

# ENVIRONMENTAL ASSESSMENT

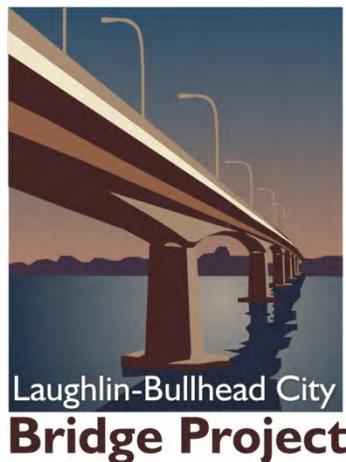
FHWA-NV-EA 10.02

DE-PLH-0003(108)

EA: 73360

**October 2010**

Federal Highway Administration  
in cooperation with  
Nevada Department of Transportation  
and  
Arizona Department of Transportation  
and  
Regional Transportation Commission of Southern Nevada  
and  
U.S. Coast Guard  
and  
U.S. Army Corps of Engineers



Laughlin–Bullhead City Bridge Project  
Needles Highway in Laughlin, Nevada  
to SR 95 in Bullhead City, Arizona

**ENVIRONMENTAL ASSESSMENT**

for

Laughlin-Bullhead City Bridge Project

FHWA-NV-EA 10.02

DE-PLH-0003(108)

EA: 73360

October 2010

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This Environmental Assessment has been prepared in accordance with the provisions and requirements of Chapter 1, Title 23, 23 Code of Federal Regulations (CFR) Part 771, relating to the implementation of the National Environmental Policy Act (NEPA) of 1969.

1 **ABSTRACT**

2 The Federal Highway Administration (FHWA) in cooperation with the Nevada Department of  
3 Transportation (NDOT); Arizona Department of Transportation (ADOT); United States (U.S.)  
4 Army Corp of Engineers (USACE); U.S. Coast Guard (USCG); and Regional Transportation  
5 Commission of Southern Nevada (RTCSNV) have prepared this Environmental Assessment  
6 (EA). This EA examines the potential environmental impacts of the alternatives being  
7 considered for the proposed Laughlin–Bullhead City Bridge Project located in Clark County,  
8 Nevada and Mohave County, Arizona. This document describes why the project is being  
9 proposed, alternatives for the project (including the No Build Alternative), the existing  
10 environment that may be affected by the project, the potential impacts from each alternative, and  
11 the proposed mitigation measures.

12 FHWA (as the project lead) and NDOT are proposing to build a new four-lane bridge (two  
13 general-purpose lanes in each direction and a multi-use pathway) over the Colorado River  
14 between Laughlin, Nevada and Bullhead City, Arizona. The proposed project is not included in  
15 either state’s highway system. In addition to the new bridge, the proposed project includes a new  
16 intersection and a four-lane approach roadway from Needles Highway in Nevada; and a four-  
17 lane approach roadway from the extension of Bullhead Parkway west of State Route (SR) 95 in  
18 Arizona. Each four-lane approach consists of two general-purpose lanes in each direction and a  
19 multi-use pathway. Other temporary components would include construction staging areas,  
20 material borrow areas, and other support facilities.

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## ACRONYMS AND ABBREVIATIONS

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AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
ADA	American with Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AMEC	AMEC Earth and Environmental, Inc.
AOI	Area of influence
APE	Area of potential effect
ARS	Arizona Revised Statute
ASLD	Arizona State Land Department
AZPDES	Arizona Pollutant Discharge Elimination System
BA	Biological Assessment
BATS	Bullhead Area Transit System
BDRP	Business and Design Research Park
BFE	Base Flood Evaluations
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	United States Bureau of Reclamation
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CIA	Community Impact Assessment
CO	Carbon monoxide
CWA	Clean Water Act
dBA	A-weighted decibel
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTA	Federal Transit Authority
FY	Fiscal Year

## Acronyms and Abbreviations

HDR	HDR Engineering, Inc.
IDT	Interdisciplinary Team
KOP	Key Observation Point
LAeq1h	Average decibels over one hour, A-weighted
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
LEP	Limited English Proficiency
LHFO	Lake Havasu Field Office
LOS	Level of service
LUST	Leaking Underground Storage Tank
LWCF	Land & Water Conservation Fund
MBTA	Migratory Bird Treaty Act
MDP	Major Development Project
mg/L	Milligrams per liter
MOU	Memorandum of Understanding
mph	Miles per hour
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAC	Noise abatement criteria
NAP	Noise Abatement Policy (ADOT)
NCHRP	National Cooperative Highway Research Program
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDSL	Nevada Division of State Lands
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NWI	National Wetlands Inventory
NWP	Nation Wide Permit
OHV	Off-Highway Vehicle
OHWM	Ordinary High Water Mark
PM <sub>10</sub>	particulate matter, smaller than 10 microns
ppm	parts per million
PRCSD	Parks, Recreation, and Community Services Department
ROW	Right-of-way
RM	River Mile

## Acronyms and Abbreviations

RMP	Resource Management Plan
RSA	Resource Study Area
RTCSNV	Regional Transportation Commission of Southern Nevada
RV	Recreational Vehicle
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SHPO	State Historic Preservation Office
SNTC	Southern Nevada Transit Coalition
SR	State Route
STIP	Statewide Transportation Improvement Plan
SWPPP	Stormwater Pollution Prevention Plan
TCM	Transportation Control Measures
TDS	Total Dissolved Solids
TSM	Transportation Systems Management
TxDOT	Texas Department of Transportation
U.S.	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USC	United States Code
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VHT	Vehicle Hours of Travel
VMT	Vehicle Miles Traveled
WACOG	Western Area Council of Governments
WOUS	Waters of the United States
WQC	Water Quality Certification
ZOI	Zone-of-Influence

**1 LIST OF MITIGATION MEASURES**

2 The following list describes measures that will be implemented as part of the project to avoid,  
 3 reduce, or otherwise mitigate environmental impacts associated with the project’s preferred  
 4 alternative.

5 Mitigation measures and actions are to comply with federal, state, and local laws/regulations in  
 6 the areas of noise, air quality, water quality, wetlands, protected species, Section 4(f) resources,  
 7 floodplains, hazardous materials, and engineering design as well as those listed below and  
 8 specified in the contract documents.

9 The following mitigation measures and commitments are not subject to change or modification  
 10 without prior written approval from the FHWA. This list does not include any of FHWA’s  
 11 permits, approvals, or reviews that are required related to Plans, Specifications, and Estimates;  
 12 Right-of-way (ROWs); contracts; or other design or administrative aspects of the project.

**Project Responsibilities (Clark County and Bullhead City)**

EA Section Reference	Mitigation/ Compliance Category	Description
2.1.4.2	Construction	Local jurisdictions will coordinate with businesses to address access and construction concerns.
2.1.4.2 2.15.1.3.2 2.15.3.3.2 2.16.1.3.2	Construction/ Mobility and Access/ Safety	Transportation management plans will be developed and specified in contract documents to maintain traffic safety and access during construction. All traffic-related impacts will be short-term, ending upon completion of the project. Access to businesses will be maintained during construction.
2.3.3.2	Hydrology and Water Quality	Obtain operational water quality certification from NDEP and ADEQ that is associated with the collection and management of bridge and roadway run-off. This water quality certification will address water quality degradation aspects of the river (due to the operation of the proposed bridge).
2.4.3.2	Floodplain	If it is determined that levees will be affected, coordination with USACE and BOR may be required.
2.5.4	Wetlands and Jurisdictional Waters	Obtain USACE Clean Water Act Section 404 permit, Section 401 Water Quality Certification, and an USCG Section 9 Bridge Permit.
2.6.2.3.2	Biological Resources and Sensitive Species	Noxious weed control and abatement will be implemented as part of ongoing project maintenance by the local jurisdictions’ public works departments.

**Project Responsibilities (Clark County and Bullhead City)**

EA Section Reference	Mitigation/ Compliance Category	Description
2.10.3.2	Socioeconomics	In conformance with the Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act), ROW will be negotiated for with property owners directly affected, ensuring they receive fair market value for the ROW acquired. Landscaping, signs, and other items located within the acquired ROW will be relocated, replaced, or compensated as required by the Uniform Act. Legally permitted property access will be perpetuated in the after-condition.
2.17.4.2	Recreation Resources; Section 4(f) and Section 6(f) Resources	The Colorado River Nature Center Interdisciplinary Team (AGFD, BLM, and Bullhead City) has committed to ensuring a water supply will be available for irrigation of the vegetation on the proposed earthen berm to be located in the Colorado River Nature Center.

1

**Project Design Responsibilities**

EA Section No. Reference	Mitigation/ Compliance Category	Description
2.1.4.2	Construction	Approaches and intersections not proposed to be improved or realigned will be at a minimum, be matched to existing conditions.
2.4.3.2	Floodplain	The bridge structure will be designed in accordance with 23 CFR 650, Subpart A (Bridges, Structures, and Hydraulics), and USCG Section 9 Bridge Permit, and approved by the DOTs. The bridge will be designed, constructed, operated, and maintained, in accordance with state laws, regulations, directives, safety standards, design standards, and construction standards.
2.4.3.2	Floodplain	Final design of the project will avoid impacts to existing levees/berms. If a risk-analysis determines that there would be impacts to the levees, the bridge design will be modified to minimize impacts. Coordination with USACE and BOR will be necessary and may include levee certification.
2.4.3.2	Floodplain	Develop a technical drainage study report in accordance with flood control evaluation requirements for Mohave County, Arizona and Clark County, Nevada. A detailed HEC-RAS modeling analysis for actual bridge design and construction will be performed (abutment to abutment, and bank to bank) to determine and avoid impacts during design.
2.4.3.2	Floodplain	Bridge abutments will be located outside the Colorado River Floodway or Zone AE areas. Locations of bridge piers will be determined during final design.
2.4.3.2	Floodplain	The bridge girders will be placed a minimum of 25 feet above

**Project Design Responsibilities**

EA Section No. Reference	Mitigation/ Compliance Category	Description
		ordinary high water mark consistent with USCG Section 9 bridge permitting requirements.
2.5.4.1 2.5.4.2	Wetlands and Jurisdictional Waters	Adhere to parameters of the Section 404 and Section 401 permits issued by the USACE and other permits issued by state and local agencies.
2.13.3.2	Visual Resources	Designers will be responsible for mitigation of visual impacts that may include low lighting or shields, vegetation or natural landform screening, structural screening, and complementary architectural design. No light shall be located in such a way as to be a nuisance to a neighboring property. This may include low mast for lighting structures, low output, and/or shielding. Integrate complementary architectural features into design of the bridge (e.g., bridge façade, bridge and road design, fences, use of earth-tone colors).
2.13.3.2	Visual Resources	Replacing, repairing, or improving any disturbance to vegetated areas such as re-stabilizing disturbed soils and generally restoring or improving natural resources that have been disrupted will also mitigate aesthetic conditions. Reducing earthwork contrasts by: retaining rocks, trees, shrubs, and adding mulch or topsoil, and repairing any disruption to existing drainages will also help relieve visual changes.
2.13.3.2	Visual Resources	Additionally, the consideration of the bridge location and orientation will reduce potential shadow effects. The proposed bridge alternatives are all oriented in an east-westerly pattern thus generally reducing the effects of shadowing on the adjacent landscape.
2.15.1.3.2	Mobility and Access	Mobility and access to and within the future planned Colorado River Heritage Greenway Trail will be maintained for bicycles and pedestrians.
2.17.4.2	Recreation Resources; Section 4(f) and Section 6(f) Resources	Design will include a noise reducing, vegetated earthen berm between the Colorado River Nature Center and the proposed Parkway Alternative. This earthen berm will be made of fill from the Colorado River Nature Center (whenever possible) to facilitate wetland excavation. Preliminary design and size specifications (approximately 2,900 feet [length] by 58 feet [width] by 6 feet [height]), and the location of the vegetated earthen berm are indicated on Appendix F—Figure 10 (minimum 25 feet south of northern border of parcel for maintenance access).
2.17.4.2	Recreation Resources; Section 4(f) and Section 6(f) Resources	Design will include the installation of a fence near the vegetated earthen berm and barriers installed under the bridge. This will prohibit OHV access issues across the Colorado River Nature Center property.

**Project Construction Responsibilities**

EA Section No. Reference	Mitigation / Compliance Category	Description
2.1.4.2	Construction	Construction equipment will be washed and properly maintained to minimize pollutant runoff from construction equipment.
2.1.4.2	Construction	Construction equipment and associated hazardous material storage will be frequently inspected and maintained to reduce the potential for hazardous materials spills and runoff into the river, floodplain, and upland areas.
2.1.4.2	Construction	Noise mitigation measures will be implemented during construction activities. BMPs include limiting construction hours to within normal business hours, etc.
2.1.4.2/ 2.3.3.2	Construction/ Hydrology and Water Quality	Contractor will develop and implement a Stormwater Pollution Prevention Plan as part of the Clean Water Act National Pollutant Discharge Elimination System and Arizona Pollutant Discharge Elimination System permitting processes.
2.1.4.2/ 2.3.3.2	Construction/ Hydrology and Water Quality	To reduce deposition of sediments in adjacent surface waters, erosion control measures will be incorporated for site soil stabilization. Measures will include the application of soil stabilizers such as landscaping, mulch, and rock slope protection. Erosion control measures will be designed to filter the stormwater originating from the pavement prior to entering the offsite drainage system.
2.1.4.2/ 2.3.3.2	Construction/ Hydrology and Water Quality	The contractor will prepare a Spill Prevention Notification and Cleanup Plan prior to the start of construction. Proper control and cleanup measures will be available on site. See section 2.14.3.4 for additional BMP and mitigation measures.
2.1.4.2 2.6.2.3.2	Construction/ Biological Resources and Sensitive Species	Mitigation for the prevention of invasive weeds will be developed in coordination with the local jurisdictions. Easy mitigation is to have the contractor wash their equipment before arriving on site and to wash before leaving site. In compliance with Executive Order 13112 regarding noxious weeds, all earth-moving and hauling equipment will be washed prior to arriving onsite to prevent the introduction of noxious weed and invasive weed seeds. Contract documents will specify a noxious weed management plan to control noxious weeds.
2.1.4.2/ 2.11.3.2	Construction/ Air Quality	Fugitive dust generated from construction activities must be controlled in accordance with federal, state, and local laws regulations governing air pollution control.
2.2.3.2	Land Resources	To avoid an increase in river turbidity during deep foundation construction within the river, spoils will be deposited on barges, removed offsite, and disposed of properly.

**Project Construction Responsibilities**

EA Section No. Reference	Mitigation / Compliance Category	Description
2.3.3.2	Hydrology and Water Quality	Development or construction of roadway and bridge improvements will have to be completed within and in accordance to applicable federal, state, and local standards. Floodplain impacts will be minimized by improving the offsite drainage system in consultation with the Clark County Regional Flood Control District. Offsite drainage cross culverts will be extended to accommodate roadway construction while maintaining flow patterns.
2.3.3.2	Hydrology and Water Quality	Construction within the Colorado River floodway or where the proposed bridge crossing is to take place (bridge abutment to abutment – Arizona side to Nevada side) will be controlled through modifications to the natural storm water drainage system, including but not limited to, construction of lined and unlined channels, installation or modifications of culverts, temporary and permanent detention basins, and other natural or engineered controls as necessary.
2.3.3.2	Hydrology and Water Quality	If previously unidentified wells are encountered during project construction, the contractor will be responsible for notifying the appropriate state Department of Water Resources and for retaining an authorized driller to abandon the well properly.
2.3.3.2	Hydrology and Water Quality	Water quality parameters such as turbidity will be monitored in accordance with each of the state’s 401 WQC requirements.
2.5.4.1 2.5.4.2	Wetlands and Jurisdictional Waters	Adhere to parameters of the Clean Water Act Section 404 and Section 401 permits issued by the USACE as well as other permits issue by state or local agencies.
2.6.1.3.2 2.6.3.3.2	Biological Resources and Sensitive Species	Construction activities will occur within, and be limited to the 250-foot study corridor.
2.6.1.3.2	Biological Resources and Sensitive Species	Protected plant species will be avoided, whenever possible. Prior to any construction activity, the project boundaries will be flagged and cactus, yucca, mesquite, and other Nevada and Arizona protected plant species will be salvaged in coordination with landowners such as Clark County. Plants will be removed in accordance with Arizona and Nevada state guidelines. Disturbed soils will be stabilized using BMPs for erosion control. If areas are to be revegetated, a certified weed free seed mix will be used.
2.6.3.3.2 2.7.1.3.2	Biological Resources and Sensitive Species/ Federally Listed Threatened and Endangered Species	A litter control plan will be implemented. All trash will be collected and put in proper receptacles so ravens and other predators are not attracted to the site, and subsequently prey on juvenile tortoises. Receptacles will be emptied at the end of each workweek so ravens don’t congregate around dumpsters.

**Project Construction Responsibilities**

EA Section No. Reference	Mitigation / Compliance Category	Description
2.6.4.3.2	Biological Resources and Sensitive Species	Gila monsters will be removed during preconstruction surveys for desert tortoises in accordance with guidelines established by NDOW (2005).
2.6.1.3.2	Biological Resources and Sensitive Species	Disturbed areas will be landscaped and/or seeded with certified weed-free mixes.
2.7.1.3.2 2.7.2.3.2 2.7.4.3.2 2.7.5.3.2	Federally Listed Threatened and Endangered Species and Migratory Birds	Contractor will be responsible for providing biological oversight of construction activities and payment of mitigation fees (copies of receipts must be provided to the applicable DOT environmental divisions prior to the initiation of project construction) to comply with mitigation measures set forth in the Biological Opinion issued by the USFWS. For specific mitigation for Threatened and Endangered Species, see Section 2.7.
2.7.2.3.2 2.7.5.3.2	Federally Listed Threatened and Endangered Species and Migratory Birds	Land clearing activities will not take place in saltcedar-mesquite woodland habitat during migratory bird breeding season (March to July). BMPs will restrict activities to within the 250-foot study corridor to minimize impacts to saltcedar-mesquite woodland.
2.8.3.2	Cultural Resources	The contractor will comply with the executed Section 106 Programmatic Agreement for the project.
2.14.3.2	Hazardous Materials	Contractor mitigation will include detecting and excavating impacted media, and documenting the appropriate handling, transport, and disposal of impacted media in compliance with applicable environmental laws and regulations.

**1 State Department of Transportation Environmental Division Responsibilities**

EA Section No. Reference	Mitigation/ Compliance Category	Description
1.4.4.1	Bridge Design	State DOT's are the ultimate recipients of Federal-aid Highway funds and as such are responsible for oversight of these projects. This typically requires state DOT approval of the project guides and specifications.
1.4.4.2	Roadway Design	State DOT's are the ultimate recipients of Federal-aid Highway funds and as such are responsible for oversight of these projects. This typically requires state DOT approval of the project guides and specifications.
2.8.3.2	Cultural Resources	Mitigation for the types of sites encountered by the project will include, but is not limited to, archaeological excavations, historical and archival research, ethnographic studies, and will comply with the executed Section 106 Programmatic Agreement for the project.

## 1.0 PROPOSED ACTION

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### 1.1 Introduction

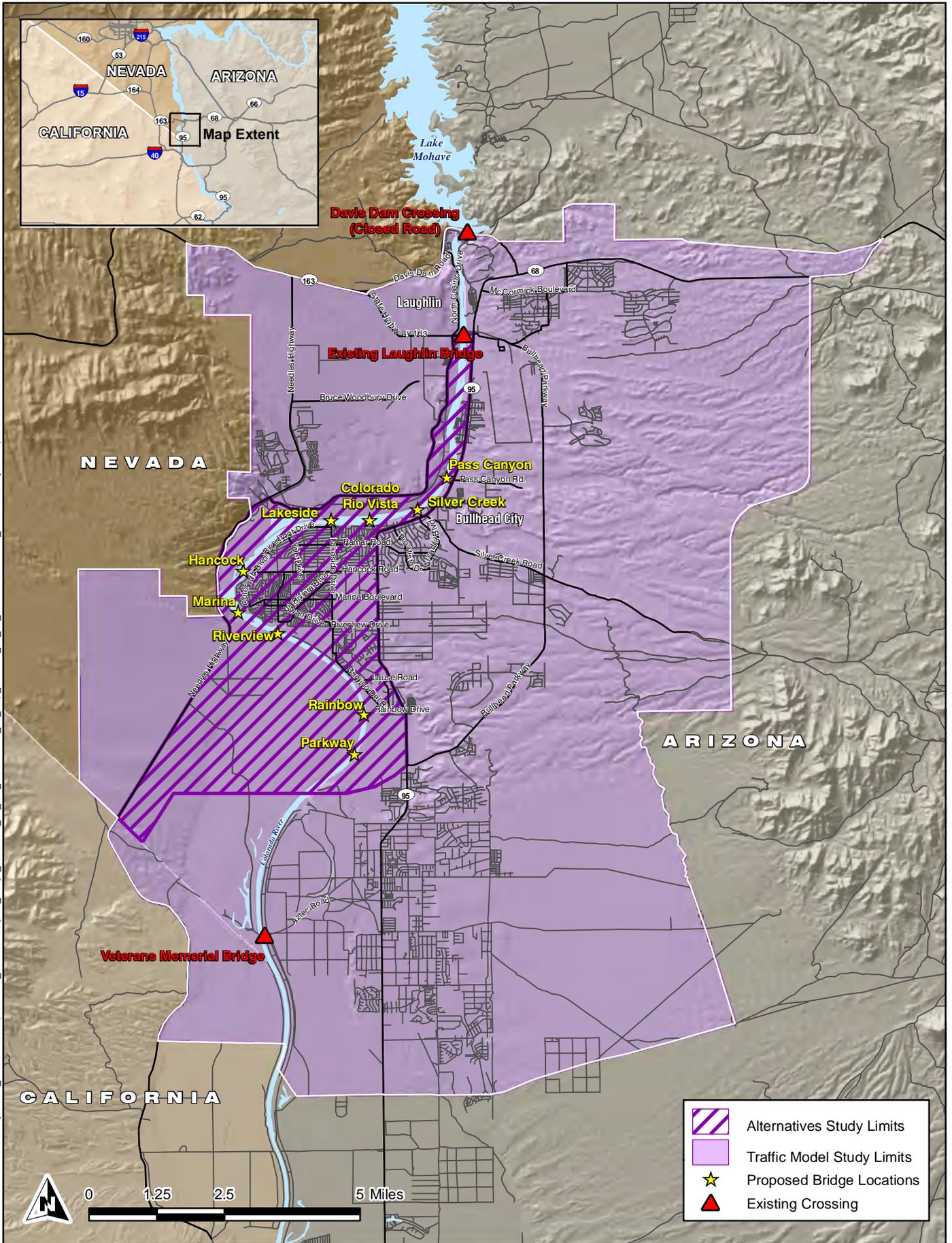
The Federal Highway Administration in cooperation with the Nevada Department of Transportation (NDOT), Arizona Department of Transportation (ADOT); U.S. Army Corps of Engineers (USACE); U.S. Coast Guard (USCG); and Regional Transportation Commission of Southern Nevada (RTC SNV) are initiating an Environmental Assessment (EA) for a proposed new bridge over the Colorado River between Laughlin, Nevada and Bullhead City, Arizona.

This newly proposed bi-state bridge project would be in addition to the existing four-lane Laughlin Bridge that crosses the Colorado River at approximately 1.9 miles south (downstream) of Davis Dam and approximately 12.4 miles north (upstream) of the proposed bridge. The proposed project is not included in either state's highway system. Figure 1 shows the location of the existing Laughlin Bridge and the overall project study area.

This EA was written in accordance with:

- the National Environmental Policy Act (NEPA) of 1969, as amended
- the President's Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations [CFR] Parts 1500 to 1508, Regulations for Implementing NEPA, 1978
- FHWA (Technical Advisory T6640.8A) Guidance for Preparing and Processing Environmental and Section 4(f) Documents, 1987
- FHWA 23 United States Code (USC) 109 (h) Highway Standards, 1972
- FHWA 23 CFR 771 Environmental Impact and Related Procedures Revised, 2009
- FHWA 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise, 1982
- FHWA/Federal Transit Authority (FTA) Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6002, Environmental Review Process (Public Law 109-59) Final Guidance, 2006
- FHWA/FTA SAFETEA-LU Section 4(f) Final Rule, 2008,
- 23 CFR 710, 774, 777 and 650
- 49 CFR Part 24
- all additional, applicable, state, and federal regulations

Source: ESRI data files, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Watershed\_Arizona.mxd | Last Updated: 11-13-09



1 It is FHWA’s policy (23 CFR 771.105) that:

- 2 • to the fullest extent possible, all environmental investigations, reviews, and  
3 consultations be coordinated as a single process, and compliance with all  
4 applicable environmental requirements be reflected in the environmental  
5 document required by this regulation,
- 6 • alternative courses of action be evaluated and decisions be made in the best  
7 overall public interest based upon a balanced consideration of the need for  
8 safe and efficient transportation; of the social, economic, and environmental  
9 impacts of the proposed transportation improvement; and of national, state,  
10 and local environmental protection goals,
- 11 • public involvement and a systematic interdisciplinary approach be essential  
12 parts of the development process for proposed actions, and
- 13 • measures necessary to mitigate adverse impacts be incorporated into the  
14 action

15 **1.2 Purpose and Need**

16 The purpose of this proposed project is to accommodate present and future traffic  
17 demand between Laughlin, Nevada and Bullhead City, Arizona; alleviate congestion on  
18 the existing bridge; alleviate congestion on Arizona State Route (SR) 95 including  
19 north/south traffic flows and overall circulation within Bullhead City; increase regional  
20 connectivity between Laughlin and Bullhead City; improve access and delivery of  
21 essential services and emergency services to the region in a manner that is safe, reliable  
22 and cost-effective while avoiding, minimizing and/or mitigating effects on the  
23 communities and the environment. Below is a justification of the need for this proposed  
24 project in the Laughlin–Bullhead City area.

