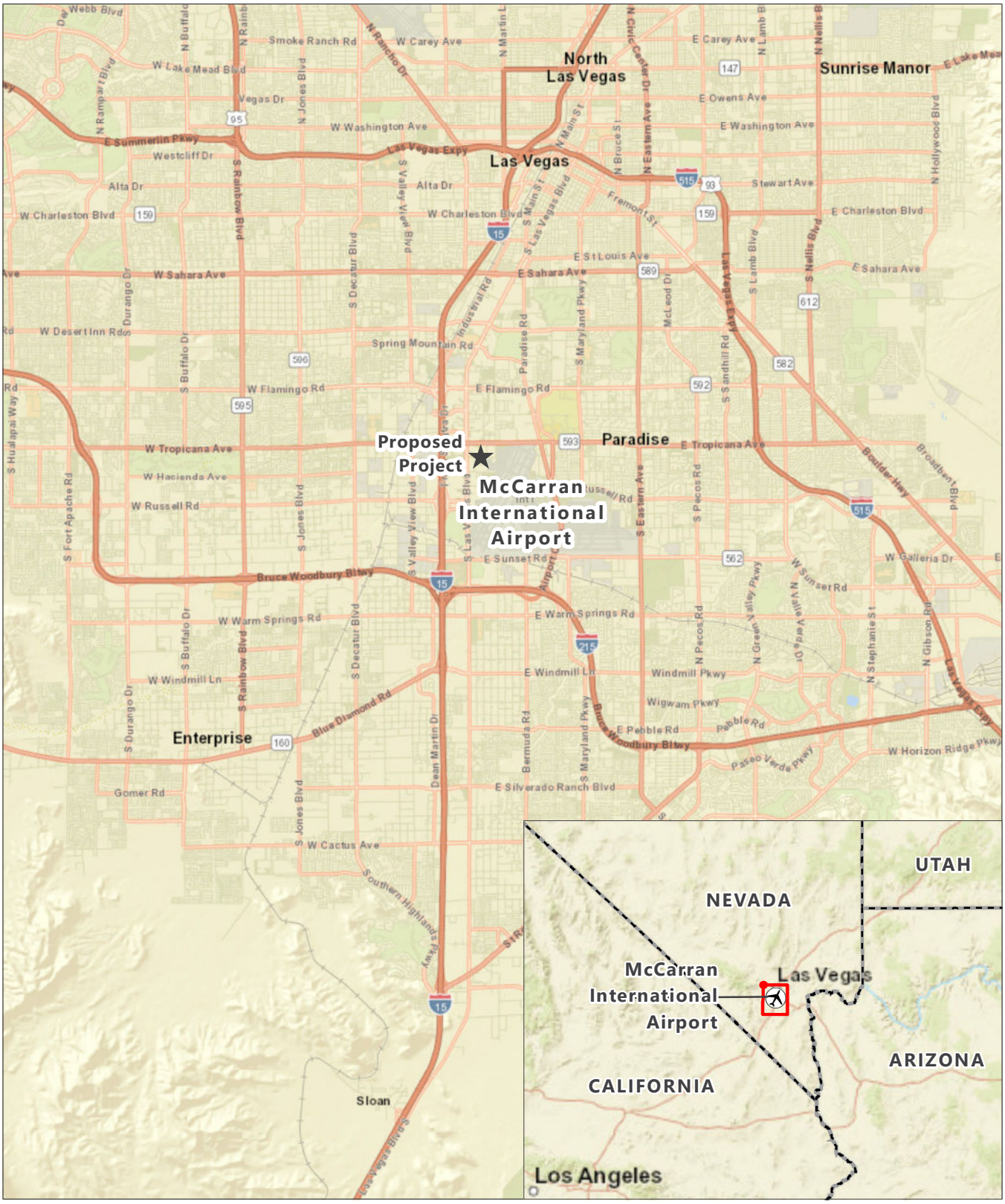
1.2 BACKGROUND

The proposed project is on the western side of the Airport, which is located 5 miles south of downtown Las Vegas, in the town of Paradise and surrounded by the town of Enterprise to the south and west. The regional setting is shown on **Exhibit 1-1**. The proposed project vicinity is shown on **Exhibit 1-2**.

The existing LVM is a dual guideway elevated transit system with nine trains and seven stations along the east side of the Las Vegas Strip Corridor. The system connects eight hotel/resort properties and the Las Vegas Convention Center (LVCC) and has been in operation for 14 years. Surveys conducted by the LVMC indicate that approximately 97 percent of LVM riders are visitors and 90 percent of those riders traveled to Las Vegas by air through McCarran International Airport. LVM trains run every four to nine minutes from 7:00 a.m. to midnight on Mondays, 7:00 a.m. to 2:00 a.m. Tuesday through Thursday, and 7:00 a.m. to 3:00 a.m. Friday through Sunday.

[1] U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1F, *Environmental Impacts: Policies and Procedures*, July 16, 2015.

[2] U.S. Department of Transportation, Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, April 28, 2006.



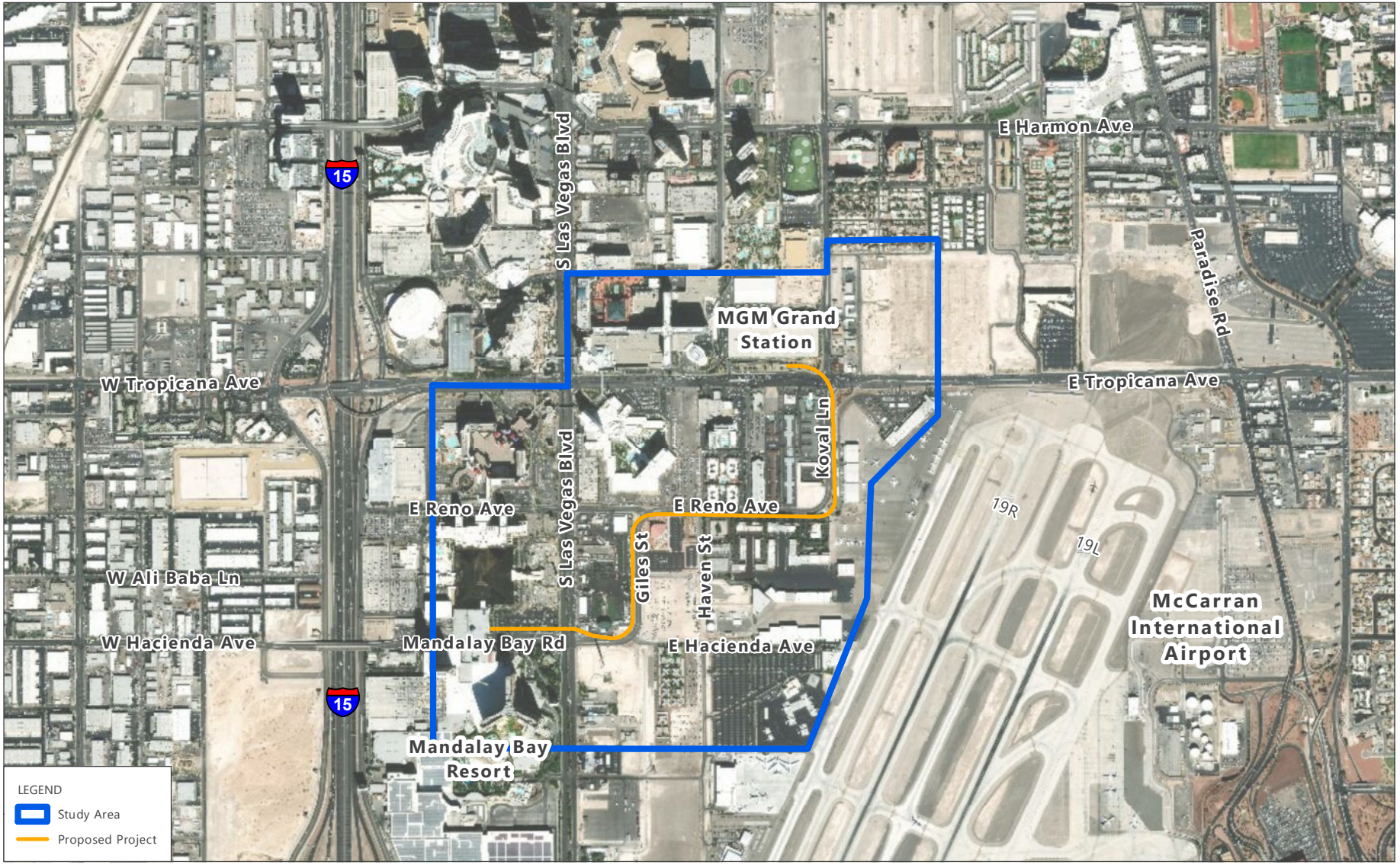
SOURCES: Esri, HERE, DeLorme, MapmyIndia, OpenStreetMap contributors, and the GIS user community, May 2018 (basemap).

EXHIBIT 1

NORTH 0 3 mi.

PROJECT LOCATION

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SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2017 (aerial basemap); Las Vegas Monorail Company, 2018 (monorail components); Ricondo & Associates, Inc., June 2018 (study area).

NORTH 0 1,500 ft.

EXHIBIT 1-2

PROPOSED PROJECT VICINITY

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1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.3.1 SPONSOR'S PURPOSE AND NEED

The purpose of the Proposed Action is to connect the entire Las Vegas Strip via a single, continuous mode of transportation extending from the LVCC to the Mandalay Bay Convention Center (MBCC), connecting hotel/resort properties along the northern, central, and southern portions of the Strip. The extension would support increasing LVM ridership and would provide an alternative to vehicular and pedestrian traffic along the entire Las Vegas Strip, alleviating traffic and pedestrian congestion and improving the overall levels of service.

The LVM is an important mode of transport for Las Vegas visitors, many of whom travel to Las Vegas by air, and supports the strong and growing tourist industry. It is a self-sustaining system, funded solely by revenues generated by fares. The Proposed Action would generate sufficient fare revenue to meet the economic feasibility and reasonableness needs of the extended system. In 2017, approximately 5 million LVM riders generated approximately $21.1 million in fare revenue.[3] Ridership is estimated to increase to 7 million by 2022 after the Proposed Action is opened and reaches full operation.[4] The system provides visitors, including convention attendees, an alternative to walking, driving, or using taxis or rideshare companies, thereby reducing vehicular and pedestrian movements in the northern and central portions of the Las Vegas Strip. However, because its southern terminus is the MGM Grand Hotel station, the LVM does not provide access to the hotel/resort properties on the southern end of the Las Vegas Strip Corridor or the MBCC. Consequently, the LVM does not link the entire Las Vegas Strip and does not provide an alternative to vehicular or pedestrian modes to properties within the Southern portion of the Strip.

Traffic congestion is a concern in and around the Las Vegas Strip. The Regional Transportation Commission of Southern Nevada (RTC), in its role as the Metropolitan Planning Organization for Southern Nevada, recently published the Congestion Management Process 2018.[5] The report identifies the intersection of Las Vegas Boulevard and East Tropicana Avenue; and the intersection of East Tropicana Avenue and South Paradise Road, a primary Airport access point, as bottlenecks on the arterial roadway system (refer to Exhibit 1-2). The report also identifies the stretch of East Tropicana Avenue between Las Vegas Boulevard and Eastern Avenue as a congested arterial segment. A pedestrian study of Las Vegas Boulevard from Sahara Avenue to Russell Road conducted in 2012 identified several segments of pedestrian walkways that experienced an unacceptable level of service[6], highlighting the high volumes of pedestrian traffic on the Las Vegas Strip.[7] One segment of the sidewalk near Mandalay Bay, within the study area, was identified as a pinch point causing unacceptable service levels.

The FAA requires CCDOA to maintain a current, approved ALP that graphically depicts current and future facilities on Airport property. The ALP must be updated by CCDOA and approved by the FAA for the LVM extension to be constructed with portions of the guideway on Airport property.

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[3] Las Vegas Monorail, https://www.lvmonorail.com/corporate/ridership-information/ (accessed July 20, 2018).

[4] Ingrid Reisman, Senior Vice President, Las Vegas Monorail Company, Personal Communication, April 29, 2018.

[5] Regional Transportation Commission of Southern Nevada, https://www.rtcsnv.com/wp-content/uploads/2018/05/CMP_main_text_v1-1.pdf (accessed August 24, 2018).

[6] Level of service designations are A through F, with A representing the highest LOS and F the lowest. LOS C is considered the lowest acceptable. Conditions below that include walking speeds of less than 4 feet per second, with the ability to pass slower pedestrians restricted.

[7] Kimley-Horn and Associates, Inc., *Pedestrian Study Las Vegas Boulevard to Sahara Avenue*, prepared for Clark County, November 2012.

1.3.2 FAA'S PURPOSE AND NEED

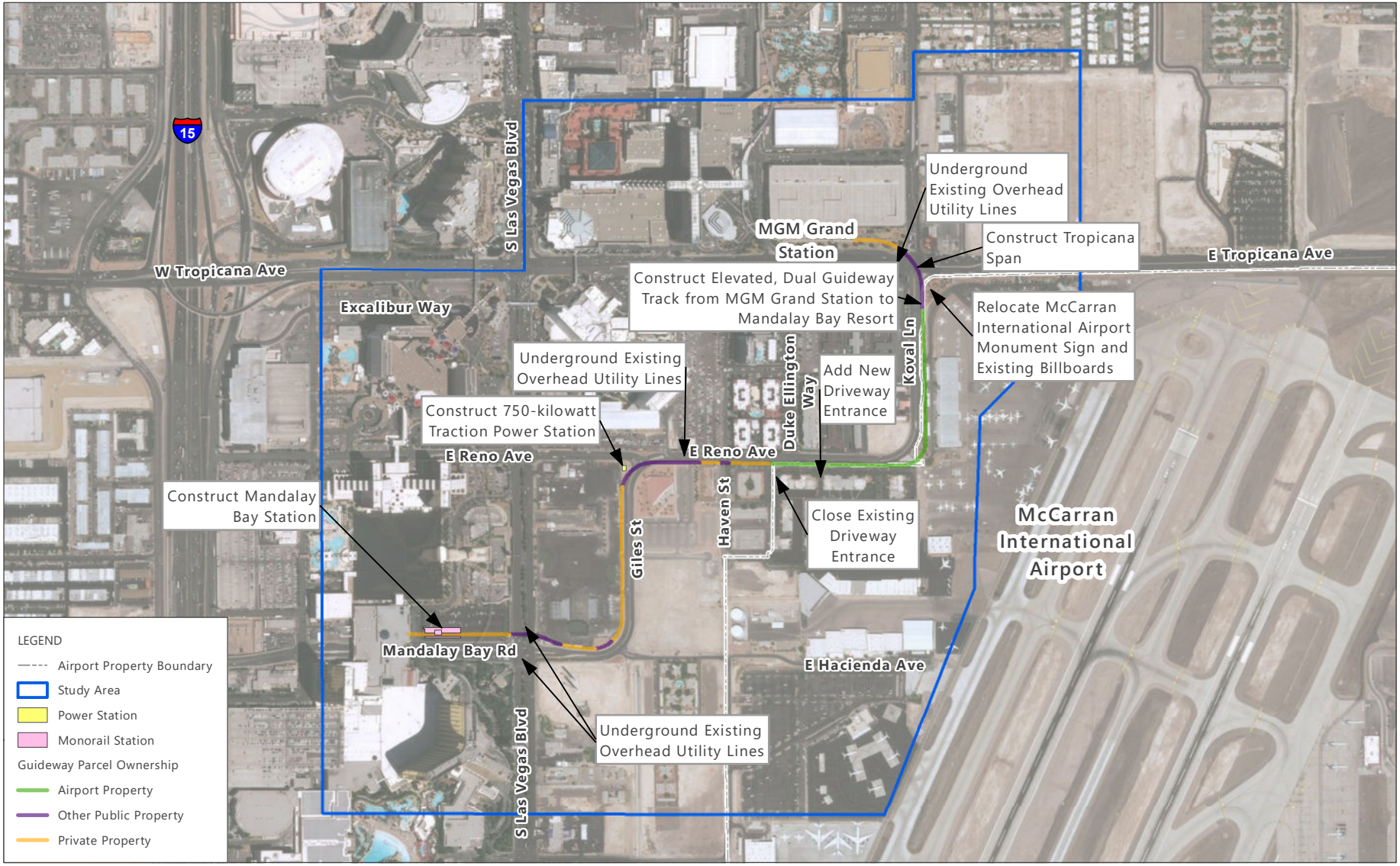
The FAA's statutory mission is to ensure safe and efficient use of navigable airspace in the U.S. pursuant to 49 U.S.C. § 47101(a)(1). The FAA must ensure that the Proposed Action would not result in any airspace obstructions or otherwise diminish the safety of aircraft and airport operations at LAS. Pursuant to 49 U.S.C. § 47107(a)(16), the FAA has a responsibility to review and approve any revision or modification to the LAS ALP. By approving the revised ALP, the FAA ensures that the proposed LVM guideway and associated columns on Airport property would not result in any obstructions to airspace or airport safety areas at LAS.

1.4 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action would include the construction of approximately 1.14 miles of elevated, dual guideway track, which would be supported by a series of steel-reinforced concrete columns on drilled shaft foundations. As shown on **Exhibit 1-3**, the proposed guideway would extend eastward from the MGM Grand Station, crossing Tropicana Avenue diagonally to the east side of Koval Lane, on the western edge of Airport property. The alignment would continue along the western edge of Airport property to Reno Avenue, where it would turn west, continuing along the edge of Airport property on the south side of Reno Avenue. The alignment would exit Airport property just before Haven Street and continue along the south side of Reno Avenue until Giles Street, where the alignment would cross to the west side of Giles Street and then turn south, continuing along the west side of Giles Street. At the north side of Mandalay Bay Road, the alignment would turn west and cross Las Vegas Boulevard, terminating at a new open-air platform station at the Mandalay Bay Resort. The Proposed Action also includes one traction power station that would be built to support the proposed extension.

The key elements of the Proposed Action are:

- Construct 1.14 miles of elevated, dual guideway track from the existing MGM Grand Hotel station to a new station at the Mandalay Bay Resort.
  - The proposed guideway would be supported by a series of approximately 60 steel-reinforced concrete columns on drilled shaft (caisson) foundations. The columns would be spaced approximately 100 feet apart, with foundations set 35 to 55 feet below ground.
    - Column dimensions would range from 4 feet by 4 feet to 6 feet by 6 feet and would be approximately 25 to 35 feet in height.
    - Approximately 25 columns would be located on Airport property (14 along the east side of Koval Lane and 11 along the south side of Reno Avenue).
  - The proposed guideway would include a diagonal span from the northwest to the southeast corners of the intersection of Tropicana Avenue and Koval Lane (the Tropicana Span).
    - The guideway for the Tropicana Span would be constructed on four steel beams (4 feet wide and 9 feet deep).
    - Support columns for the Tropicana Span would be 8 feet by 8 feet.
  - The proposed guideway would include a cable tray for electrical cables and an emergency walkway in the middle.
- Excavate approximately 7,000 cubic yards of material for construction of the columns; the material would be transported and deposited at the Las Vegas Paving Blue Diamond Pit.



SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Las Vegas Monorail Company, 2018 (monorail components); City of Las Vegas, 2015 (parcels); Clark County Department of Aviation, 2018 (Airport property line).

EXHIBIT 1-3

PROPOSED ACTION

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- Construct a four-car, side platform station on the north side of Mandalay Bay Road, between the Mandalay Bay Resort and the Luxor Hotel.
  - The platform station would be approximately 140 feet long with a height of 54 feet.
  - The north side of the station would have one active passenger loading and unloading platform and the south side would consist of a maintenance platform. The station would include an elevator, escalator, and stair access, and would be connected to a pedestrian bridge to be built by MGM Resorts.
- Construct a 750-kilowatt traction power station (TPS) at the southwest corner of Giles Street and Reno Avenue, consisting of a transformer, a switch gear, and electrical service protection devices.

The following associated elements of the Proposed Action are necessary to support the LVM extension:

- Close the existing west driveway entrance to the Ribeiro Quail Air Center on the south side of Reno Avenue and construct a replacement driveway entrance farther east.
- Relocate existing overhead utility lines with underground lines at the Las Vegas Boulevard/Mandalay Bay Road intersection, Tropicana Avenue/Koval Lane intersection, and along the south side of Reno Avenue.
  - Existing light poles and underground utility conduits and sanitary sewer connections would receive minor adjustments to facilitate installation of column footings.
- Relocate the McCarran International Airport monument sign at the southeast corner of Tropicana Avenue and Koval Lane and two east facing billboards on the south side of Tropicana Avenue, east of Koval Lane.

The extended LVM guideway would be located on a combination of Airport land, other public land, and private property, as shown on Exhibit 1-3. The portion of the guideway and associated concrete columns on Airport property would be on land currently leased from CCDOA by Airport tenants. LVMC and the CCDOA would enter into a shared use license agreement for use of the area, which comprises 1.04 acres. The CCDOA would collect revenue from the land at least equal to the current lease rates from existing tenants.

1.5 REQUESTED FEDERAL ACTIONS

The requested federal actions include the following:

- Unconditional approval of the portion of the ALP depicting the proposed project pursuant to 49 U.S.C. §§ 40103(b) and 47107(a)(16).
- An FAA determination of effects of the proposed project upon the safe and efficient utilization of navigable airspace pursuant to Title 14 CFR Parts 77 and 157.

1.6 TIMEFRAME OF THE PROPOSED ACTION

Construction of the Proposed Action is scheduled to begin in late 2018 with the proposed LVM extension becoming operational in 2020 and operating at full capacity by 2022. Construction is planned to begin at both ends of the alignment simultaneously and would not require any full road closures. The construction timeframe is contingent on completing the federal environmental review process, obtaining all environmental permits, and finishing the design. Testing of the system would commence after substantial completion of the structural, electrical, and mechanical elements of the Proposed Action, and would take place over approximately eight months, primarily during nighttime hours.

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2. ALTERNATIVES

2.1 INTRODUCTION

This chapter describes and evaluates reasonable alternatives to the Proposed Action. CEQ regulations governing NEPA implementation (40 CFR 1502.14) require federal agencies to:

- rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination;
- devote substantial treatment to each alternative considered in detail, including the Proposed Action, so that reviewers may evaluate the alternatives' comparative merits;
- include reasonable alternatives not within the jurisdiction of the lead agency; and
- include an assessment of the no action alternative.

In accordance with FAA Orders 5050.4B and 1050.1F, alternatives can be eliminated from further consideration if they do not fulfill the purpose and need for the Proposed Action or cannot be reasonably implemented. Specially, FAA Order 1050.1F provides: "*There is no requirement for a specific number of alternatives or a specific range of alternatives to be included in an EA. An EA may limit the range of alternatives to the proposed action and no action when there are no unresolved conflicts concerning alternative uses of available resources.*"[1]

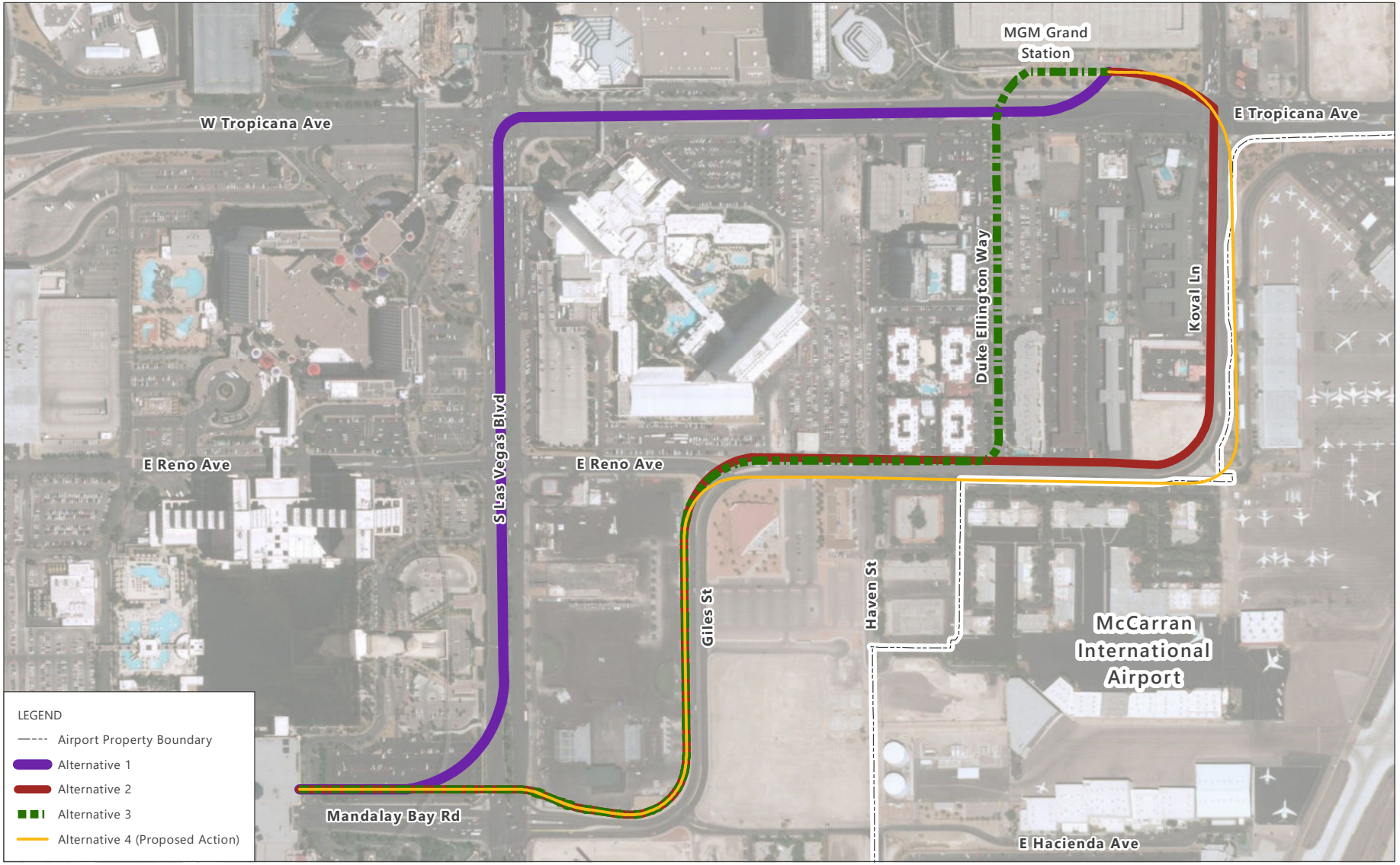
The following sections describe the process for identifying alternatives and determining which alternatives would reasonably satisfy the purpose of, and need for, the Proposed Action. Any alternatives that satisfied this requirement were then evaluated for construction and operational feasibility. Alternatives that satisfied both criteria were then carried forward for analysis of environmental consequences.

2.2 ALTERNATIVES SCREENING

The LVMC considered four alternative alignments for the proposed LVM extension. All alignments considered were within the Study Area, as shown on **Exhibit 2-1**. A two-step process was used to evaluate these alternatives. The following criteria were used for alternative screening and evaluation in this EA.

1. **Meet the Purpose and Need** - The alternative must meet the Purpose and Need described in Section 1.3 of this EA to be considered further. If the alternative did not meet this criterion, it was eliminated from further consideration.

[1] U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1F, *Environmental Impacts: Policies and Procedures*, effective July 16, 2015.



SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Las Vegas Monorail Company, 2018 (monorail components); City of Las Vegas, 2015 (parcels); Clark County Department of Aviation, 2018 (Airport property line); Ricondo & Associates, Inc., September 2018 (alternatives).

NORTH

0 550 ft.

EXHIBIT 2-1

ALTERNATIVES

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2. **Construction and Operational Feasibility** – The alternative must be able to be built without disrupting the operation of the existing LVM system, and without requiring placement of guideway support columns within existing streets.[2] In addition, the guideway support columns must be placed on land that would be available through agreements between the LVMC and the landowners.

Under this two-step process, each alternative was evaluated first under the Step 1 criterion. Those alternatives meeting Step 1 were then evaluated under Step 2. Alternatives eliminated under Steps 1 or 2 above were not subject to detailed evaluation as part of this EA, with one exception: the No Action alternative was evaluated regardless of the outcome of the screening process pursuant to NEPA, as implemented by CEQ regulations (40 CFR 1502.14).[3]

All four alternatives (including the Proposed Action) would meet the Purpose and Need, and therefore were carried forward to the Step 2 evaluation. **Table 2-1** summarizes the Step 2 evaluation. Of these four, only Alternative 4 (the Proposed Action) was deemed to have construction and operational feasibility, and therefore carried forward for evaluation of environmental consequences.

2.3 ALTERNATIVES CARRIED FORWARD FOR DETAILED EVALUATION

2.3.1 NO ACTION ALTERNATIVE

As noted above, CEQ regulations and FAA Orders 1050.1F and 5050.4B require analysis of the No Action alternative in assessing environmental consequences. The No Action alternative involves continuing to operate the LVM under current conditions without extending the line. While this alternative does not meet the Step 1 criterion (Purpose and Need), the No Action alternative is a required alternative under NEPA and serves as the baseline for the assessment of future conditions/impacts.

2.3.2 PROPOSED ACTION ALTERNATIVE

Based on this two-step analysis, Alternative 4, the Proposed Action, is the Preferred Alternative. This alternative would avoid placement of support columns within streets, which would potentially affect the water main and reduce the LOS on Koval Lane, Duke Ellington Street, or Reno Avenue. Further, the Proposed Action would not require temporary closure of the MGM Grand Hotel Station or reconstruction of the MGM Grand Hotel subterranean parking structure and entry roadway (which would adversely affect monorail service). Finally, the Proposed Action can be built on land with agreements between the LVMC and the landowners. Given these considerations, the Proposed Action would provide the most viable route for the extended LVM system, and represents the alignment preferred by the LVMC and approved by Clark County. A negotiated license agreement would be implemented with the CCDOA for the portions of the Proposed Action on Airport property.

[2] A 50-year-old, 90-inch water main runs under Tropicana Avenue, Koval Lane, and Reno Avenue. Any damage that could occur by the placement of guideway column supports near the water main would require shutting off the line, affecting water service to residences, resorts, and businesses within an area from Lake Mead to a SNWA water facility west of the Las Vegas Strip. Guideway column supports placed in roadways could also adversely affect the level-of-service on those roads. Therefore, local elected officials, business owners, and the Southern Nevada Water Authority (SNWA) required alternatives that would not require placement of guideway column supports on these streets.

[3] 40 CFR 1502.14

TABLE 2-1 STEP 2 ALTERNATIVES EVALUATION

ALTERNATIVE	FEASIBLE	COMMENTS
Alternative 1	No	▪ Requires closure of the existing MGM Grand Hotel monorail station for a minimum of 6 months, disrupting 30 percent of monorail ridership for the duration of the closure ▪ Requires realignment of existing LVM guideway and support columns, resulting in relocation of columns and footings and potential adverse effects to the structural integrity of the MGM Grand Hotel subterranean parking garage and main entry roadway structures ▪ Cost of construction and shut-down time is not financially feasible ▪ Requires placement of guideway support columns on Tropicana Avenue that could adversely impact the existing underground water main and reduce the roadway level of service (LOS)[1] ▪ Requires substantial relocation of several underground utilities that could also adversely impact the existing underground water main ▪ LVMC would be unable to reach agreement with private property owners on Las Vegas Boulevard for placement of guideway support columns on their land
Alternative 2	No	▪ Requires placement of guideway support columns on Koval Lane and Reno Avenue that could adversely impact the existing underground water main, or on private property on the west side of Koval Lane and the north side of Reno Avenue, and could reduce the LOS on Koval Lane and Reno Avenue ▪ LVMC would be unable to reach agreement with property owners on the west side of Koval Lane and the north side of Reno Avenue for placement of guideway support columns on their land
Alternative 3	No	▪ Requires closure of the existing MGM Grand Hotel monorail station for a minimum of 6 months, disrupting 30 percent of monorail ridership for the duration of the closure ▪ Requires closure and reconstruction of all or part of the MGM Grand Hotel subterranean parking garage ▪ Cost of construction and shut-down time is not financially feasible ▪ Requires placement of guideway support columns on Duke Ellington Street or on private property on either side of the street that could reduce the LOS on Duke Ellington Street; any alignment on Duke Ellington Street requires removal or reconstruction of privately owned buildings on either side of the street due to its narrow width ▪ Requires significant modification to the existing MGM Grand Hotel station and/or construction of an additional transfer station on private property, which would not be supported by a private property owner ▪ LVMC would be unable to reach agreement with property owners on Duke Ellington Street for placement of guideway support columns on their land
Alternative 4 (Proposed Action)	Yes	▪ Does not require placement of guideway supports in streets that could adversely impact the existing underground water main under Tropicana Avenue, Koval Lane, and Reno Avenue and reduce the LOS on those streets ▪ Does not require closure of the MGM Grand Hotel station or any modifications to the MGM Grand Hotel subterranean parking garage ▪ Agreements can be signed with all public and private landowners, including the CCDOA, for placement of guideway support columns along the entire alignment

NOTE:

1 Level of service (LOS) is a term used to qualitatively describe the operating conditions of a roadway in terms of measures such as speed, travel time, maneuverability, delay, and safety.

SOURCES: Las Vegas Monorail Company, Las Vegas Monorail Expansion Project Description Report, April 29, 2018; Transportation Research Board, *Highway Capacity Manual*, 2000; Ricondo & Associates, Inc., September 2018.

The Proposed Action would include the following key components, as further described in Section 1.4:

- Construct 1.14 miles of elevated, dual guideway track from the existing MGM Grand Hotel station to a new station at the Mandalay Bay Resort.
- Excavate approximately 7,000 cubic yards of material for construction of the columns; the material would be transported and deposited at the Las Vegas Paving Blue Diamond Pit.
- Construct a four-car, side platform station on the north side of Mandalay Bay Road situated between the Mandalay Bay Resort and the Luxor Hotel.
- Construct a 750-kilowatt traction power station (TPS) at the southwest corner of Giles Street and Reno Avenue, consisting of a transformer, switch gear, and electrical service protection devices.

2.4 LIST OF PERMITS REQUIRED FOR PROPOSED ACTION

As required under Chapter 6-1, paragraph a(4) of FAA Order 1050.1F, **Table 2-2** provides a preliminary list of permits required for implementation of the Proposed Action.

TABLE 2-2 PERMITS REQUIRED FOR PROPOSED ACTION

ISSUING AGENCY	PERMIT
Clark County Building Department	Amusement and Transportation Systems Permit
Clark County Comprehensive Planning	Special Use Permit
Clark County Department of Air Quality	Dust Control Permit
Clark County Department of Development Services	Building and Utility Permits
Clark County Department of Public Works	Encroachment Permit
Nevada Department of Transportation	Encroachment Permit
Nevada Division of Environmental Protection	National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit
U.S. Fish and Wildlife Service	Multiple Species Habitat Conservation Plan (MSHCP) Incidental Take Permit

SOURCE: Ricondo & Associates, Inc., September 2018.

2.5 LIST OF FEDERAL LAWS AND REGULATIONS CONSIDERED

Pursuant to FAA Order 1050.1F, the relevant federal laws and statutes, executive orders, and other federal regulations considered during preparation of this EA are listed in **Table 2-3**, **Table 2-4**, and **Table 2-5**, respectively.

TABLE 2-3 FEDERAL LAWS AND STATUTES CONSIDERED

FEDERAL LAWS AND STATUTES	CITATION
National Environmental Policy Act of 1969	42 U.S.C. 4321 et seq.
Clean Air Act of 1970, as amended	42 U.S.C. 7401 et seq.
Endangered Species Act of 1973	16 U.S.C. 1531 et seq.
Fish and Wildlife Coordination Act of 1958	16 U.S.C. 661 et seq.
Land and Water Conservation Fund Act of 1965	16 U.S.C. 4601 et seq.
Department of Transportation Act, Section 4(f)	49 U.S.C. 303(c)
Resource Conservation and Recovery Act of 1976, as amended by the Solid Waste Disposal Act of 1980	42 U.S.C. 6901 et seq.
Archaeological and Historic Preservation Act	54 U.S.C. 312501 et seq.
National Historic Preservation Act of 1966, as amended	54 U.S.C. 300101 et seq.
Clean Water Act	33 U.S.C. 1251 et seq.
Safe Drinking Water Act of 1974	42 U.S.C. 300 et seq.
Aviation Safety and Noise Abatement Act of 1979	49 U.S.C. 47501 et seq. (14 CFR Part 150)
Protection of Historic and Cultural Properties	36 CFR 800

SOURCE: Ricondo & Associates, Inc., September 2018.

TABLE 2-4 EXECUTIVE ORDERS CONSIDERED

EXECUTIVE ORDER	CITATION
Executive Order 11593, Protection and Enhancement of the Cultural Environment	36 Federal Register (FR) 8921
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	59 FR 7629
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	62 FR 19883
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments	65 FR 67249
Executive Order 12088, Federal Compliance with Pollution Standards	43 FR 47707

SOURCE: Ricondo & Associates, Inc., September 2018.

TABLE 2-5 FEDERAL ORDERS, ADVISORY CIRCULARS, AND REGULATIONS CONSIDERED

ORDERS, ADVISORY CIRCULARS, AND FEDERAL REGULATIONS
U.S. Department of Transportation and FAA Orders
U.S. Department of Transportation (DOT), FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*
U.S. DOT, FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*
U.S. DOT, Order 5680.1, *Final Order to Address Environmental Justice in Low-Income and Minority Populations*
U.S. DOT, Order 5650.1, *Protection and Enhancement of the Cultural Environment*
FAA Advisory Circulars
U.S. DOT, FAA AC 150/5370-10G, *Standards for Specifying Construction of Airports*
U.S. DOT, FAA AC 150/5370-2F, *Operational Safety on Airports During Construction*
Code of Federal Regulations
Title 14 CFR Part 77, Objects Affecting Navigable Airspace
Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports
Title 40 CFR Part 50, National Primary and Secondary Ambient Air Quality Standards
Title 40 CFR Part 81, Designations of Air Quality Control Regions
Title 40 CFR Part 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans, Subpart B
Title 40 CFR Part 122, EPA Administered Permit Programs: The National Pollution Discharge Elimination System
Title 40 CFR Parts 1500, Council on Environmental Quality
Title 43 CFR Part 2460, Airport and Airway Improvement Act of 1982, as amended

SOURCE: Ricondo & Associates, Inc., September 2018.

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3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the existing conditions and resources that could be directly, indirectly, or cumulatively affected by implementation of the Proposed Action. Direct effects are those that occur at the same time and place as the action, such as impacts caused by construction or ground disturbances. Indirect effects are those that are caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Cumulative impacts result from the incremental effects of an action, when viewed in combination with past, present, and reasonably foreseeable future federal and non-federal projects (40 CFR § 1508). This chapter also describes potential impacts resulting from the Proposed Action and No Action alternative, as required by FAA Orders 1050.1F and 5050.4B.