25 **1.2.1 Travel Patterns and Demand**

26 In 2009, there were approximately 32,200 total bridge crossings per day on the existing  
27 Laughlin Bridge (LBHCBP 2009a). The traffic demand at the crossing is projected to  
28 increase to approximately 74,800 total bridge crossings per day in the year 2030, which is  
29 nearly 1.87 times the capacity of the existing bridge. Table 1 includes a summary of the  
30 vehicle trips in the project traffic model study area for 2009.

31 **Table 1. Vehicle Trip Summary**

Trip Purpose	Total Trips/Per Day	Percent Trips	Average Trip Length (minutes)
Home-Based Work	54,100	21.1%	10.50
Home-Based Other	122,100	47.5%	8.30
Non-Home Based	80,800	31.4%	5.90

32

1 The largest proportion of trips (Home-Based Other) are made from Laughlin to Bullhead  
2 City for essential goods and services, including major shopping, car dealerships and  
3 repair services, health care, beauty and barber shops, places of worship, child care  
4 facilities, law offices, and other consumer services that are not present on the Laughlin  
5 side of the river. This imbalance of services is primarily due to the land-use development  
6 patterns on both sides of the river.

7 Laughlin and Bullhead City are a complementary pair of jobs/housing communities.  
8 Bullhead City provides about 75% of Laughlin's employees. In 2009, there were about  
9 13,830 workers in Laughlin. Bullhead City has little in the way of major employers and  
10 Laughlin does not yet provide enough housing to accommodate its workers. This  
11 produces an existing (and future) imbalance of home-work trips across the bridge.

12 The existing bridge also carries non-home based trips that include tourist, business, and  
13 other trips across the river. Finally, a small proportion of trips are made by tourists, not  
14 making local stops in Arizona or Nevada, before crossing the bridge to a final destination  
15 elsewhere.

16 The dominant vehicle movement (primarily in the morning peak period [8:00-9:00 a.m.],  
17 but also occurring during swing and graveyard shift changes) is westbound from Arizona,  
18 across the existing Laughlin Bridge and then turning left onto southbound Casino Drive  
19 in Nevada. The reverse movement occurs during the evening peak period (3:15-4:15  
20 p.m.).

21 According to the *Highway Capacity Manual* (Transportation Research Board 2000),  
22 Level of Service (LOS) is a quality measure describing operational conditions within a  
23 traffic stream. This is generally described in terms of such service measures as speed and  
24 travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.  
25 LOS values are designated from A to F, with LOS A representing the optimum operating  
26 conditions and LOS F representing the worst (Figure 2). Most design or planning efforts  
27 typically target service flow rates of at least LOS C or D, to ensure an acceptable  
28 operating service for facility users. With approximately 32,200 total bridge crossings per  
29 day occurring on the existing Laughlin Bridge in 2009, the existing bridge and the area  
30 street system are functioning at LOS D (Figure 2). Over the next five years, however, the  
31 LOS is projected to deteriorate to LOS F. These poor traffic-operating conditions would  
32 further deteriorate over time as the number of crossings is projected to increase by over  
33 123% by 2030. Long wait times, increased air pollution, and wasted fuel, all contribute  
34 to user travel costs. For more information on travel demand, see *Section 1.4.5 Travel*  
35 *Demand*.

36

1 **Figure 2. Levels of Service**



**LOS A**



**LOS B**



**LOS C**



**LOS D**



**LOS E**



**LOS F**

2

3

4

Source: Transportation Research Board. 2000. *Highway Capacity Manual*. Washington, D.C.

1 **1.2.2 Land Use and Socioeconomic Growth**

2 Laughlin had a population of 7,076 in the U.S. Census (year 2000) and the population is  
 3 currently estimated at 9,284 persons (LBHCBP 2009a). The Colorado River  
 4 Commission transferred approximately 9,000 additional acres to Clark County on July 1,  
 5 2007, for privatization in Laughlin, which enables major additional development  
 6 capacity. In addition, the Bureau of Land Management (BLM) plans to dispose of  
 7 approximately 2,689 acres for privatization in Laughlin. The availability of these areas  
 8 for private development will substantially increase opportunities for growth, with  
 9 associated traffic, in and around Laughlin.

10 Bullhead City had a population of 33,769 in the U.S. Census (year 2000) and the  
 11 population is currently estimated at 41,984 persons (LBHCBP 2009a). Mohave County,  
 12 where Bullhead City is located, experienced 66 percent growth in population between  
 13 1990 and 2000, due to the availability of affordable retirement housing, commercial  
 14 growth, and the presence of Laughlin with nearby employment opportunities.

15 The population, dwelling unit, and employment estimates for 2009 and 2030 within the  
 16 project traffic model study area is summarized in the following table, which indicates that  
 17 the total population of the region is expected to increase by more than 73% by 2030.  
 18 Traffic is also likely to increase at a substantial rate (Table 2).

19 **Table 2. Year 2009 and 2030 Population, Dwelling Unit and Employment Data**

Location*	Year 2009			Year 2030		
	Population Per traffic Model	Dwelling Units	Employees	Population	Dwelling Units	Employees
Laughlin/Clark Co.	9,284	4,442	13,830	25,134	12,026	24,602
Bullhead City	41,984	22,991	11,570	63,140	30,701	16,229
Mohave County**	12,123	6,241	2,755	21,085	10,126	5,082
Total	63,391	33,674	28,155	109,359	52,853	45,913
* Note: Within project traffic model study area boundary						
** Mohave County location excludes Bullhead City limits within Mohave County.						

20 **1.2.3 Access to and Delivery of Emergency Services**

21 Vehicle crashes interfere with the typical traffic flow across the existing bridge and often  
 22 result in closures and lengthy delays. Between January 1, 2003 and December 31, 2007,  
 23 204 crashes occurred on the existing Laughlin Bridge and adjacent roadway intersections  
 24 (LBHCBP 2009b). This is a higher rate (between 33% and 50%) of crash incidents than  
 25 in the nearby intersections.

26 There is a definite lack of alternative river-crossing routes in the Laughlin/Bullhead City  
 27 area. Since the Davis Dam Road crossing is permanently closed to traffic, the only  
 28 detour route available is the Veterans Memorial Bridge (on Aztec Road) on tribal lands at

1 the northern limits of the Mohave Valley (Figure 1). This alternate route adds 14.5 miles  
2 and considerable time to a one-way trip between the two cities rather than across the  
3 existing Laughlin Bridge.

4 Laughlin and Bullhead City currently have a Memorandum of Understanding (MOU) for  
5 emergency service provision (all emergency vehicles) between the two communities.  
6 Normal emergency response times for Laughlin fire stations within their jurisdiction are  
7 between 7 and 10 minutes 90% of the time. Normal emergency response times for  
8 Bullhead City fire stations within their jurisdiction are between 4 and 6 minutes 90% of  
9 the time. When the existing bridge is blocked due to accidents, stalled vehicles or  
10 substantial traffic jams, emergency and medical attention is compromised and public  
11 safety threatened. This is particularly critical for injured persons needing urgent medical  
12 attention located in the northwest part of Laughlin on the Nevada side of the river since  
13 they must be transported to the Western Arizona Regional Medical Center, located on  
14 Silver Creek Road, in Bullhead City. Traffic issues on the existing bridge also impede  
15 deployment of other emergency services such as fire fighting engines and equipment  
16 when additional support is necessary between the two communities. An additional bridge  
17 that is appropriately located would improve the response times for emergency vehicles.

### 18 **1.3 Study Area Description**

19 The proposed project is located at the northern end of the Mohave Valley. The rugged  
20 and sparsely vegetated Black, Newberry, and Dead Mountains surround the project study  
21 area of Mohave Valley to the east, north, and west respectively. The Colorado River runs  
22 southward through the valley separating Laughlin from Bullhead City. The river has  
23 been modified by man-made structures such as levees, dams, and riprap banks resulting  
24 in a highly channelized river with an adjacent historic floodplain. Davis Dam controls  
25 the river water level in the valley. The Colorado River is a perennial river, meaning  
26 water flows within part or all of its bed continuously throughout the year. However, the  
27 water level can fluctuate drastically from 6,000 to 22,000 cubic feet per section (cfs)  
28 (United States Geological Survey [USGS] 2006), daily and seasonally, based upon local  
29 hydro-power demands.

30 The elevation in this portion of the valley ranges from approximately 480 feet at the  
31 Colorado River, to 660 feet at the Needles Highway (western terminus), to 592 feet at the  
32 SR 95 (eastern terminus) (any mentions of SR 95 in this report are always referring to SR  
33 95 in Arizona). The western area of the project is located within Nevada and is currently  
34 undeveloped. This land has been conveyed to Clark County and according to the  
35 Laughlin Land Use Plan is planned for major development projects. The eastern portion  
36 of the project area is located within Bullhead City and is already mostly developed.

1 Regional climate is semi-arid, characterized by hot summers and mild winters, with  
2 average daytime high temperatures ranging between 65 to 112 degrees Fahrenheit.  
3 Rainfall in the area averages from about 6 inches per year with the precipitation amounts  
4 increasing to about 10 inches in the higher mountain areas. The area supports low-  
5 growing desert flora, and existing warm-water aquatic communities.

## 6 **1.4 Alternatives**

7 As part of the Laughlin–Bullhead City Bridge Project development process, the project  
8 Interdisciplinary Team (IDT) developed and evaluated a range of potential alternatives.  
9 The IDT was comprised of representatives from FHWA-Nevada (non-voting member),  
10 FHWA-Arizona (non-voting member), USACE, USCG, BLM, NDOT, ADOT,  
11 RTCNV, Clark County, Mohave County, Laughlin, Bullhead City, and supported by  
12 consultant staff.

### 13 **1.4.1 Alternatives Eliminated from Detailed Study**

#### 14 ***1.4.1.1 Proposed Transportation Systems Management and Transit Alternatives***

15 A variety of Transportation Systems Management (TSM) and transit alternatives were  
16 preliminarily evaluated as potential options to address the Purpose and Need of the  
17 proposed project. These alternatives included reinstatement of a ferry system,  
18 construction of high-occupancy vehicle (i.e., HOV) lanes, optimization of traffic signal  
19 timing, improving the existing bus system, development of light-rail system or subways,  
20 implementing a park and ride system, and streetcars. Each of these options were  
21 excluded from further consideration because they were not feasible options or did not  
22 meet the project Purpose and Need as indicated in *Section 1.2 Purpose and Need*.

23 None of these alternatives can address each of the following components of the Purpose  
24 and Need:

- 25 • accommodate present and/or future traffic demand between Laughlin and  
26 Bullhead City (43,600 Average Annual Daily Traffic (AADT)—2009 and  
27 74,800—2030),
- 28 • sufficiently alleviate congestion on the existing bridge (LOS D—2009 and  
29 LOS F—2030) or on SR 95,
- 30 • efficiently increase regional connectivity,
- 31 • efficiently and conveniently improve access to essential services between the  
32 communities, and
- 33 • provide additional access for the efficient delivery of emergency services  
34 between the communities.

1 Since the proposed TSM and transit alternatives would not meet the project Purpose and  
2 Need, they were eliminated from further detailed study in this EA and the only remaining  
3 viable options for the preliminary alternatives screening would be a bridge.

4 Initially, the nine proposed bridge build alternatives included: widening of the existing  
5 bridge, Pass Canyon, Silver Creek, Lakeside, Hancock, Marina, Riverview, Rainbow, and  
6 Parkway (Figure 3). The technical criteria evaluated in the preliminary screening  
7 included: traffic, engineering, environmental, and social impacts, land use planning  
8 conformance, and cost. Of these alternatives being considered, initially six were  
9 eliminated (widening of the existing bridge, Pass Canyon, Silver Creek, Lakeside,  
10 Hancock, and Marina) and not carried forward for detailed study in this EA. The  
11 eliminations were due to critical impacts to environmental or social resources,  
12 engineering feasibility, or inability to meet the project Purpose and Need. In addition,  
13 based on a received public comment for the project (Appendix H–page PD-85), one  
14 additional proposed bridge build alternative, Colorado Rio Vista (Figure 3), was  
15 suggested and preliminarily screened in the same manner and also eliminated due to  
16 similar critical impacts. These bridge build alternatives and the reasons for their  
17 elimination are summarized below.

#### 18 ***1.4.1.2 Proposed Widening of the Existing Bridge***

19 Although widening of the existing bridge may be consistent with the need to rehabilitate  
20 the bridge, which is currently functionally obsolete, the expansion would prove of limited  
21 value to achieving the project Purpose and Need. In addition, the connecting roadway  
22 infrastructure needed to make the widening effective cannot be expanded so this  
23 alternative is not geometrically feasible. Finally, expanding the existing bridge also fails  
24 to provide an efficient alternative access option for providing emergency services.

#### 25 ***1.4.1.3 Proposed Pass Canyon Alternative***

26 The proposed Pass Canyon Alternative would not meet the proposed project Purpose and  
27 Need because it would not improve projected future traffic congestion as well as the other  
28 proposed bridge alternatives. In addition, this alternative has the following engineering  
29 challenges:

- 30 • The existing topography on the Nevada side is a steep cliff area to the river, which  
31 would require fencing/rock fall devices to prevent rock and material from entering  
32 the river during construction. The cliff area would require retaining walls and or  
33 piers on steep slopes, which are more expensive and difficult to build on than a  
34 gently sloping area.
- 35 • This alternative would have the highest potential for erosion and sedimentation  
36 impacts to waters of the U.S. (WOUS), and would require greater measures to  
37

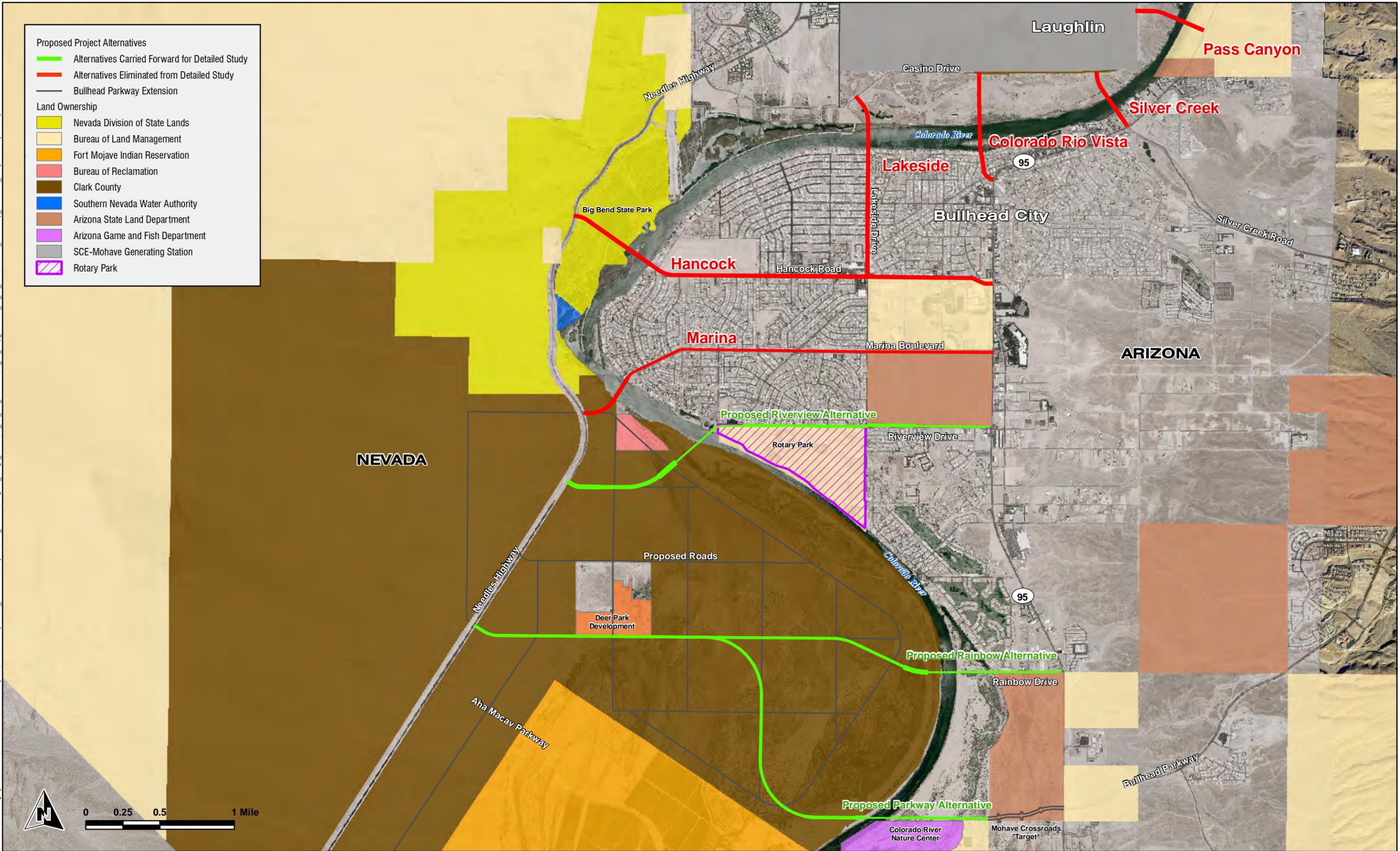
Source: Aerial Imagery from USDA, NMAP 2008. Clark County GIS, 2006/2007 | G:\GIS - Production\Projects\RTC - 100961\Laughlin - Bridge - 18174\1.4\_00\_GIS\_MODEL\S14\_03\_Map\_Docs\S14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Land\_ownership\_alternative\_analysis.mxd | Last Updated: 04-07-10

**Proposed Project Alternatives**

- Alternatives Carried Forward for Detailed Study
- Alternatives Eliminated from Detailed Study
- Bullhead Parkway Extension

**Land Ownership**

- Nevada Division of State Lands
- Bureau of Land Management
- Fort Mojave Indian Reservation
- Bureau of Reclamation
- Clark County
- Southern Nevada Water Authority
- Arizona State Land Department
- Arizona Game and Fish Department
- SCE-Mohave Generating Station
- Rotary Park



1 stabilize slopes to control erosion in the permanent condition than other  
2 alternatives.

- 3 • The elevation difference between the touchdown points on either side of the  
4 river would require steep grades (6%) on Pass Canyon Road at the intersection  
5 of Casino Drive and/or substantial cuts and reconstruction of Casino Drive.  
6 The intersection of Pass Canyon Road and Casino Drive would need to be  
7 signalized, and westbound vehicles would need to queue on the uphill grade to  
8 wait for the signal. In addition, the volume and congestion on Casino Drive  
9 going north would increase with this alternative. The timing for the signal  
10 would need to be longer than is typical to accommodate the fact that vehicles  
11 would need to stop and start again on the steep slope. This particularly affects  
12 trucks and recreational vehicles (RVs). The slower starts combined with the  
13 number of vehicles coming through the intersection (17,000 trips per day)  
14 would result in a LOS F (the worst traffic condition).
- 15 • Traffic analysis concluded that overall congestion and demand would be  
16 substantially increased on SR 95 and Casino Drive with this alternative,  
17 compared to other alternatives being carried forward for additional analysis.

18 The proposed Pass Canyon Alternative was not carried forward for additional analysis  
19 because when compared to other proposed bridge alternatives it would have steeper  
20 topography and the potential for greater erosion and sedimentation effects to the  
21 Colorado River. Additionally, it would increase traffic congestion on SR 95 and Casino  
22 Drive.

#### 23 ***1.4.1.4 Proposed Silver Creek Alternative***

24 The proposed Silver Creek Alternative would not meet the proposed project Purpose and  
25 Need because it would not improve projected future traffic congestion as well as the other  
26 proposed bridge alternatives.

27 The proposed Silver Creek Alternative would be subject to similar topographic  
28 constraints as Pass Canyon, although not to the same magnitude. While it would be  
29 feasible to design and construct a bridge at this location, the elevation difference between  
30 the touchdown points on the two sides of the river would also require a more challenging  
31 solution than other build alternatives carried forward. Similar issues as with Pass Canyon  
32 (such as steep slopes that would require more extensive bridge foundations, retaining  
33 walls, and piers, and soils that would require greater erosion and sedimentation control  
34 measures) exist at Silver Creek.

35 In addition, this alternative would require an intersection at SR 95 and Silver Creek Road.  
36 Based on the existing geometry of Silver Creek Road this would be a skewed four-way  
37 intersection. As described in the American Association of State Highways and

1 Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and*  
2 *Streets 2004 (Green Book)*, the angle intersection should not be more than 30 degrees  
3 from perpendicular. Design of this intersection includes a skew angle of more than 30  
4 degrees, which would not conform to design guidelines as specified by AASHTO. Large  
5 skew angles result in awkward maneuvers and encroachments at this intersection; these  
6 are undesirable qualities in any intersection. Skew of an intersection can result in the  
7 need for additional lanes or even costly complete roadway intersection design to obtain  
8 the required sight distance as stated in the AASHTO Green Book. Each intersection has  
9 the potential for several different types of vehicular conflicts. Decreasing the sight  
10 triangle or sight distance by increasing the skew angle of the intersection increases the  
11 probability of such vehicular conflicts resulting in an overall reduction of safety at a  
12 particular intersection.

13 Traffic analysis concluded that demand is increased along SR 95 between Silver Creek  
14 and Pass Canyon so the projected future LOS F in the area is not improved by the  
15 addition of a bridge at this location.

16 The proposed Silver Creek Alternative is not being carried forward for additional analysis  
17 because when compared to other proposed bridge alternatives: it has steep topography  
18 that would require more extensive bridge foundations, retaining walls, and piers.  
19 Additionally, it would have the potential for greater erosion and sedimentation effects to  
20 the Colorado River. Additionally, it would increase projected future traffic congestion on  
21 SR 95 and Casino Drive.

#### 22 ***1.4.1.5 Proposed Colorado Rio Vista Alternative***

23 The proposed Colorado Rio Vista Alternative does not meet the proposed project Purpose  
24 and Need for the project because it would not improve the projected future traffic  
25 congestion as well as the other proposed bridge alternatives.

26 Along this proposed alternative, the land in Nevada is owned by Riverside  
27 Developments. The Bureau of Reclamation (BOR), State of Nevada (Division of State  
28 Lands), and State of Arizona (State Lands Department) claim jurisdiction of the Colorado  
29 River below the ordinary high water mark (OHWM). The small island (approximately 35  
30 acres) within the river is owned by the State of Arizona. The land in Arizona is mostly  
31 privately owned, medium-density residential, with some commercial properties south of  
32 Baseline Road.

33 This proposed bridge alternative would locate a major arterial through the residential and  
34 commercial areas. The high-volume traffic on an arterial is not compatible within  
35 residential areas without mitigation considerations. The Bullhead City General Plan  
36 (Bullhead City 2002) identified current and future minor arterial and connector streets  
37 that provide functional service to retail, commercial and industrial land uses. Colorado

1 Rio Vista Drive is not identified as a minor arterial or connector street. The General Plan  
2 also shows Colorado Rio Vista Drive to remain as a local street and function as a  
3 drainage outlet (conveys water to the Colorado River). Therefore, the suggested traffic  
4 modifications would not be compatible with local planning efforts. In addition,  
5 residences access the roadway system through private, single-family driveways opening  
6 directly onto Colorado Rio Vista Drive, which, for safety reasons, would typically not be  
7 permitted on an arterial without major mitigation considerations. Thus, ROW needs  
8 would be greater since alternative access for these residents would also need to be  
9 provided. To accommodate the ROW needed for an expanded roadway design standards  
10 along Colorado Rio Vista Drive, approximately 18 residences and five commercial  
11 properties would be displaced. In addition to displacing homes and businesses, the  
12 elevation of the proposed bridge structure would be directly above some of the houses  
13 that would not be displaced. This proposed bridge alternative would also include  
14 potential street closures and rerouting of traffic of the nearby street network, such as only  
15 accessing Riverfront Drive, Terrace Drive, and Bryan Drive, by using Clubhouse Drive  
16 on the east and Trane Road on the west since there would be no direct access from  
17 Colorado Rio Vista Drive as it currently exists.