3.2 IDENTIFICATION AND DESCRIPTION OF STUDY AREA

The Study Area defined for this EA, as shown on Exhibit 1-2 in Chapter 1, covers 490.5 acres. It is defined as the area that has the potential to be directly or indirectly affected during construction, construction staging, or operation of the Proposed Action. For some resource categories, a larger area was required to capture the full effects of the Proposed Action. For example, Clark County was used for air quality analysis, and climate impacts were considered on a global scale. The Study Area is mainly impervious surface and structures, has no natural water features, has minimal vegetation, and is not suitable for wildlife habitat. The Study Area encompasses the northwestern corner of Airport property as well as residential and commercial developments.

3.3 ENVIRONMENTAL RESOURCES NOT AFFECTED

Based on the results of a site visit, database search, and scoping, the Proposed Action would have no direct or indirect impact on the resources listed in **Table 3-1**. These resources have been eliminated from further consideration because they either do not exist within the Study Area or would otherwise not be affected by the Proposed Action.

TABLE 3-1 (1 OF 2) RESOURCES NOT AFFECTED BY THE PROPOSED ACTION

RESOURCE CATEGORY	RATIONALE FOR DETERMINATION	DETERMINATION
Biological Resources	The potential presence of threatened or endangered species within the Study Area was assessed using the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online tool. The IPaC tool identified the potential for the presence of the Southwestern Willow Flycatcher, Yuma Clapper Rail, Desert Tortoise, and Pahrump Poolfish in the Study Area. There is no critical habitat or known presence of threatened or endangered species within the Study Area.[1] Due to the urban setting, heavy vehicular and pedestrian traffic, and lack of surface water, presence of these species in the Study Area is not anticipated. The Study Area is within the plan area of the Clark County Multispecies Habitat Conservation Plan (MSHCP), which provides coverage under Section 10(a) of the Endangered Species Act of 1973. The Proposed Action would be constructed in compliance with the MSHCP. If needed, an Incidental Take Permit would be acquired from the USFWS.	No Impact
Coastal Resources	There are no designated coastal resources in Nevada.	Not Present/No Impact
Department of Transportation Act Section 4(f)	There are no publicly-owned parks, recreational areas, or wildlife/waterfowl refuges within the Study Area that would be considered properties protected under Section 4(f) of the U.S. Department of Transportation (DOT) Act. Resources protected under Section 4(f) also include publicly or privately-owned historic sites of national, state, or local significance. The nearest known resource listed in the National Register of Historic Places (NRHP) is the Little Church of the West located outside the Study Area, approximately 0.5 miles south of the proposed alignment. Twenty-four historic-age resources (50 years and older) identified within the Study Area were left unevaluated and are treated by the FAA as potentially eligible for listing in the NRHP. The Proposed Action would not directly affect those resources. Further, the Proposed Action would not introduce incompatible visual elements or result in a significant increase in noise levels. Therefore, the Proposed Action would not result in constructive use of these historic or potential Section 4(f) resources.	No Direct or Constructive Use
Farmlands	There are no farmlands in the Study Area. The Proposed Action would occur entirely within the built environment in an existing urban area.	Not Present/No Impact
Land Use	The Proposed Action would not alter the current land use designations. The proposed LVM extension is included in the Las Vegas Convention and Visitors Authority (LVCVA) Business District Master Plan and is one of the near-term recommendations in the Regional Transportation Commission's Transportation Investment Business Plan. The proposed LVM extension is also recommended in the Las Vegas Global Economic Alliance's Comprehensive Economic Development Strategy.[2]	No Impact
Noise and Noise-Compatible Land Use	The Proposed Action would not modify aircraft overflight paths, increase airport capacity, or change the existing aircraft fleet mix; thus, there would be no change in aircraft noise levels. The LVM trains have rubber tires and are 100 percent electric which minimize noise.[3] Existing trains and new trains with the same specifications would be used on the proposed LVM extension. Multiple public and one-on-one meetings with affected stakeholders have occurred throughout the planning process. Concerns regarding noise levels were raised during the initial planning phase. These concerns have been adequately addressed with design modifications. As part of obtaining a construction permit from Clark County, the LVMC would be required to submit a construction schedule, including the potential for nighttime construction. Clark County would identify restrictions on nighttime construction that would potentially result in noise impacts on hotels and residential areas within the Study Area.	No Impact

TABLE 3-1 (2 OF 2) RESOURCES NOT AFFECTED BY THE PROPOSED ACTION

RESOURCE CATEGORY	RATIONALE FOR DETERMINATION	DETERMINATION
Water Resources		
Floodplains	The Study Area is within Federal Emergency Management Agency Flood Insurance Rate Map, panel number 30223C2556F. As a designated Area of Minimal Flood Hazard, the Study Area is outside the 100-year floodplain. The Proposed Action would not encroach upon any designated 100-year floodplains.	No Impact
Groundwater	There are no designated sole source aquifers in Nevada.[4] Groundwater levels within the proposed alignment range from 13 to 25 feet below land surface.[5] Excavation depths for the proposed monorail column drilled shaft (caisson) foundations would be 35 feet below land surface. The proposed station caisson foundations would be 55 feet below land surface.[6] Construction of the proposed caisson foundations may encounter groundwater. Compliance with discharge permit(s) from the Nevada Division of Environmental Protection (NDEP) would ensure groundwater quality is not contaminated. Groundwater is not used for drinking water, so potable water sources would not be affected. The Proposed Action would not create a barrier to infiltration that could affect groundwater recharge.	No Impact
Surface Water	There are no streams, rivers, lakes, or other surface waters in the Study Area. No new impervious surface would be created. A project-specific stormwater pollution prevention plan (SWPPP) would be prepared for the Proposed Action. The SWPPP would indicate surface drainage patterns, the extent of site disturbance, and the soil erosion and sedimentation control measures planned to be used during construction and operation of the Proposed Action. The Proposed Action would comply with the NDEP general National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharge from construction sites (NVR100000) and the Las Vegas Valley general NPDES permit for small municipal separate storm sewer systems (NV0021911). The *Las Vegas Valley Construction Site Best Management Practices Guidance Manual* would be used to identify temporary measures that would be implemented during construction to control water pollution and soil erosion.[7]	Not Present/No Impact
Wetlands	No wetlands are located within the Study Area.	Not Present/No Impact
Wild and Scenic Rivers	There are no designated Wild and Scenic Rivers in Nevada.	Not Present/No Impact

NOTES:
1 U.S. Fish and Wildlife Service, Information for Planning and Consulting, ecos.fws.gov/ipac/ (accessed August 13, 2018).
2 Las Vegas Monorail, https://www.lvmonorail.com/corporate/extension/ (accessed October 12, 2018).
3 Bombardier, rail.bombardier.com//en/solutions-and-technologies/urban/monorail.html (accessed September 19, 2018).
4 U.S. Environmental Protection Agency, epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b (accessed September 25, 2018).
5 Nova Geotechnical & Inspection Services, *Geotechnical Exploration Report to Las Vegas Monorail Extension – Mainline, Clark County, Nevada*, March 23, 2018.
6 Las Vegas Monorail Company, Las Vegas Monorail Expansion Project Description Report, April 29, 2018.
7 Las Vegas Valley Stormwater Quality Management Committee and Clark County Flood Control District, *Las Vegas Valley Construction Site Best Management Practices Guidance Manual*, January 2009.
SOURCE: Ricondo & Associates, Inc., September 2018.

3.4 ENVIRONMENTAL RESOURCES POTENTIALLY AFFECTED

The following sections describe and disclose potential environmental impacts of the Proposed Action and the No Action alternative. The analysis includes considerations of direct, indirect, and cumulative impacts, including potential impacts from construction and operations.

3.5 AIR QUALITY

Under the federal Clean Air Act (CAA)[1], as amended, the U.S. Environmental Protection Agency (USEPA) has developed National Ambient Air Quality Standards (NAAQS) for the following air pollutants, referred to as criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The CAA requires establishment of two standards—primary standards, which define maximum concentrations of criteria air pollutants to protect public health, and secondary standards, which define maximum concentrations to protect public welfare.

The CAA requires federal agencies to ensure that proposed actions in a designated nonattainment or maintenance area conform to the appropriate State Implementation Plan (SIP), also known as General Conformity. The General Conformity Rule establishes *de minimis* levels used to determine whether a proposed action complies with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and in meeting those standards as expeditiously as possible. Under FAA Order 1050.1F, a proposed action would generally be considered in compliance with the SIP if it would not cause emissions that exceed NAAQS *de minimis* levels. If the proposed action's emissions exceed *de minimis* levels, a conformity determination would be required.

3.5.1 AFFECTED ENVIRONMENT

Air quality is not localized to the Study Area identified on Exhibit 1-2, instead representing a potential regional impact; therefore, the region is the affected environment for air quality. The project is in Clark County, Nevada. Clark County is classified by the USEPA as marginal nonattainment for the 2015 Ozone NAAQS. Clark County has historically been classified as a serious nonattainment area for PM_{10} and CO. The area was re-classified to attainment for the CO NAAQS in September 2010 and for the PM_{10} NAAQS in November 2014 and operates as a maintenance area for both of these pollutants. Clark County is in attainment with the NAAQS for all other criteria air pollutants.

Ozone is not directly emitted from a source, rather, it is formed through photochemical reactions involving emissions of the precursor pollutants nitrogen oxides (NOx) and volatile organic compounds (VOC) in the presence of abundant sunlight and heat. Therefore, ozone emissions are evaluated at the project level based on the rate of emissions of the precursor pollutants, NOx and VOC.

3.5.2 ENVIRONMENTAL CONSEQUENCES

The evaluation of significance determines whether the Proposed Action would cause pollutant concentrations to exceed one or more of the NAAQS for any time period(s) or would increase the frequency or severity of any existing violations. Therefore, the Proposed Action was evaluated for conformity with applicable SIPs. The General Conformity Rule is a component of the CAA that applies to proposed federal actions in a nonattainment or maintenance area if the Proposed Action would cause the total of direct and indirect emissions of relevant criteria air pollutants and precursor pollutants to equal or exceed established *de minimis* levels. If the project would cause emissions of any pollutant to exceed *de minimis* levels, the federal agency would need to make a determination of General Conformity. If project emissions would not exceed the *de minimis* thresholds, the federal agency can determine that the General Conformity Rule does not apply, and that no further analysis or documentation is required.

Clark County is a nonattainment area for ozone; therefore, the *de minimis* thresholds used to determine whether the General Conformity Rule applies are 100 tons per year for VOCs and NO_x (ozone precursor compounds).

[1] 42 U.S.C. 7401, et. seq.

Because Clark County is a maintenance area for CO, the applicable *de minimis* thresholds for CO and PM_{10} are also 100 tons per year. To determine whether the Proposed Action would contribute to an exceedance of the NAAQS for other criteria pollutants, project emissions for SOx and $PM_{2.5}$ were also compared to *de minimis* thresholds of 100 tons per year.

3.5.2.1 NO ACTION ALTERNATIVE

Because the No Action alternative would not involve any construction or change in the operation of the existing LVM system, it would not cause any impacts to air quality that are not already occurring or expected to occur. Furthermore, because the LVM does not currently serve the MBCC and the hotels/resorts in the southern end of the Las Vegas Strip, the No Action alternative would not reduce vehicular trips or vehicular miles travelled (VMTs).

3.5.2.2 PROPOSED ACTION

Construction of the Proposed Action would result in short-term increases in emissions from various sources, including: exhaust from non-road construction equipment, haul trucks, and vehicles belonging to workers; VOC emissions from paving; and fugitive dust emissions from excavation, materials handling, and vehicles traveling on paved and unpaved roads. **Table 3-2** summarizes the anticipated construction emissions for the Proposed Action and provides a comparison to the *de minimis* thresholds. The complete construction air quality analysis is provided in **Appendix A**.

TABLE 3-2 PROPOSED ACTION CONSTRUCTION EMISSIONS SUMMARY

	EMISSIONS (TONS/YEAR)					
	CO	VOC	NO_X	SO_X[1]	PM_{10}	$PM_{2.5}$
Total Emission by Year						
2018	0.395	0.071	0.492	0.001	0.279	0.039
2019	9.031	1.575	11.688	0.032	7.054	0.902
2020	2.034	0.328	2.852	0.011	2.705	0.172
de minimis Threshold	100.000	100.000	100.000	100.000	100.000	100.000
Difference (Under)/Over *de minimis* Threshold						
2018	(99.605)	(99.929)	(99.508)	(99.999)	(99.721)	(99.961)
2019	(90.969)	(98.425)	(88.312)	(99.968)	(92.946)	(99.098)
2020	(97.966)	(99.672)	(97.148)	(99.989)	(97.295)	(99.828)
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

NOTE:
1 For purposes of this analysis, it was assumed that estimates of SOx emissions are equal to calculated emissions of SO_2.
SOURCE: Ricondo & Associates, Inc., August 2018, using the USEPA NONROAD2008a and MOVES2014a emissions models, and USEPA, AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition., January 1995, as amended.

Operation of the Proposed Action would not cause a change in aircraft activity, fleet mix, runway use patterns, or taxi times. The Proposed Action would, however, reduce vehicular congestion and delay within the Study Area and therefore reduce emissions from gas and diesel motors. The LVMC estimates that the project would reduce vehicle

traffic by 12.4 million VMTs per year by 2022.[2] These vehicle trips would be replaced by electric, zero emissions trains.[3]

The air quality analysis demonstrates that the Proposed Action would not cause an increase in air emissions above the applicable *de minimis* thresholds. The Proposed Action conforms to the SIP and the CAA and would not create any new NAAQS violations, delay the attainment of any NAAQS, or increase the frequency or severity of any existing NAAQS violations. Also, emissions resulting from the Proposed Action would not exceed the *de minimis* thresholds; therefore, the General Conformity Rule does not apply, and no further analysis or documentation is required.

Although no significant air quality impacts are anticipated because of the Proposed Action, the LVMC would ensure that standard practices for controlling emissions, including fugitive dust, would be followed. A dust control permit would be obtained from the Clark County Department of Air Quality (CCDAQ) prior to construction, which would include development of a Dust Mitigation Plan to outline dust control measures. Best management practices, as set forth in the CCDAQ Construction Activities Dust Control Handbook and the Clark County Air Quality Regulations would also be implemented to minimize air quality impacts.[4] Therefore, the Proposed Action would not result in a significant impact on local or regional air quality when compared to the No Action alternative.

3.6 CLIMATE

The Intergovernmental Panel on Climate Change (IPCC) estimates that aviation accounts for 4.1 percent of global transportation greenhouse gas (GHG) emissions. Scientific research is ongoing to better understand climate change, including any incremental atmospheric impacts that may be caused by aviation. Uncertainties are too large to accurately predict the timing, magnitude, and location of aviation's climate impacts; however, it is clear minimizing GHG emissions and identifying potential future impacts of climate change are important for a sustainable national airspace system.

Increasing concentrations of GHGs in the atmosphere affect global climate.[5] GHG emissions result from anthropogenic sources (i.e., emissions resulting from human activity) including the combustion of fossil fuels. GHGs, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and fluorinated gases.[6] CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years. Scientific measurements show that Earth's climate is warming, with concurrent impacts including warmer air temperatures, increased sea level rise, increased storm activity, and an increased intensity in precipitation events. Research has shown there is a direct correlation between fuel combustion and GHG emissions.

[2] Las Vegas Monorail Company, Las Vegas Monorail Expansion Project Description Report, April 29, 2018.

[3] Las Vegas Monorail, www.lvmonorail.com/corporate/environmental-efficiency/ (accessed September 17, 2018).

[4] Clark County, Nevada, Air Quality Regulations, www.clarkcountynv.gov/airquality/regulations/Pages/Rules_CurrentRulesandRegulations.aspx (accessed September 25, 2018).

[5] Intergovernmental Panel on Climate Change, *Fifth Assessment Report*, 2014, https://www.ipcc.ch/report/ar5/ (accessed September 28, 2018).

[6] U.S. Environmental Protection Agency, Overview of Greenhouse Gases, http://www3.epa.gov/climatechange/ghgemissions/gases.html (accessed May 11, 2017).

3.6.1 AFFECTED ENVIRONMENT

Climate change is a global phenomenon that can have local impacts.[7] For this EA, the study area for the GHG emissions inventory is Clark County. The Department of Air Quality and Environmental Management is the lead agency for ensuring clean air in Clark County. Clark County prepared a multi-jurisdictional hazard mitigation plan to assess risks posed by natural and human-caused hazards, such as climate change, and to develop mitigation action plans for reducing the risks in Clark County, Nevada.[8]

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 NO ACTION ALTERNATIVE

The existing LVM system would not be extended under the No Action alternative. Accordingly, no construction activities would occur, and area roadways would continue to operate under existing conditions. Without providing an alternative to vehicular and pedestrian traffic, the No Action alternative would result in increased delays and congestion, increasing GHG emissions.

3.6.2.2 PROPOSED ACTION

As described in Section 3.5.2.2, construction of the Proposed Action would include the use of equipment and vehicles that produce emissions. To provide a single metric that embodies all GHGs, emissions are quantified in metric tons of CO_2 equivalent (CO_2e). **Table 3-3** presents GHG emissions for construction activities associated with the Proposed Action. This inventory is provided for information purposes only, as the FAA has not established significance thresholds for climate. The complete construction emissions analysis is provided in Appendix A. The construction emissions for the Proposed Action would be short-term and would not significantly contribute to global climate change when compared to the No Action alternative.

TABLE 3-3 PROPOSED ACTION CONSTRUCTION GHG EMISSIONS INVENTORY

CONSTRUCTION YEAR	$MTCO_2e$
2018	181.938
2019	4,193.903
2020	1,887.239

SOURCE: Ricondo & Associates, Inc., August 2018, using the U.S. Environmental Protection Agency NONROAD2008a and MOVES2014a emissions models, and U.S. Environmental Protection Agency, AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition., January 1995, as amended.

Operation of the Proposed Action would not cause a change in aircraft activity, fleet mix, runway use patterns, or taxi times. The Proposed Action would, however, reduce vehicular congestion and delay within the Study Area, thus,

[7] As explained by the EPA, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." U.S. Environmental Protection Agency, Climate Change Division, Office of Atmospheric Programs, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, December 7, 2009, https://www.epa.gov/ghgemissions/technical-support-document-endangerment-and-cause-or-contribute-findings-greenhouse (accessed October 5, 2018).

[8] Clark County, *2018 Multi-Jurisdictional Hazard Mitigation Plan*, August 2018, http://www.clarkcountynv.gov/fire/oem/Documents/General%20Documents/Clark%20County%20HMP_080918_compiled.pdf#search=climate%20action%20plan (accessed October 5, 2018).

reducing emissions from gas and diesel motors. Therefore, operation of the Proposed Action would be expected to produce fewer GHG emissions when compared to No Action alternative.

3.7 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

At the federal level, hazardous materials, solid waste, and pollution prevention are controlled by several laws and regulations. The following applicable regulations are overseen by the USEPA. The Clean Water Act regulates discharges and spills of pollutants (including hazardous materials) to surface and groundwater.[9] The Safe Drinking Water Act regulates discharges of pollutants to underground aquifers.[10] The CAA regulates discharges of air emissions (including hazardous air pollutants) to the ambient (i.e., outside) air.[11] Finally, the Resource Conservation and Recovery Act (RCRA, as amended by the Federal Facilities Compliance Act of 1992) governs the generation, treatment, storage, and disposal of hazardous and solid wastes.[12] Subtitle D of the RCRA establishes the Solid Waste Program, which encourages states to develop comprehensive plans to manage nonhazardous solid waste, sets criteria for municipal solid waste landfills, and prohibits the open dumping of solid waste.

The Nevada Division of Environmental Protection (NDEP) oversees the Clark County solid waste program, which is implemented by the Southern Nevada Health District. The Local Emergency Planning Committee implements the Clark County Hazardous Materials Response Plan, which establishes guidelines for responding to hazardous materials incidents.

3.7.1 AFFECTED ENVIRONMENT

The Study Area is a developed, urban area comprising commercial, residential, industrial, and Airport land uses. There are no known sites containing hazardous substances, pollutants or contaminants, or any sites listed on the National Priorities List or active RCRA sites within the Study Area.[13]

3.7.2 ENVIRONMENTAL CONSEQUENCES

The FAA has not established significance thresholds for hazardous materials, solid waste, and pollution prevention. However, FAA Order 1050.1F identifies factors to consider when evaluating potential environmental impacts. To identify the potential for impacts, the No Action alternative and Proposed Action were reviewed to determine whether either would:

- Violate applicable federal, state, local, or tribal regulations regarding hazardous materials and/or solid waste management;
- Affect a contaminated site;
- Produce an appreciably different quantity/type of hazardous waste;
- Generate an appreciably different quantity/type of solid waste or use a different method of collection and disposal that would exceed local capacity; or

[9] 33 U.S.C. 1251, et seq.

[10] 42 U.S.C. 300 et seq.

[11] 42 U.S.C. 7401 et seq.

[12] 42 U.S.C. 6901 et seq.

[13] U.S. Environmental Protection Agency, Resource Conservation and Recovery Act Information, www3.epa.gov/enviro/facts/rcrainfo/search.html (accessed September 5, 2018).

- Adversely affect human health and the environment.

3.7.2.1 NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no construction or operational activities that would generate solid waste above what would be generated by the estimated increase in future ridership, affect a contaminated site, or adversely affect human health and the environment. Therefore, the No Action alternative would not produce a significant impact on hazardous materials, solid waste, or pollution prevention.

3.7.2.2 PROPOSED ACTION

Construction of the Proposed Action would involve the use of common hazardous and non-hazardous materials, such as fuel, lubricants, oils, and cleaning solvents associated with construction equipment. These materials would be handled and stored in accordance with federal, state, and local regulations to prevent pollution and manage disposal of hazardous and non-hazardous substances.

It is anticipated that 7,000 cubic yards of dirt would be excavated and removed during construction of the Proposed Action. The excavated materials would be hauled to the Las Vegas Paving Blue Diamond Pit where they would be combined with other sand and gravel materials and reused on future projects. Temporary measures would be implemented during construction to control water pollution and soil erosion.[14]

No contaminated materials were observed during initial geotechnical studies conducted within the site of the proposed LVM extension.[15] However, any contaminated materials identified during construction would be removed in accordance with all applicable regulations. All required notices would be provided, and parties involved in construction would coordinate with the Nevada State Fire Marshal, NDEP, and other appropriate regulatory agencies.

The Proposed Action would operate in a manner consistent with the existing LVM system. There would be a slight increase in the use of common hazardous and non-hazardous materials being used with the existing LVM system (such as oils and cleaning solvents). However, the type and quantity would not be appreciably different or adversely affect human health. The expected increase in ridership from the operation of the Proposed Action would also generate more solid waste from passengers; however, the type of waste would be consistent with current output associated with the existing LVM and would not exceed local capacity.

The Proposed Action would not violate applicable federal, state, tribal, or local laws and regulations, involve a contaminated site, produce an appreciably different quantity or type of hazardous waste, generate an appreciably different quantity or type of solid waste that would exceed local capacity, or adversely affect human health or the environment. Therefore, no significant impacts related to hazardous materials, solid waste, or pollution prevention would occur under the Proposed Action when compared to the No Action alternative.

[14] Las Vegas Valley Stormwater Quality Management Committee and Clark County Flood Control District, *Las Vegas Valley Construction Site Best Management Practices Guidance Manual*, January 2009.

[15] Nova Geotechnical & Inspection Services, *Geotechnical Exploration Report to Las Vegas Monorail Extension – Mainline, Clark County, Nevada*, March 23, 2018.

3.8 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Cultural resources include prehistoric and historic sites, districts, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Under Section 106 of the National Historic Preservation Act of 1966, federal agencies must consider the effects of federally funded projects on historic properties.[16] Under this statute, historic properties are those that are listed in, or are determined eligible for inclusion in, the National Register of Historic Places (NRHP) through consultation with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO). The specific procedures and requirements for Section 106 compliance are implemented under 36 CFR Part 800, *Protection of Historic Properties*.

3.8.1 AFFECTED ENVIRONMENT

The FAA defines the direct and indirect Area of Potential Effects (APE) to encompass an approximately 490.5-acre area on private, Airport/CCDOA, and Clark County lands. Of this, the direct APE covers the approximately 21.9-acre monorail extension corridor and the indirect APE covers the remaining approximately 468.6 acres. **Exhibit 3-1** shows the indirect and direct APEs.

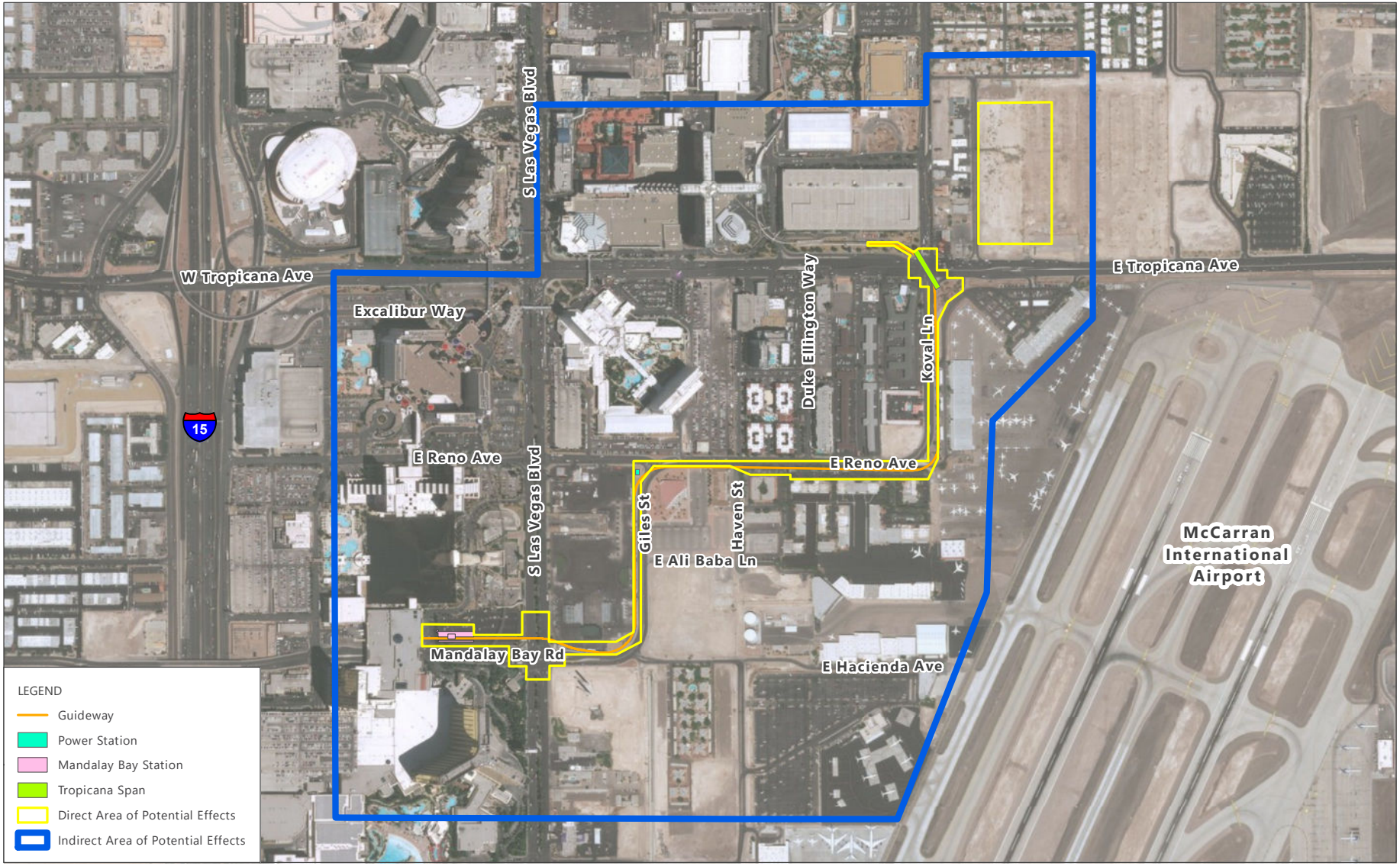
A site visit and review of NRHP records maintained by the National Park Service and the SHPO was conducted as part of a Class III cultural resource inventory to identify historic properties within the APE (includes indirect and direct APEs).[17,18] The inventory resulted in the recording of four previously unrecorded resources and the update of the record of one previously recorded resource. All five resources are roadway segments. No previously recorded prehistoric sites or site boundaries are located within the APE. The FAA has determined that the four newly recorded roadway segments of S2116, S2117, S2118, and S2119 are not eligible for listing in the NRHP. The previously recorded resource, the surveyed segment of South Las Vegas Boulevard/Old U.S. 91/Arrowhead Trail Highway within the direct APE assigned number S2162, is also deemed by FAA not eligible for NRHP listing. The Nevada SHPO concurred with these eligibility determinations on October 9, 2018.

There are an additional 24 historic-age (50 years and older) partially recorded resources in the indirect APE, comprising 6 commercial buildings, 7 multifamily residential buildings, and 11 roadway segments, which includes the segment of South Las Vegas Boulevard that runs north-south along the entire length of the indirect APE. The FAA determined, and SHPO acknowledged, that these 24 resources will be left unevaluated and be treated as NRHP-eligible for the purposes of this undertaking (see **Appendix B** for SHPO concurrence letter on eligibility and effect).

[16] 54 USC §§ 300101, et seq.

[17] Western Cultural Resource Management, Inc., *An Architectural Survey Report of the 2018 Las Vegas Monorail Extension in Clark County, Nevada*, July 31, 2018.

[18] Western Cultural Resource Management, Inc., Memorandum to Dee Phan, Federal Aviation Administration, *Addendum to "An Architectural Survey Report of the 2018 Las Vegas Monorail Extension in Clark County, Nevada,"* September 13, 2018.



SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Ricondo & Associates, Inc., May 2018 (Direct and Indirect Area of Potential Effects); Las Vegas Monorail Company, 2018 (monorail components).

NORTH 0 1,000 ft.

EXHIBIT 3-1

AREA OF POTENTIAL EFFECTS

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As part of the identification of historic properties, the FAA consulted with the Intertribal Council of Nevada and three Native American tribes: Fort Mojave, Moapa Band of Paiute, and Las Vegas Paiute, in June 2018. To date, no responses have been received from representatives of these tribes. A sample of the letter sent to tribal representatives is provided in Appendix B.

3.8.2 ENVIRONMENTAL CONSEQUENCES

The FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. However, the results of the Section 106 process (i.e., an adverse effect finding) would be considered in determining a significance threshold.

3.8.2.1 NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no construction or operational impacts. Therefore, the No Action alternative would not adversely affect historic, architectural, archaeological, or cultural resources.

3.8.2.2 PROPOSED ACTION

No archaeological resources or other historic properties have been identified in the APE. While the discovery of archaeological resources in the APE is not anticipated, should any previously unidentified cultural materials be encountered during construction, work would cease immediately and the FAA, SHPO, and/or appropriate tribes would be notified as soon as possible to determine the appropriate course of action.

Given the highly developed baseline conditions within the APE, the Proposed Action would not introduce any incompatible visual elements or result in adverse indirect visual effects to the 24 unevaluated historic-age resources. As a result, the FAA made a finding of "no adverse effect" for the proposed undertaking. The SHPO concurred with the FAA's finding in a letter dated October 9, 2018. A copy of this correspondence is provided in Appendix B.

3.9 NATURAL RESOURCES AND ENERGY SUPPLY

Natural Resources and Energy Supply requires an evaluation of natural resource consumption (e.g., water, asphalt, aggregate, wood, etc.) and use of energy supplies (e.g., coal for electricity, natural gas for heating, and fuel for ground vehicles).

3.9.1 AFFECTED ENVIRONMENT

The Study Area is located within the Las Vegas Metropolitan Area, which is urbanized and has adequate access to energy and natural resources. Electricity is provided by NV Energy and natural gas is supplied by Southwest Gas. Electricity is primarily used within the Study Area for lighting, cooling, and equipment operation in buildings, roadway and airfield lighting and operations. Electricity is also used to operate the existing LVM, which is completely electric and runs zero-emissions trains.[19] Electricity is also used indirectly in the delivery, treatment, and distribution of water used within the Study Area and the treatment of wastewater. The LVM uses regenerative braking, which saves electricity consumption by storing excess energy that accumulates when the LVM train cars are slowed using brakes.

[19] Las Vegas Monorail, www.lvmonorail.com/corporate/environmental-efficiency/ (accessed September 17, 2018).

The Las Vegas Valley Water District provides public water service, and sewer service is provided by the Clark County Water Reclamation District. Surface vehicles primarily consume automotive gasoline and diesel, while some operate, partially or fully, on electricity or alternative fuels (e.g., compressed natural gas).

3.9.2 ENVIRONMENTAL CONSEQUENCES

The FAA has not established a significance threshold for consumable natural resources and energy supply. Significant impacts would occur when an action's construction or operation would result in the demand for scarce consumable natural resources and/or energy exceeding available or future supplies.

The analysis for natural resources and energy supply considers the demand for consumable natural resources (e.g., water, oil, and coal) and energy (e.g., electricity and natural gas) under the Proposed Action and No Action alternative. Impacts on electricity demand, water usage, fuel consumption, and other consumable materials were determined by evaluating the extent to which construction and operation of the Proposed Action would change demand when compared to the No Action alternative.

3.9.2.1 NO ACTION ALTERNATIVE

Under the No Action alternative, no construction activities would occur. Energy usage under the No Action alternative from the operation of the existing LVM would be the same as what is currently forecast and planned. Consequently, the No Action alternative would not result in natural resource or energy demands that would exceed available or future energy supplies in the area, and no significant impacts related to natural resources and energy supply associated with the No Action alternative would occur.

3.9.2.2 PROPOSED ACTION

Operation of construction equipment and vehicles would use diesel and other fuels that are not unusual or in short supply. Because both construction materials and fuel for equipment are readily available, construction of the Proposed Action would not result in significant impacts related to natural resources when compared to the No Action alternative.

From an operations standpoint, the proposed LVM extension would be completely electric and continue to utilize zero-emissions trains. If the current normal schedule was operated on the expanded system, power consumption would increase by an estimated 25 percent. Additional trains could also be added to the current schedule to maintain headways and system capacities. Operating this expanded fleet would result in an estimated 47 percent increase over the current utility usage. A new 750-kilowatt TPS would be constructed to power the proposed LVM extension and would draw power from existing electric lines along Reno Avenue.

The additional electricity usage associated with the Proposed Action would not result in energy demands that exceed available or future supply. In discussions with the LVMC, NV Energy indicated it would be able to meet the energy needs of the Proposed Action.

The LVMC estimates that the proposed LVM extension would reduce vehicle traffic by 12.4 million VMTs per year, thereby reducing gasoline, diesel, and alternative fuel consumption by ground vehicles. The Proposed Action would not result in a change in fuel consumed by aircraft operating at the Airport. Therefore, no significant impacts to natural resources and energy supply would occur under the Proposed Action, compared to the No Action alternative.

3.10 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

3.10.1 AFFECTED ENVIRONMENT

The Study Area is within Census Tracts 26.04, 67, and 68. The majority of the Study Area is south of Tropicana Avenue, within Census Tract 68. Census Tract 67 contains the MGM Grand Hotel and parking garage and Census Tract 26.04 contains the vacant lot proposed for equipment staging. Therefore, Census Tract 68 was used to represent the socioeconomic characteristics of the Study Area. **Table 3-4** compares the demographic and socioeconomic characteristics of Clark County, the City of Las Vegas, and Census Tract 68.

In terms of Children's Health and Safety Risks, no schools are located within the Study Area, which is mainly confined to commercial and Airport land uses. The nearest school is Gene Ward Elementary School, located approximately 1.8 miles east of the Study Area.

TABLE 3-4 DEMOGRAPHIC AND SOCIOECONOMIC DATA BY JURISDICTION

	CLARK COUNTY	CITY OF LAS VEGAS	CENSUS TRACT 68
Demographic Data			
Population (estimate)	2,070,153	1,869,958	4,793
Percent by Ethnicity Group			
White	62.7	50.7	58.8
Black or African American	11.0	35.3	20
Asian	9.4	6.0	3.6
Pacific Islander/Native Hawaiian	0.7	0.1	0.0
American Indian/Alaska Native	0.6	0.3	0.1
Reporting Two or More Races	4.9	2.8	3.0
Some Other Race	10.6	4.9	14.5
Hispanic or Latino (of any race)	30.4	13.7	24.3
Percent Children Under 18 Years of Age	26.1%	26.3%	28.3%
Socioeconomic Data			
Median Household Income, 2010-2015	$52,629	$51,219	$29,886
Persons Below Poverty Level, 2010-2015 (percent)	15.0	15.7	23.2
Unemployment Rate (percent)	9.6	9.9	30.3

SOURCE: United States Census Bureau American Fact Finder, *2012-2016 American Community Survey 5-Year Estimates*, *ACS Demographic and Housing Estimates*, 2016; United States Census Bureau American Fact Finder, *2012-2016 American Community Survey 5-Year Estimates*, *Selected Economic Characteristics*, 2016.

3.10.2 ENVIRONMENTAL CONSEQUENCES

3.10.2.1 NO ACTION ALTERNATIVE

Under the No Action alternative, none of the proposed construction and operational activities would occur. The LVM would continue to operate as under current conditions.

Socioeconomics

There would be no construction activity under the No Action alternative. Operationally, vehicular and pedestrian traffic patterns would continue at current levels. There would be no significant impact to socioeconomic resources under the No Action alternative.

Environmental Justice

Similarly, because the No Action alternative would not involve construction, and operations would not be impacted, there would be no disproportionately high or adverse effects on minority or low-income populations under the No Action alternative.

Children's Environmental Health and Safety Risks

No construction or operational activities would occur near schools or other areas where children congregate. There would be no disproportionate health or safety risks to children under the No Action alternative.

3.10.2.2 PROPOSED ACTION

The Proposed Action is located on developed property and would not require relocation of any businesses or residences. No changes to the population, community tax base or economic activity would occur, nor would any established communities be disrupted. There would be a short-term increase in employment due to construction activities. The use of the proposed construction haul route would not reduce the LOS on any roadways or result in any road closures, although short-term lane closures on individual road segments may occur during construction.

Socioeconomics

Construction of the Proposed Action would generate temporary construction employment; however, because of the temporary duration, it is unlikely that construction would induce population growth in the Study Area and adjacent communities. Construction workers would likely commute from the vicinity and would not require relocations to support construction job opportunities generated by the Proposed Action.

While there may be short-term localized impacts associated with construction activities and vehicle/equipment traffic, the Proposed Action would not reduce the LOS on roadways serving the Study Area. Some lane closures are anticipated to occur because of construction activity, but no full road closures would be required during construction of the Proposed Action. Again, because of the temporary nature of construction activities, any construction-related traffic impacts would not be significant.

Operation of the Proposed Action would not cause any population growth or land use changes within the Study Area that would substantially increase surface traffic or noise. When considering operational traffic, the Proposed Action would not disrupt local traffic patterns or substantially reduce the LOS on roadways serving the Study Area. The Proposed Action could, however, improve the LOS on roadways by alleviating vehicular traffic congestion within the Study Area. Therefore, the Proposed Action would not have a significant impact on socioeconomic resources when compared to the No Action alternative.