18 The General Plan states that low and/or medium density areas should be adequately  
19 buffered from adjacent high-density uses, commercial and industrial sites, and major  
20 arterial and/or minor arterial streets. The plan necessitates buffering between the two  
21 land uses, particularly if there is substantial reason to believe that the two land uses  
22 would be incompatible. Buffering consists of the placement of neutral space between  
23 two incompatible uses. Although formal analysis has not been conducted on this  
24 suggested proposed bridge alternative, it is apparent based on industry standards that it  
25 would not be possible to provide a sufficient buffer from increased noise levels and  
26 altered visual aspects that would result from placing the elevated deck directly over the  
27 residential area.

28 Impacts associated with placement of the elevated deck and construction of a large  
29 intersection at SR 95 and Palma Way would have social impacts to residential  
30 communities in the area. In addition, a residential community was planned for  
31 development across the river in the Emerald River Road area. Placing a large  
32 transportation facility (proposed bridge) would negatively affect community cohesion for  
33 residents by bisecting residential areas within the same neighborhood from each other.

34 Aerial photography depicts that the small island in the Colorado River that would be used  
35 for pier location for the proposed bridge is undeveloped and can likely be considered  
36 habitat for various types of wildlife, especially bird species. The presence of a bridge  
37 being constructed over this island would increase noise levels and likely adversely affect  
38 vegetation and wildlife and would therefore decrease the quality of this habitat.

1 The proposed Colorado Rio Vista Alternative traverses WOUS. U.S. Census blocks  
2 (year 2000) in this area contain a higher than average proportion of minority and elderly  
3 populations which would most likely be directly impacted by the project.

4 The proposed Colorado Rio Vista Alternative is not being carried forward for additional  
5 analysis because it does not meet the city's planning policies or guidelines for zoning,  
6 compatibility, safety, or roadway function. It would displace several residences and  
7 business compared to other alternatives and would cause social and community cohesion  
8 impacts. It has the potential for effects to minority and elderly populations.  
9 Additionally, it would likely affect vegetation and wildlife habitat.

10 ***1.4.1.6 Proposed Lakeside Alternative***

11 The proposed Lakeside Alternative would not meet the proposed Purpose and Need for  
12 the project because it would not improve the projected future traffic congestion as well as  
13 the other proposed bridge alternatives.

14 This alignment would locate a major arterial through a single-family residential area.  
15 The high-volume traffic on an arterial is not compatible within residential areas without  
16 major mitigation considerations. In addition, residences access the roadway system  
17 through private, single-family driveways opening directly onto Lakeside Drive, which,  
18 for safety reasons, would typically not be permitted on a major arterial. Thus, the need  
19 for extensive ROW and the associated mitigation considerations would be greater since  
20 alternative access for these residents would also need to be provided.

21 The proposed Lakeside Alternative would have the highest number of displacements  
22 (172) of any of the proposed build alternatives, which cannot be avoided given the  
23 required ROW width to meet design standards. This would be substantially greater than  
24 the other bridge build alternatives being considered.

25 The proposed Lakeside Alternative traverses U.S. Census blocks (year 2000) containing:

- 26       • a higher-than-average proportion of minority and low-income populations  
27       with percentages in excess of Bullhead City as a whole, and  
28       • a greater number of elderly and female heads of households than census  
29       blocks for the other proposed bridge alternatives.

30 With the construction of a bridge at Lakeside Drive, the projected future LOS on  
31 Lakeside Drive and Casino Drive would be reduced to F (greatest congestion), as traffic  
32 utilizes the new bridge connection. This increase in congestion would be greater than  
33 any of the proposed bridge build alternatives.

1 The proposed Lakeside Alternative is not being carried forward for additional analysis  
2 because it would displace the highest number of residents compared to other proposed  
3 bridge alternatives; have the potential to impose disproportionate impacts on minority  
4 and low-income populations; and would cause the greatest decrease in LOS compared to  
5 the other proposed bridge alternatives.

6 ***1.4.1.7 Proposed Hancock Alternative***

7 The proposed Hancock Alternative would not meet the proposed project Purpose and  
8 Need because it would not improve the projected future traffic congestion as well as the  
9 other proposed bridge alternatives.

10 During the formal agency coordination process for this project, the State of Nevada  
11 Division of Lands issued a letter (Appendix H) stating their objection to the proposed  
12 Hancock Alternative based on potential Section 4(f) impacts. The proposed Hancock  
13 Alternative was eliminated from further consideration because this alternative would  
14 bisect a Section 4(f) property (park), and, under Section 4(f) regulations (23 CFR 774), if  
15 other feasible and prudent alternatives exist, this alternative cannot be selected.  
16 Especially since the State of Nevada Division of Lands will be spending \$3 million in the  
17 construction of a new RV park and infrastructure. In addition, the State of Nevada  
18 Division of Lands has stated that it would not concur with a road through the Big Bend  
19 State Park as this park was encumbered with Section 6(f) funding that also prohibits the  
20 conversion of this park to a non-recreational use such as transportation.

21 The proposed Hancock Alternative would also cause impacts to the Laughlin Lagoons,  
22 which have substantial amounts of wetlands, native riparian vegetation and Mohave scrub  
23 vegetation. This alternative has the greatest amount of wetland and riparian vegetation of  
24 the alternatives.

25 The proposed Hancock Alternative would traverse Census blocks containing: 1) a higher  
26 than average proportion of minority and low-income populations with percentages in  
27 excess of Bullhead City as a whole, and 2) a greater number of elderly and female heads  
28 of households than census blocks for the other proposed bridge alternatives.

29 The proposed Hancock Alternative is not being carried forward for additional analysis  
30 because it would affect Section 4(f) and 6(f) properties; wetland and riparian areas; and  
31 would have the potential to impose disproportionate impacts on minority and low-income  
32 populations.

33 ***1.4.1.8 Proposed Marina Alternative***

34 The proposed Marina Alternative would not meet the proposed project Purpose and Need  
35 for the project because it would not improve the projected future traffic congestion as  
36 well as the other proposed bridge alternatives.

1 The proposed Marina Alternative would have greater displacements than most of the  
2 other proposed bridge alternatives and a higher presence of minority and low-income  
3 populations when compared to the other proposed bridge alternatives.

4 The proposed Marina Alternative would have 166 displacements, which would be the  
5 second highest number of displacements. In addition, this alternative would have the  
6 same problem with private residential driveway access as the proposed Lakeside  
7 Alternative, and it would be necessary to provide secondary access for private residential  
8 driveways currently taking access directly onto Marina Boulevard.

9 The proposed Marina Alternative would traverse U.S. Census blocks (year 2000)  
10 containing a higher than average proportion of minority and low-income populations with  
11 percentages in excess of Bullhead City as a whole.

12 Finally, the proposed Marina Alternative would be located adjacent to an existing 20”  
13 high-pressure natural gas line and facilities owned by El Paso Gas. The associated gas  
14 operating facilities and a pipeline bridge (owned by both El Paso Gas and Southwest Gas)  
15 are located at the west end of Marina Boulevard. The pipeline bridge then crosses over  
16 the Colorado River to the southwest. While it would be feasible to construct a highway  
17 arterial over or adjacent to this line, the relocation costs of this pipeline and the associated  
18 operational facilities would substantially increase the project construction and ROW  
19 costs.

20 The proposed Marina Alternative is not being carried forward for additional analysis  
21 because it would create a large number of displacements and have the potential to impose  
22 disproportionate impacts on minority and low-income populations. This alternative  
23 would have greater construction costs and would require extensive coordination because  
24 additional ROW may be needed to accommodate a relocated high-pressure gas line, and  
25 associated facilities.

#### 26 **1.4.2 Alternatives Carried Forward for Detailed Study**

27 Since the six proposed bridge alternatives discussed above would not meet the project  
28 Purpose and Need, they were eliminated from further detailed study in the EA.  
29 Therefore, the remaining three bridge build alternatives (the proposed Parkway,  
30 Rainbow, and Riverview Alternatives) have been carried forward and studied in greater  
31 detail in the subsequent sections of this EA for preliminary engineering, and potential  
32 environmental and social impacts from their construction.

##### 33 ***1.4.2.1 No Build Alternative***

34 This alternative would maintain the Laughlin–Bullhead City study area in its current  
35 transportation infrastructure without an additional proposed bridge. This would leave  
36 capacity, operations, and safety conditions as they exist, worsening over time as

1 development places greater demand on the existing bridge. The No Build Alternative is  
2 considered not feasible due to capacity issues generated by the increase in traffic by  
3 design year 2030.

#### 4 ***1.4.2.2 Proposed Parkway Alternative (preferred alternative)***

5 The proposed Parkway Alternative would be the longest alternative at approximately  
6 23,124 feet (approximately 4.4 miles) and approximately 12.2 miles downstream of the  
7 existing bridge (Figure 4) at approximate river mile (RM) 256.4. This alternative would  
8 require constructing approximately 18,652 feet of roadway in Nevada, an approximately  
9 1,286-foot-long bridge, and approximately 3,186 feet of roadway in Arizona. This  
10 alternative is located in the following sections, townships, and ranges of the USGS Mt.  
11 Manchester and Davis Dam quadrangles: Sec. 15, 16, 17, 21, and 22 in T33S R66E in  
12 Nevada and Sec. 2 and 3 in T19N R22W in Arizona (*Section 1.4.3 Proposed Project*  
13 *Description*).

14 The proposed Parkway Alternative is supported as the preferred alternative in this EA as  
15 described in *Section 2.21 Preferred Alternative*.

#### 16 ***1.4.2.3 Proposed Rainbow Alternative***

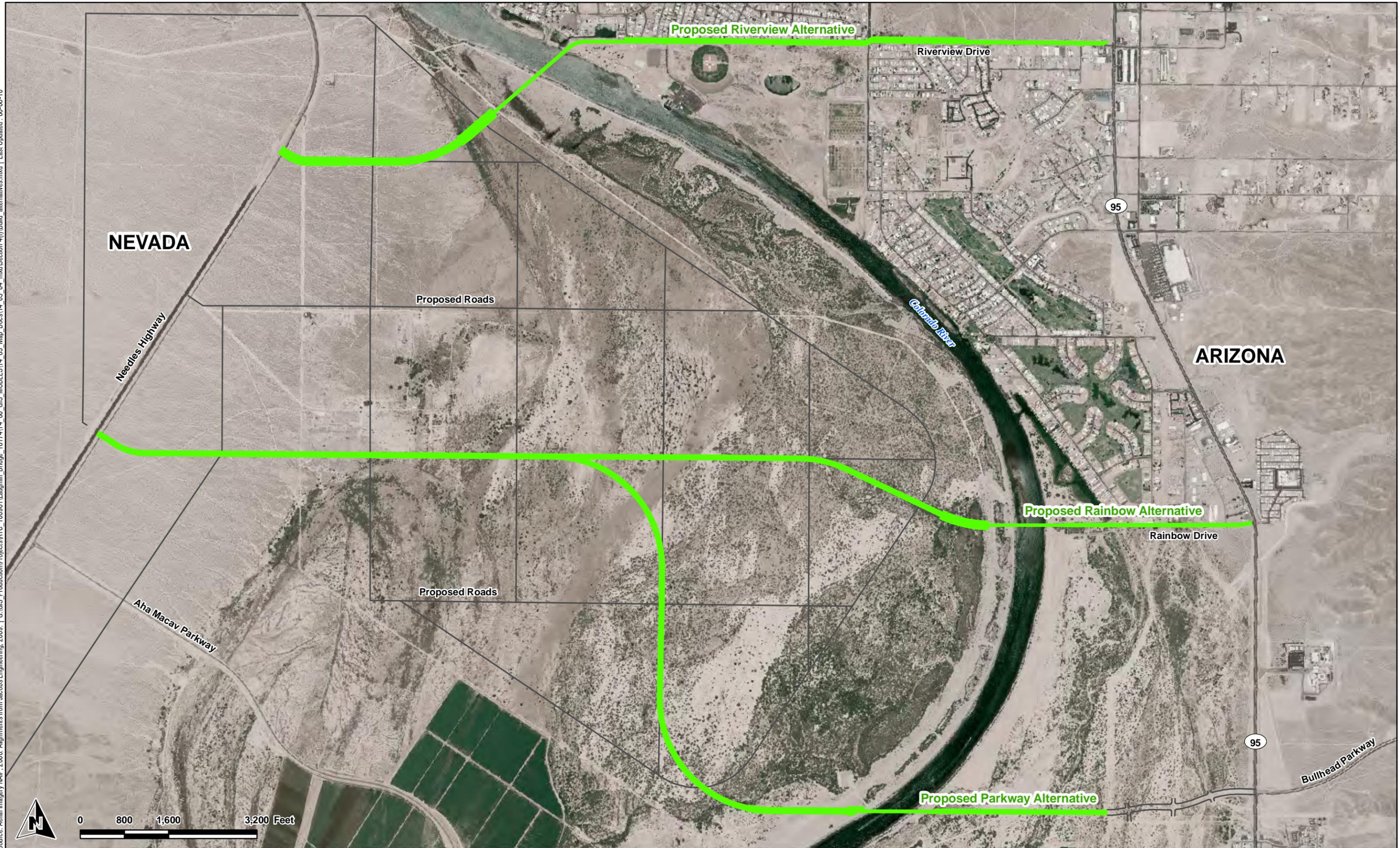
17 The proposed Rainbow Alternative would be approximately 21,308 feet (approximately 4  
18 miles) long and approximately 11.4 miles downstream of the existing bridge (Figure 4).  
19 This alternative would require constructing 16,501 feet of roadway in Nevada, a 1,359-  
20 foot-long bridge, and 3,448 feet of roadway in Arizona. This alternative is located in the  
21 following sections, townships and ranges of the USGS Mt. Manchester and Davis Dam  
22 quadrangles: Sec. 15, 16, and 17 in T33S R66E in Nevada; Sec. 2 and 3 in T19N R22W  
23 in Arizona; and Sec. 32 and 35 in T20N R23W in Arizona (*Section 1.4.3 Project*  
24 *Description*).

#### 25 ***1.4.2.4 Proposed Riverview Alternative***

26 The proposed Riverview Alternative would be 15,875 feet (approximately 3 miles) total  
27 length and approximately 9 miles downstream of the existing bridge (Figure 4). This  
28 alternative would require constructing approximately 4,217 feet of roadway in Nevada,  
29 an approximately 1,768-foot-long bridge, and approximately 9,890 feet of roadway in  
30 Arizona. This alternative is located in the following sections, townships and ranges of  
31 the USGS Mt. Manchester and Davis Dam quadrangles: Sec. 8 and 9 in T33S R66E in  
32 Nevada; Sec. 10 and 11 in T19N R22W in Arizona; Sec. 19, 20, 29 and 30 in T20N  
33 R22W in Arizona; and Sec. 24 and 25 in T20N R23W in Arizona.

34 The proposed Riverview Alternative can no longer be considered as a proposed buildable  
35 alternative in this EA based on a Section 4(f) *de minimis* determination issued as  
36 described in *Section 2.17*, but is included in this EA to present the analyses that were  
37 conducted.

Source: Aerial Imagery NAD, 2006. Alignments from Jacobs Engineering, 2009. | G:\GIS Production\Projects\FTC - 100961\Laughlin Bridge - 18174\14\_00\_GIS\_MODEL\14\_03\_Map\_Docs\14\_03\_04\_mxd\Section 4(f)\Build\_alternatives.mxd | Last Updated: 06-06-10



### 1 **1.4.3 Project Description**

2 This EA includes four proposed alternatives to be considered and studied in detail: the No  
3 Build Alternative, and three proposed build alternatives (the Parkway Alternative, the  
4 Rainbow Alternative, and the Riverview Alternative) (Figure 4). The lengths of the three  
5 proposed build alternative alignments are Parkway–23,124 feet, Rainbow–21,308 feet,  
6 and Riverview–15,875 feet. Construction is anticipated to begin in late 2011 and is  
7 expected to last 24-28 months. The proposed project would provide a safe and efficient  
8 east-west transportation facility accommodating bicyclists and pedestrians with the multi-  
9 use pathway and Americans with Disabilities Act (ADA) compliant sidewalks. It is  
10 anticipated that the proposed roadway and bridge project would be constructed as four  
11 travel-lanes with a posted speed of 35 m.p.h., including an adjacent multi-use pathway.

12 There are varying ROW widths proposed for the three build alternative alignments  
13 (Figures 5, 6, and 7). The proposed Parkway Alternative ROW in Nevada varies from  
14 110 to 170 feet wide. In Arizona, the Parkway Alternative ROW is 100 feet wide. The  
15 bridge would be constructed 69 feet wide for each of the proposed build alternatives  
16 (Figure 5). The proposed Rainbow Alternative ROW in Nevada varies from 107 to 175  
17 feet wide. In Arizona, the proposed Rainbow Alternative ROW is 79 feet wide. The  
18 proposed Riverview Alternative ROW in Nevada varies from 150 to 200 feet wide. In  
19 Arizona, the proposed Riverview Alternative ROW varies between 72 and 123 feet wide.

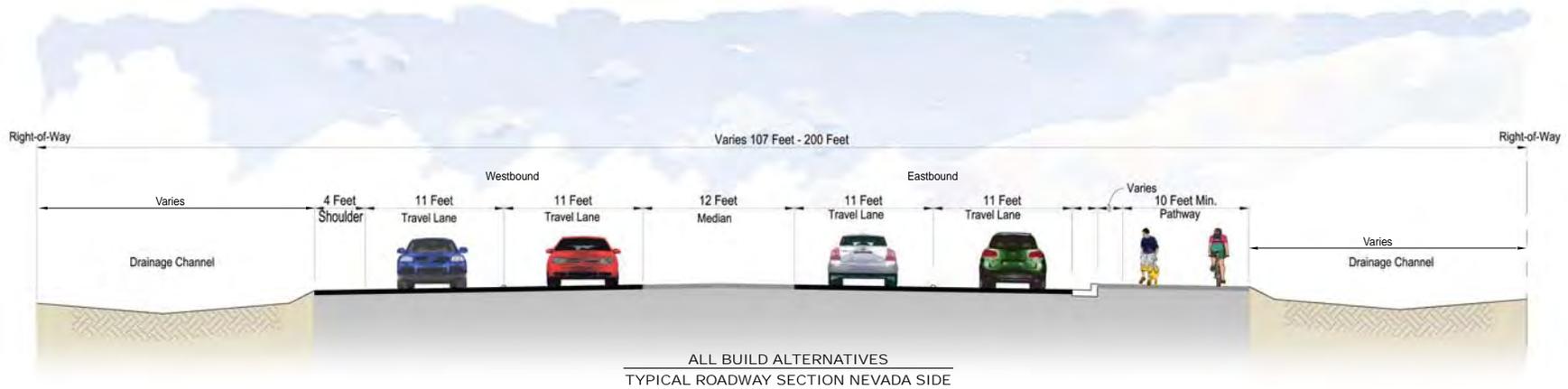
20 The proposed Parkway and Rainbow Alternatives approach roadways connecting the  
21 bridge to the logical termini (Needles Highway [Nevada] and SR 95 [Arizona]) would  
22 have a design configuration of four travel lanes (two in each direction), a median, and a  
23 shoulder on the north side of the roadway, and at a minimum a ten-foot wide multi-use  
24 pathway on the south side (Figure 7). However, with the proposed Riverview Alternative  
25 the design configuration was expanded for the Arizona side of the project to include a  
26 frontage road (one parking lane and two travel lanes) and/or landscaped buffering and  
27 noise barriers depending on location.

### 28 **1.4.4 Project Design**

29 All proposed project final designs would need to be formally approved by the FHWA and  
30 DOTs prior to construction, which would occur following the NEPA document  
31 determination. The primary permanent components of the proposed project would  
32 include constructing a new bridge crossing the Colorado River, an intersection with and  
33 approach roadway from Needles Highway in Nevada and an approach roadway from the  
34 extension of Bullhead Parkway west of SR 95 in Arizona. Secondary temporary  
35 components associated with the proposed project would include construction staging  
36 areas, material borrow areas, excavation disposal areas, and other support facilities.

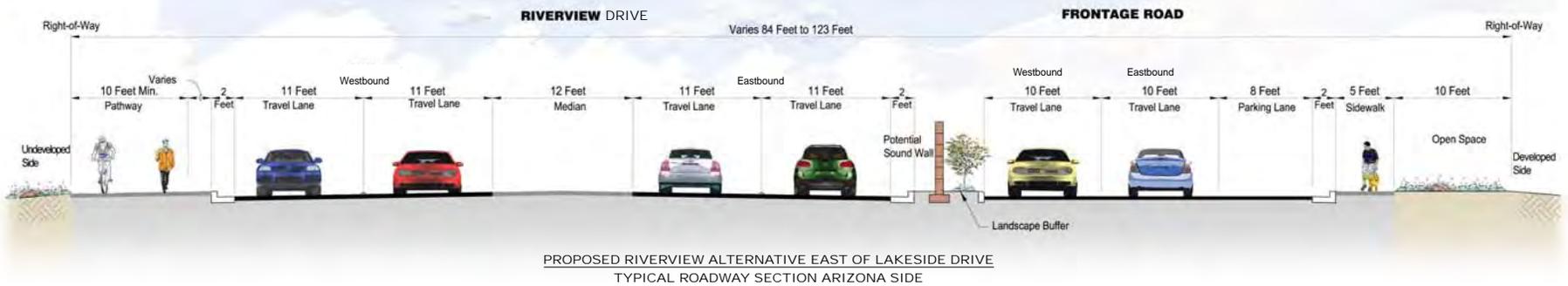
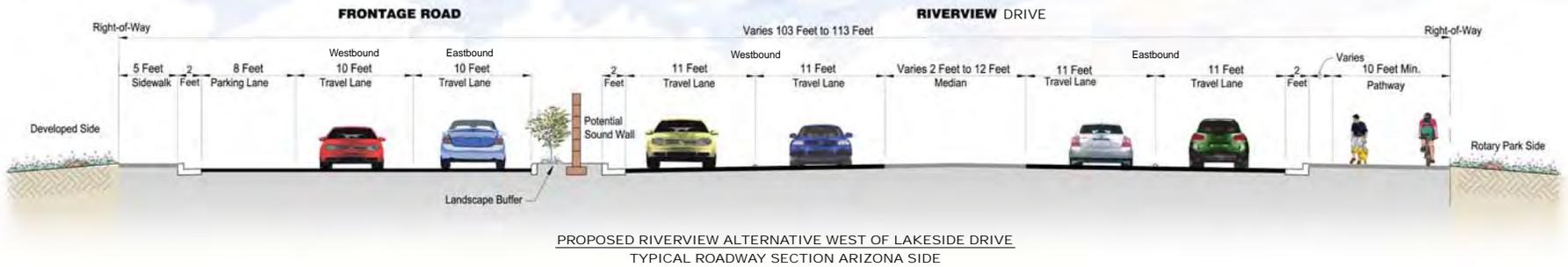
37

## TYPICAL SECTIONS

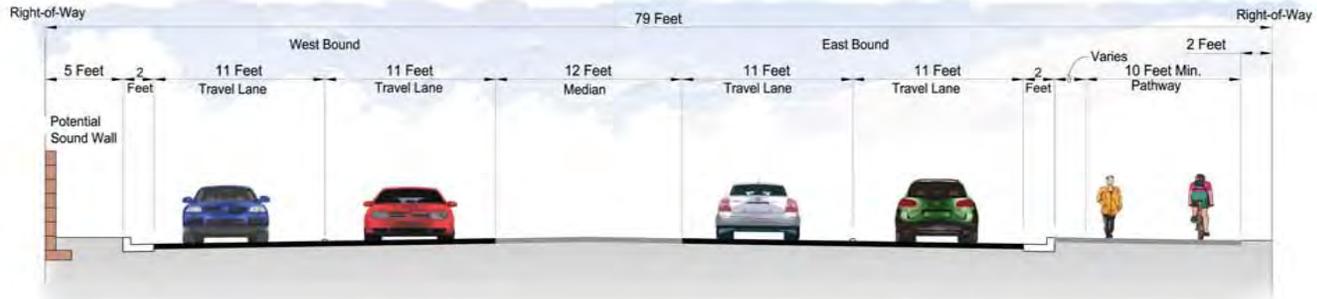


Note: Bridge cross section is for illustrative purposes only and does not limit the bridge type selection

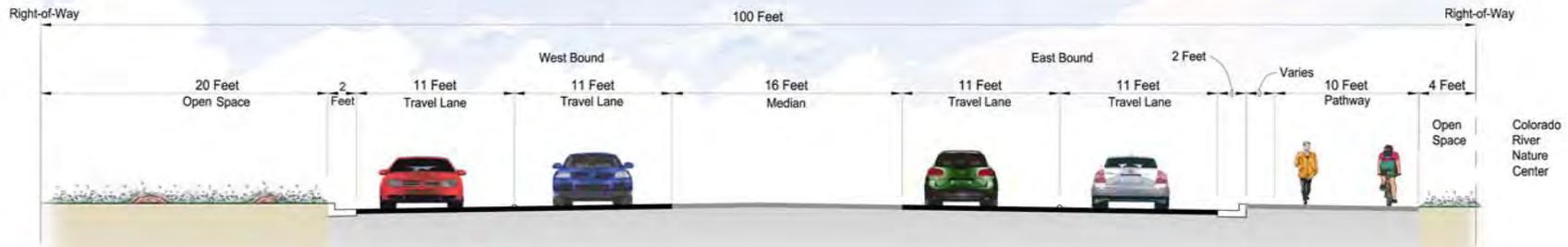
## TYPICAL SECTIONS



## TYPICAL SECTIONS



PROPOSED RAINBOW ALTERNATIVE  
TYPICAL ROADWAY SECTION ARIZONA SIDE



PROPOSED PARKWAY ALTERNATIVE  
TYPICAL ROADWAY SECTION ARIZONA SIDE

1 The primary permanent components for the proposed Parkway Alternative (preferred  
2 alternative) (structures including cut and fill slopes) would be within planned designated  
3 ROW in Nevada. In Arizona, some new ROW would be required. The secondary  
4 temporary components for the proposed Parkway Alternative would be located within the  
5 250-foot study corridor that was evaluated for potential environmental impacts in both  
6 Nevada and Arizona.