Environmental Justice

Construction and operation of the Proposed Action would not result in significant impacts to air quality, water quality, hazardous materials, noise, or traffic. There would be no disproportionately high or adverse impacts to an environmental justice community from the Proposed Action when compared to the No Action alternative.

Children's Environmental Health and Safety Risks

Air quality impacts on schools and recreational areas near the Study Area from the construction of the Proposed Action would not exceed applicable significance thresholds, including NAAQS. Similarly, no significant noise, hazardous materials, or health-related impacts would occur from the operation of the Proposed Action. Therefore, the Proposed Action would not result in disproportionate health and safety risks to children when compared to the No Action alternative.

3.11 VISUAL EFFECTS

Visual effects pertain to the extent a proposed action would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Visual effects can be difficult to define and assess because of the subjective nature of this evaluation.

3.11.1 AFFECTED ENVIRONMENT

The visual character of the Study Area is urban and contains structures of varying heights that limit the distance that can be seen from ground level. The Study Area has multiple light sources, such as billboard, hotels, and the Airport. Existing residential developments have security lights on buildings and in parking lots. There is also a series of existing light poles along the sidewalks and roadways.

3.11.2 ENVIRONMENTAL CONSEQUENCES

The FAA has not established significance thresholds for visual effects. However, based on guidance in FAA Order 1050.1F, the following factors should be considered when evaluating light emissions and effects on the visual character and visual resources of an action:

- Light Emissions
  - The degree to which the action would have the potential to create annoyance or interfere with normal activities from light emissions; and
  - The degree to which the action would have the potential to affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.
- Visual Resources/Visual Character
  - The degree to which the action would have the potential to affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
  - The degree to which the action would have the potential to contrast with the visual resources and/or visual character in the study area; and
  - The degree to which the action would have the potential to block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

3.11.2.1 NO ACTION ALTERNATIVE

Under the No Action alternative, no construction activity would occur and the LVM would continue to operate under current conditions. No significant impacts to light emissions or visual impacts would occur.

3.11.2.2 PROPOSED ACTION

Light Emissions

Nighttime light emissions already occur within the Study Area. As part of obtaining a construction permit from Clark County, the LVMC would submit a construction schedule, including the identification of anticipated nighttime construction work. If nighttime construction is permitted, any use of construction lighting would be temporary and restricted to specific construction areas. Additionally, if nighttime construction is required, construction lighting would be shielded and focused on the construction area to eliminate unnecessary light spillover and glare. Therefore, no significant impacts relative to light emissions would occur during construction.

The Proposed Action would not increase light emission levels above the level of those from existing sources (i.e., Airport, hotels, roadways, billboards, and other urban development). The existing light poles along the proposed LVM alignment would remain. The only new light sources would be from security lights installed intermittently on the top of the columns along the proposed guideway. Lighting associated with the operation of the Proposed Action would be adjusted downward or constructed with light shields to prevent interference with Airport operations and surrounding land uses. Therefore, the Proposed Action would not create a significant impact relative to light emissions when compared to the No Action alternative.

Visual Resources/Visual Character

During construction, large trucks and other heavy construction equipment would be present within the Study Area. The construction activity would be short-term and temporary. Construction activities would be restricted to the Study Area and would not require any roadway closures. The Study Area comprises commercial, residential, industrial, and Airport land uses, and construction of the Proposed Action would result in temporary visual impacts.

Given the highly developed existing conditions within the Study Area, operation of the Proposed Action would not introduce any visual elements that would be significantly different from the existing urban environment. The Proposed Action would be similar in scale and features to the existing LVM. Agreements are being negotiated between the LVMC and Airport tenants regarding the establishment of aesthetic guidelines for the proposed guideway columns. Therefore, the Proposed Action would not significantly affect visual resources and visual character when compared to the No Action alternative.

3.12 CUMULATIVE IMPACTS

Cumulative impacts to environmental resources result from incremental effects of future actions combined with other past, present, and planned projects in the area. Cumulative impacts can result from actions undertaken over a period of time by various agencies (federal, state, and local) or individuals that may be minor in isolation, but collectively substantial. CEQ Regulations and FAA Orders 1050.1F and 5050.4B require an evaluation of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or planned for implementation in the near future. For this EA, projects within the Study Area that were implemented within the last five years, are ongoing, and that are proposed to be implemented within the next five years were considered for the cumulative impacts evaluation. These projects are listed in **Table 3-5**.

TABLE 3-5 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

PROJECT	DESCRIPTION	TIMEFRAME
Koval Lane Sewer Improvements	Improved sewer line and partially reconstructed the west side of Koval Lane where it meets Reno Avenue.	2015
Reno Avenue Sewer Improvements	Improved sewer line 200 feet east and 250 feet west of Duke Ellington Way on Reno Avenue.	2015
Quail Air Center Expansion	Construction of three hangars for fixed-wing aircraft maintenance, storage, and office space for existing and new tenants.	2017-2018
Koval Lane Improvements	Widening and reconstruction of 1.5 miles of Koval Lane from Tropicana Avenue north to Sands Avenue.	2019
Roadway Resurfacing	Resurfacing of Koval Lane, Reno Avenue, and Giles Street	2020

SOURCE: Clark County Department of Aviation, September 2018; Ricondo & Associates, Inc., September 2018.

As documented in this chapter, no significant construction or operational impacts would occur as a result of the Proposed Action when compared to the No Action alternative. The potential for the Proposed Action to cumulatively contribute to effects on resource categories discussed in this chapter with other past, present, and reasonably foreseeable future projects is described in **Table 3-6**. No other past, present, or future projects within the Study Area have been assessed to have significant impacts or to have cumulative impacts. As shown, the implementation of the Proposed Action is not anticipated to be cumulatively significant when considered with other past, present and reasonably foreseeable future actions.

TABLE 3-6 (1 OF 2) CUMULATIVE IMPACTS

RESOURCE CATEGORY	CUMULATIVE EFFECTS
Air Quality	Due to the regional nature of emissions, all projects have the potential to contribute to cumulative air quality effects. If a project's emissions are below the *de minimis* thresholds, then it is expected that the project would not contribute to cumulative air quality effects in that region. Emissions from the construction of the Proposed Action would be temporary in nature and would not be above the applicable *de minimis* thresholds. It is estimated that the Proposed Action would result in approximately 12.4 million fewer annual VMTs and associated emissions once operational. Therefore, the Proposed Action would not result in significant cumulative effect to local and regional air quality when combined with the projects listed in Table 3-5.
Climate	Construction of the Proposed Action would be short-term and temporary in nature. The proposed LVM extension would utilize existing zero emissions trains and is expected to result in approximately 12.4 million annual VMTs and their associated emissions once operational.[1] When combined with the projects listed in Table 3-5, no significant cumulative impacts on local or regional air quality are anticipated due to the Proposed Action.
Historical, Architectural, Archaeological, and Cultural Resources	Given the highly developed existing conditions within the indirect APE, the Proposed Action would not introduce any incompatible elements that could result in adverse indirect effects to the 24 identified historic-age resources. These historic-age resources remain unevaluated and treated as potentially NRHP-eligible by the FAA. No archaeological or other cultural resources were identified in the APE. The FAA made a finding of "no adverse effect" for the proposed undertaking and the SHPO concurred. When combined with the projects listed in Table 3-5, no significant cumulative impacts would occur relative to historic, architectural, archaeological, and cultural resources under the Proposed Action.
Natural Resources and Energy Supply	The Proposed Action would not result in increased energy demands that would exceed available or future energy supplies. Construction materials and equipment fuel are readily available and not in short supply. No significant cumulative impacts related to natural resources and energy supply associated with the Proposed Action would occur when combined with the projects listed in Table 3-5.

TABLE 3-6 (2 OF 2) CUMULATIVE IMPACTS

RESOURCE CATEGORY	CUMULATIVE EFFECTS
Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks	The Proposed Action would not change the community tax base, create a shift in population, or relocate residential or business developments. No construction activities would occur near schools or other areas where children congregate. There would be short-term localized impacts associated with construction activities and vehicle/equipment traffic; however, no full road closures would be required. The Proposed Action would not result in significant cumulative impacts to socioeconomics, environmental justice communities, or health and safety risks to children when combined with the projects listed in Table 3-5.
Visual Effects	Lighting associated with the Airport, hotels, roadways, billboards, and other urban development contribute to a high level of ambient light. Existing light poles along the proposed LVM alignment would remain. Lighting would be angled downward or use light shields to minimize light emissions. Concerns expressed by Airport tenants regarding visual effects will be addressed with the establishment of aesthetics standards. The Proposed Action would not introduce any incompatible visual elements to the surrounding urban environment, and thus would not result in significant cumulative visual effects when combined with the projects listed in Table 3-5.

NOTE:

1 Information from Las Vegas Monorail Expansion Project Description Report, April 29, 2018.

SOURCES: Las Vegas Monorail Company, April 2018; Ricondo & Associates, Inc., September 2018.

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4. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

4.1 SCOPING

To identify potential issues with the Proposed Action, a scoping letter was mailed on August 8, 2018 to the Nevada State Clearinghouse, who then distributed the letter to state regulatory agencies. The letter described the Proposed Action and invited agencies to provide input on the purpose and need for the project, alternatives considered, and to identify any specific concerns that should be examined in the EA.

Comments on the Proposed Action were solicited over a 30-day period from August 8, 2018 to September 8, 2018. One comment was received from the SHPO requesting that the EA discuss any potential visual, audible, or atmospheric effects to the Little Church of the West, which is located outside the APE approximately 0.5 miles south of the Mandalay Bay Road and South Las Vegas Boulevard intersection. Copies of the scoping letter and SHPO comment are provided in Appendix B.

4.2 PUBLIC WORKSHOPS AND COMMUNITY MEETINGS

During the planning process and prior to initiating the EA, the LVMC conducted three public workshops and five community meetings to gain input from affected stakeholders and impacted parties, including adjacent landowners and Airport tenants. A series of one-on-one meetings with affected property owners and parties adjacent to the proposed alignment began in 2016. The specific meeting dates and parties consulted are provided in a memorandum included in Appendix B. Through these meetings and ongoing correspondence, agreements that outline all modifications and responsibilities are being negotiated with the Ribeiro Corporation and Atlantic Aviation and will be signed prior to the beginning of construction.

Concerns raised during the public workshops and community meetings were generally related to the aesthetics of the proposed guideway columns, the potential for nighttime work, and whether Koval Lane would be fully closed at any time.

4.3 REVIEW OF THE DRAFT EA

The Draft EA is available for review by the general public, government agencies, and interested parties for a period of 30 days from October 30, 2018 to November 30, 2018. The Notice of Availability (NOA) of the Draft EA for review was published on October 30, 2018 in the Las Vegas Review Journal. The NOA was also sent to the Nevada State Clearinghouse. Copies of the Draft EA are available for review at the locations listed in **Table 4-1**, and online at https://www.lvmonorail.com/corporate/extension/.

TABLE 4-1 LOCATIONS WHERE THE DRAFT EA IS AVAILABLE

LOCATION	ADDRESS
Federal Aviation Administration, Phoenix Airports District Office	3800 N. Central Avenue, Suite 1025, 10th Floor, Phoenix, Arizona
Clark County Library	1401 E. Flamingo, Las Vegas
CCDOA Administrative Offices	5757 Wayne Newton Boulevard, Business Office, 3rd Floor, Las Vegas
LVMC Offices	3770 Howard Hughes Parkway, Suite 295, Las Vegas

SOURCE: Ricondo & Associates, Inc., October 2018.

Anyone wishing to comment on the Draft EA will be offered the opportunity to do so in writing. Written comments must be submitted via mail or email by 5:00 p.m., November 30, 2018 to:

SundayLee Cabrera
Airport Property Manager
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, NV 89111
sundayl@mccarran.com

With a copy to:
Julie Car
Senior Consultant
Ricondo & Associates, Inc.
20 N. Clark Street, Suite 1500
Chicago, IL 60602
jcar@ricondo.com

All comments related to the Draft EA will be considered by the FAA and the CCDOA in preparing the Final EA.

5. LIST OF PREPARERS

This document was prepared under the direction of the CCDOA on behalf of the LVMC, with oversight by the FAA. **Table 5-1** lists the individuals who contributed to the preparation of this EA.

TABLE 5-1 LIST OF PREPARERS

NAME/ORGANIZATION	RESPONSIBILITIES	PROFESSIONAL EXPERTISE/EXPERIENCE
Dee Phan/FAA Environmental Protection Specialist	FAA Principal Reviewer	12 years of experience in detailed evaluation of NEPA documents, as well as coordination with various federal and state agencies in Arizona and Nevada for FAA airport projects.
John Williams/Ricondo & Associates, Inc.	Project Management/NEPA Documentation	More than 35 years of experience in airport facilities and environmental planning, including the development of numerous NEPA documents, with several of those for airport projects at McCarran International Airport.
Julie Car/Ricondo & Associates, Inc.	NEPA Documentation/Processing	More than 10 years of experience in aviation and environmental planning, with expertise in protected species, sensitive habitat, wetlands, and wildlife management.
Jason Apt/Ricondo & Associates, Inc.	Air Quality Analysis	Over 11 years of experience in airport planning and environmental analysis, with expertise in air quality, greenhouse gas emissions, and documentation.
SundayLee Cabrera/Clark County Department of Aviation	EA Reviewer	22 years of experience in the airport industry with 10 years of airport project management experience and 3 years of experience performing reviews of NEPA documentation for projects involving airport property.
Ingrid Reisman/SVP & CMO, Las Vegas Monorail Company	EA Principal Reviewer	19 years of experience in transportation-related fields; three years of private sector contractor experience plus seven years with a regional transportation agency involved in drafting and reviewing language for NEPA and other project documents.
Curtis Myles/President & CEO, Las Vegas Monorail Company	EA Principal Reviewer	27 years of transportation project development and management; 14 years of experience in evaluation and oversight of NEPA and federal documents.
Mark Demuth, M.S., M.S., AICP/Western Cultural Resource Management, Inc.	Cultural Resources Inventory/Principal Environmental Planner	31 years of experience in preparation of NEPA documents and baseline cultural resource documents, as well as university teaching experience in environmental law and NEPA.
Tom Lennon, Ph.D./Western Cultural Resource Management, Inc.	Principal Investigator	42 years of experience in cultural resource identification and evaluation in the western U.S.
Steve Mehls, Ph.D./Western Cultural Resource Management	Senior Architectural Historian	41 years of experience in U.S. history and architectural history of the western U.S.

SOURCE: Ricondo & Associates, Inc., October 2018.

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APPENDIX A

Air Quality Analysis

APPENDIX A AIR QUALITY ANALYSIS

A.1 INTRODUCTION

This document describes the methods used to calculate emissions of carbon monoxide (CO), volatile organic compounds (VOCs), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), particulate matter less than ten microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and carbon dioxide equivalent (CO_{2e}) in support of the Environmental Assessment (EA) for construction of the proposed extension of the Las Vegas Monorail from the existing MGM Grand Station to a new station at the Mandalay Bay Resort. A portion of the proposed extension would occur on property owned by the Clark County Department of Aviation (CCDOA), which owns and operates McCarran International Airport. For purposes of this analysis, emissions were estimated for construction of the entire project, not limited to construction elements occurring on CCDOA property.

The emissions analysis was conducted to develop emissions inventories pursuant to the National Environmental Policy Act of 1969 (NEPA), and to determine whether emissions associated with the Proposed Action would exceed applicable *de minimis* thresholds as documented in the U.S. Environmental Protection Agency (EPA) general conformity regulations. Construction-related activities are anticipated to occur in 2018, 2019, and 2020.

A.2 REGULATORY SETTING

Under the federal Clean Air Act (CAA), as amended, the U.S. EPA has developed National Ambient Air Quality Standards (NAAQS) for the following air pollutants, referred to as criteria air pollutants: CO, nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), PM_{10}, and $PM_{2.5}$. The CAA defines the need to establish two standards—primary standards, which define maximum concentrations of criteria air pollutants to protect public health, and secondary standards, which define maximum concentrations of criteria air pollutants to protect public welfare.

Individual states are required to identify general geographic areas where the NAAQS for these criteria air pollutants are not met. The U.S. EPA designates such areas as nonattainment areas and qualifies the nonattainment status by severity of nonattainment ranging from marginal to moderate to serious to extreme nonattainment. Areas that were in nonattainment but have since attained the NAAQS are considered to be an attainment/maintenance area for several years before being designated as attainment. A state with a nonattainment or maintenance area must prepare a State Implementation Plan (SIP) that describes the programs and requirements that the state will implement to attain or maintain the NAAQS by the deadlines specified in the CAA, as well as subsequent related documents promulgated by the U.S. EPA.

The CAA requires federal agencies to ensure that actions proposed to occur in a designated nonattainment or maintenance area conform to the appropriate SIP, also known as General Conformity. The General Conformity Rule establishes the *de minimis* levels by which a proposed action may show that it complies with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Pursuant to FAA Order 1050.1F, a proposed action would generally be considered in compliance if it would not cause emissions that exceed NAAQS *de minimis* levels. If the proposed action's emissions exceed the *de minimis* levels, a conformity determination would be required.

The Nevada Division of Environmental Protection (NDEP) works to protect and improve outdoor, or ambient, air quality in Nevada. The NDEP operates a statewide air quality monitoring network to measure the level of pollutants

in the outdoor air, develops and implements plans to meet future air quality initiatives, assures compliance with air quality rules, and educates, informs and assists the public regarding air quality issues.

The project is in Clark County. The Clark County Department of Air Quality is the air pollution control agency for the county and works to ensure that air quality in the county meets regulatory standards. For the NAAQS, the portion of Clark County that contains the Study Area lies within hydrographic area 212 and is classified as marginal nonattainment for the 2015 Ozone NAAQS. A portion of Clark County was historically a serious nonattainment area for CO and PM_{10}. The area was re-designated to attainment for the CO NAAQS in September 2010 and for the PM_{10} NAAQS in November 2014 and remains designated as a maintenance area for both pollutants.

A.3 METHODOLOGY

In support of evaluating air quality effects, estimates were prepared for criteria air pollutants (or their precursor compounds) for which Clark County is not in attainment and that may be affected by construction of the Proposed Action. Therefore, the air quality analysis is based on the following:

- CO—Clark County is designated as a maintenance area for CO, so emissions were estimated for this criteria pollutant.
- NO_2—Clark County is in attainment with federal standards, so emissions were not estimated for this criteria pollutant.
- O_3—Volatile organic compounds (VOCs) and NO_x are primary precursor compounds that lead to the formation of O_3, so VOC and NO_x emissions were estimated in the air quality analysis to evaluate O_3 effects.
- SO_2—Clark County is in attainment with federal standards, but for inventory purposes, emissions of SO_x were estimated, and it was assumed that estimates of SO_x emissions are equal to calculated emissions of SO_2.
- Pb—Although Pb is a criteria air pollutant, it was not evaluated in the analysis because the Proposed Action would not affect Pb emissions. The only source of Pb emissions at airports near the project site is aviation gasoline, and the Proposed Action would not change the number of aircraft operations.
- PM_{10} and $PM_{2.5}$—Emissions of PM_{10} were estimated because Clark County is designated as a maintenance area for PM_{10}. Even though Clark County is in attainment with federal $PM_{2.5}$ standards, $PM_{2.5}$ emissions were estimated for inventory purposes.

A.3.1 MODELS

The U.S. EPA's nonroad equipment emissions model (NONROAD2008a) was used to obtain emission factors for nonroad construction vehicle/equipment and the Motor Vehicle Emissions Simulator (MOVES2014a) was used to obtain emission factors for onroad vehicles.[1] In addition to exhaust emissions, MOVES estimates fugitive emissions related to non-exhaust and non-equipment sources, including evaporative (VOC) emissions and brake and tire wear (PM) emissions. Fugitive emissions from other sources, including soil handling and material movement, were also estimated, using methodologies from the U.S. EPA's AP-42.[2]

[1] The latest MOVES model incorporates the NONROAD2008a model for estimating emissions from nonroad construction vehicles and equipment.

[2] U.S. Environmental Protection Agency, AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition., January 1995, as amended.

A.3.2 THRESHOLDS OF SIGNIFICANCE

The evaluation of significance involves identifying if the Proposed Action would cause pollutant concentrations to exceed one or more of the NAAQS for any of the time period(s) analyzed or would increase the frequency or severity of any such existing violations. Therefore, the Proposed Action was evaluated for conformity with the applicable SIPs. Established under the CAA, the General Conformity Rule applies to proposed federal actions in a nonattainment or maintenance area if the total of direct and indirect emissions of the relevant criteria air pollutants and precursor pollutants caused by the Proposed Action would equal or exceed defined *de minimis* amounts. If the project would cause an exceedance of *de minimis*, then the federal agency would need to make a determination of General Conformity. If project emissions would not exceed the *de minimis* thresholds, the federal agency can determine that the General Conformity Rule does not apply and no further analysis or documentation is required.

As a nonattainment area for ozone, the *de minimis* thresholds established to evaluate the applicability of the General Conformity Rule of the Proposed Action are 100 tons per year for VOCs and NO_x (ozone precursor compounds). As a maintenance area for CO and PM_{10}, applicable *de minimis* thresholds are also 100 tons per year for these pollutants. For purposes of determining whether construction of the Proposed Action would contribute to an exceedance of the NAAQS for other criteria pollutants, *de minimis* thresholds of 100 tons per year for SOx and $PM_{2.5}$ were also compared to project emissions. If the project emissions do not exceed the *de minimis* thresholds, the FAA can determine that the General Conformity Rule does not apply and no further analysis or documentation is required.

A.4 ASSUMPTIONS

Construction of the Proposed Action would result in short-term changes in air emissions from sources such as: exhaust emissions from nonroad construction equipment, haul trucks, and construction worker vehicles; fugitive VOC emissions from paving; and fugitive dust emissions from grading, materials handling, and vehicles traveling on paved and unpaved roads.

A.4.1 PROPOSED ACTION COMPONENTS

For purposes of this analysis, the Proposed Action was assumed to consist of the following components and schedule. Construction of the Proposed Action is estimated to take 18 months. Although a specific construction schedule for each project component was not available, estimated schedule assumptions were developed by Ricondo & Associates, Inc. for purposes of this analysis, based on experience with similar projects.

- **Earthwork** – Includes excavation and grading of the project site, including the excavation of 7,000 cubic yards of material for placement of the columns supporting the guideway. Earthwork was assumed to span from October 2018 through July 2019.
- **Guideway construction** – Includes construction of 6,000 linear feet of elevated guideway track supported with approximately 60 columns. Construction of the guideway was assumed to begin in August 2019 and to be completed by December 2019.
- **Station construction** – Includes construction of a four-car side platform station approximately 140 feet in length and 54 feet in height. Construction of the station was assumed to span from October 2019 through March 2020.
- **Utilities** – Includes construction and installation of a power station and related equipment, utility line relocation, and associated miscellaneous utility work. Utility construction was assumed to begin in January 2020 and be completed by March 2020.

A.4.2 CONSTRUCTION ACTIVITY

Construction emissions analyses generally require information such as the type of construction equipment to be used, the amount of time the equipment will operate, estimates of required construction material, areas to be paved, and the number of employees anticipated to be on site. Such data was largely unavailable for purposes of conducting this analysis.

A similar project has been proposed at San Francisco International Airport (SFO) to expand an existing airport people mover system, including construction of an elevated guideway and station. Construction activity was obtained for use in support of a construction emissions analysis for an Environmental Assessment for that project. Due to the similarities in overall project scope and construction elements, construction activity for that project was scaled for purposes of estimating construction activity for the Proposed Action. For each of the Proposed Action components listed in Section A.4.1, scaling factors were calculated based on the ratio of areas and specifications of the Proposed Action compared to those of the proposed project at SFO. These scaling factors were then applied to construction equipment activity estimates (equipment hours) to estimate construction activity for the Proposed Action.

The resulting summary of equipment types and usage hours for each construction year by project component is presented in **Table A-1**.

Onroad construction vehicle trips include construction worker vehicle trips to and from the job site, off site hauling trips, and material delivery trips. The number of roundtrips per year for each type of onroad activity was calculated based on equipment estimates, project areas, and required quantities of various construction materials. Vehicle miles traveled (VMT) for each onroad activity was calculated by multiplying the total number of vehicle roundtrips by the roundtrip distance. **Table A-2** summarizes the onroad activity for the Proposed Action. The following types of onroad construction trips were assumed in the analysis:

- Construction worker trips – Travel of construction workers to/from the project site in passenger cars and trucks. Construction worker trips were estimated based on the number of pieces of construction equipment per day on the project site. A roundtrip distance of 30 miles was assumed.
- Soil hauling – Hauling of excavated soil from the project site in 12-cubic-yard haul trucks. Approximately 7,000 cubic yards of material is assumed to be excavated from the site and deposited at the Las Vegas Paving Blue Diamond Pit; a roundtrip distance of approximately 15 miles.
- Material delivery – Delivery of general construction materials and supplies to the project site on large delivery/flatbed trucks. For construction of the guideway, station, and utilities, an allowance of 50 trips per day with a roundtrip distance of 40 miles was assumed.

TABLE A-1: NONROAD EQUIPMENT AND HOURS OF OPERATION

PROJECT COMPONENT	EQUIPMENT TYPE	OPERATING HOURS PER YEAR		
		2018	2019	2020
Earthwork	Excavator	332	763	
Earthwork	Grader	663	1,527	
Earthwork	Generator Sets	663	1,527	
Earthwork	Pumps	3,978	9,162	
Earthwork	Dozer	663	1,527	
Earthwork	Sweepers/Scrubbers	166	382	
Earthwork	Tractors/Loader/Backhoe	663	1,527	
Guideway Construction	Air Compressor		18,745	
Guideway Construction	Generator Sets		18,745	
Guideway Construction	Crane		9,373	
Guideway Construction	Forklift		18,745	
Guideway Construction	Tractors/Loader/Backhoe		24,603	
Station Construction	Crane		2,262	2,228
Station Construction	Forklift		848	836
Station Construction	Excavator		2,262	2,228
Station Construction	Aerial Lift		566	557
Station Construction	Air Compressor		848	836
Station Construction	Bore/Drill Rig		1,131	1,114
Station Construction	Generator Sets		566	557
Station Construction	Grader		1,131	1,114
Station Construction	Paving Machine		1,131	1,114
Station Construction	Compacting Equipment		1,131	1,114
Station Construction	Pumps		3,393	3,342
Station Construction	Roller		1,131	1,114
Station Construction	Rubber Tired Loader		1,131	1,114
Station Construction	Tractors/Loader/Backhoe		1,131	1,114
Utilities	Compacting Equipment			744
Utilities	Pumps			4,464
Utilities	Sweepers/Scrubbers			372
Utilities	Tractors/Loader/Backhoe			744
Utilities	Trencher			744
Total Hours		**9,146**	**127,307**	**27,470**

SOURCE: Ricondo & Associates, Inc., August 2018, based on similar project specifications provided by the City and County of San Francisco and project specifications provided by the Las Vegas Monorail Company, April 2018.

TABLE A-2: ONROAD VEHICLE ACTIVITY ASSUMPTIONS

TRIP TYPE BY YEAR	EQUIPMENT CATEGORY	FUEL	ROUND TRIP DISTANCE (MILES)	ROUNDTRIPS PER YEAR	VEHICLE MILES TRAVELED
2018					
Construction Worker Trips	Passenger Car	Gasoline	30	1,518	45,540
Soil Hauling	Combination Short-haul Truck	Diesel	15	177	2,655
			Total 2018	**1,695**	**48,195**
2019					
Construction Worker Trips	Passenger Car	Gasoline	30	26,035	781,050
Material Delivery	Combination Short-haul Truck	Diesel	40	8,750	350,000
Soil Hauling	Combination Short-haul Truck	Diesel	15	407	6,105
			Total 2029	**35,192**	**1,137,155**
2020					
Construction Worker Trips	Passenger Car	Gasoline	30	5,980	179,400
Material Delivery	Combination Short-haul Truck	Diesel	40	6,500	260,000
			Total 2020	**12.480**	**439,400**

SOURCE: Ricondo & Associates, Inc., August 2018, based on information provided by the Las Vegas Monorail Company, April 2018.

A.4.3 EMISSION FACTORS

The U.S. EPA's NONROAD model and MOVES model were used to obtain emission factors for nonroad and onroad vehicles/equipment, respectively. The following assumptions were used to develop appropriate emission factors for use in estimating construction emissions for the Proposed Action:

- Construction years—Vehicle age affects the emission factors assigned to a specific vehicle or piece of equipment. Emission factors were derived for each construction year: 2018, 2019, and 2020.
- Project location—Emission factors can be derived on a national or local basis. National average emission factors, as distributed to Clark County using default distribution assumptions, were assumed in this analysis.
- Seasons—Seasonal variation in fuel characteristics can affect nonroad and onroad vehicle/equipment emissions. In the case of this project, nonroad equipment emissions factors were found to have no significant difference between summer and winter seasons. For onroad emissions, emission factors were developed through the MOVES2014a model using winter for CO and summer for all other pollutants. Emission factors for CO are generally higher during the winter, especially for gasoline vehicles, such as those assumed to be used for construction worker trips. Since construction worker trips comprise the majority of onroad vehicle trips in this analysis, this methodology results in a more conservative estimation of CO emissions.
- Equipment type—Nonroad construction equipment was selected based on construction activities specific to each project component. Onroad vehicles were assumed to include light-duty, gasoline passenger cars for construction worker trips, and heavy-duty, diesel long-haul trucks for material transport (i.e., 18-wheeler, tractor trailer, cement mixer, and dump truck).
- Fuel type—By default, all nonroad construction equipment was assumed to be diesel. Fuel types for onroad vehicles were based on equipment type.

- Fugitive emissions—Equipment-related emission factors for sources of fugitive emissions include evaporative emissions, brake and tire-dust emissions, and re-suspended dust emissions. Dust emission factors in the analysis included dust emissions associated with activities such as earth moving, material handling, and travel on paved and unpaved roads.

Table A-3 presents the default nonroad equipment specifications assumed in the analysis, while **Table A-4** shows the nonroad emission factors for each piece of construction equipment by year and by season, as applicable.

TABLE A-3: NONROAD CONSTRUCTION EQUIPMENT SPECIFICATIONS

EQUIPMENT TYPE	FUEL	HORSEPOWER	LOAD FACTOR
Air Compressor	Diesel	100	0.43
Bore/Drill Rig	Diesel	175	0.43
Compacting Equipment	Diesel	6	0.43
Crane	Diesel	300	0.43
Dozer	Diesel	175	0.59
Excavator	Diesel	175	0.59
Forklift	Diesel	100	0.59
Generator Sets	Diesel	40	0.43
Grader	Diesel	300	0.59
Paving Machine	Diesel	175	0.59
Pumps	Diesel	11	0.43
Roller	Diesel	100	0.59
Rubber Tired Loader	Diesel	175	0.59
Sweepers/Scrubbers	Diesel	175	0.43
Tractors/Loader/Backhoe	Diesel	100	0.21
Trencher	Diesel	75	0.59

SOURCE: Ricondo & Associates, Inc., August 2018, based on similar project specifications provided by the City and County of San Francisco.

TABLE A-4: NONROAD CONSTRUCTION EQUIPMENT EMISSION FACTORS

	EMISSION FACTORS (GRAMS PER HORSEPOWER-HOUR)						
EQUIPMENT BY YEAR	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_{2E}
2018							
Aerial Lift	4.478	0.911	5.081	0.004	0.628	0.578	693.238
Air Compressor	1.377	0.238	2.285	0.003	0.205	0.189	589.648
Bore/Drill Rig	0.995	0.312	3.571	0.003	0.220	0.202	530.096
Compacting Equipment	4.454	0.624	4.506	0.004	0.410	0.377	588.478
Crane	0.317	0.167	1.432	0.003	0.064	0.058	530.537
Dozer	0.492	0.162	1.155	0.003	0.111	0.102	536.339
Excavator	0.380	0.153	0.940	0.003	0.080	0.073	536.366
Forklift	0.510	0.141	0.486	0.003	0.030	0.027	595.729
Generator Sets	1.402	0.364	4.270	0.004	0.272	0.250	589.265
Grader	0.311	0.153	1.005	0.003	0.053	0.048	536.367
Paving Machine	0.767	0.200	1.851	0.003	0.177	0.163	536.226
Pumps	4.465	0.662	4.708	0.004	0.448	0.412	588.364
Roller	1.728	0.195	1.749	0.003	0.225	0.207	595.567
Rubber Tired Loader	0.635	0.177	1.480	0.003	0.149	0.137	536.294
Sweepers/Scrubbers	0.344	0.162	1.202	0.003	0.082	0.075	530.552
Tractors/Loader/Backhoe	4.557	0.731	3.625	0.004	0.649	0.597	693.784
Trencher	1.964	0.250	3.497	0.003	0.229	0.211	595.401
2019							
Aerial Lift	4.213	0.848	4.918	0.004	0.583	0.537	693.428
Air Compressor	1.241	0.224	2.040	0.003	0.182	0.167	589.691
Bore/Drill Rig	0.923	0.298	3.324	0.003	0.205	0.189	530.141
Compacting Equipment	4.454	0.618	4.474	0.004	0.400	0.368	588.496
Crane	0.279	0.162	1.263	0.003	0.055	0.051	530.550
Dozer	0.432	0.158	1.005	0.003	0.094	0.086	536.352
Excavator	0.336	0.151	0.820	0.003	0.067	0.062	536.374
Forklift	0.487	0.141	0.445	0.003	0.026	0.024	595.730
Generator Sets	1.287	0.340	4.157	0.003	0.249	0.229	589.339
Grader	0.277	0.150	0.880	0.003	0.045	0.041	536.375
Paving Machine	0.684	0.191	1.651	0.003	0.156	0.143	536.252
Pumps	4.462	0.651	4.651	0.004	0.433	0.398	588.396
Roller	1.516	0.186	1.528	0.003	0.191	0.176	595.595
Rubber Tired Loader	0.557	0.171	1.298	0.003	0.127	0.117	536.313
Sweepers/Scrubbers	0.302	0.158	1.047	0.003	0.070	0.064	530.564
Tractors/Loader/Backhoe	4.264	0.675	3.350	0.004	0.599	0.551	693.953

EQUIPMENT BY YEAR	EMISSION FACTORS (GRAMS PER HORSEPOWER-HOUR)						
	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_{2E}
Trencher	1.777	0.234	3.425	0.003	0.204	0.187	595.448
2020							
Aerial Lift	3.949	0.785	4.754	0.004	0.538	0.495	693.619
Air Compressor	1.105	0.209	1.794	0.003	0.158	0.145	589.735
Bore/Drill Rig	0.851	0.283	3.077	0.003	0.191	0.176	530.186
Compacting Equipment	4.454	0.612	4.443	0.004	0.390	0.359	588.515
Crane	0.241	0.158	1.095	0.003	0.047	0.043	530.564
Dozer	0.371	0.154	0.855	0.003	0.076	0.070	536.364
Excavator	0.292	0.148	0.701	0.003	0.054	0.050	536.382
Forklift	0.464	0.141	0.404	0.003	0.022	0.020	595.731
Generator Sets	1.173	0.316	4.044	0.003	0.225	0.207	589.413
Grader	0.243	0.148	0.754	0.003	0.038	0.035	536.383
Paving Machine	0.601	0.182	1.451	0.003	0.134	0.124	536.278
Pumps	4.459	0.640	4.594	0.004	0.418	0.384	588.429
Roller	1.304	0.176	1.307	0.003	0.157	0.144	595.622
Rubber Tired Loader	0.478	0.165	1.117	0.003	0.105	0.097	536.332
Sweepers/Scrubbers	0.261	0.154	0.893	0.003	0.058	0.053	530.576
Tractors/Loader/Backhoe	3.970	0.620	3.074	0.004	0.548	0.504	694.122
Trencher	1.589	0.218	3.353	0.003	0.178	0.164	595.495

SOURCE: Ricondo & Associates, Inc., August 2018, using the U.S. Environmental Protection Agency NONROAD2008a emissions model.

Onroad vehicle emission factors by year are presented in **Table A-5**. Key assumptions and notes regarding the modeling of these factors are as follows:

- CO emission factors were modeled for winter; all other pollutant factors were modeled for summer
- Road type: urban unrestricted
- Fuel type: passenger car (gasoline); trucks (diesel)
- CO emission factors include running exhaust, crankcase running exhaust, and crankcase start exhaust
- VOC emission factors include running exhaust, evaporative permeation and fuel vapor venting, crankcase running exhaust, refueling displacement vapor loss, and refueling spillage loss
- NO_x emission factors include running exhaust and crankcase start exhaust
- SO_x emission factors include running exhaust and start exhaust
- PM emission factors include running exhaust, brakewear, tirewear, and crankcase running exhaust
- CO_{2e} emission factors include running exhaust

TABLE A-5: ONROAD CONSTRUCTION VEHICLE EMISSION FACTORS

VEHICLE CATEGORY	EMISSION FACTORS (GRAMS PER MILE)						
	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_{2E}
2018							
Passenger Car	2.223	0.016	0.109	0.005	0.019	0.004	504.614
Combination Short-haul Truck	2.289	0.122	3.570	0.017	0.219	0.097	2,574.816
2019							
Passenger Car	2.083	0.013	0.087	0.006	0.022	0.004	465.862
Combination Short-haul Truck	1.925	0.110	3.027	0.018	0.217	0.090	2,474.999
2020							
Passenger Car	2.123	0.011	0.071	0.006	0.019	0.004	469.425
Combination Short-haul Truck	1.885	0.096	2.692	0.018	0.193	0.076	2,506.819

SOURCE: Ricondo & Associates, Inc., August 2018, using the U.S. Environmental Protection Agency MOVES2014a emissions model.

A.5 SUMMARY OF CONSTRUCTION EMISSIONS

Emissions for nonroad and onroad construction equipment were estimated using the following equations:

*Nonroad Equipment Emissions (tons/year) = emission factor (grams per horsepower-hour) * size (horsepower) * load factor * hours per year * (1 pound/453.592 grams) * 1 ton/2,000 pounds)*

*Onroad Vehicle Emissions (tons/year) = emission factor (grams per vehicle-mile) * miles per year * (1 pound/453.592 grams) * 1 ton/2,000 pounds)*

Fugitive dust emissions sources of PM_{10} were calculated for soil handling and material movement based on project-specific specifications, as well as methodologies included in the U.S. EPA's AP-42, using the following equations and assumptions:

Soil Handling

PM_{10} Emissions (tons/year) = T x 0.35 x 0.0032 x [(u/5)^1.3] / [(m/2)^1.4]

u=wind speed: 5 miles per hour
m = moisture content: 0.25 fraction
T = Mass of aggregate: 10,395 tons, based on 7,000 cubic yards of soil at 110 pounds per cubic yard

Material Movement (Paved Roads)

PM_{10} Emissions (tons/year) = 0.0022 x (sL^0.91) x (Wt.^1.02) x VMT

sL = Road surface silt loading: 0.1 g/m^3
Wt. = Mean vehicle weight: 32 tons

VMT = Vehicle miles traveled: varies by project component

Material Movement (Unpaved Roads)

PM_{10} Emissions (tons/year) = 1.5 x [(s/12)^0.9] x [(Wt./3)^0.45] x VMT

s = Surface material silt loading: 0.043 fraction
Wt. = Mean vehicle weight: 32 tons
VMT = Vehicle miles traveled: varies by project component (5 miles per trip)

Table A-6 summarizes the annual emissions of criteria air pollutants and CO_{2e} estimated by project component for construction of the Proposed Action, which would occur from 2018-2020.