7 Additional discussion of the geometric designs and construction methodologies for the  
8 project components are described below and in *Section 2.1 Construction Methods* to the  
9 degree that the information is currently available. These designs are conceptual in nature  
10 and are not intended to exclude other designs and/or methods, or narrow the bridge-type  
11 selection process. They are based upon a number of assumptions, typical roadway  
12 designs in Clark County and Bullhead City, and typical bridge designs and construction  
13 methods across the Colorado River in Nevada and Arizona. These designs and methods  
14 may change as they proceed through final design.

#### 15 ***1.4.4.1 Bridge Design***

16 The proposed design for the bridge superstructure would consist of a concrete deck  
17 supported by structural steel or concrete girders. The final specifications of the bridge  
18 components, geometric configuration, and construction methods would be developed  
19 during the bridge type/selection process and finalized at the end of the design process.  
20 State DOTs are the ultimate recipients of Federal-aid Highway funds and as such are  
21 responsible for oversight of those projects. This typically requires state DOT approval of  
22 the guides and specifications. The FHWA and DOT approved final bridge design would  
23 be submitted with the USCG Section 9 Bridge Permit.

24 With all three proposed build alternatives, river recreationalists would be able to continue  
25 all permissible in-river navigable activities such as boating, jet skiing, and fishing.  
26 Construction of a bridge would not create restrictions/barriers to navigation in the river  
27 itself because the bridge piers and substructure have been designed to have sufficient  
28 vertical height and horizontal span lengths for clearance purposes per USCG regulations  
29 (49 CFR 1.46(c)).

30 The bridge would be designed to provide a vertical navigational clearance above ordinary  
31 high water mark (OHWM) equal to or greater than the other bridges (the existing  
32 Laughlin Bridge upstream and the Veterans Memorial Bridge downstream) on the  
33 Colorado River. Tentatively, the bridge girders would be placed a minimum of 25 feet  
34 above OHWM, which is consistent with USCG bridge permitting requirements. The  
35 superstructure would likely consist of a concrete deck supported by structural steel or  
36 concrete girders. The deck would likely be constructed of traditional cast-in-place,  
37 conventionally reinforced concrete. While full-depth pre-cast concrete deck panels may

1 be used to expedite construction, minimize the potential for inadvertent release of  
2 concrete in to the river, and eliminate the need to use strip forms over the river, it is  
3 assumed that the cost-premium associated with such an option is not warranted. The  
4 release of concrete and form debris into the river can be minimized with basic  
5 construction best management practices (BMPs). Proposed bridge piers, which would be  
6 located in the navigable portions of the river, have currently been conceptually designed  
7 with horizontal span lengths at a minimum of 130 feet apart.

8 While the configuration of the piers and abutments would be determined during final  
9 design, a conceptual design has been developed based on preliminary geotechnical  
10 information and recent and typical construction in similar river environments in the area.  
11 It is anticipated that all the proposed piers, whether in the river proper or in the  
12 floodplain, would consist of conventionally reinforced concrete caps supported on  
13 multiple concrete columns and drilled/cast-in-place concrete shafts. Abutments would  
14 consist of similar concrete caps supported on drilled shafts.

#### 15 ***1.4.4.2 Roadway Design***

16 The proposed roadway design for the approaches to the bridge would not be included in  
17 either state's highway system; therefore, they would be designed following guidelines  
18 and specifications provided by the applicable local jurisdictions (Clark County and  
19 Bullhead City) which also meet AASHTO guidelines. However, State DOTs are the  
20 ultimate recipients of Federal-aid Highway funds and as such are responsible for  
21 oversight of those projects. This typically requires state DOT approval of the guides and  
22 specifications.

23 The final specifications of the roadway components, geometric configuration, and  
24 construction methods would be developed as guideline requirements are incorporated and  
25 finalized in the design process. Final design cannot be initiated until a NEPA document  
26 determination has been issued by the FHWA.

27 For the Nevada roadway approach, an intersection with Needles Highway would be  
28 developed to address anticipated traffic loads, in accordance with the local guidelines.  
29 The additional roadway approach heading east from Needles Highway would be  
30 developed in lands owned by Clark County with no current development.

31 For the Arizona roadway approach, the configuration would begin at the west end of the  
32 Bullhead Parkway extension (a currently built roadway segment and developed  
33 intersection to access the Mohave Crossroads development) and then continue west  
34 (towards the Colorado River) in lands privately owned with no current development.

#### 1 **1.4.5 Travel Demand**

2 A travel demand model for the Laughlin and Bullhead City regional area was developed  
3 to evaluate the traffic impacts of a new proposed bridge across the Colorado River  
4 (LBHCBP 2009a). This transportation-planning model is a representation of the  
5 Laughlin–Bullhead City area roadway facilities and the travel patterns associated with  
6 these facilities. The Laughlin–Bullhead City travel demand model was developed with  
7 the TransCAD 5.0 (Build 1705) travel demand software program. The transportation-  
8 planning model utilizes socioeconomic data to estimate the roadway system travel  
9 demand and represent the transportation network. Together with the socioeconomic data,  
10 previous model considerations, simulated roadway network, and other mathematical  
11 travel parameters, the model was calibrated and validated to replicate the base year travel  
12 patterns, making it possible to project traffic flow.

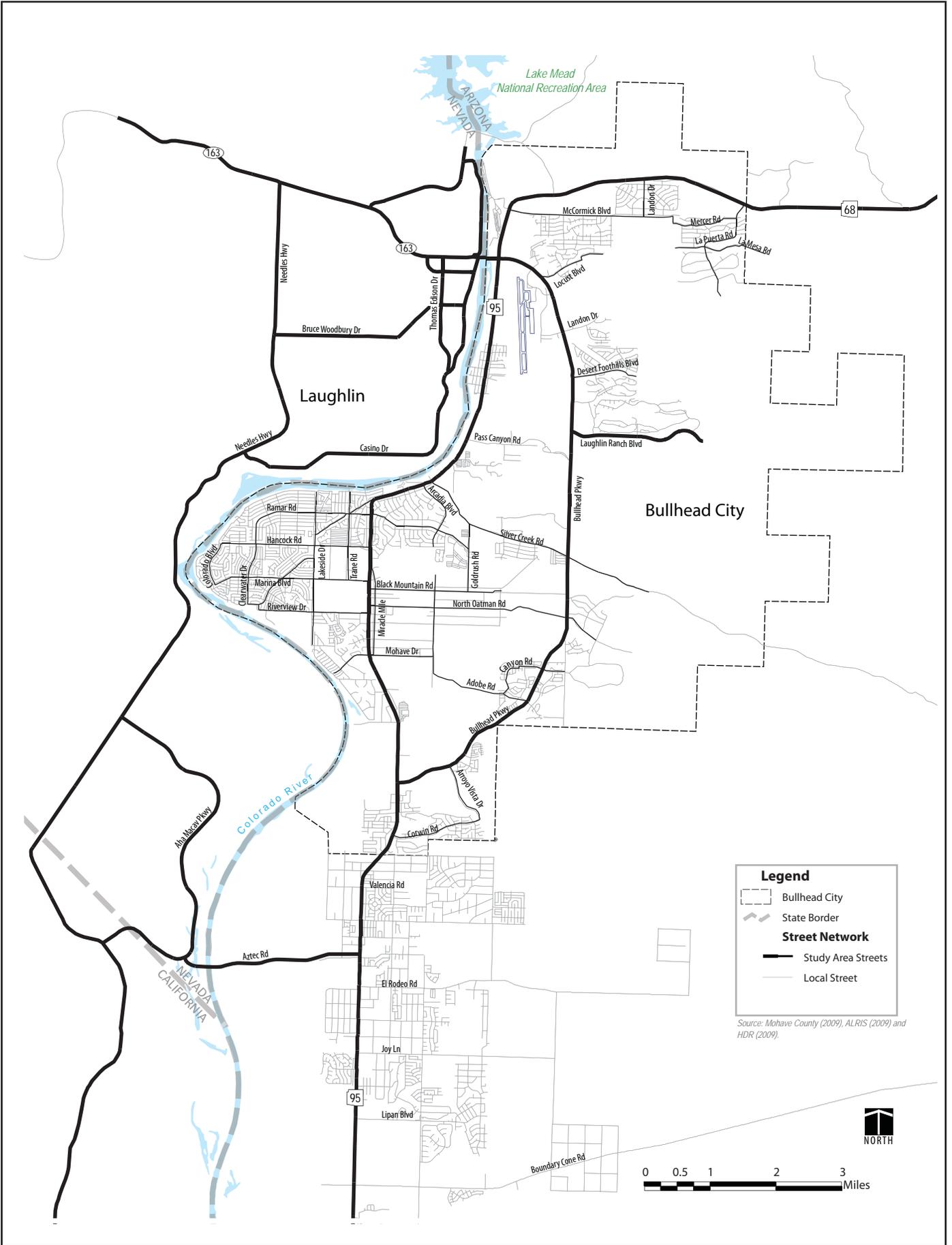
13 The model area consisted of the overall study area in order to encompass a buffer and  
14 account for outside influences that would directly affect the potential bridge crossing  
15 demand (Figure 1). Figure 8 represents the model network and boundary limits, which  
16 are outlined below:

- 17 • SR 163 (Nevada)/ SR 68 (Arizona) – Northern Area Boundary
- 18 • Needles Highway – Western Area Boundary
- 19 • Proposed SR 95 (Arizona) Realignment – Eastern Area Boundary
- 20 • Boundary Cone Road – Southern Area Boundary

21 The initial model evaluated eight proposed build alternatives (Pass Canyon, Silver Creek,  
22 Lakeside, Hancock, Marina, Riverview, Rainbow, and Parkway) and the No Build  
23 Alternative all in comparison to the existing Laughlin Bridge based on four- and six-lane  
24 roadway and bridge configurations with a 45 m.p.h. posted speed limit. The initial model  
25 was developed for 2007 ‘base’ conditions, and forecasted for 2012 opening year and  
26 2030-horizon year for the alternatives analysis conducted in March 2007. Later, the  
27 model was refined and updated to evaluate the three remaining proposed build  
28 alternatives (Riverview, Rainbow, and Parkway) and the No Build Alternative. This  
29 revised model developed the travel demand for the 2009 ‘base’ conditions, and forecasted  
30 2015-mid-year and 2030-horizon year for the alternatives analysis conducted in October  
31 2009. This model was based on a four-lane configuration with a 35 m.p.h. posted speed  
32 limit for all proposed build alternatives in comparison to the existing Laughlin Bridge.

33 Table 3 illustrates the AADT on the existing Laughlin Bridge and the proposed  
34 alternatives. The forecasted traffic flow is substantial with an additional bridge.  
35 Generally, as the additional bridge would be located farther to the south of the existing  
36 Laughlin Bridge, the amount of traffic decreases; however, traffic volumes on any of the  
37 bridge locations are quite substantial, particularly in the long-range forecasts.

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1 Furthermore, with two additional bridges, the summations of traffic flow are higher  
 2 across the bridges. This is most likely due to excess demand to utilize a bridge crossing.  
 3 Conversely, with no additional bridge crossing, the potential demand is constrained due  
 4 to the existing single bridge.

5 **Table 3. Average Annual Daily Traffic**

Scenario	Existing Laughlin Bridge	New Bridge	Total Bridge Crossings
2009 Base	32,200	-	32,200
2015 No Additional Bridge	43,600	-	43,600
2015 Parkway	33,900	6,400	40,300
2015 Rainbow	33,100	9,400	42,500
2015 Riverview	30,200	19,500	49,700
2030 No Additional Bridge	74,800	-	74,800
2030 Parkway	52,300	20,600	72,900
2030 Rainbow	51,500	26,200	77,700
2030 Riverview	49,900	37,700	87,600

6 Measures of effectiveness were derived for a comparison of system performance between  
 7 each of the scenarios (Table 4). These measures include total vehicle miles of travel  
 8 (VMT), vehicle hours of travel (VHT), average operating speed, and other measures.  
 9 Additionally, minimum travel time estimates between two locations were derived from  
 10 the travel demand model at: 1) northwest corner of Needles Highway/Casino Drive and  
 11 2) Western Arizona Regional Medical Center. Table 4 indicates the measures of  
 12 effectiveness for the 2009, 2015, and 2030 bridge scenarios.

13 Based on the projected population and socioeconomic growth in the Laughlin Bullhead  
 14 City area, an additional bridge across the Colorado River would provide increased  
 15 mobility and access between the communities. Based on travel demand, the location of  
 16 the bridge farther to the north would indicate a higher demand. However, any of the  
 17 bridge locations would reveal some improved traffic flows. In addition, with the major  
 18 congestion due to the location of desired interaction between the urbanized areas on the  
 19 roadway system, the location of the bridge farther to the south would increase the  
 20 distance of travel between the urbanized areas and subsequent increase in travel time.

21 In review of Table 4, VMT and VHT are reduced with an additional bridge in 2015 and  
 22 2030. The average operating speeds would remain similar in 2015 and slightly increase  
 23 with an additional bridge crossing. The LOS of the existing Laughlin Bridge would  
 24 improve in 2015 and would remain the same in 2030 with an additional bridge due to  
 25 major population increases. The AADT of the existing bridge would be reduced with an  
 26 additional bridge in 2015 and 2030. The AADT of the proposed bridges would increase

**Table 4. Measures of Effectiveness**

Potential Screening Criteria	Base Year (2009)	Year 2015				Year 2030			
		No Additional Bridge	Parkway	Rainbow	Riverview	No Additional Bridge	Parkway	Rainbow	Riverview
Vehicle Miles Traveled (VMT)	1,145,705	1,516,995	1,391,426	1,394,884	1,391,499	2,745,454	2,362,214	2,355,715	2,367,985
Vehicle Hours Traveled (VHT)	28,505	41,291	35,858	35,877	35,188	103,396	63,375	63,386	63,427
Average Operating Speed (AOS)	35.7	35.1	35.6	35.6	35.8	34.5	36.0	36.0	36.0
Level of Service <sup>a</sup> (LOS)	D/-/D	F/-/E	D/A/D	D/A/D	C/C/D	F/-/F	F/C/E	F/D/E	F/F/E
Daily volume (V) over capacity (C) is (V/C) <sup>a</sup>	0.74/-/0.49	1.01/-/0.85	0.78/0.19/0.55	0.77/0.28/0.53	0.70/0.58/0.48	1.73/-/1.69	1.21/0.61/0.91	1.19/0.78/0.88	1.15/1.12/0.91
Average annual daily traffic (AADT) <sup>a</sup>	32,200/ -/ 7,600	43,600/ -/ 13,200	33,900/ 6,400/ 8,500	33,100/ 9,400/ 8,200	30,200/ 19,500/ 7,400	74,800/ -/ 26,300	52,300/ 20,600/ 14,100	51,500/ 26,200/ 13,600	49,900/ 37,700/ 14,200
Emergency response time (in minutes) <sup>b</sup>	19.0	20.4 (+7.4%)	19.5 (2.6%)	19.5 (2.6%)	18.0 (-5.3%)	37.6 (+97.9%)	21.7 (+14.2%)	21.4 (+12.6%)	20.4 (+7.4%)

Note: <sup>a</sup> X/Y/Z represents Existing Laughlin Bridge/Study Bridge/Veterans Memorial Bridge (on Aha Macav Parkway)

<sup>b</sup> From NW of Needles Hwy/Casino Drive to Western Arizona Regional Medical Center, parentheses indicates percent increase or decrease from 2009 base year.

1 the farther north an additional bridge is constructed. Emergency Response times would  
 2 substantially increase in 2015 and 2030 on the existing bridge if there were no additional bridge  
 3 crossing for access and the Veterans Memorial Bridge would need to be used as the only access  
 4 option.

5 An additional bridge crossing further north of the Veterans Memorial Bridge would provide  
 6 another access point and faster response times for emergency response vehicles in the event that  
 7 the existing bridge would be closed. The emergency response time across the existing Laughlin  
 8 Bridge would greatly increase in 2030 without an additional bridge due to major population  
 9 increase. Emergency Response times would be greatly be reduced with an additional bridge in  
 10 2030.

#### 11 **1.4.6 Project Costs**

12 Project construction costs were estimated for year 2013 for each of the proposed build  
 13 alternatives. The 20% contingency would account for proposed mitigation costs and roadway  
 14 construction cost fluctuations. The individual and total costs are summarized below in Table 5.  
 15 Prior to final design and construction of the proposed project, a MOU between NDOT, ADOT,  
 16 Clark County, and Bullhead City would be established to address the design and construction  
 17 contracts, future bridge inspections, and the associated costs. Future operation and maintenance  
 18 costs for the roadways and bridge would be the responsibility of the respective jurisdictions.

19 **Table 5. Summary of Estimated Project Costs for the Proposed Build Alternatives**

4-Lane Cost Estimates for Proposed Build Alternatives	Parkway 4-lane	Rainbow 4-lane	Riverview 4-lane
Roadway Construction Cost (with 20% contingency)			
Arizona Side	\$4,269,300	\$4,931,400	\$15,087,800
Nevada Side	\$11,974,100	\$11,371,600	\$3,864,800
Bridge Construction Cost	\$28,394,880	\$22,505,040	\$29,278,080
<b>Estimated Construction Cost</b>	<b>\$44,638,280</b>	<b>\$38,808,040</b>	<b>\$48,230,680</b>
Right-of-Way Cost			
Arizona Side	\$503,200	\$159,700	\$629,800
Nevada Side	\$151,500	\$151,500	\$0
<b>Estimated Right-of-Way Cost</b>	<b>\$654,700</b>	<b>\$311,200</b>	<b>\$629,800</b>
<b>Preliminary Engineering Cost</b>	<b>\$2,746,231</b>	<b>\$2,746,231</b>	<b>\$2,746,231</b>
<b>Design Engineering and Construction Engr. (16%)</b>	<b>\$7,142,125</b>	<b>\$6,209,286</b>	<b>\$7,716,909</b>
<b>Total Estimated Project Cost</b>	<b>\$55,181,336</b>	<b>\$48,074,757</b>	<b>\$59,323,620</b>

#### 20 **1.4.7 Funding**

21 Potential funding for the project has been researched and evaluated. Currently, established  
 22 funding includes both federal and local monies, as indicated in Table 6. The RTCSNV is  
 23 currently amending their local funding agreement with Clark County and Bullhead City to  
 24 progress the project through the environmental phase and into the design, ROW acquisition,

1 mitigation, construction, and operation and maintenance phases. This would address the cost  
 2 sharing responsibilities for the project improvements as a whole and establish the equitable  
 3 contributions from each jurisdiction prior to authorization for design or construction. All  
 4 elements of the proposed project are included in the RTCSNV Regional Transportation Plan  
 5 (2009-2030) and the Western Area Council of Governments (WACOG) Bridge Program (2009-  
 6 2013). The proposed project is identified in the Nevada Statewide Transportation Improvement  
 7 Program (STIP) (FY 2010-2013), the Nevada Long-Range Element (2013-2019), and the  
 8 Arizona STIP (FY 2010-2013) with funding provided for activities through construction  
 9 (Appendix B). Clark County would be proposed as the owner of the new bridge with  
 10 maintenance responsibilities shared between Clark County and Bullhead City, with Clark County  
 11 as the lead.

12 **Table 6. Summary of Potential Funding.**

Potential Funding Sources	
NDOT STIP	
Section 1702 High Priority Projects—Transportation Improvements	\$14,998,505
SAFETEA-LU High Priority Projects	\$2,966,418
Regionally Significant Non-Federally Funded Projects (Clark County) and Question 10 Funding—High Speed Lane Miles Program	\$30,000,000
Other Federal Projects	\$1,000,000
ADOT STIP	
WACOG Bridge Replacement Program (setaside)	\$28,000,000
<b>POTENTIAL TOTAL FUNDS AVAILABLE</b>	<b>\$76,964,923</b>

13 **1.4.8 Toll Feasibility**

14 The feasibility of building the Laughlin–Bullhead City Bridge Project as a toll facility was  
 15 assessed in October 2007 (LBHCBP 2007) at the request of the IDT. To assess this potential,  
 16 two specific criteria were used:

- 17
- 18 • Would the Laughlin–Bullhead City Bridge Project generate sufficient traffic and toll  
revenue to cover the costs of construction, financing and operation and maintenance?
  - 19 • Would the Laughlin–Bullhead City Bridge Project attract adequate capital in the form  
20 of debt or private equity at a reasonable cost?

21 The proposed Riverview Alternative has the necessary qualities to be suitable as a toll facility,  
 22 but the proposed Rainbow and Parkway Alternatives do not. In addition, neither Nevada nor  
 23 Arizona currently has legislation in place that enables tolling options or authorities to manage  
 24 such facilities. Therefore, at the time that such legislation is implemented, an update to the toll  
 25 feasibility analysis would be recommended to reevaluate the existing and projected conditions.  
 26 After that, the next recommended step in the process would be to find the project financing  
 27 structure that minimizes equity requirements and obtains positive opinion of viability from

## Proposed Action

- 1 opinion leaders in the capital markets. This next step would then form the basis for a decision on
- 2 proceeding to an investment-grade traffic and revenue study.

## 1   **2.0   ENVIRONMENTAL IMPACTS AND MITIGATION**

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2   This chapter provides a description of existing conditions for each of the proposed build  
3   alternatives (Parkway, Rainbow, and Riverview). Subsequently, this section includes an impact  
4   analysis for each of the proposed build alternatives and the No Build Alternative. Lastly,  
5   minimization and mitigation measures of impacts are discussed for each proposed build  
6   alternative. The following documents provide the background data and technical analyses to  
7   support the concise discussions of the alternatives and their impacts within this EA.

- 8       • Toll Feasibility Study (LBHCBP 2007)
- 9       • Phase 1 Environmental Site Assessment (LBHCBP 2008a)
- 10      • A Class III Cultural Resources Survey (LBHCBP 2008b)
- 11      • Updated Travel Demand Model Analysis (LBHCBP 2009a)
- 12      • Crash Analysis (LBHCBP 2009b)
- 13      • Waters of the U.S. Jurisdictional Determination (LBHCBP 2009d)
- 14      • Biological Resources Technical Report (LBHCBP 2009e)
- 15      • A Supplemental Class III Cultural Resources Survey (LBHCBP 2009f)
- 16      • Air Quality Report (LBHCBP 2009g)
- 17      • Noise Report (LBHCBP 2009h)
- 18      • Visual Resources Assessment (LBHCBP 2009i)
- 19      • Environmental Justice Assessment (LBHCBP 2010a)
- 20      • Community Impact Assessment (LBHCBP 2010b)
- 21      • Section 4(f) and 6(f) Documentation (LBHCBP 2010c)
- 22      • Noise Technical Memorandum (LBHCBP 2010d)
- 23      • Visual Technical Memorandum (LBHCBP 2010e)
- 24      • Environmental Justice Project Memorandum (LBHCBP 2010f)

### 25   **2.1   Construction Methods**

26   The following is a general description of the construction methods that are typically used for this  
27   type of project. Final methodologies would be established once final design is complete and a  
28   contractor is selected. Some of the below methodologies would be obligatory for the contractor  
29   as these are mitigation measures for biological resources, air quality, noise, water quality, etc. It  
30   is the responsibility of the contractor to adhere to methodologies set forth in appropriate  
31   documents, permits, guidelines, and regulations from federal, state, and local agencies.

#### 32   **2.1.1   Bridge Construction**

33   There are two distinct zones that the contractor would have to work within - the main channel  
34   where the Colorado River ordinary high water is conveyed and beyond the main channel within  
35   the floodplain. Construction would have to be accomplished somewhat differently within these

1 two zones due to the complexity of in-water/over-water construction required at the main  
2 channel.

3 Barring any unplanned high flow releases from the dams on the river, it is anticipated that the  
4 bridge would be constructed in one season (12 months). Construction activities within the  
5 floodplain would continue throughout most of that period with the construction of the  
6 foundations and piers, followed by the erection of the girders and placing of the deck concrete.