TABLE A-8: ANNUAL POLLUTANT EMISSIONS DUE TO CONSTRUCTION OF THE PROPOSED ACTION

	EMISSIONS (TONS/YEAR)						METRIC TONS/YEAR
	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_{2E}
Earthwork							
2018	0.395	0.071	0.492	0.001	0.279	0.039	181.938
2020	0.851	0.157	1.033	0.003	0.741	0.081	414.240
	1.246	**0.228**	**1.525**	**0.004**	**1.020**	**0.120**	**596.178**
Guideway Construction							
2019	6.654	1.127	8.203	0.022	4.650	0.664	3,115.116
	6.654	**1.127**	**8.203**	**0.022**	**4.650**	**0.664**	**3,115.116**
Station Construction							
2019	1.526	0.290	2.453	0.008	1.664	0.158	1,078.787
2020	1.412	0.274	2.145	0.007	1.615	0.135	1,067.202
	2.938	**0.564**	**4.598**	**0.015**	**3.278**	**0.292**	**2,145.990**
Utilities							
2020	**0.622**	**0.054**	**0.708**	**0.003**	**1.091**	**0.037**	**405.797**

SOURCE: Ricondo & Associates, Inc., August 2018, using the U.S. Environmental Protection Agency NONROAD2008a and MOVES2014a emissions models, and U.S. Environmental Protection Agency, AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition., January 1995, as amended.

Table A-7 compares the maximum annual emissions with the applicable *de minimis* thresholds. Even with the short-term increase in emissions from the construction of the Proposed Action, emission levels would be well below *de minimis* thresholds. Changes in criteria air pollutant emissions due to construction of the Proposed Action would not result in an adverse effect on air quality.

TABLE A-7: PROPOSED ACTION CONSTRUCTION EMISSIONS SUMMARY AND COMPARISON TO *DE MINIMIS*

	EMISSIONS (TONS/YEAR)					
	CO	VOC	NO_X	SO_X[1]	PM_{10}	$PM_{2.5}$
Total Emission by Year						
2018	0.395	0.071	0.492	0.001	0.279	0.039
2019	9.031	1.575	11.688	0.032	7.054	0.902
2020	2.034	0.328	2.852	0.011	2.705	0.172
de minimis Threshold	100.000	100.000	100.000	100.000	100.000	100.000
Difference (Under)/Over *de minimis* Threshold						
2018	(99.605)	(99.929)	(99.508)	(99.999)	(99.721)	(99.961)
2019	(90.969)	(98.425)	(88.312)	(99.968)	(92.946)	(99.098)
2020	(97.966)	(99.672)	(97.148)	(99.989)	(97.295)	(99.828)
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

NOTE:

1 For purposes of this analysis, it was assumed that estimates of SO_x emissions are equal to calculated emissions of SO_2.

SOURCE: Ricondo & Associates, Inc., August 2018, using the U.S. Environmental Protection Agency NONROAD2008a and MOVES2014a emissions models, and U.S. Environmental Protection Agency, AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition., January 1995, as amended.

APPENDIX B

Agency and Public Coordination

NEVADA
STATE HISTORIC PRESERVATION OFFICE

Department of Conservation and Natural Resources

Brian Sandoval, Governor
Bradley Crowell, Director
Rebecca L. Palmer, Administrator, SHPO

October 9, 2018

Dee Phan
Environmental Protection Specialist
Federal Aviation Administration
3800 N. Central Ave., Ste., 1025, 10th Floor
Phoenix, AZ 85012

Re: Proposed Las Vegas Monorail Extension, McCarran International Airport, Las Vegas, Clark County, Nevada (UT # 2018-5593)

Dear Ms. Phan:

The Nevada State Historic Preservation Office (SHPO) has reviewed the subject documents received September 13 and October 9, 2018 in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Thank you for submitting additional information in response to our letter dated September 15, 2018. The SHPO previously concurred with the Area of Potential Effect and archaeological identification effort for this undertaking. The SHPO also previously acknowledged the Federal Aviation Administration's (FAA) consultation effort for this undertaking.

Identification and Evaluation of Historic Properties
The SHPO previously concurred that the surveyed segments of S2116, S2117, S2118, and S2119 are not eligible for listing in the National Register of Historic Places (NRHP).

FAA has evaluated the segment of South Las Vegas Boulevard/Old U.S. 91/Arrowhead Trail Highway in the APE. The FAA transmittal letter includes a determination that the "segment within the direct and indirect APE" is not eligible for NRHP listing. However, the submitted ARA form for the resource documented and evaluated only the segment within the *direct* APE. Therefore, the SHPO is unable to comment on the potential eligibility of the segments in the larger indirect APE. The submitted ARA form did not include a SHPO Structure number for the segment. Our office has assigned the number S2162 to the resource. The SHPO **concurs** that the surveyed segment of S2162 is **not eligible** for NRHP listing.

FAA has submitted a list of 24 resources in the indirect APE that are 50 years of age, along with photographs of the resources keyed to a map. The SHPO acknowledges that FAA is leaving the 24 resources unevaluated and treating them as NRHP-eligible for the purposes of this undertaking.

In addition, in an email dated October 9, 2018, FAA indicated that the agency is also leaving the unevaluated segments of South Las Vegas Boulevard in the indirect APE (north and south of the direct APE) unevaluated and will treat them as NRHP-eligible for the purposes of the undertaking.

Finding of Effect
The SHPO **concurs** with FAA's finding that the proposed undertaking will result in **No Adverse Effect** to historic properties.

Should you have any questions concerning this correspondence, please contact SHPO staff architectural historian Kristen Brown at (775) 684-3439 or by email at knbrown@shpo.nv.gov.

Sincerely,

Robin K. Reed
Deputy State Historic Preservation Officer

U.S Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

15000 Aviation Boulevard
Lawndale, CA 90261

JUN 29 2018

Daryl Crawford
Executive Director
Intertribal Council of Nevada
680 Greenbrae Drive, Suite 265
Sparks, NV 89431

Proposed Las Vegas Monorail Extension, McCarran International Airport,
Las Vegas, Clark County, Nevada
Government-to-Government Consultation Initiation

Dear Mr. Crawford:

Government-to-Government Consultation Initiation

The Federal Aviation Administration (FAA) and the Clark County Department of Aviation (CCDOA) are preparing an Environmental Assessment (EA) evaluating the potential environmental effects resulting from a proposal by the Las Vegas Monorail Company (LVMC) to extend the Las Vegas Monorail (LVM) from the MGM Grand Hotel to the Mandalay Bay Resort. A portion of the proposed LVM extension would be on McCarran International Airport (LAS) property, requiring a change to the Airport Layout Plan that must be approved by the FAA. The CCDOA is the sponsor of LAS. The FAA is the lead Federal Agency for Government-to-Government consultation for the proposed project. Tribal sovereignty, culture, traditional values and customs will be respected at all times during the consultation process.

Purpose of Government-to-Government Consultation

The primary purpose of Government-to-Government consultation, as described in Federal Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, and FAA Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*, is to ensure that Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect the Tribes. I am the FAA Official with the responsibility of coordinating Government-to-Government consultations with Tribes under FAA Order 1210.20.

Consultation Initiation

With this letter, the FAA is seeking input on concerns that uniquely or significantly affect your Tribe related to proposed airport improvements. Early identification of Tribal concerns, or known properties of traditional, religious, and cultural importance, will allow the FAA to consider ways to avoid or minimize potential impacts to Tribal

resources as project planning and alternatives are developed and refined. We are available to discuss the details of the proposed project with you.

Project Information

The LVMC is proposing to extend the existing LVM system from the MGM Grand Hotel on East Tropicana Avenue south along Koval Lane, along the border of LAS, then west along East Reno Avenue to Giles Street then west along Mandalay Bay Road to the Mandalay Bay Convention Center (MBCC) west of LAS. The LVM system is a dual fixed guideway elevated transit system with nine trains and seven stations. The LVM connects eight hotel/resort properties and the Las Vegas Convention Center and has been in operation for 14 years. Approximately 90% of LVM riders are fly-in travelers (LAS users). The proposed LVM extension would provide greater connectivity by reducing pedestrian and vehicle congestion in the Resort Corridor. The proposed undertaking includes construction of approximately 1.14 miles of elevated, dual guideway track. The guideway would be supported by a series of 60 support columns on drilled shaft foundations. One four-car, side platform station and one traction power station would also be constructed.

Enclosed are two exhibits depicting the Project Location and Area of Potential Effects to help illustrate the proposed undertaking.

Confidentiality

We understand that you may have concerns about the confidentiality of information on areas or resources of traditional, religious, and cultural importance to your Tribe. We are available to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

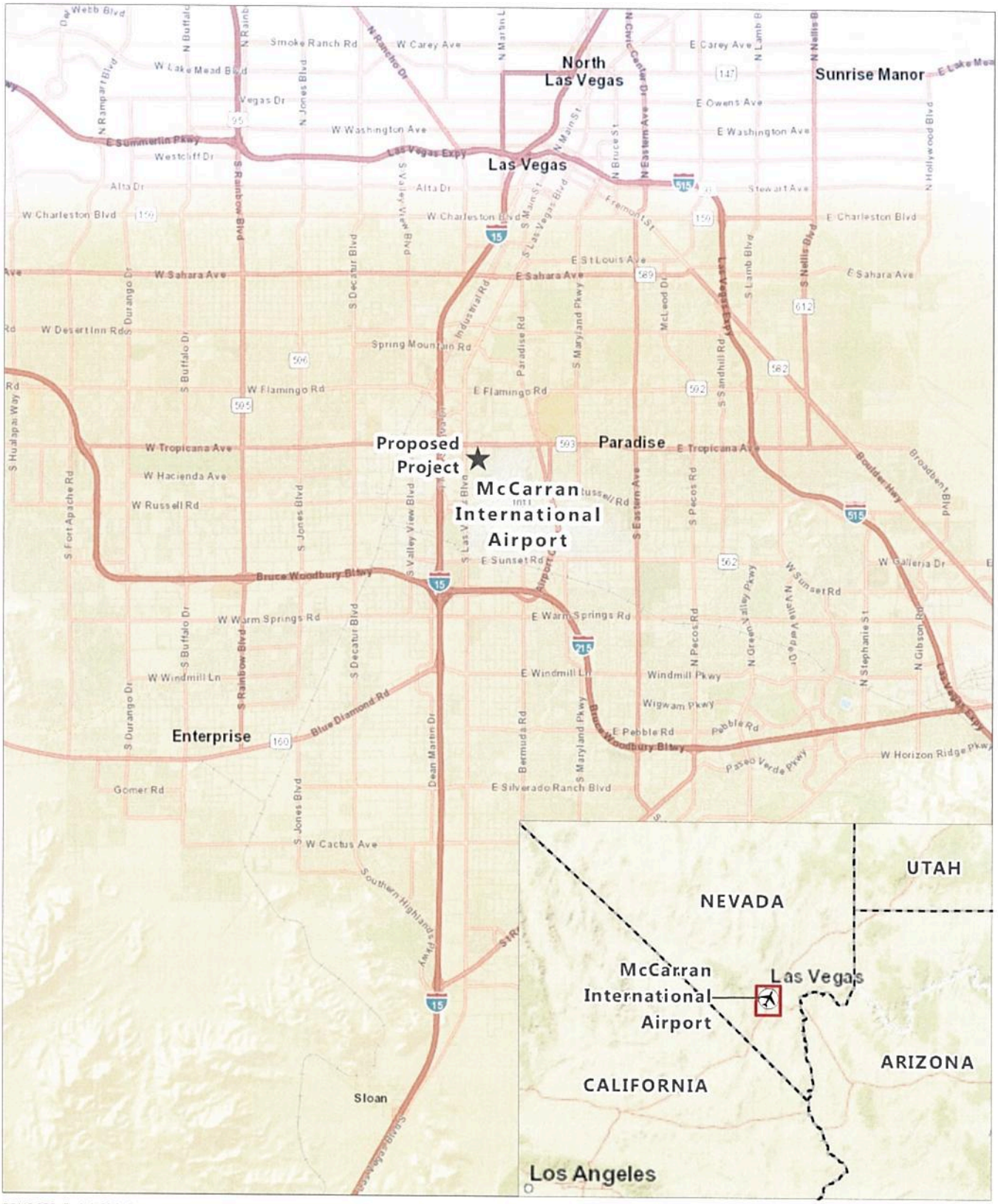
FAA Contact Information

Your timely response within 30-days of receipt of this correspondence will greatly assist us in incorporating your concerns into project planning. If you wish to provide comments related to this proposed project, please contact Ms. Dee Phan, Environmental Protection Specialist, at 602-792-1066 or by email at dee.phan@faa.gov. Please feel free to contact me directly at 310-725-3600 or mark.mcclardy@faa.gov.

Sincerely,

Mark A. McClardy
Director, Office of Airports
Western-Pacific Region

Enclosures



SOURCES: Esri, HERE, DeLorme, MapmyIndia, OpenStreetMap contributors, and the GIS user community, May 2018 (basemap).

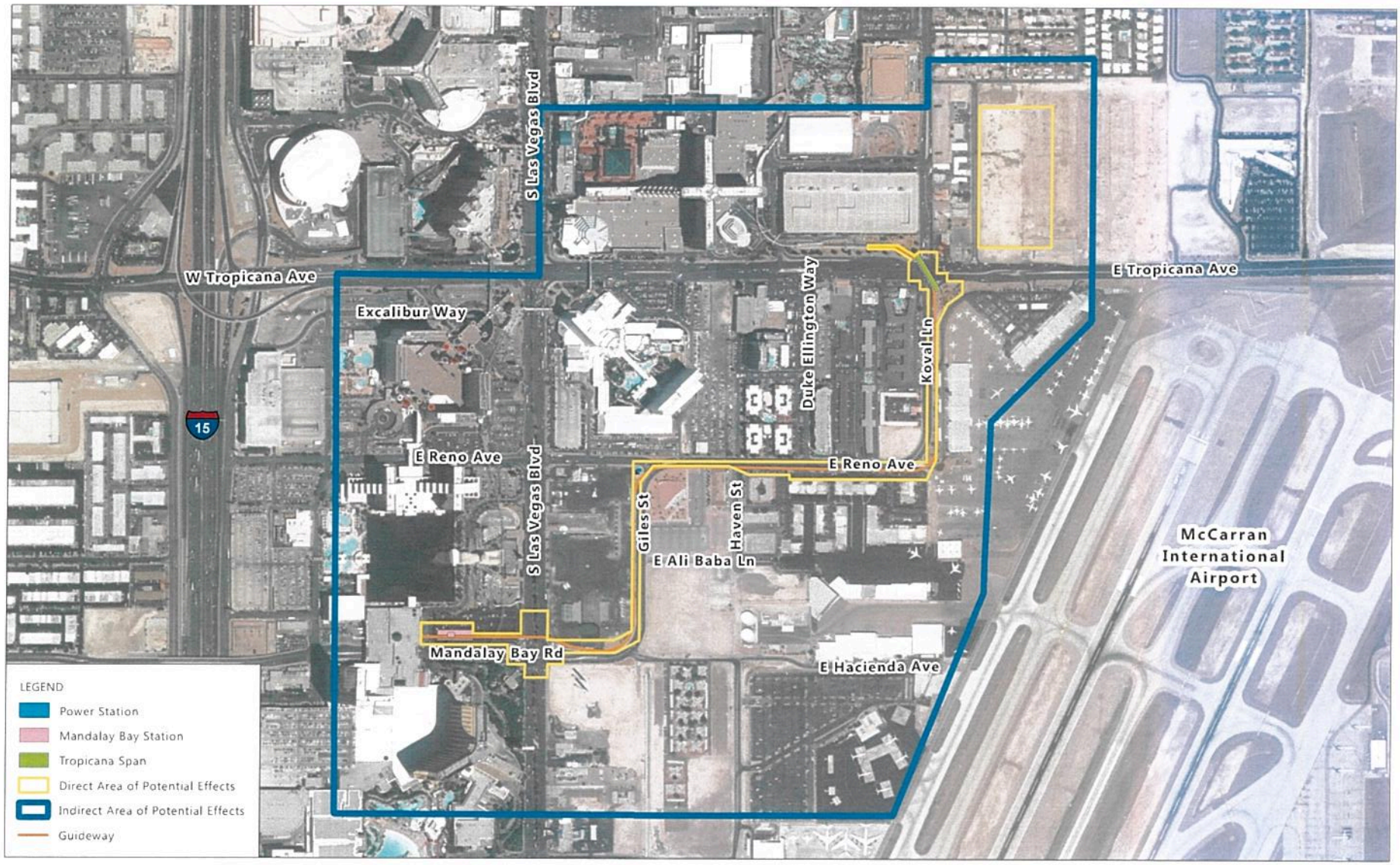
EXHIBIT 1

NORTH

0 3 mi.

Project Location

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SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Ricondo & Associates, Inc., May 2018 (Direct and Indirect Area of Potential Effects); Las Vegas Monorail Company, 2018 (monorail components).

EXHIBIT 2

NORTH 0 1,000 ft.

Area of Potential Effects

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LAS VEGAS
McCARRAN INTERNATIONAL AIRPORT

Department of Aviation
ROSEMARY A. VASSILIADIS
DIRECTOR

POSTAL BOX 11005
LAS VEGAS, NEVADA 89111-1005
(702) 261-5211
FAX (702) 597-9553

August 8, 2018

VIA CERTIFIED MAIL
91 7199 9991 7034 0820 9548

Mr. Skip Canfield
State of Nevada Clearinghouse
Nevada Division of State Lands
901 S. Stewart Street, Suite 5003
Carson City, Nevada 89701-5246

RE: Proposed Las Vegas Monorail Extension in Clark County, Nevada

Dear Mr. Canfield:

The Federal Aviation Administration (FAA) and the Clark County Department of Aviation (CCDOA) are preparing an Environmental Assessment (EA) evaluating the potential environmental effects resulting from a proposal by the Las Vegas Monorail Company (LVMC) to extend the Las Vegas Monorail (LVM) from the MGM Grand Hotel to the Mandalay Bay Resort (Proposed Action). A portion of the proposed LVM extension would be on McCarran International Airport (LAS) property, requiring a change to the Airport Layout Plan that must be approved by the FAA. FAA approval of the Airport Layout Plan is a federal action that must be evaluated in accordance with the National Environmental Policy Act (NEPA).

The FAA is, therefore, the lead agency for the EA. The EA will be prepared in accordance with NEPA; the Council on Environmental Quality Regulations (20 Code of Federal Regulations 1500-1509); FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The EA will assess the environmental consequences associated with the Proposed Action, and prudent and feasible alternatives, and the No Action Alternative.

The LVMC is proposing to extend the existing LVM system from the MGM Grand Hotel on East Tropicana Avenue south along Koval Lane, along the border of LAS, then west along Reno Avenue to Giles Street then west along Mandalay Bay Road to the Mandalay Bay Convention Center (MBCC) west of LAS. The LVM system is a dual fixed guideway elevated transit system with nine trains and seven stations along the east side of the Las Vegas Strip. The LVM connects eight hotel/resort properties and the Las Vegas Convention Center (LVCC) and has been in operation for 14 years.

The proposed undertaking includes construction of approximately 1.14 miles of elevated, dual guideway track. The guideway would be supported by a series of 60 support columns on drilled shaft foundations. One four-car, side platform station and one traction power station would also be constructed. A description of the Proposed Key Elements of the Proposed Action is provided in Attachment A, which includes three exhibits depicting the project location, the Proposed Action, and the Study Area.