#### 7 ***2.1.1.1 Bridge Construction in the Floodplain***

8 A temporary access way on one side of the proposed bridge running parallel to the edge of deck  
9 is anticipated. The extent of the access way would be from the limits of the floodplain to the  
10 limits of the main channel. Typically, a width of 20 feet is needed to allow for the setup of  
11 equipment and still allow for ingress and egress (material delivery and operations). A work zone  
12 of about 15 feet on each side of pier centerlines should also be anticipated to facilitate pier  
13 column and cap construction, girder erection, and deck construction. Specifically, the contractor  
14 would need an operational area for the drill rig, column and cap form construction, girder  
15 erection and material delivery cranes, and concrete pumping operations.

16 The drilled shaft foundations would most likely be constructed using full-depth temporary casing  
17 due to the high water table and the nature of the subgrade materials. The casings would be  
18 installed using a crane-mounted vibratory hammer, and extracted while maintaining a head as  
19 concrete is being placed to insure stability of the excavation. Alternatively, the drilled shafts  
20 may be constructed using a self-contained slurry process, but it is not likely due to the additional  
21 cost and environmental risk associated with that process. Excavated material (drilling spoils) can  
22 be salvaged for roadway embankment where permissible and acceptable, or removed from the  
23 site if warranted. Once the drilled shafts are completed, the contractor would construct the  
24 concrete columns and pier caps using conventional re-usable formwork and falsework. Girders  
25 would be erected using ground-mounted cranes. The ground-mounted cranes would also be used  
26 to deliver the forms and reinforcing steel for the deck. It is anticipated that all concrete for the  
27 project would be delivered by truck and dispensed using pumpers (and slick lines [delivers  
28 concrete by pump lines or hoses] where access is limited).

#### 29 ***2.1.1.2 Bridge Construction in the Main Channel***

30 The construction of the main channel spans would differ due to the in-water/over-water  
31 condition. At the limits of the main channel, it is anticipated that the contractor would need to  
32 have a staging area to facilitate delivery of equipment and material. Because of anticipated water  
33 depths, the equipment and material would have to be delivered to the point of construction by  
34 barge.

35 It is anticipated that the contractor would construct temporary cofferdams around the perimeter  
36 of the pier locations using sheet piling. Once cofferdam construction is complete, the contractor  
37 would likely need to place a seal slab on the bottom to facilitate de-watering. After de-watering

1 of the cofferdams (typically by submersible pumps with the water being discharged directly into  
2 the river), the contractor would construct drilled shaft foundations, using temporary full-depth  
3 casing similar to the procedure that was utilized in the floodplain. Additionally, pier  
4 columns/pier cap construction, girder erection, and deck placement would be built using similar  
5 floodplain procedures.

6 An in-water pier construction option may be to use permanent casing thereby eliminating the  
7 need to construct cofferdams. Pier construction methods would be finalized as more detailed  
8 site-specific geotechnical data is obtained, the engineering design is advanced, and construction  
9 methods are determined.

10 To avoid increased turbidity levels in the river, excavation spoils would not be discharged into  
11 the river. Rather, they would be deposited on a barge and removed offsite or discarded within  
12 the project area if permitted. Upon completion of the in-water pier construction, the cofferdams  
13 (if used) would be removed.

#### 14 **2.1.2 Roadway Construction**

15 Primary activities associated with roadway construction would include vegetation clearing and  
16 grubbing; salvage of topsoil; cut and fill to required grade (grading); installation of culverts,  
17 drainage structures and associated swales; placement of subgrade and sub-base materials;  
18 placement of pavement; curb/gutter as needed; and signing/stripping.

19 Staging areas would be required to facilitate the construction of this project on both sides of the  
20 river. It is assumed that most of the staging activities can occur within the ROW associated with  
21 the project. However, the contractor may determine that additional space is required, and would  
22 identify private/county/other areas off-site for these purposes. These areas would require  
23 environmental clearances.

##### 24 ***2.1.2.1 Material Disposal and Borrow Locations***

25 Materials required for this project would be obtained from an existing, permitted borrow site  
26 maintained by NDOT, ADOT, Clark County, Mohave County, and/or Bullhead City. The  
27 specific location of these sites would be identified as detailed design is developed. Materials  
28 removed during construction (pavement, structures, or unusable overburden) would be recycled  
29 or disposed of in approved landfills or other facilities with proper environmental clearances, if  
30 needed.

##### 31 ***2.1.2.2 Staging Areas***

32 Specific locations of staging areas would be identified by the contractor. Staging areas would be  
33 constructed within the 250-foot study corridor to reduce impacts to surrounding areas. New  
34 staging areas would not be established in creosote desert scrub, wetland areas, or on the banks of  
35 the Colorado River below the OHWM. If the contractor determines that a staging area would be

1 necessary outside of the 250-foot study corridor, they would be responsible for obtaining all  
2 necessary environmental clearances and permits.

### 3 **2.1.3 Impacts**

#### 4 **2.1.3.1 No Build Alternative**

5 No construction impacts are associated with the No Build Alternative.

#### 6 **2.1.3.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

7 Construction impacts are short-term and temporary, and cease upon completion of the project.  
8 Project construction impacts include effects on local air quality and ambient noise levels;  
9 increased erosion; potential fuels or chemical spills; potential transportation and circulation  
10 impacts; effects on vegetation, wildlife habitat, recreation, and cultural resources; disturbance of  
11 special-status species; and effects on the area's visual resources. The following is a list of  
12 activities that would be associated with construction.

13 Construction impacts of the proposed project common to the three proposed build  
14 alternatives may include the following:

- 15 • Dust would result from earthmoving activities, construction vehicles and equipment,  
16 construction worker vehicles, material delivery vehicles, and from areas within the  
17 ROW that have been disturbed or areas that have stockpiled materials.
- 18 • Dirt, contaminants, and pollutants from construction equipment may affect the water  
19 quality within the Colorado River.
- 20 • Construction activities and storage of associated hazardous materials may affect the  
21 water quality of the Colorado River, Floodplain, and Upland areas.
- 22 • Noise would be emitted during all construction phases. Noise sources include  
23 construction vehicles and equipment, construction worker vehicles, and material  
24 delivery vehicles. According to USDOT's *Highway Construction Noise:  
25 Measurement, Prediction, and Mitigation (1977)*, noise levels associated with  
26 construction activities are typically 80-100 dBA at a distance of 50 feet (LBHCBP  
27 2009d).
- 28 • Construction activities within the river may affect water-dependent recreational  
29 activities. Barges may temporarily affect normal recreational and commercial traffic  
30 on the Colorado River.
- 31 • Construction activities for the bridge may induce a slight impediment to river traffic.  
32 Barges and other in-water construction equipment would need to be negotiated by  
33 passing river traffic. Cofferdams would displace 2,000-2,400 square feet of river  
34 water during the installation of pier columns. This may affect recreational or  
35 commercial travel within the river. However, this impact should be minimal as the  
36 river is hundreds of feet wide at each proposed build alternative.

- 1 • Construction of the proposed project would induce traffic-related impacts such as  
2 traffic slowdowns, rerouting local streets, temporary traffic control devices, and stops,  
3 impaired access to local streets, dust, and noise. The duration of construction impacts  
4 affecting residents, businesses, and traveling public would be short-term, but would  
5 occur at various locations within the project area as the proposed actions are staged  
6 and constructed.
- 7 • Construction of the proposed project would induce temporary traffic-related impacts  
8 such as lane closures, rerouting to local streets, slowdowns, or traffic control devices.

#### 9 **2.1.4 Mitigation**

##### 10 **2.1.4.1 No Build Alternative**

11 No mitigation measures are associated with the No Build Alternative.

##### 12 **2.1.4.2 Proposed Parkway and Rainbow Alternatives**

13 A dust mitigation plan will be developed and implemented to control air borne particulates  
14 pursuant to Clark County code to control dust and particulate matter from construction activities.  
15 BMPs will be used, including a watering program for dust abatement.

16 Construction equipment will be washed and properly maintained to minimize pollutant runoff  
17 from construction equipment. Construction equipment and associated hazardous material  
18 storage will be inspected frequently and maintained to reduce the potential for hazardous  
19 materials spills and runoff into the river, floodplain, and upland areas.

20 The potential for accidental spills of hazardous materials will be assessed before construction.  
21 Hazards will be minimized and avoided through the implementation of BMPs and measures  
22 specified in a Stormwater Pollution Prevention Plan (SWPPP). Additionally, the contractor will  
23 prepare a Spill Prevention Notification and Cleanup Plan prior to the start of construction.  
24 Proper control and cleanup measures will be available on site. See *Section 2.14 Hazardous*  
25 *Materials* for additional BMPs and mitigation measures.

26 Noise mitigation measures will be implemented during construction activities. BMPs include  
27 limiting construction hours to within normal business hours.

28 A transportation management plan will be developed and specified in contract documents to  
29 maintain traffic safety and access during construction. All construction traffic-related impacts  
30 will be short-term, ending upon completion of the project. Access to businesses will be  
31 maintained during construction. Local jurisdictions will coordinate with businesses to address  
32 access and construction concerns.

1 **2.1.4.3 Proposed Riverview Alternative**

2 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
 3 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
 4 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

5 **2.1.5 Permitting Summary**

6 This section of the EA was developed to identify the requirements that may apply to the  
 7 construction and operation of the roadway and its associated bridge over the Colorado River.  
 8 Compliance with federal, state, and local laws, rules, and regulations would require a substantial  
 9 effort to meet regulatory requirements for the two different states. Early and continuous  
 10 coordination with federal, state, and local agencies and entities is paramount to the timely and  
 11 successful acquisition of the required permits, approvals, and licenses for this project.

12 **Environmental Commitments and Permit Obligations**

13 The term “environmental commitment” includes actions that (1) avoid, minimize and/or mitigate  
 14 environmental impacts of a project and (2) are required to be implemented as a condition of  
 15 project approval, or have been committed to by the FHWA, NDOT, and ADOT as part of the  
 16 project development process.

17 The permit and approval table provides the following information:

- 18 • Issuing Agency: The issuing agency or agency having jurisdictional control or  
 19 authority in administration of the permit or approval process.
- 20 • Required Permit or Approval: The applicable or common permit name, license,  
 21 application, or review activity.
- 22 • Regulated Activity: Activity or task to which the permit or approval is applicable.

23

**Table 7. Anticipated Permits and Approvals**

Issuing Agency	Required Permit or Approval	Regulated Activity
Federal		
FHWA	Programmatic Agreement between FHWA, SHPO–Nevada, and SHPO–Arizona	Coordination (Section 106 consultation) of project design and construction to minimize impacts on cultural and historic properties
FHWA	All full-oversight requirement approvals for a federal transportation project	Required for a full-oversight federal project as outlined in the current FHWA/NDOT Stewardship and Oversight Agreement
USACE	Clean Water Act Section 404 Permit; File NWP No. 14 – Linear Transportation Projects	Required for actions that discharge dredged/fill materials into waters of the U.S. as defined by Section 404 of the Clean Water Act

**Table 7. Anticipated Permits and Approvals**

Issuing Agency	Required Permit or Approval	Regulated Activity
USCG	Section 9 Bridge Permit	Required for bridge design and construction This permit includes the submittal of a Nationwide Permit No. 15, which is required for dredge or fill impacts to the Colorado River.
NDEP and ADEQ	NPDES Permit and AZPDES Permit	Required for impacts to waters of the U.S. from stormwater discharges
USFWS	ESA Section 7 Consultation	Required for direct or indirect impacts to federally listed species and/or associated habitats
Nevada State		
NDOT	MOA between FHWA, NDOT, and ADOT	Coordination of project design, construction, operation, maintenance, and financing
NDEP	Section 401 Water Quality Certification	Impacts on water quality caused by discharges to a water body by construction activities
NDEP	General Stormwater Permit for Construction Activities (Notice of Intent and General Permit)	Construction activities disturbing greater than 1 acre
NDEP	Temporary Permit Application for Working in Waterways (formerly known as “Rolling Stock permit”)	Working within waterways permit – maximum of 180 days
NDEP	Temporary or Permanent Discharge Permit	Discharge to surface waters: - for all purposes except working in waterways - maximum of 180 days
NDEP	NDPES Permit (also see Arizona)	Discharge to surface waters (permit or bridge operation for bridge deck discharges related to storm events)
NDWR	Water Right Permit	For any anticipated river water use during construction
NDOW	Tortoise Handling Permit	Potential disturbance of desert tortoise (clearance and monitoring)
NDOW	Implementation of terms and conditions of the Biological Opinion	Potential impacts on common and special-status wildlife species (document compliance with the terms and conditions of Biological Opinion)
NDSL	ROW application for authorization to use state-owned submerged lands	Acquisition of ROW for State Land within the Colorado River for bridge pier placements
Nevada–SHPO	Section 106 Review of	Federally funded projects are to take

**Table 7. Anticipated Permits and Approvals**

Issuing Agency	Required Permit or Approval	Regulated Activity
	National Historic Preservation Act	into account potential impacts on cultural and historical resources
Arizona State		
ADEQ	Waste storage on-site for more than 90-days. Waste disposal facility may require approval.	Disposal of solid and/or hazardous waste generated by work activities.
ADEQ	Clean Water Act Section 401 Water Quality Certification	Impacts on water quality
ADEQ	AZPDES Permit (also see Nevada)	Discharge to surface waters or groundwater from Bridge and Roadway (i.e., surface impoundments or point source discharges to Colorado River)
ADEQ	General Stormwater Permit and Notice of Intent for Construction General Permit (AZG-2008-001)	Construction activities disturbing 1 acre or more of land
ADEQ	Standard Permit Form for Non-Road Engines	Portable air pollution sources
ADEQ	Design Review of Plans and Specifications	Approval of plans and specifications necessary prior to construction start
ADOT	Memorandum of Agreement between FHWA, NDOT, and ADOT	Coordination of project design, construction, operation, maintenance, and financing
ADWR	Water Right Permit	River water use during construction (Note: Water rights may be controlled by BOR)
AGFD	Guidelines for Handling Desert Tortoise	Potential disturbance of desert tortoise habitat (Sonoran population)
AGFD	Special Permits or License	Potential impacts on common and special-status wildlife species
ASLD	ROW application for authorization to use State Owned submerged and sovereign lands	Acquisition of right-of-way for State Land within and adjacent to the Colorado River for bridge pier and abutment placements
Arizona-SHPO	Section 106 Review of National Historic Preservation Act	Federally funded projects are to take into account potential impacts on cultural and historical resources
Clark County, Nevada		
Public Works Department	Design Package Review and adherence with Municipal Code and/or County requirements.	Construction of roadway and bridge structures
Public Works Department	Drainage Study Report	Drainage associated with grading and construction activity
Public Works	Grading Permit	Grading of project site (for

**Table 7. Anticipated Permits and Approvals**

Issuing Agency	Required Permit or Approval	Regulated Activity
Department		disturbance greater than 0.25 acre or 100-linear feet of trenching)
Public Works Department	Transportation Control Plan	Construction traffic on public roadways (i.e., required when construction traffic would affect public/county roadways and traffic flow)
Public Works Department	ROW/easement/dedication	Construction or disturbance on county-owned lands
Department of Air Quality and Environmental Management	Dust Control Permit	Dust emissions from construction activities
Department of Air Quality and Environmental Management	Various Location Permit	Emissions from portable units (rock crushers, generators, cement plants, etc.) used at site
<b>Mohave County, Arizona</b>		
Note: County has authority over activities outside Bullhead City Limits within the unincorporated part of the County. Otherwise, all jurisdictional authority is deferred to Bullhead City Administrative review process. The proposed project is within the Bullhead City Limits		
<b>Bullhead City, Arizona</b>		
Public Works Department	Use Permit and Design Package review Adherence with municipal code and/or county requirements	Construction of aboveground structures in Bullhead City (i.e., bridge design)
Public Works Department	ROW / Encroachment Permit per Municipal Code Chapter 12.04	Construction or disturbance within city rights-of-way (i.e., within drainage or public utility easement area)
Public Works Department	Floodplain Development Permit (Technical Drainage Study Report)	Development within floodplain and drainage associated with grading and construction activity
Public Works Department	Grading Permit	Required for grading activities, includes dust control related to construction
Public Works Department	Transportation Management Plan	Construction traffic on public roadways (i.e., required when construction traffic would affect public/city roadways and traffic flow)
<b>Other General Permits/Coordination</b>		
Various Utilities / Telecommunications Lines	Call before you dig	Construction, trenching and digging related to the project and within the project area

**Table 7. Anticipated Permits and Approvals**

Issuing Agency	Required Permit or Approval	Regulated Activity
Local Fire Dept.	Hot Work Permit	Construction involving hot work or fire

1 **2.2 Land Resources**

2 **2.2.1 Existing Conditions**

3 Land resources such as topography, soils, and geology can affect the constructability of a project  
 4 and the visual appearance of the project area. The construction of a project can create impacts to  
 5 the topography that may include such things as cuts into the landscape or high embankments that  
 6 obstruct the views.

7 **2.2.1.1 Topography**

8 The topography surrounding the study area consists of a floodplain, terraces, and alluvial fans.  
 9 The Colorado River divides the project area, east from west. The elevation of the project area  
 10 ranges from 490 feet to 640 feet above mean sea level.

11 **2.2.1.2 Geology**

12 The study area lies within the Sonoran Desert section of the Basin and Range physiographic  
 13 province, an area characterized by roughly parallel mountain ranges separated by alluvial basins.  
 14 All three alternatives contain Quaternary Fill, Quaternary Active Colorado River Channel  
 15 Deposits, Quaternary Modern to Late Holocene Floodplain Deposits, and Quaternary Holocene  
 16 to Late Pleistocene River Terrace Deposits (AMEC Earth and Environmental, Inc. [AMEC]  
 17 2005). These deposits are described below in Table 8.  
 18

**Table 8. Geologic Units within Proposed Build Alternatives**

Quaternary geologic units	Description
Fill	Fill materials consisting of locally derived materials. Commonly used to construct dikes and embankments along the Colorado River. Dikes and embankments are commonly mantled with imported, cobble- to boulder-sized riprap.
Active Colorado River Channel Deposits	Deposits of sand, gravel and cobbles located within the active channel of the Colorado River, commonly submerged in the active channel. The deposits occur locally as exposed bars and islands within the river channel, or as narrow bands along the river's margins. The deposits are uncemented, nonplastic, and grayish brown.
Modern to Late Holocene Floodplain Deposits	Dominated by deposits of silt and fine-grained sand with subordinate amounts of sand and gravel associated with historical floodplains and flood channels of the Colorado River. The floodplain surfaces are generally 15 to 25 feet above the active channel and are covered by fine-grained deposits of silt and sand. However, relict gravel bars and lenses are locally common. The deposits are

**Table 8. Geologic Units within Proposed Build Alternatives**

Quaternary geologic units	Description
	generally uncemented to very weakly lime cemented, nonplastic, and light brown.
Holocene to Late Pleistocene River Terrace Deposits	Dominated by deposits of sand and gravel, and locally interbedded with silt and clay. The deposits are weakly lime cemented, nonplastic to low in plasticity, and brownish gray. Gravels are generally well rounded and commonly coated with calcium carbonate.

\*Information derived from AMEC 2005

1 The proposed Parkway, Rainbow, and Riverview Alternatives are located within an area that  
 2 experienced multiple inundations of the floodplain in the geologically recent past, with a portion  
 3 of the floodplain marked with prominent fluvial scarps. Low sand dunes, with abandoned  
 4 sloughs on both sides of the river channel, cover portions of the floodplain. Most of the river has  
 5 been channelized. To reduce the potential for flooding, access to the bridges at all three  
 6 proposed build alternatives would require lengthy approaches, which may need to be constructed  
 7 as elevated causeways, possibly with a series of flow-through structures (AMEC 2005). Deep  
 8 foundations within the riverine deposits would support the bridge, both in the river and the  
 9 floodplain. Although Davis Dam controls river flow, riverbank and bed erosion would still need  
 10 to be evaluated and accommodated. Most likely, this erosion would influence the engineering  
 11 design of the bridge substructure.

12 **2.2.1.3 Soils**

13 The study area is composed of a variety of soils, predominantly from the Nonamewash-Rositas  
 14 association; the Riverbend-Carrwash association; the Carrwash-Riverbend association; the  
 15 Ripley-Holtville complex; Laguna sand; Ripley silt loam; and the Rositas, Superstition family  
 16 and Torriorthents soils. The soils consist of sands, silts, clays, and loams. The sand size ranges  
 17 from fine to coarse-grained sands (Natural Resources Conservation Service [NRCS] 2007).

18 **2.2.2 Impacts**

19 **2.2.2.1 No Build Alternative**

20 No land resource impacts are associated with the No Build Alternative.

21 **2.2.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

22 Minor impacts to topography would result from minor excavation into the hillside, and minor  
 23 raised roadbed construction for the Parkway, Rainbow, and Riverview Alternatives.

24 At all three proposed build alternatives, the fine-grained soils that dominate the broad floodplains  
 25 are susceptible to erosion (AMEC 2005). Although Davis Dam controls river flow, riverbank

1 and bed erosion would still need to be evaluated and accommodated. Most likely, this erosion  
2 would control the engineering design of the bridge substructure.

### 3 **2.2.3 Mitigation**

#### 4 **2.2.3.1 No Build Alternative**

5 No mitigation is proposed since no land resources impacts are associated with the No Build  
6 Alternative.

#### 7 **2.2.3.2 Proposed Parkway and Rainbow Alternatives**

8 In order to avoid an increase in river turbidity during deep foundation construction within the  
9 river, spoils will be deposited on barges, removed offsite, and disposed of properly. The spoil  
10 removal also addresses biological concerns and is discussed in *Section 2.6 Biological Resources*  
11 *and Sensitive Species*. Spoil impacts are also addressed in *Section 2.5 Wetlands and*  
12 *Jurisdictional Waters*.

#### 13 **2.2.3.3 Proposed Riverview Alternative**

14 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
15 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
16 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 17 **2.3 Hydrology and Water Quality**

### 18 **2.3.1 Existing Conditions**

19 The following is a general description of the lower Colorado River Drainage Basin area. This is  
20 important in understanding the regional and local hydrologic influences on surface water  
21 (including the Colorado River) and groundwater quality. The following section discusses the  
22 existing conditions of the Colorado River, surface water hydrology, groundwater hydrology and  
23 the relationship to water quality.

#### 24 **2.3.1.1 Colorado River**

25 Drainage from approximately 170,000 square miles of land surface area contributes to the  
26 Colorado River. For over 70 years, river flows have been regulated by dams located upstream  
27 (i.e., the Hoover and Davis Dams). Additionally, several water diversion points exist both  
28 upstream and downstream along the Colorado River for irrigation, and industrial and municipal  
29 water uses. Many laws (such as the Colorado River Compact of 1922), treaties, decrees,  
30 contracts, projects, management agreements, and plans regulate usage and protect the waters of  
31 the Colorado River. BOR is the main governing agency for water management along this stretch  
32 of the Colorado River system, including flood improvement coordination along the banks of the  
33 river.

34 The Colorado River is a perennial river. The river within the project area is highly manipulated.

1 Lakes and power-producing dams exist both upstream and downstream of the three proposed  
2 build alternatives (e.g. Davis Dam and Lake Mohave upstream, and Lake Havasu and Parker  
3 Dam downstream). Besides the Colorado River and its associated marshes, no other natural  
4 surface water body exists within the project area. Only a few man-made ponds or water features  
5 are found in the area. Depending on power production, river flow (and volume) fluctuates  
6 resulting in an increase or decrease of the water level. When energy demand and production are  
7 low (evenings and mornings), the river volume drops substantially, exposing gravel beds and  
8 vegetated shallows (approximately 6,000 cfs.). When energy demands are high (summer  
9 afternoons and early evenings) the river volume increases substantially (approximately 22,000+  
10 cfs,) resulting in a higher river level. During high water, very few sand or gravel bars are  
11 exposed. River hydrology is not influenced substantially by localized precipitation events, as  
12 average annual rainfall in the area is approximately 6 inches, with rainfall generally coming in  
13 the monsoon season (July-August) and during the winter (January–March). Rain or storm events  
14 in this area tend to be very short, and moderate to high in intensity.

### 15 **2.3.1.2 Surface Water: Regional**

16 The proposed project area lies within the lower Colorado River Valley. Within this valley are  
17 two watersheds separated by the Colorado River. The watershed east of the Colorado River in  
18 Arizona is the lower Colorado-Lower Gila Watershed. The Colorado River Basin (Hydrographic  
19 Area 213) is west of the Colorado River in Nevada. The boundary of each watershed is  
20 described in detail below.

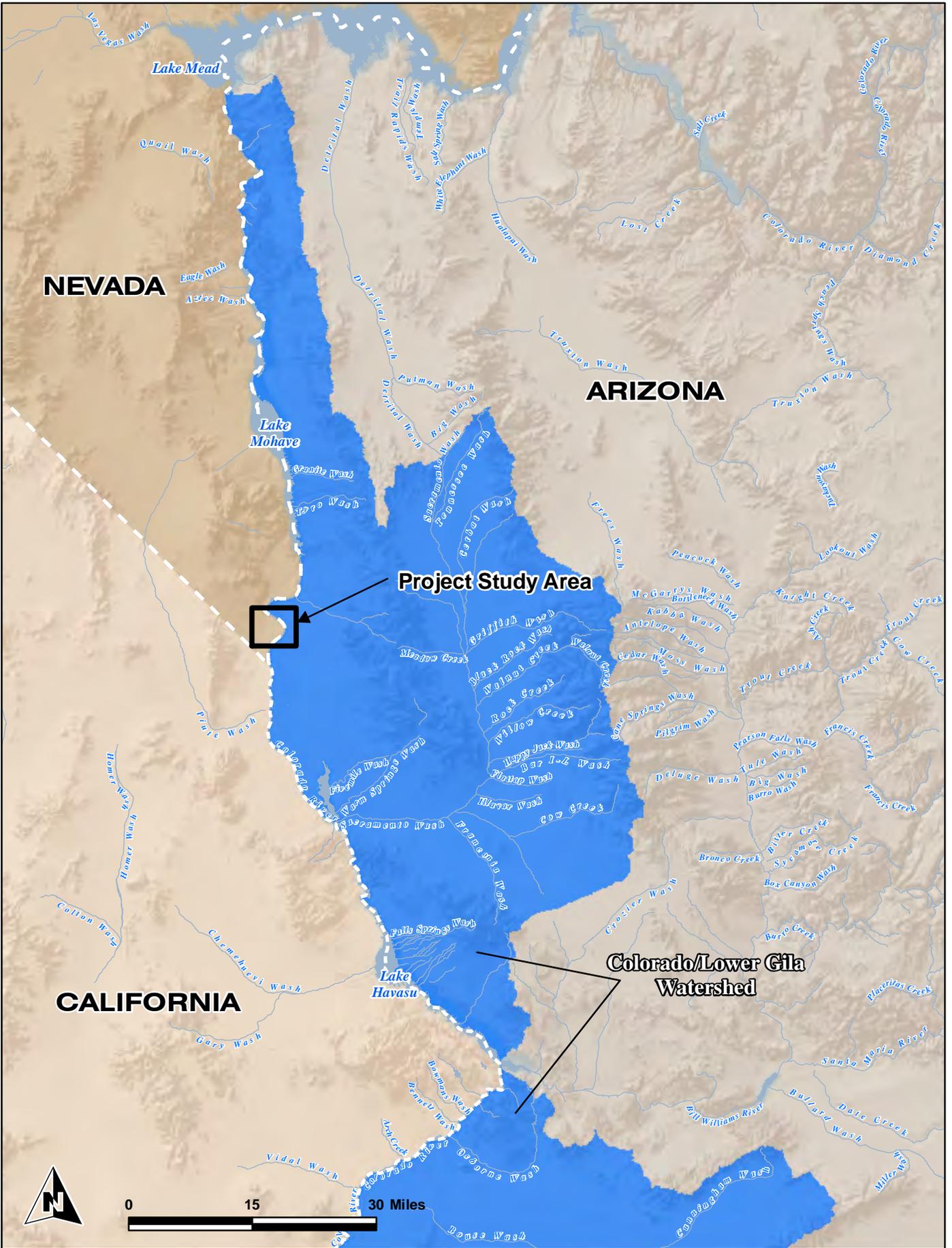
### 21 **2.3.1.3 Lower Gila Watershed (Arizona)**

22 The Colorado-Lower Gila Watershed within Arizona is defined by the Colorado River drainage  
23 area from Hoover Dam, located 80 miles upstream at Lake Mead, to the Mexico border near  
24 Yuma, Arizona (Figure 9). The majority of the 14,459-square-mile watershed is undeveloped  
25 federal property. Populated or developed communities are limited to areas directly adjacent to  
26 the Colorado River (e.g., Yuma, Bullhead City, and Lake Havasu City). Ranching and  
27 agriculture are also common land uses within the watershed. General vertical relief ranges from  
28 80 to 5,500 ft throughout the watershed.

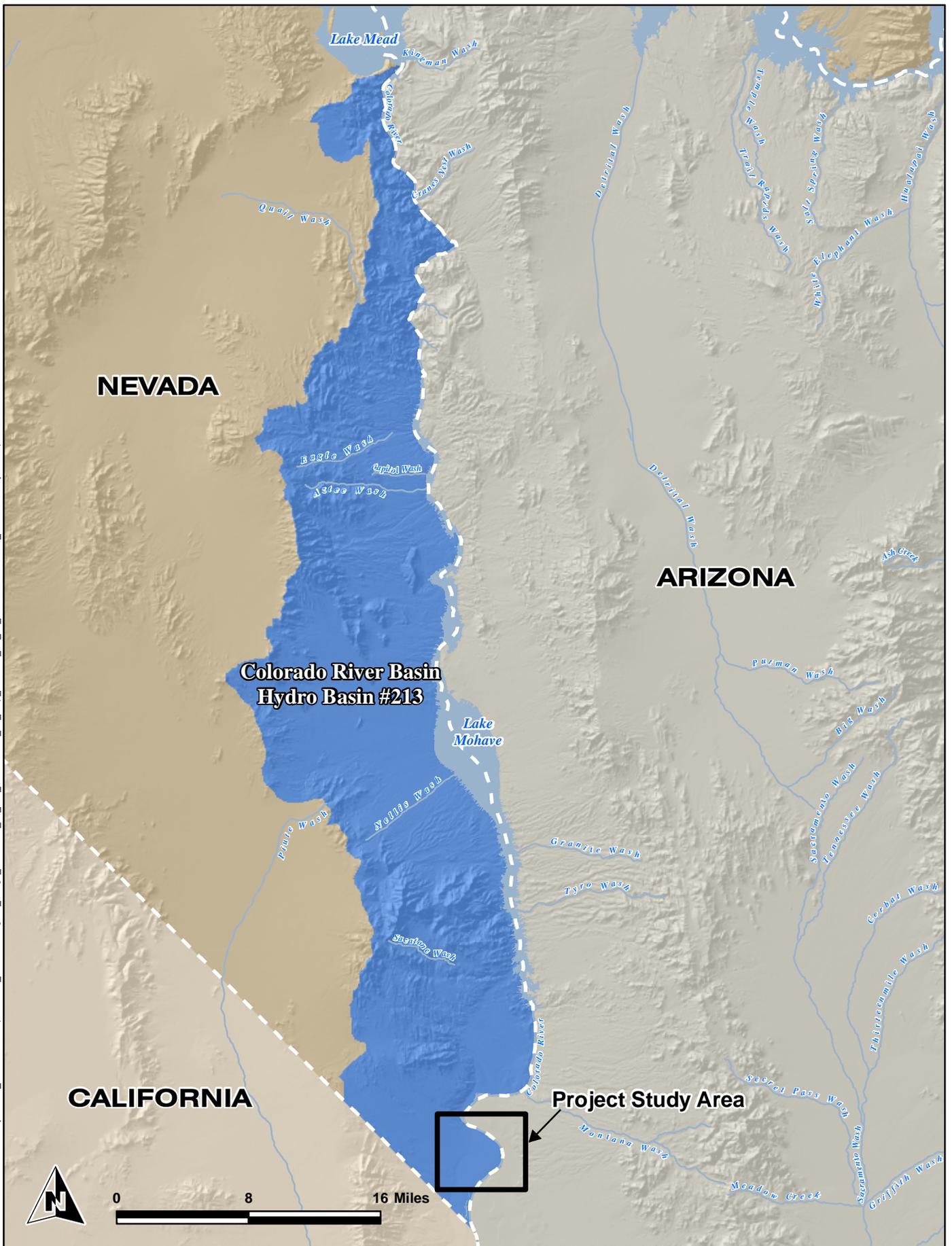
### 29 **2.3.1.4 Colorado River Basin (Nevada)**

30 The Colorado River Basin is defined by the Colorado River drainage area in Nevada, from just  
31 below the Hoover Dam to the Nevada/California state border on the Fort Mohave Indian  
32 Reservation, located just south of the proposed project area (Figure 10). In the northern section  
33 of the region, the drainage flows off the Eldorado Mountains and travels east towards Black  
34 Canyon of the Colorado River. In the southern part of the region, water flows from the  
35 Newberry Mountains eastward towards the river and Lake Mohave. The majority of the 563-  
36 square-mile watershed is undeveloped federal property, with Laughlin as the only developed  
37 community. Due to topography and the desert climate, grazing opportunity is very limited  
38 within the watershed. General vertical relief ranges from 480 to 5,700 feet throughout the  
39

Source: ESRI data files, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Watershed\_Arizona.mxd | Last Updated: 11-13-09



Source: ESRI data files, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_181714\14\_00\_GIS\_MODEL\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Watershed\_Airzone.mxd | Last Updated: 11-13-09



1 watershed.

2 **2.3.1.5 Surface Water Local**

3 General drainage patterns are similar for both the Nevada and Arizona sides of the river (specific  
4 distinctions are discussed in subsequent sections). The uplands above the floodplain areas are  
5 bisected by numerous small, ephemeral drainages that flow to the floodplain of the Colorado  
6 River. These washes are apparent on the aerial photographs and can generally be characterized  
7 as small gullies and swales with very infrequent flows. Most of the washes contain minimal to  
8 no consistent shelving or scour lines that are typical indicators of regular flows. On both sides of  
9 the river, these washes do not appear to have direct connectivity to the Colorado River. These  
10 dry ephemeral washes on either side of the river were not delineated as jurisdictional waters  
11 since there is no nexus to the overall hydrological, biological, and/or physical regime of this  
12 portion of the Colorado River.

13 Historically during a major storm event, some water may have entered the river from these  
14 washes; however, access roadways/levees running parallel to the river at its edge currently act as  
15 man-made barriers and prevent any surface drainage back to the river. The levees that flank both  
16 sides of the Colorado River are armored with riprap in certain stretches to protect residential and  
17 commercial development from erosion forces of the river and potential flooding. The OHWM is  
18 near the base of these earthen levees and riprap-lined banks. The heights of the banks or levees  
19 vary depending upon location, but usually range between 10 to 20 feet above the surface of the  
20 river.

21 **2.3.1.5.1 Proposed Parkway, Rainbow, and Riverview Alternatives in Nevada**

22 The hydrology for all proposed build alternatives in the Nevada area consists of two distinct  
23 areas: the upper bajada (alluvial fan) area, and the relict Colorado River floodplain. The bajada  
24 stretches from above Needles Highway, eastward and drops off (approximately 20 to 30 feet)  
25 onto the ancient floodplain. Water naturally drains from the higher elevations of the bajada  
26 eastward to the lower elevation at the Colorado River. The presence of rills and gullies illustrate  
27 that surface water and stormwater flow across the alluvial fan in sheets toward the lower ancient  
28 river terrace. Other indicators such as shelving or scour are only evident near the steeper slopes  
29 where the washes cut through the bluff before entering the relict floodplain area. Some water  
30 does not reach the lower terrace as it rapidly infiltrates into the ground.

31 The historic floodplains of the river were more evident prior to construction of the dams and  
32 levees around 1950. Currently, the undeveloped/undisturbed areas still exhibit evidence of the  
33 historic floodplain. Saltcedar and mesquite dominate the relict floodplain. Indicators of surface  
34 water flow are limited to major storm events. However, plants and the woodland within the  
35 relict floodplain are healthy and likely tap into groundwater. The floodplain probably consists of  
36 a sand/silt/loam layer from historic river sediments on top of an ancient gravel bed. When river  
37 levels are high, river water seeps through the gravel layer at a rate and quantity sufficient to

1 support the historic surface vegetation. The smaller, less dense saltcedar-mesquite woodland  
2 found on the Arizona side of the river between the proposed Rainbow and Parkway Alternatives  
3 is likely supported in the same manner.

4 An abandoned sand and gravel site (approximately 50 acres) is located west of the Colorado  
5 River in the project area. This area is relatively level with some sloping towards the river. The  
6 rest of the area from Needles Highway to the Colorado River is undeveloped land. Other than  
7 trash and debris along the roadways, no hazardous materials storage or disposal sites are  
8 documented to exist in the area (LBHCBP 2008a).

9 **2.3.1.5.2 Proposed Parkway Alternative in Arizona**

10 Although a majority of land is currently undeveloped, a major drainage extension is currently  
11 being constructed from SR 95, west towards the river. This facility would divert waters from  
12 major storm events to a discharge point south/southeast of the proposed Parkway Alternative.

13 **2.3.1.5.3 Proposed Rainbow Alternative in Arizona**

14 No wetlands or drainages occur on or along the proposed Rainbow Alternative. The majority of  
15 land south of the alternative is undeveloped and lies within the 100-year floodplain area.

16 **2.3.1.5.4 Proposed Riverview Alternative in Arizona**

17 Most of the land located on the Arizona side of the project has been developed. Directly  
18 adjacent to the river is Rotary Park with residential, commercial and some undeveloped parcels  
19 to the east. Stormwater flows in sheets across the land and streets into culverts tied to the  
20 drainage system. Portions of Rotary Park within Bullhead City were designed to act as a  
21 detention area during major storm events. An abandoned sanitary sewer lift station is located on  
22 the north end of Rotary Park. Additionally, a stormwater detention basin is located north of  
23 Rotary Park adjacent to the river.

24 **2.3.1.6 Surface Water Quality**

25 The Colorado River and its tributaries provide municipal and industrial water to about 27 million  
26 people and irrigation water to nearly 4 million acres of land in the U.S. According to  
27 requirements established by Section 303(d) of the Clean Water Act (CWA), this stretch of the  
28 Colorado River below Davis Dam, is not considered impaired (i.e., does not chronically violate  
29 Environmental Protection Agency (EPA) monitored standards for total maximum daily loads).  
30 Additionally, no point-source discharges occur upstream or along this stretch of the Colorado  
31 River. However, non-point-source discharges are present on the Arizona side within this river  
32 reach. Several federal and state agencies and stakeholder groups along the river have programs  
33 that gather water quality information, and monitor the land use activities that can harm surface  
34 and groundwater within the state. They also gather data and monitor biological and aquatic  
35 systems that are recipients of these types of discharges (Arizona Department of Environmental  
36 Quality [ADEQ] 2007).

## Environmental Impacts and Mitigation

1 Drainage characteristics within this section of the Colorado River Basin are well drained  
2 watersheds with slow run-off and moderate to high erosion potential (Bullhead City 2006). The  
3 average slope is approximately zero (0) to four (4) percent within the study area. The Colorado  
4 River/Lake Mohave is the major surface water in the study area, with springs, a few low-lying  
5 backwater areas directly adjacent to the river, and manmade ponds. The only other surface flows  
6 that can occur are stormwater run-off from very intense localized thunderstorm events, but most  
7 run-off infiltrates into the ground before reaching the Colorado River.

8 Salinity levels are the major water quality concern in the lower Colorado River. Salinity is the  
9 measure of salts such as sodium chloride, calcium bicarbonate, and calcium sulfate that are  
10 dissolved in water. The majority of salt loading within the Colorado River is mostly attributed to  
11 run-off from sources such as saline springs, erosion of saline geologic formations, and surface  
12 soils. Irrigation, reservoir evaporation, and municipal and industrial sources also contribute to  
13 the salinity levels in the Colorado River Valley. Impacts caused by saline-laden water can  
14 affect municipal, industrial, and agricultural water users in the lower basin of the Colorado  
15 River. Common damage resulting from elevated saline level is in the form of corrosion of pipes,  
16 metal and concrete surfaces.

17 In June 1974, Congress enacted the Colorado River Basin Salinity Control Act, Public Law 93-  
18 320, which created a program to protect the water quality of the Colorado River. In 1975, the  
19 EPA approved water quality standards developed by the seven basin states in response to the  
20 Federal Water Pollution Control Act (now known as the CWA). The standards included numeric  
21 criteria for three stations on the main stem of the lower Colorado River (below Hoover Dam,  
22 below Parker Dam, and at Imperial Dam) and created a plan to control salinity increases.  
23 Nevada and Arizona cooperate with the federal agencies in order to reduce salinity and total  
24 dissolved solids (TDS).

25 Pursuant to the CWA, other surface water quality standards exist for the protection and  
26 improvement of Colorado River water quality for different types of beneficial use. This means  
27 that water destined for agricultural use has different water quality standards than drinking water.  
28 Examples of other beneficial uses include recreation involving water contact, propagation of  
29 wildlife, aquatic life, irrigation, watering of livestock, municipal or domestic supply and  
30 industrial supply. Water quality standards include, but are not limited to temperature, pH, total  
31 phosphates, dissolved oxygen, and turbidity. Surface water quality within the study area is  
32 considered acceptable as only minor water quality exceedances documented by the Arizona  
33 Department of Water Resources (ADWR) are as follows:

- 34 • Water quality standards were exceeded in one 40-mile reach of the Colorado River  
35 between Hoover Dam and Lake Mohave. The drinking water standard exceeded was  
36 for selenium (ADWR, 2007).

- The Colorado River between Hoover Dam and Lake Mohave is not part of the ADEQ water quality improvement effort for Total Maximum Daily Load program (ADWR, 2007).

Additional sources of water pollution may be caused by recreational boating and other watercraft sports. This pollution includes fuel, oil, trash, and debris, which can degrade water quality and exceed published standards.

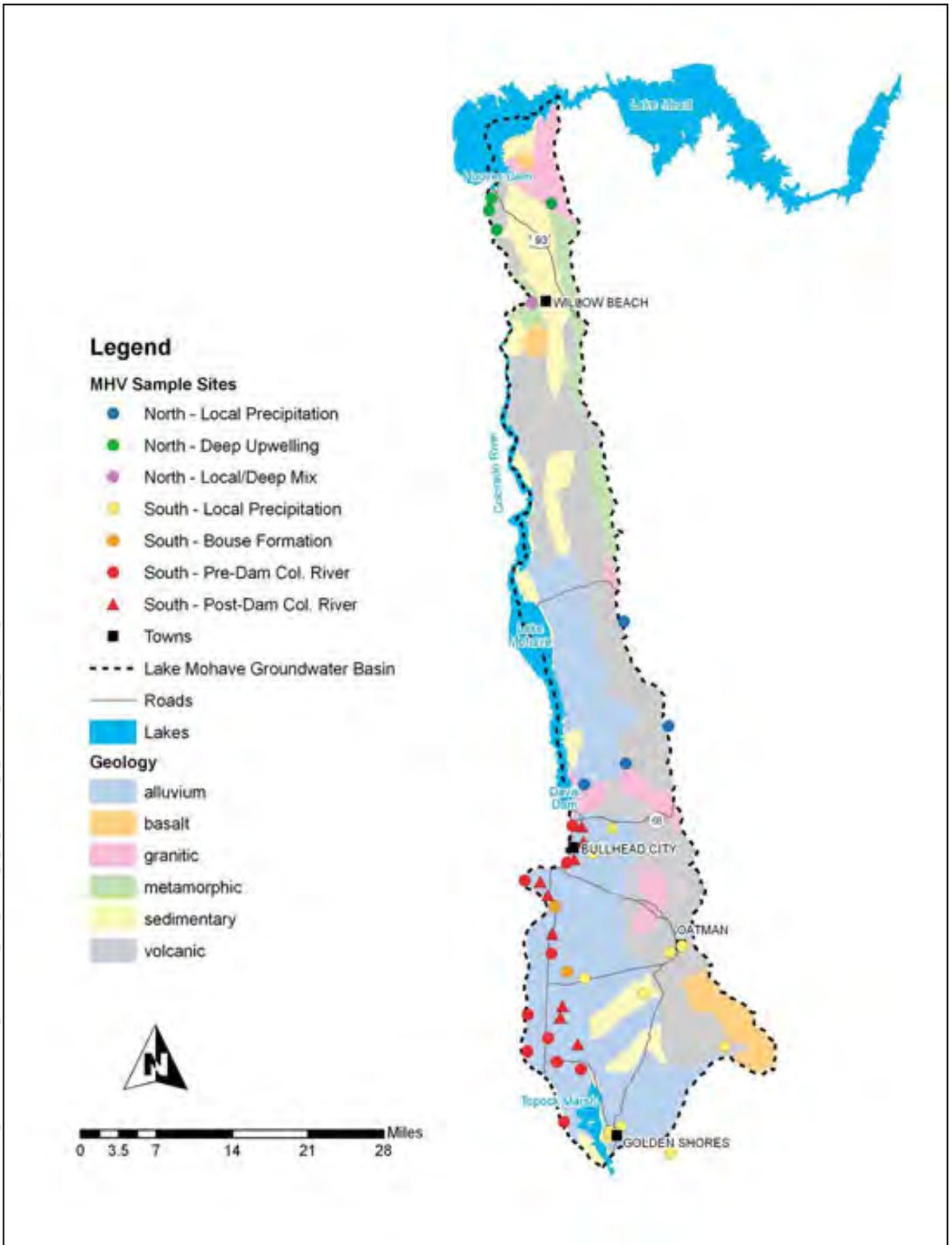
### **2.3.1.7 Groundwater Quality**

Groundwater quality within the study area can be determined from groundwater well samples collected for various constituents. Drinking water standards have been exceeded in multiple wells in the alluvial basin within the study area as summarized from ADWR data:

- The drinking water standard for arsenic was the most frequently exceeded standard (ADWR, 2007).
- There are two clusters of arsenic exceedances, including one in the Bullhead City area (ADWR 2007).
- Other drinking water standards exceeded in the groundwater basin in the study area include cadmium, fluoride, lead, nitrate/nitrite, mercury, and TDS (ADWR 2007).

Groundwater levels near Laughlin are associated with the Colorado River and from natural springs and seeps. In the project area, the groundwater table varies from a few feet below the ground surface at the river's edge, to a few hundred feet below the ground surface at Needles Highway. The groundwater levels are dependant upon the distance from the river and the type of soils and geological formations in the underlying strata (Figure 11). Groundwater on the Nevada side of the river is potable; however, some areas have manganese and TDS concentrations above secondary water quality standards. TDS can range as high as 4,200 milligram per liter (mg/L). In Laughlin's water supply, TDS ranges between 500 and 650 mg/L. Monitoring and sampling efforts throughout the years indicate that nitrate concentrations in the monitoring wells surrounding the pivot irrigation sites is slowly declining, with nitrate concentrations ranging from 3 to over 20 mg/L. The most current 5-year data shows a continued gradual decline in concentrations, and it is expected that the nitrate concentrations would continue to decline to background concentrations of 3 to 8 mg/L. Laughlin's drinking water supply is treated and provided by the Big Bend Water District; source water is the Colorado River.

The ADEQ completed a Groundwater Quality Study for Northern Mohave Valley in 1995. Twenty wells located within the Bullhead City contract area were tested for compliance with Safe Drinking Water standards for inorganics and metals (Tuve and Giannelli 1995). Of these test wells, four were found to exceed the minimum standards allowed for arsenic and nitrates. The study concluded that the arsenic in the area was produced by natural factors, but there was not sufficient data to determine its origin and the magnitude of the levels in the groundwater.



1 Secondly, the high concentrations of nitrates were attributed to the densely populated areas and  
2 their use of on-site septic systems. These densely populated areas have been on a municipal  
3 sewer system since 2003. A copy of the complete study can be obtained from ADEQ  
4 Hydrologic Support and Assessment Division, Water Quality Division.

5 Within Mohave Valley, Arizona, certain water purveyors such as Willow Valley obtain some of  
6 their water supply from groundwater sources. Past sampling has indicated that iron and  
7 manganese are two inorganic contaminants that are commonly found in drinking water at low  
8 concentration levels.

## 9 **2.3.2 Impacts to Groundwater and Surface Water**

### 10 **2.3.2.1 No Build Alternative**

11 The No Build Alternative would not create impacts to groundwater or surface water. However,  
12 development and build-out would most likely continue within the areas surrounding the proposed  
13 build alternatives, which would most likely result in additional impacts to surface water quality  
14 and the installation of additional stormwater controls to reduce and/or control stormwater run-off  
15 from the urbanized and developed areas.

### 16 **2.3.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

17 Impacts to surface water and groundwater are expected to be minimal to negligible for all  
18 proposed build alternatives. Surface water impacts caused by bridge construction are expected to  
19 be minimal due to the implementation of BMPs (to be specified in the SWPPP) to protect the  
20 Colorado River from sediment discharges. Impacts to surface water in the area where the bridge  
21 would cross the Colorado River are expected to be minimal to non-existent during the operation  
22 and maintenance phase of the bridge (based on the project proponents MOU). Monitoring  
23 (either visual or analytical in nature) may be conducted if construction and/or operation activities  
24 are determined to have a potential for causing an impact to the surface waters (either directly or  
25 indirectly).

26 Temperature, pH, dissolved oxygen (DO), nutrients, and suspended solids are the main pollutants  
27 of concern and are being targeted in the Non-point Source Program for the Colorado River.  
28 Water quality for the lower Colorado River has generally been improving due to the removal of  
29 point sources and more stringent standards being implemented on the remaining point sources.