CLARK COUNTY NEVADA
Clark County Board of Commissioners
Steve Sisolak, Chairman • Chris Giunchigliani, Vice Chair
Susan Brager • Larry Brown • James B. Gibson • Marilyn Kirkpatrick • Lawrence Weekly

Construction is scheduled to begin in 2018 with a substantial completion in 2020. Construction activities are planned to begin at both ends of the alignment simultaneously and would not require full road lane closures. The construction timeframe is subject to completing the federal environmental review process, obtaining all environmental permits, and completing the design. Testing of the system would commence upon substantial completion of the structural, electrical, and mechanical elements of the Proposed Action and will take place over approximately 8 months, primarily during nighttime hours.

This notification is sent as part of the process to determine the scope of issues addressed in the EA, and specifically to:

1. Advise your agency or organization of the preparation of the EA;
2. Request any relevant information that your agency or organization may have regarding the Airport environs; and
3. Solicit early comments regarding potential issues to consider as the EA is prepared.

Please send information and comments to the contact information below, along with a return mailing and email address so that you can be notified as information about the project becomes available.

SundayLee Cabrera
Airport Property Manager
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, NV 89111
sundayl@mccarran.com

With a copy to:
Julie A. Car
Senior Consultant
Ricondo & Associates, Inc.
20 N. Clark Street, Suite 1500
Chicago, Illinois 60602
jcar@ricondo.com

As there is an established 30-day review period, please provide written correspondence by September 8, 2018, to address your concerns.

Sincerely,

ROSEMARY A. VASSILIADIS
DIRECTOR OF AVIATION

ENCLOSURES

ATTACHMENT A

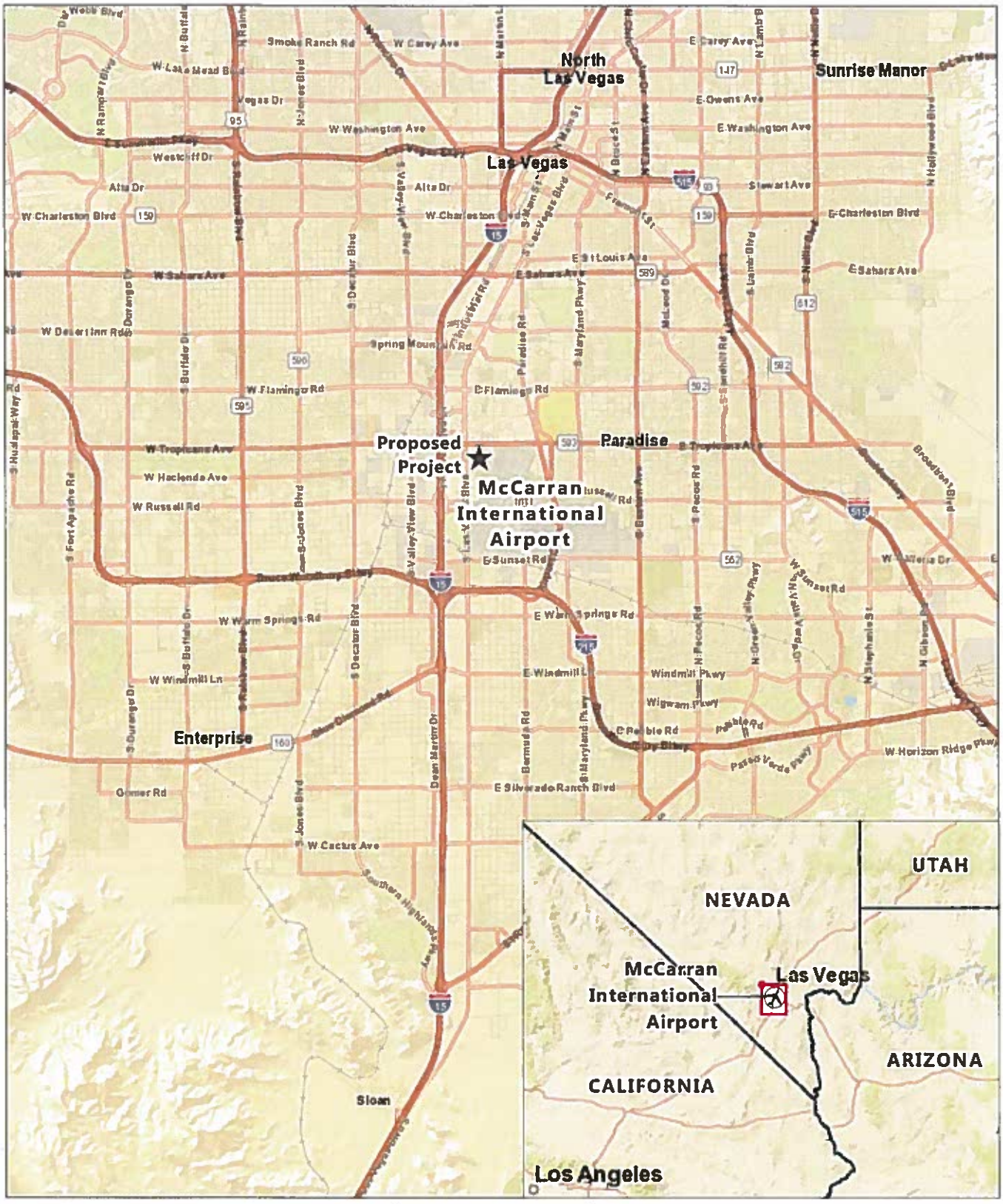
PROPOSED LAS VEGAS MONORAIL EXTENTION KEY ELEMENTS

The key elements of the proposed Las Vegas Monorail (LVM) extension are:

- Construct 6,000 linear feet (1.2 miles) of elevated, dual guideway track from the existing MGM Grand Station to a new station at the Mandalay Bay Resort.
    - The proposed guideway would be supported by a series of approximately 60 support columns on drilled shaft (caisson) foundations. The columns would be spaced approximately 100 feet apart and placed to a depth of 35 to 55 feet below the ground.
        - Column diameters would range from 4 feet by 4 feet to 6 feet by 6 feet and would be approximately 25 to 35 feet in height above the ground.
        - Approximately 25 columns would be located on Airport property (14 along east side of Koval Lane and 11 along south side of Reno Avenue).
        - Approximately 7,000 cubic yards of material would be excavated for construction of the columns; the material would be transported and deposited at the Las Vegas Paving Blue Diamond Pit.
    - The proposed guideway would span diagonally from the northwest corner to the southeast corner of the intersection of Tropicana Avenue and Koval Lane (Tropicana Span).
        - Guideway beams would be constructed on four steel beams (4 feet in width and 9 feet in depth).
        - Support columns for the Tropicana Span would be 8 feet by 8 feet.
    - The proposed guideway would include a cable tray for electrical cables and an emergency walkway in the middle.
- Construct four-car, side platform station on the north side of Mandalay Bay Road situated between the Mandalay Bay Resort and the Luxor Hotel.
    - The platform station would be approximately 140 feet in length and 54 feet in height.
    - The north side of the station would have one active passenger loading and unloading platform and the south side would consist of a maintenance platform. The station would include an elevator, escalator, and stair access, and be connected to a pedestrian bridge constructed by MGM Resorts.
- Construct a 750-kilowatt traction power station (TPS) at the southwest corner of Giles Street and Reno Avenue, consisting of a transformer, a switch gear, and electrical service protection devices.

The following associated elements of the Proposed Action are necessary to support the LVM extension:

- Close existing west driveway entrance to the Ribeiro Quail Air Center on the south side of Reno Avenue and construct a replacement driveway entrance farther east.
- Relocate existing overhead utility lines underground at the Las Vegas Boulevard/Mandalay Bay intersection, Tropicana Avenue/Koval Lane intersection, and along the south side of Reno Avenue.
    - Existing light poles and underground utility conduits and sanitary sewer connections would receive minor adjustments to facilitate installation of column footings.
- Relocate the McCarran International Airport monument sign at the southeast corner of Tropicana Avenue and Koval Lane and two east facing billboards on the south side of Tropicana Avenue, east of Koval Lane.



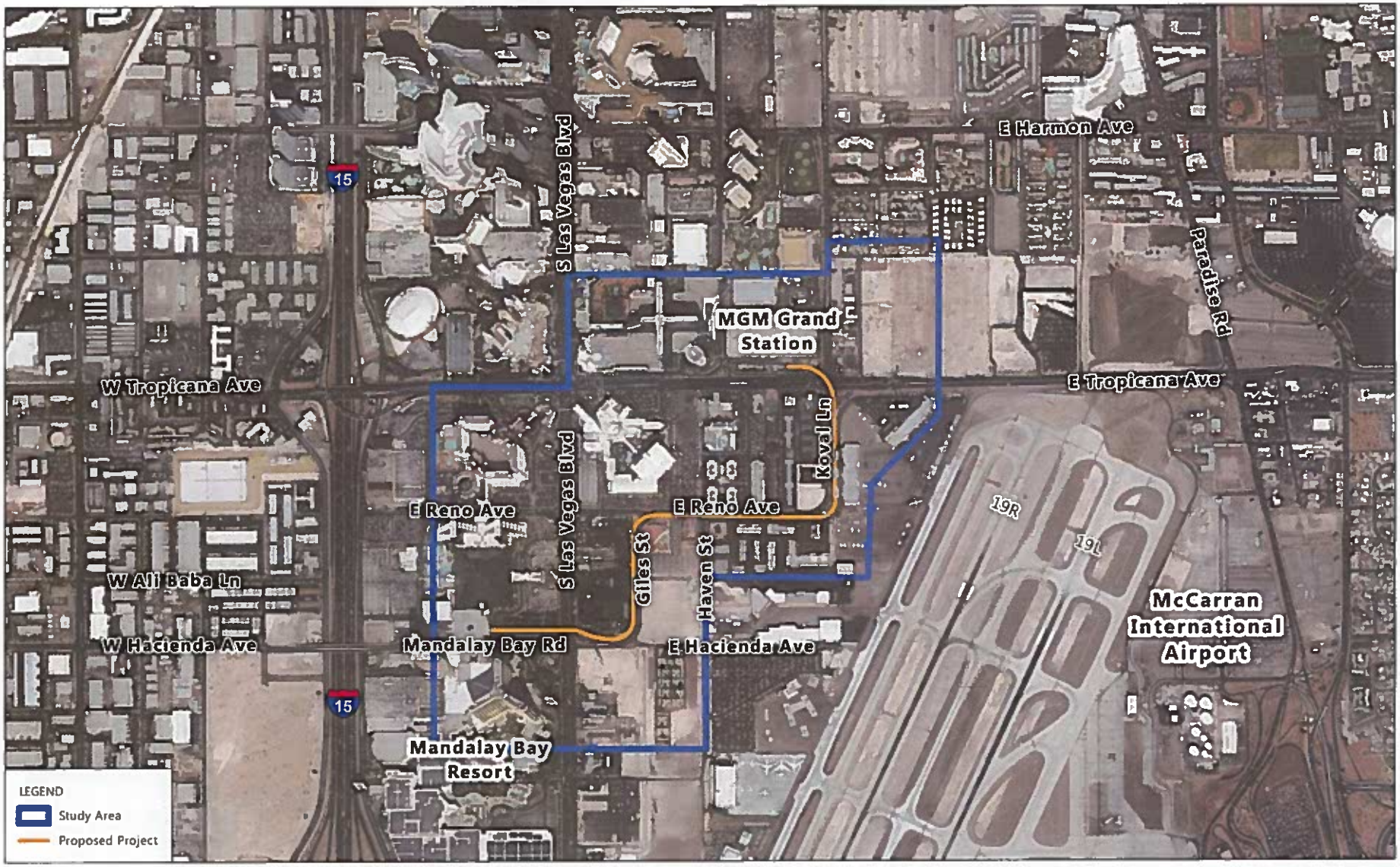
SOURCES: Esri, HERE, DeLorme, MapmyIndia, OpenStreetMap contributors, and the GIS user community, May 2018 (basemap).

EXHIBIT 1

NORTH 0 3 mi

Project Location

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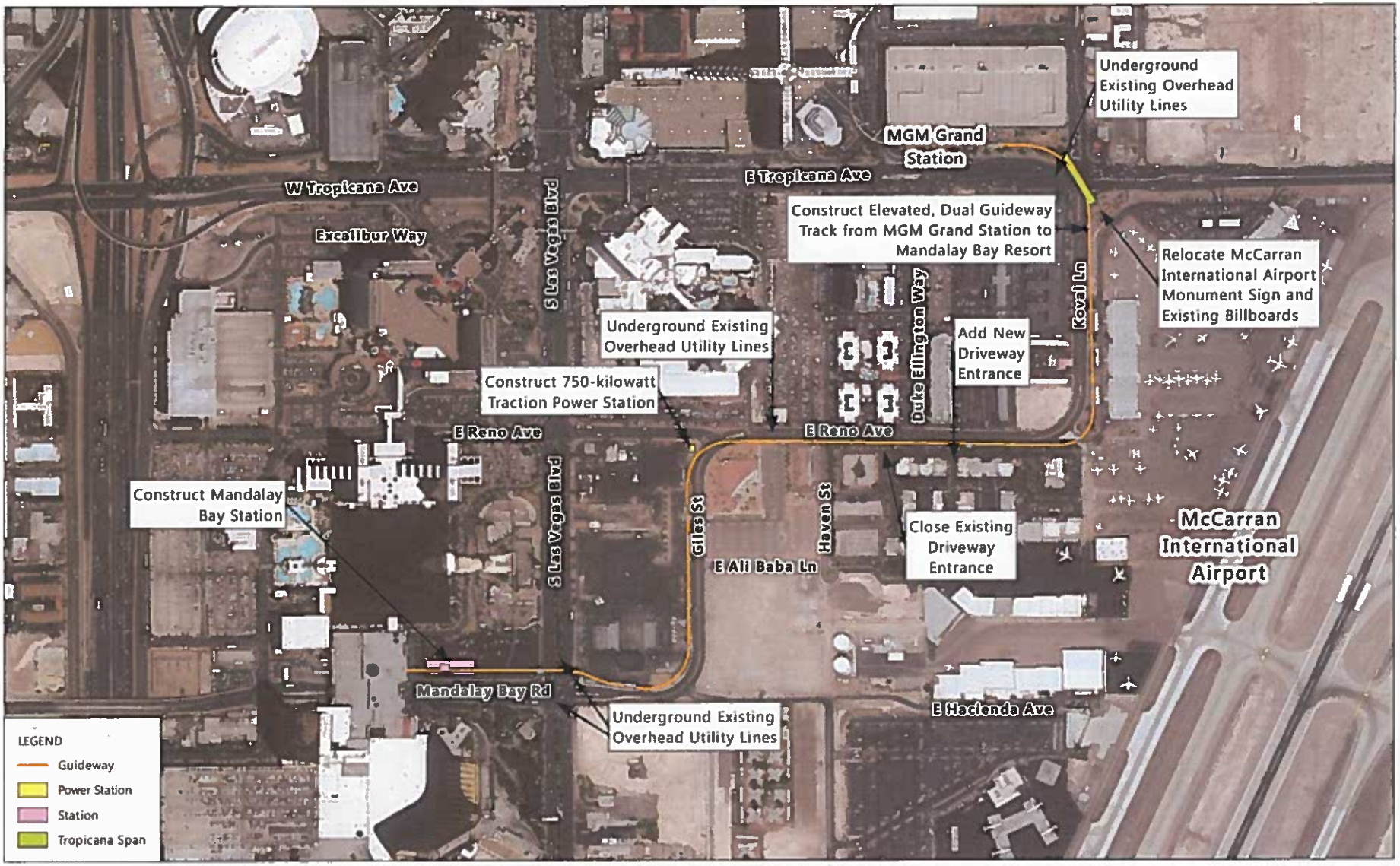
SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Las Vegas Monorail Company, 2018 (monorail components); Ricondo & Associates, Inc., June 2018 (study area).

NORTH 0 1,500 ft.

EXHIBIT 2

Study Area

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SOURCES: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, May 2018 (aerial basemap); Las Vegas Monorail Company, 2018 (monorail components).

EXHIBIT 3

Proposed Action

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E2019-016 (Scoping - EA - Las Vegas Monorail Extension)

The SHPO has reviewed the document. Along with a general discussion of the direct effects to cultural resources, the SHPO recommends that the document address any potential visual, audible, or atmospheric effects to the Little Church of the West. This National Register of Historic Places listed historic property (listed in 1992; NRIS # 92001161) is located approximately 2,000 feet south of the intersection of the undertaking with South Las Vegas Blvd..

Regards,

Rebecca Lynn Palmer
State Historic Preservation Officer
901 South Stewart Street, Suite 5004
Carson City NV 89701
(phone) 775.684.3443

NEVADA
STATE HISTORIC
PRESERVATION OFFICE

RICONDO®

MEMORANDUM

Date: August 3, 2018

To: Dee Phan
Federal Aviation Administration

From: John Williams

Subject: PUBLIC INVOLVEMENT CONDUCTED BY THE LAS VEGAS MONORAIL CORPORATION

The Las Vegas Monorail Corporation (LVMC) provided the following information summarizing public communication and involvement related to the proposed extension of the Las Vegas Monorail (LVM).

Three public workshops have been conducted to gain input from affected stakeholders and impacted parties, including adjacent landowners and airport tenants. Additionally, one-on-one meetings were conducted with affected properties and parties adjacent to the alignment beginning in 2016 and prior to each set of the following five community meetings, listed below.

The public concerns were with respect to the potential for work being conducted at night during sleeping hours and whether Koval Lane would be fully closed at any time. The LVMC will file a construction schedule with the County that will be reviewed by neighbors and must be agreed upon. This satisfied concerns regarding nighttime work. Full closure of Koval Lane would not be allowed by the County.

Airport tenants, the Ribeiro Corporation and Atlantic Aviation, expressed concerns regarding the proximity of the proposed guideway to existing facilities and the potential for an increase in noise, as well as potential line of sight issues from facility driveways. Additionally, the Ribeiro Corporation and Atlantic Aviation were concerned about the potential visual effects from the guideway columns. Through one-on-one meetings and ongoing correspondence, modifications to the guideway alignment addressed concerns regarding noise and line of sight issues. Potential visual impacts will be addressed through the establishment of aesthetic standards consistent with engineering, design, and structural integrity standards for the columns. These standards will be implemented for columns within the Airport tenants' ground leases.

Parties Consulted

- MGM Resorts International
- Clark County
- McCarran International Airport/CCDOA
- Motel 6
- Travelodge Las Vegas
- Howard Johnson

- America's Best Value Inn
- Atlantic Aviation
- Ribeiro Corporation
- Tenants of Ribeiro Corporation Quail Air Center
- Penn Gaming/Tropicana Hotel & Casino
- Rebel Oil
- Tenants of [business park west of Ribeiro]
- Onyx Apartments
- Desert Rose Resorts, a Wyndham property
- Hooters
- Shrine of the Most Holy Redeemer Catholic Church
- Martin Parelman (Billboard)

Public Workshops/Community Meetings

- Tuesday, September 6, 2016, 5:30-7 p.m. at Mandalay Bay Convention Center, room South Pacific J

- Wednesday, January 4, 2017, 2-5 p.m. in the Ribeiro Corporation conference room, 175 E. Reno, Suite C9

- Tuesday, January 10, 2017, 9 a.m. – 12 p.m. in the Ribeiro Corporation conference room, 175 E. Reno, Suite C9

- Additionally, notices were sent out to all addresses within 1,500 feet of the alignment as part of the notification process for the Clark County SUP prior to the Paradise Town Advisory Board (TAB) on September 13, 2016 and February 13, 2018; and the Board of County Commissioners (BCC) meetings held November 21, 2016, February 21, 2017, and March 7, 2018.