30 Following construction and during operation of a new bridge crossing and its associated  
31 roadway, there is a low-risk potential for a release of a hazardous material from an accident  
32 involving the transport of raw materials along the transportation route (*Section 2.14 Hazardous*  
33 *Materials*). This low risk is due to increases in traffic volume and congestion, and not as a result  
34 of adding a new river crossing. Thus the risk for a hazardous materials or chemical spill from a  
35 transport vehicle technically remains the same, as adding another bridge does not equate to more

1 transport vehicle crossings for the Colorado River as a whole, but rather equates to an increase in  
2 the locations that are used to cross the river.

### 3 **2.3.3 Mitigation**

#### 4 **2.3.3.1 No Build Alternative**

5 No mitigation is proposed since no water quality impacts are associated with the No Build  
6 Alternative.

#### 7 **2.3.3.2 Proposed Parkway and Rainbow Alternatives**

8 Development or construction of roadway and bridge improvements will have to be completed  
9 within and in accordance to applicable federal, state, and local standards. This includes the  
10 preparation of a technical drainage study in accordance with the Mohave County and Clark  
11 County flood control evaluation requirements.

12 Construction within the Colorado River floodway, or where the proposed bridge crossing is to  
13 take place (bridge abutment to abutment – Arizona side to Nevada side), will be controlled  
14 through modifications to the natural storm-water drainage system. These modifications include  
15 but are not limited to the following: construction of lined and unlined channels, installation or  
16 modifications of culverts, temporary and permanent detention basins, and other natural or  
17 engineered controls, as necessary.

18 The development and implementation of a project specific construction SWPPP as part of the  
19 CWA Nevada Pollution Discharge Elimination System (NPDES) and Arizona Pollutant  
20 Discharge Elimination System (AZPDES) permitting processes will help to protect surface water  
21 for the selected build alternative. Additionally, several federal, state, and local conservation and  
22 water quality plans have been developed and they continue to help further protect or improve  
23 water quality by promoting public awareness, and promoting responsible conservation and  
24 restoration practices, including erosion control measures and implementation of BMPs.

25 Both counties and states (Nevada Division of Environmental Protection [NDEP] and ADEQ)  
26 have guidance and permitting requirements for stormwater controls and pollution prevention  
27 associated with roadway construction activities. An operational water quality certification  
28 (WQC) application will be developed (by Clark County and Bullhead City) for the operational  
29 aspect of the bridge as well, however, the bridge's final design will include engineering controls  
30 associated with collection and management of bridge and roadway run-off directly at or adjacent  
31 to the Colorado River. The operational WQC will address water quality degradation aspects of  
32 the river due to the operation of a bridge throughout its designed lifespan.

33 If previously unidentified wells are encountered during project construction, the contractor is  
34 responsible for notifying the appropriate state Department of Water Resources and for retaining  
35 an authorized driller to abandon the well properly.

1 During construction, water quality parameters such as turbidity will be monitored in accordance  
2 with each of the state's 401 WQC requirements. Due to potential impacts to surface water,  
3 CWA NPDES and AZPDES permits for stormwater construction and the associated SWPPP will  
4 be required for anticipated construction activity in the study area. As a condition of the SWPPP,  
5 specific BMPs (i.e., engineered controls, avoidance, or other mitigation) will be included to  
6 minimize potential impacts to surface waters. Due to the nature of surface disturbances related  
7 to construction of a roadway and bridge, it is anticipated that there will be no impacts to  
8 groundwater.

### 9 **2.3.3.3 Proposed Riverview Alternative**

10 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
11 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
12 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 13 **2.4 Floodplain**

### 14 **2.4.1 Existing Conditions**

#### 15 **2.4.1.1 Flood Zones**

16 All of the flood zones presented below exist in the project area. Flood zones are divided into two  
17 distinct areas: the floodplain (adjacent to the Colorado River) and the floodway (within the  
18 Colorado River). Some zones pose little to no risk while other areas or locations, such as river  
19 bottoms, pose a higher risk of floods. Flood zones are geographic areas that the Federal  
20 Emergency Management Agency (FEMA) defines, based on studies of flood risk. The zone  
21 boundaries are shown on flood hazard maps, also called Flood Insurance Rate Maps (FIRM) or  
22 FIRM panel maps. For general reference and discussion within this text, brief definitions of the  
23 FEMA flood zones are provided below.

24 The only low-to-moderate-Risk Zone in the project area is Zone X. Zone X has less than a 1%  
25 annual chance of flood risk to one or a more of the following areas:

- 26 • floodplain
- 27 • areas where average flood water depths are less than 1 foot (shallow flooding risk)
- 28 • drainage area is less than 1 square mile where a stream flooding risk is possible
- 29 • areas protected by levees

30 High-Risk Zones in the project area are defined as areas that have a 26% chance of flooding over  
31 a 30-year period. Specific zones and definitions are as follows:

- 32 • Zone A - Areas with a 1% annual flood risk and a 26% risk of flooding over a 30-year  
33 period. Because detailed analyses are not performed for such areas, no depths or base  
34 flood elevations are shown within these zones.

- 1 • Zone AE - Areas subject to a 1% or greater annual chance of flooding in any given  
2 year. Base flood elevations in these areas are derived from detailed analyses (Zone  
3 AE is used on new and revised maps in place of Zones A1-A30).
- 4 • Zone AH - Areas subject to a 1% or greater annual chance of shallow flooding in any  
5 given year. Flooding is usually in the form of ponding, with the average depths  
6 between one and three feet. Base flood elevations are derived from detailed analyses.
- 7 • Zone AO - River or stream flood hazard areas, and areas with a 1% or greater annual  
8 shallow flooding risk, with flooding usually in the form of sheet flow with average  
9 depths between one and three feet. Average flood depths are derived from detailed  
10 analyses.

11 In order to evaluate the potential for flooding, the FEMA website, and the local county flood  
12 control district websites (Clark County Regional Flood Control and Mohave County) were  
13 consulted to obtain information. This information was evaluated based on the location of the  
14 proposed build alternative and field conditions within the detailed study area for the three  
15 proposed build alternatives or directly adjacent thereto. A FIRM Floodplain Map was created to  
16 evaluate each proposed build alternative location relative to the flood zones (Figure 12).

#### 17 **2.4.1.2 Colorado River**

18 As a result of the Colorado Floodway Protection Act of 1986, a floodway was established along  
19 the Colorado River from Davis Dam to the U.S.-Mexican Boarder. The hydrology and hydraulic  
20 analyses were prepared by the BOR. This hydraulic or HEC-RAS analysis was performed to  
21 determine the 100-year peak discharges at all points along the Colorado River for the study  
22 reach. Flows in the Colorado River are regulated by both the Hoover and Davis Dams located  
23 upstream, therefore, there are no major channels or structures other than the levees as part of the  
24 Colorado River Flood Control Project that have been constructed to offer flood protection from  
25 events larger than a 100-year flood on the Colorado River. Flows from Davis Dam combined  
26 with flows from flash floods originating in the upstream watershed were used in determining the  
27 peak 100-year discharges. A peak discharge of 40,000 cfs was determined to flow along the  
28 Colorado River from Davis Dam to the Clark County line. Further details regarding the methods  
29 used to produce the peak discharges along the Colorado River are outlined in the report entitled  
30 "Flood Frequency Determinations for the lower Colorado River," Volume I, Supporting  
31 Hydrologic Documents of the Colorado River Floodway Protection Act of 1986, dated March  
32 1989, as prepared by the BOR.

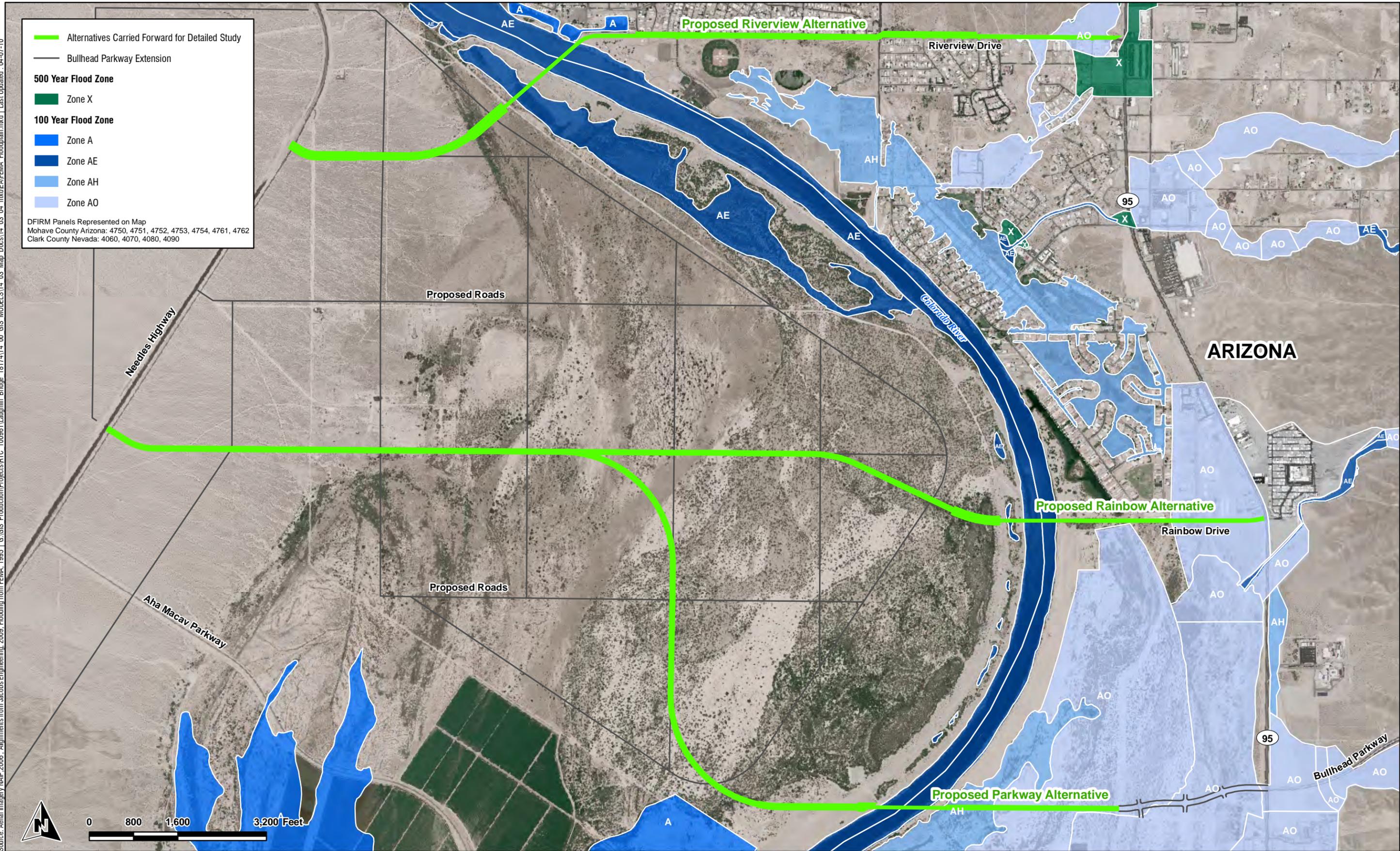
33 The primary levees constructed along the banks of the river offer protection for Colorado River  
34 events/flows larger than a 100-year flood. However, the relict floodplain areas on the Arizona  
35 side of the river that lie behind the riverbank levees, are not susceptible to flooding from river  
36 water, but rather are susceptible to flooding from localized flashflood or storm events that flow  
37 and accumulate within the river bottom area. Land use regulations have been adopted by local  
38 and county authorities to control building in areas that have a high risk of flooding. The area of  
39

Source: Aerial Imagery NAD 2011 - Alignments from Jacobs Engineering, 2009; Flooding from FEMA, 1995; GIS Production/Projects/RTC - 100961\Laughlin Bridge - 1817A\14\_00\_GIS\_MODEL\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\FEMA\_Floodplain.mxd | Last Updated: 04-07-10

**Legend**

- Alternatives Carried Forward for Detailed Study
- Bullhead Parkway Extension
- 500 Year Flood Zone**
- Zone X
- 100 Year Flood Zone**
- Zone A
- Zone AE
- Zone AH
- Zone AO

DFIRM Panels Represented on Map  
Mohave County Arizona: 4750, 4751, 4752, 4753, 4754, 4761, 4762  
Clark County Nevada: 4060, 4070, 4080, 4090



1 the Colorado River between bank levees on each side of the river is designated as the Colorado  
2 River Floodway, and no structures can be constructed within the floodway without coordination  
3 with the BOR and other federal agencies, as necessary. Please refer to *Section 2.1.5 Permitting*  
4 *Summary* for further details on bridge coordination and overall permitting requirements,  
5 regarding applicable federal, state, and local permits and design reviews/approvals.

#### 6 ***2.4.1.3 Colorado River Floodway at Parkway, Rainbow, and Riverview Alternatives***

7 A floodway is defined as channel of a watercourse and portion of the adjacent floodplain that is  
8 needed to convey the base or 100-year flood event without increasing flood levels by more than  
9 one foot and without increasing velocities of flood. In the project area, the floodway is generally  
10 characterized as the Colorado River area from bank to bank (top-of levee to top-of levee when  
11 water levels are at flood stage). The BOR conducted a HEC-2 hydraulic computer model  
12 analysis based on effective flow areas to help determine floodway and its fringe areas. The  
13 floodway fringe area (100-year floodplain) was determined using the computed water-surface  
14 elevations and topographic mapping (natural and floodway elevations). Additionally, a flood  
15 insurance study of this area was prepared for FEMA to define these floodway boundaries as well  
16 as the base flood (100-year) elevations (BFEs). The BFEs for the Colorado River and adjacent  
17 areas are provided on the FIRM panel map (Figure 12). The floodway proper is considered flood  
18 zone AE. Outside of the floodway proper are other designated zone AE areas (floodplains).

#### 19 ***2.4.1.4 Floodplain at the Proposed Parkway, Rainbow, and Riverview Alternatives in*** 20 ***Nevada***

21 The only existing floodplain areas (deemed Zone AE) in Nevada cross the proposed Riverview  
22 and Rainbow Alternatives. These very small areas are potential backwaters (with small  
23 wetlands) directly adjacent to the river (*Section 2.5 Wetlands and Jurisdictional Waters*). All  
24 other areas are upland areas, not within the floodplain. For a complete description of this area,  
25 refer to *Section 2.3 Hydrology and Water Quality*.

#### 26 ***2.4.1.5 Proposed Parkway and Rainbow Alternatives in Arizona***

27 The project area between the proposed Parkway and Rainbow Alternatives is mostly  
28 undeveloped and within the 100-year floodplain (Zone AO). The drainage system in this area  
29 consists of sheet-flow and an urban street drainage system. Most existing residential and  
30 commercial development in this area is constructed above the floodplain.

#### 31 ***2.4.1.6 Proposed Riverview Alternative in Arizona***

32 On the Arizona side, the majority of the area located south of Riverview and west of SR 95 is  
33 within, or partially within, the 100-year floodplain area.

### 34 **2.4.2 Impacts**

#### 35 ***2.4.2.1 No Build Alternative***

36 No impacts to the flood zones are anticipated from the No Build Alternative.

1 **2.4.2.2 Colorado River Floodway at the Proposed Parkway, Rainbow, and Riverview**  
2 **Alternatives**

3 Bridge abutments may potentially have an impact on the Colorado River Floodway or associated  
4 levees. Specific impacts cannot be assessed until the project is further in the design process  
5 when a HEC-RAS analysis is performed. Impacts to the levees would be analyzed by a risk-  
6 based analysis, if necessary.

7 According to the FIRM Panel maps available, both the proposed Parkway and Rainbow  
8 Alternatives' bridge abutments would be located within the floodplain on the Arizona side of  
9 the river, but not within the floodplain in Nevada. Therefore, impacts are possible in Arizona at  
10 both the proposed Parkway and Rainbow Alternatives due to placement of fill material and  
11 drainage associated with the roadway. Additionally, the elevation of the roadway may be within  
12 the floodplain (at or below the 100-year flood elevation). Specific impacts cannot be determined  
13 until a technical drainage study report is complete, which would occur later in the design  
14 process.

15 The majority of the proposed Riverview Alternative is not located within the floodplain, except  
16 for the section of the alternative's alignment that crosses the Colorado River and a small  
17 backwater area in Nevada (Figure 12). Therefore, anticipated impacts to the floodplain should  
18 be minimal.

19 **2.4.3 Mitigation**

20 **2.4.3.1 No Build Alternative**

21 No impacts are associated with the No Build Alternative; therefore, no mitigation is proposed.

22 **2.4.3.2 Proposed Parkway and Rainbow Alternatives**

23 The bridge structure will be designed in accordance with 23 CFR 650, Subpart A (Bridges,  
24 Structures, and Hydraulics), a USCG Section 9 Bridge Permit, and approved by the DOTs. The  
25 bridge will also be designed, constructed, operated, and maintained in accordance with state  
26 laws, regulations, directives, safety standards, design standards, and construction standards.

27 Bridge abutments will be located outside the Colorado River Floodway or Zone AE areas.  
28 Locations of bridge piers will be determined during final design. Bridge piers would be designed  
29 to prevent increases in surface water elevation of the Colorado River. A detailed HEC-RAS  
30 modeling analysis for actual bridge design and construction will be performed (abutment to  
31 abutment, and bank to bank) to determine impacts. If the existing HEC data or models are not  
32 sufficient to perform a detailed analysis, an effective model will be chosen or obtained from  
33 FEMA to perform the river hydraulic analysis, as necessary. This analysis will estimate base  
34 flood elevations, volume of water, velocities, and forces for the bridge at normal river flows, as  
35 well as 100-year and greater events. This model will be important in assessing impacts and  
36 cannot be determined until further in the design process.

1 To avoid impacts to the Colorado River Floodway, the bridge deck girders will be placed a  
2 minimum of 25 feet above OHWM consistent with USCG bridge permitting requirements. If a  
3 risk-analysis determines that there would be impacts to the levees, the bridge design will be  
4 modified to minimize impacts. Coordination with USACE and BOR will be necessary and may  
5 include levee certification. Roadway approaches to the river will be designed and built to federal  
6 (FEMA and FHWA), state (NDOT and ADOT), and local (flood control district) design  
7 standards. Prior to construction, a technical drainage study report will be completed for the  
8 chosen build alternative.

### 9 **2.4.3.3 Proposed Riverview Alternative**

10 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
11 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
12 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 13 **2.5 Wetlands and Jurisdictional Waters**

### 14 **2.5.1 Existing Conditions**

15 The Colorado River is regulated under Section 404 of the CWA and Section 10 of the Rivers and  
16 Harbors Act. CWA 404 permitting for anticipated impacts to wetlands and/or waters of the U.S.  
17 would be sought under two permits. The USACE Nationwide Permit (NWP) No. 14 “Linear  
18 Transportation Systems” and a USCG Section 9 Bridge Permit (which includes the submittal of a  
19 Nationwide Permit No. 15 “USCG Approved Bridges” for dredge and fill activities) would be  
20 the two applicable permits that the roadways and associated bridge construction would be  
21 permitted under. Anticipated impacts to wetlands and waters of the U.S. (WOUS) based on the  
22 proposed bridge and roadways alignment for each of the three proposed build alternatives would  
23 remain under the threshold acreages allowed (e.g., under half-an-acre of wetlands or waters of  
24 the U.S. associated with total permanent disturbance area). Based on the jurisdictional  
25 determination received from the USACE (Appendix M), no “one” alternative contains more than  
26 2.5 acres of WOUS and 0.5 acre of wetlands. Temporary disturbance is allowed, and mitigation  
27 to offset permanent impact to wetlands is anticipated. The conceptual design of the bridge pier  
28 placement and location takes into account possible disturbance of wetland areas and WOUS.  
29 Under the Section 9 Bridge Permit, the elevation of the bottom of the bridge girders would be  
30 designed to be 25 feet above the OHWM of the Colorado River, thus not affecting recreational  
31 navigation or possible commercial usage of the river for interstate commerce of goods and  
32 services both up and down the river.

#### 33 **2.5.1.1 Colorado River**

34 The Colorado River is identified as a Traditional Navigable Waterway, therefore it is a non-  
35 wetland jurisdictional WOUS under the CWA and is crossed by all the proposed build  
36 alternatives. Both banks of the river have been heavily altered to channelize and control water  
37 flow. On the Arizona side of the river, riverbank levees have been constructed and are armored

1 with riprap in certain stretches to protect residential and commercial development from potential  
2 flooding. On the Nevada side, a similar levee system has been constructed using primary levees  
3 that are armored with riprap in some areas and secondary levees, effectively isolating the river  
4 from the floodplain except in the most severe of flood events. Beyond the levees, the areas  
5 appear to be historic floodplains of the river formed sometime prior to the construction of many  
6 dams and levees around 1950. The floodplains are most notable in Nevada, which is still  
7 relatively undeveloped or undisturbed. On both sides of the river, the uplands above the  
8 floodplain areas are bisected by numerous small, non-distinct, ephemeral drainages that flow to  
9 the relict floodplain. Most of the washes contain minimal to no consistent shelving or scour lines  
10 that are a typical indicator of regular flows. None of the washes appear to have connectivity to  
11 the Colorado River and its adjacent wetlands, especially since the relict floodplains are separated  
12 by one or more man-made levees.

### 13 **2.5.1.2 Wetlands**

14 The National Wetlands Inventory (NWI) maps were used to identify wetlands, deepwater  
15 habitats, and/or intermittent streams in the study area (U.S. Fish and Wildlife Service [USFWS]  
16 2007) (Figure 13). The proposed build alternatives cross four wetlands that were identified on  
17 the NWI maps and all of these were on the Nevada side of the river along the levees. Based on  
18 field delineations and official jurisdictional determinations by the USACE (Appendix M), three  
19 of these areas met the USACE three-parameter criteria (i.e., vegetation, soils, and hydrology)  
20 when they were investigated in the field, so the areas were determined to be wetlands, and  
21 therefore jurisdictional due to their proximity to the river (LBHCBP 2009d). Each of these  
22 wetlands is discussed in detail in the pertinent alternative section below.

23 Additionally, all other wetlands within a 250-foot study corridor for each proposed build  
24 alternative were delineated in accordance with the USACE 1987 Wetlands Delineation Manual  
25 (USACE 1987), 2006 Regional Supplement for the Arid West (USACE 2006), and the recent  
26 June 2007 Rapanos Guidance (Rapanos, 2007).

#### 27 **2.5.1.2.1 Proposed Parkway Alternative**

28 One wetland area was found along the proposed Parkway Alternative (Figure 14).

#### 29 **River Bank Wetland Adjacent to the Colorado River in Nevada and Arizona**

30 Along the proposed Parkway Alternative, small areas of scrub wetland were present on both the  
31 Arizona and Nevada riverbanks. Approximately 0.177 acre in Nevada and 0.113 acre in Arizona  
32 were delineated within the 250-foot study corridor for the proposed. These wetland areas can be  
33 considered “wetlands adjacent to a permanent navigable water of the U.S.” Because of this,  
34 these wetlands are a jurisdictional water of the U.S.

#### 35 **2.5.1.2.2 Proposed Rainbow Alternative**

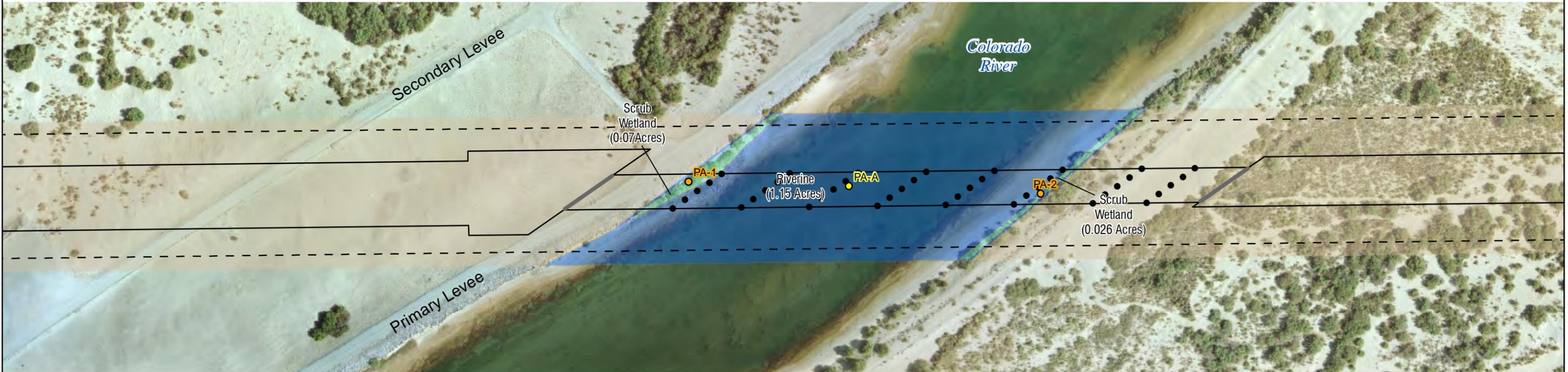
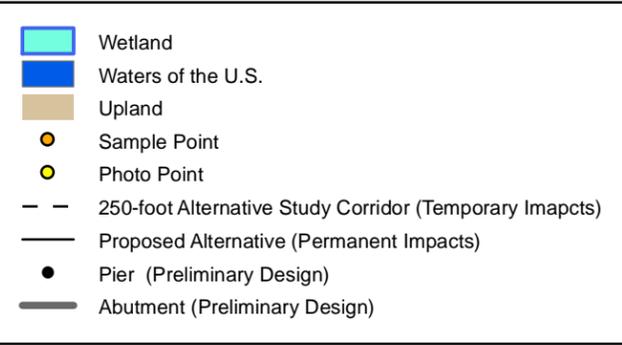
36 Three wetland areas were found along the proposed Rainbow Alternative (Figure 15).

37

Source: Aerial Imagery from NADP, 2006; Alignments from USFWS, 2009; NWI from USFWS, 2007; GIS Production/Projects/RTC - 100961\Laughlin Bridge\_18174\14\_00\_GIS MODELS\14\_03\_Map\_Docs\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\NWI\_Wetlands.mxd | Last Updated: 11-16-08



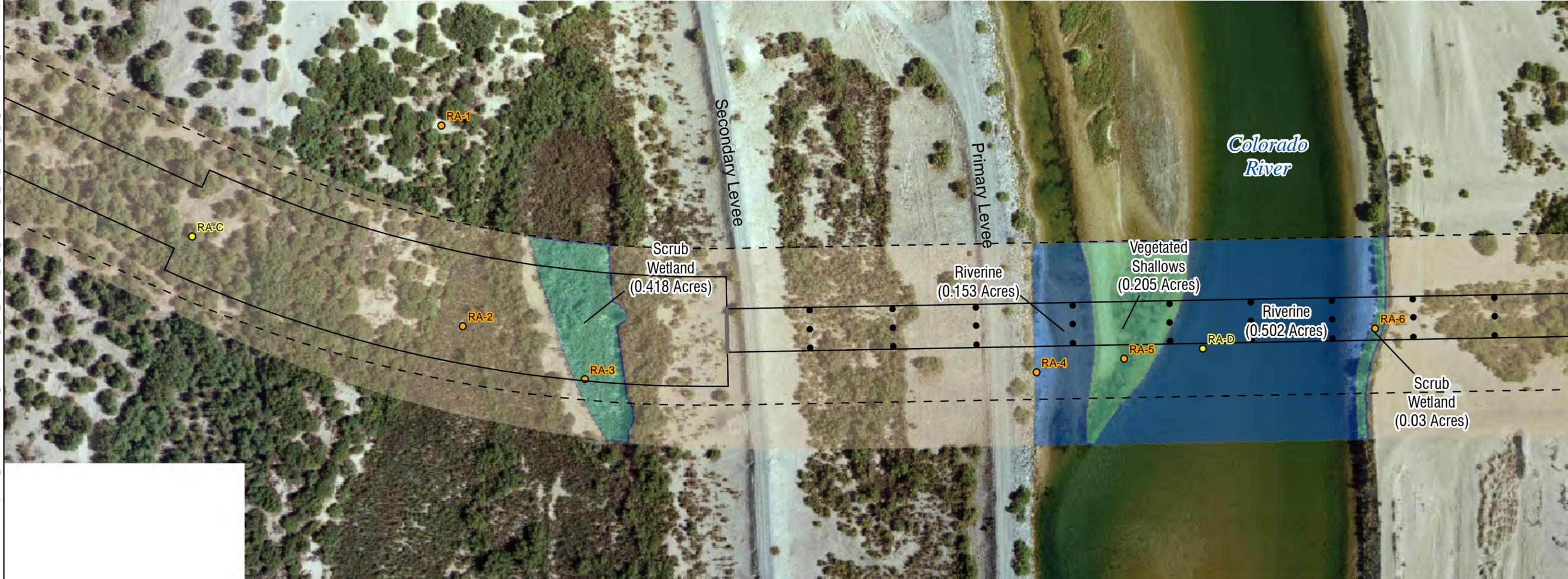
Source: Aerials from Aztec, 2007. Alignments from Jacobs, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Parkway\_Wetlands.mxd | Last Updated: 11-16-09



0 100 200 400 Feet

Source: Aerials from Aztec, 2007. Alignments from Jacobs, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_181741\14\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Rainbow\_Wetlands.mxd | Last Updated: 11-16-09

	Wetland
	Waters of the U.S.
	Upland
	Sample Point
	Photo Point
	250-foot Alternative Study Corridor (Temporary Impacts)
	Proposed Alternative (Permanent Impacts)
	Pier (Preliminary Design)
	Abutment (Preliminary Design)



1 **Wetland West of Secondary Levee**

2 An emergent wetland dominated by arrowweed exists west of the secondary levee in Nevada.  
3 Approximately 0.6 acre of this wetland was delineated within the 250-foot study corridor for this  
4 proposed build alternative. The area is currently dominated by arrowweed and surrounded by a  
5 slight embankment covered with a near impenetrable thicket of saltcedar and mesquite. At the  
6 southern end of the area, remnants of dead and decaying cattails were present. This area is the  
7 remnant of the historic river channel. This area is a former bend in the river channel based on  
8 historic land survey maps from 1939 and 1962. This wetland area can be considered “wetlands  
9 adjacent to a permanent navigable water of the U.S.” because it appears to abut the river and it is  
10 highly likely that water flows between the wetland and the river when flow regimes allow.  
11 Because of this, this wetland is a jurisdictional water of the U.S.

12 **Vegetated Shallow**

13 Another wetland along the proposed Rainbow Alternative is a shallow, vegetated island that  
14 appears within the river when flows are at their lowest level in the morning and that is  
15 completely inundated when the river is at its higher levels. Approximately 0.734 acre of this  
16 wetland was delineated within the 250-foot study corridor. Vegetation on this island is  
17 dominated by hydrophytic species and includes Bermuda grass, sweet clover (*Melilotus albus*),  
18 cocklebur (*xanthium strumarium*), rabbitfoot's grass, knotgrass (*Paspalum distichum*), streambed  
19 bristlegrass, and giant reed (*Arundo donax*). This wetland area can be considered “wetlands  
20 adjacent to a permanent navigable water of the U.S.” because it is within the river. Because of  
21 this, this wetland is a jurisdictional water of the U.S.

22 **River Bank Wetland Adjacent to the Colorado River in Arizona**

23 Additionally, a small jurisdictional scrub wetland is present along the riverbank on the Arizona  
24 side of the Colorado River. Wetland vegetation present along the riverbank is composed of  
25 saltcedar, arrowweed, and various grasses. Approximately 0.112 acre of this shoreline scrub  
26 wetland was delineated within the 250-foot study corridor. This wetland area can be considered  
27 “wetlands adjacent to a permanent navigable water of the U.S.” Because of this, this wetland is a  
28 jurisdictional water of the U.S.

29 **2.5.1.2.3 Proposed Riverview Alternative**

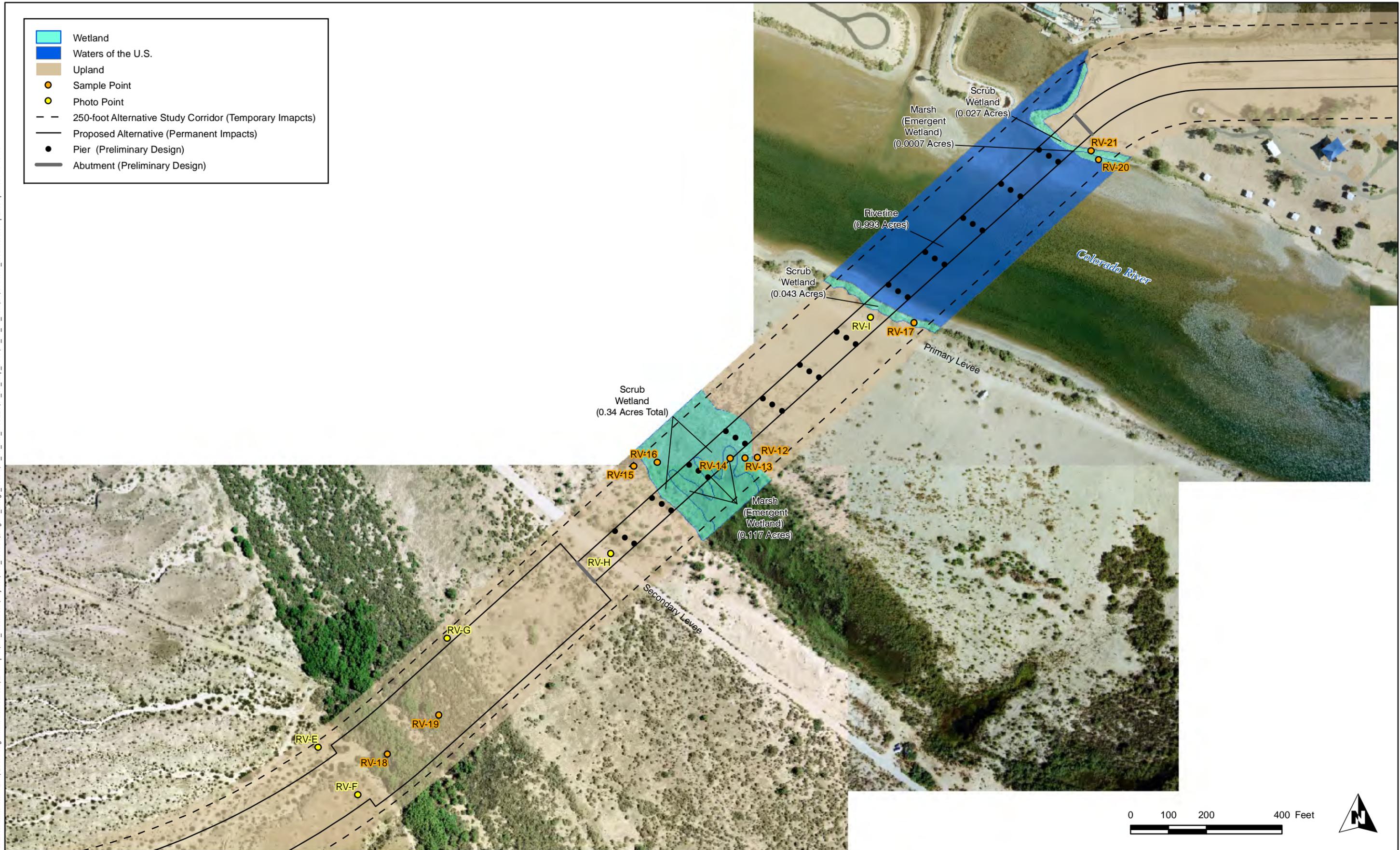
30 Two wetlands areas were found along the proposed Riverview Alternative (Figure 16).

31 **Wetland between Primary and Secondary Levees**

32 A small wetland consisting of scrub and emergent wetland vegetation occurs between the  
33 primary and secondary levees in Nevada. Vegetation within the emergent wetland was  
34 dominated by a thick stand of cattails (*Typha* sp.) throughout much of the length of the wetland  
35 area, with small stands of bulrush (*Scirpus* sp.) scattered along the edges, with occasional  
36 arrowweed (*Pluchea sericea*) or saltcedar (*Tamarix* spp.) throughout. The scrub wetland area  
37 surrounding the emergent wetland was dominated by arrowweed along the lower, wetter portions  
38 of the wetland, with occasional saltcedar and honey mesquite (*Prosopis glandulosa*) becoming

Source: Aerials from Aztec, 2007. Alignments from Jacobs, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\Riverview\_Wetlands.mxd | Last Updated: 11-16-09

- Wetland
- Waters of the U.S.
- Upland
- Sample Point
- Photo Point
- 250-foot Alternative Study Corridor (Temporary Impacts)
- Proposed Alternative (Permanent Impacts)
- Pier (Preliminary Design)
- Abutment (Preliminary Design)



1 more prevalent as the elevation increased and moisture declined. An approximate total of 1.5  
2 acres of these wetlands were delineated within the 250-foot study corridor for the proposed  
3 Riverview Alternative. These wetlands can be considered “wetlands adjacent to a permanent  
4 navigable water of the U.S.” because they abut the river and it is highly likely that water flows  
5 between the wetland and the river through subsurface or saturate alluvium features (i.e., such as a  
6 gravel layer). Because of this connectivity, these wetlands are jurisdictional WOUS.

### 7 **River Bank Wetlands adjacent to the Colorado River in Nevada and Arizona**

8 Another small scrub wetland exists on the banks of the Colorado River in Nevada dominated by  
9 saltcedar, fountain grass (*Pennisetum* sp.), rabbitfoot’s grass (*Polypogon monspeliensis*), and  
10 streambed bristlegrass (*Setaria leucopila*). Approximately 0.143 acre of scrub wetland was  
11 delineated within the 250-foot study corridor. Additionally, a small wetland consisting of  
12 emergent and scrub wetland habitat exists on the banks of the Colorado River in Arizona. The  
13 scrub wetland is similar to the scrub wetland in Nevada consisting of saltcedar, fountain grass,  
14 and rabbitfoot’s grass. The distinctive emergent wetland is dominated by Bermuda grass  
15 (*Cynodon dactylon*) only. A total of approximately 0.341 acre of scrub and emergent wetlands  
16 were delineated within the 250-foot study corridor. This wetland area can be considered  
17 “wetlands adjacent to a permanent navigable water of the U.S.” Because of this, this wetland is a  
18 jurisdictional water of the U.S.

## 19 **2.5.2 Impacts to Colorado River**

20 Permanent removal of river substrate would be limited to the area for pier column placement.  
21 Based on preliminary geotechnical information and design approximately 0.0012 acre of  
22 substrate would be removed per pier column (based on 8 feet diameter pier columns). Along  
23 each alignment, piers within the riverbed would create minor changes in directional flows of the  
24 Colorado River. Review of these bridge pier placements would be coordinated between BOR  
25 and/or USCG and/or USACE during the design process.

### 26 **2.5.2.1 No Build Alternative**

27 No impacts to the Colorado River would occur in the No Build Alternative.

### 28 **2.5.2.2 Proposed Parkway Alternative**

29 Within the proposed Parkway Alternative ROW, each pier would consist of five pier columns  
30 that collectively displace approximately 0.006 acre of riverbed due to the bridge skew. A  
31 maximum of six piers (30 pier columns) would be placed in the river along the proposed  
32 Parkway Alternative ROW; resulting in maximum riverbed removal (dredge and fill activities) of  
33 approximately 0.036 acre of riverbed.

### 34 **2.5.2.3 Proposed Rainbow Alternative**

35 Within the proposed Rainbow Alternative ROW a maximum of three piers and a portion of a  
36 fourth (10 pier columns) would be placed in the river resulting in approximately 0.012 acre of  
37 riverbed removal (dredge and fill activities).

1 **2.5.2.4 Proposed Riverview Alternative**

2 Within the proposed Riverview Alternative ROW, a maximum of five piers (15 pier columns)  
3 would be placed in the river resulting in approximately 0.018 acre of permanent riverbed  
4 removal.

5 **2.5.3 Impacts to Wetlands**

6 **2.5.3.1 No Build Alternative**

7 No impacts to wetlands would occur in the No Build Alternative.

8 **2.5.3.2 Proposed Parkway Alternative**

9 **River Bank Wetlands in Arizona and Nevada**

10 Approximately 0.071 acre of scrub wetland on the Nevada side and approximately 0.026 acre of  
11 scrub wetland on the Arizona side were delineated within the proposed alternative ROW at this  
12 location along the river may be affected by bridge pier placement and/or shade; however, dredge  
13 and fill activities would be limited to areas associated with the piers. Each new pier would  
14 displace approximately 0.006 acre of wetland. During the current preliminary engineering phase  
15 of the project, the design team is making every effort to avoid and minimize impacts to wetland  
16 areas through design considerations. At this time, no piers are located within this scrub wetland  
17 resulting in no permanent wetland removal (zero acres of dredge and fill activities in scrub  
18 wetland). Exact pier placement would be finalized as the design progresses and may continue to  
19 avoid the wetlands.

20 Additionally, 0.106 acre of scrub wetland on the Nevada side and 0.087 acre of scrub wetland on  
21 the Arizona side are within the 250-foot alternative study corridor and may be subjected to  
22 temporary impacts during construction activities.

23 **Total Wetland Impacts for the Proposed Parkway Alternative**

24 The total amount of wetlands within the proposed Parkway Alternative ROW is less than 0.01  
25 acre. No acreage would be affected by bridge pier placement (dredge and fill activities) or  
26 roadway construction. However, some wetland acreage within the ROW may be affected by  
27 bridge shade, which may cause a decrease in vegetation production.

28 **2.5.3.3 Proposed Rainbow Alternative**

29 **Wetland West of Secondary Levee**

30 Approximately 0.418 acre of the scrub wetlands were delineated within the proposed alternative  
31 ROW at this location and all of this acreage would be permanently filled and replaced with  
32 roadway (i.e., affected by dredge and fill activities). Additionally, approximately 0.182 acre of  
33 scrub wetland is within the 250-foot study corridor and may be temporarily impacted during  
34 construction activities.

35

1 **Vegetated Shallow in the Colorado River**

2 Approximately 0.205 acre of this emergent wetland were delineated within the proposed  
3 alternative ROW at this location and may be permanently impacted by bridge piers and/or shade;  
4 however, dredge and fill activities would be limited to areas associated with the piers. Each new  
5 pier (three pier columns) would displace approximately 0.0036 acre of wetland. During the  
6 current preliminary engineering phase of the project, the design team is making every effort to  
7 avoid and minimize impacts to wetland areas through design considerations. At this time, two  
8 pier columns (a portion of a pier) would be located within this vegetated shallow. This would  
9 result in a maximum permanent wetland removal (dredge and fill activities) of approximately  
10 0.0024 acre of emergent wetland. Exact pier placement would be finalized as the design  
11 progresses and may further minimize impacts to the wetland areas.

12 Additionally, approximately 0.529 acre of this emergent wetland vegetation lies within the 250-  
13 foot study corridor for the proposed Rainbow Alternative and may be temporarily impacted by  
14 bridge construction.

15 **River Bank Wetlands in Arizona**

16 Approximately 0.031 acre of scrub wetland on the Arizona side were delineated within the  
17 proposed alternative ROW at this location and may be affected by bridge pier placement and/or  
18 shade; however, dredge and fill activities would be limited to areas associated with the piers.  
19 Each new pier would displace approximately 0.0036 acre of wetland. During the current  
20 preliminary engineering phase of the project, the design team is making every effort to avoid and  
21 minimize impacts to wetland areas through design considerations. At this time, no piers are  
22 located within this scrub wetland resulting in no permanent wetland removal (zero acres of  
23 dredge and fill activities in scrub wetland). Exact pier placement would be finalized as the  
24 design progresses and may continue to avoid the wetlands.

25 **Total Wetland Impacts for the Proposed Rainbow Alternative**

26 The total amount of wetlands within the proposed Rainbow Alternative ROW is approximately  
27 0.65 acre. However, only 0.42 acre would be affected by bridge pier placement (dredge and fill  
28 activities) and roadway construction. The rest of the wetland acreage within the ROW may be  
29 affected by bridge shade, which may cause a decrease in vegetation production.

30 **2.5.3.4 Proposed Riverview Alternative**

31 **Wetland between Primary and Secondary Levees**

32 Approximately 0.117 acre of the emergent wetland and approximately 0.341 acre of scrub  
33 wetland were delineated within the proposed alternative ROW at this location and may be  
34 permanently affected by the bridge piers and/or shade; however, dredge and fill activities would  
35 be limited to only areas associated with the location of the piers. Each new pier would  
36 permanently displace approximately 0.0036 acre of wetland. During the current preliminary  
37 engineering phase of the project, the design team is making every effort to avoid and minimize

1 impacts to wetland areas through design considerations. At this time, a maximum of two piers  
2 (six pier columns) would be located within the scrub or emergent wetland. This would result in a  
3 maximum permanent wetland removal (dredge and fill activities) of approximately 0.007 acre of  
4 scrub or emergent wetland. Exact pier placement would be finalized as the design progresses  
5 and may further minimize impacts to the wetland areas.

6 **Wetlands adjacent to the Colorado River in Nevada and Arizona**

7 Approximately 0.043 acre (in Nevada) and approximately 0.027 acre (in Arizona) of the scrub  
8 wetland were delineated within the proposed Riverview Alternative ROW. Also, approximately  
9 0.00007 acre of emergent wetland (in Arizona) was delineated within the proposed ROW. Both  
10 of these areas may be affected by bridge pier placement and/or shade; however, dredge and fill  
11 activities would be limited to areas associated with the piers (approximately 0.0036 acre per pier  
12 each consisting of three pier columns). Each new pier would displace approximately 0.0036 acre  
13 of wetland. During the preliminary engineering phase of the project, the design team made every  
14 effort to avoid and minimize impacts to wetland areas through design considerations. At this  
15 time, no piers are located within this scrub or emergent wetland resulting in no permanent  
16 wetland removal (zero acres of dredge and fill activities in scrub or emergent wetlands). Exact  
17 pier placement would be finalized as the design progresses.

18 An additional 0.100 acre of scrub wetland on the Nevada side and 0.154 acre of scrub wetland on  
19 the Arizona side occurs within the 250-foot study corridor and may be temporarily impacted due  
20 to construction activities. An additional 0.032 acre of emergent wetland is within the 250-foot  
21 alternative study corridor on the Arizona bank and may be temporarily impacted due to bridge  
22 construction.

23 **Total Wetland Impacts for the Proposed Riverview Alternative**

24 The total amount of wetlands within the proposed Riverview Alternative ROW is approximately  
25 0.53 acre. However, only 0.007 acre would be affected by bridge pier placement (dredge and fill  
26 activities). The rest of the acreage may be affected by bridge shade, which may cause a decrease  
27 in vegetation production.

28 **2.5.4 Mitigation**

29 Since jurisdictional lands exist within each proposed build alternative ROW and 250-foot  
30 alternative study corridor, a USACE Section 404 permit will be required regardless of the  
31 proposed build alternative chosen. Additionally, under Section 401 of the CWA, a WQC  
32 application/permit will be required through each state (Nevada—NDEP and Arizona—ADEQ)  
33 agency in order to process the 404 permit or associated Pre-Construction Notification. The  
34 project will meet the criteria for use of USCG Section 9 Bridge Permit (which includes the  
35 submittal of Nationwide Permit No. 15). The use of these permits was discussed with the  
36 USACE and USCG, as total threshold acreages (quantities) for impacts on wetlands and other  
37 WOUS are not expected to be exceeded.

1 **2.5.4.1 Colorado River**

2 **2.5.4.1.1 No Build Alternative**

3 No mitigation will be required as no impacts to the Colorado River are associated with the No  
4 Build Alternative.

5 **2.5.4.1.2 Proposed Parkway and Rainbow Alternatives**

6 Mitigation for impacts within the Colorado River and its adjacent banks will comply with terms,  
7 conditions, and guidelines under USACE 404 Permits and Section 9 of the Rivers and Harbors  
8 Act of 1899.

9 **2.5.4.1.3 Proposed Riverview Alternative**

10 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
11 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
12 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
13

14 **2.5.4.2 Wetlands**

15 In addition to complying with Section 404 regulation, wetland mitigation will comply with  
16 FHWA regulations for Mitigation of Impacts to Wetlands and Natural Habitats (23 CFR 777),  
17 which specifies that mitigation for impacts to wetlands must exceed a 1:1 ratio.

18 **2.5.4.2.1 No Build Alternative**

19 No mitigation will be required as no impacts to the Colorado River are associated with the No  
20 Build Alternative.

21 **2.5.4.2.2 Proposed Parkway Alternative**

22 Specific mitigation is to be negotiated with the USACE as well as other federal and state  
23 agencies.

24 **2.5.4.2.3 Proposed Rainbow Alternative**

25 Specific mitigation is to be negotiated with the USACE as well as other federal and state  
26 agencies.

27 **2.5.4.2.4 Proposed Riverview Alternative**

28 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
29 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
30 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 1 **2.6 Biological Resources and Sensitive Species**

### 2 **2.6.1 Vegetation**

#### 3 **2.6.1.1 Existing Conditions**

4 Below are descriptions of the vegetation and land cover types observed within a 250-foot study  
5 corridor for each proposed build alternative (LBHCBP 2009e). For logistical purposes, each  
6 proposed build alternative is described starting from the Needles Highway in Nevada and  
7 progressing eastward to SR 95 in Arizona.

##### 8 **2.6.1.1.1 Common Segment of Proposed Parkway and Rainbow Alternatives**

9 The proposed Parkway and Rainbow alternatives share a corridor until Parkway splits to the  
10 south approximately 1.4 miles east of the Needles Highway. The vegetation community on this  
11 portion of both proposed alternatives is creosote bush scrub for approximately 0.9 mile. Then  
12 the alternatives border some private property where the land is mostly disturbed. East of this  
13 area, the vegetation along this corridor transitions to saltcedar-mesquite woodland (for  
14 approximately 0.4 mile) as the terrain transitions from upland to historic floodplain. The  
15 proposed Parkway Alternative then splits to the south (Figure 17).

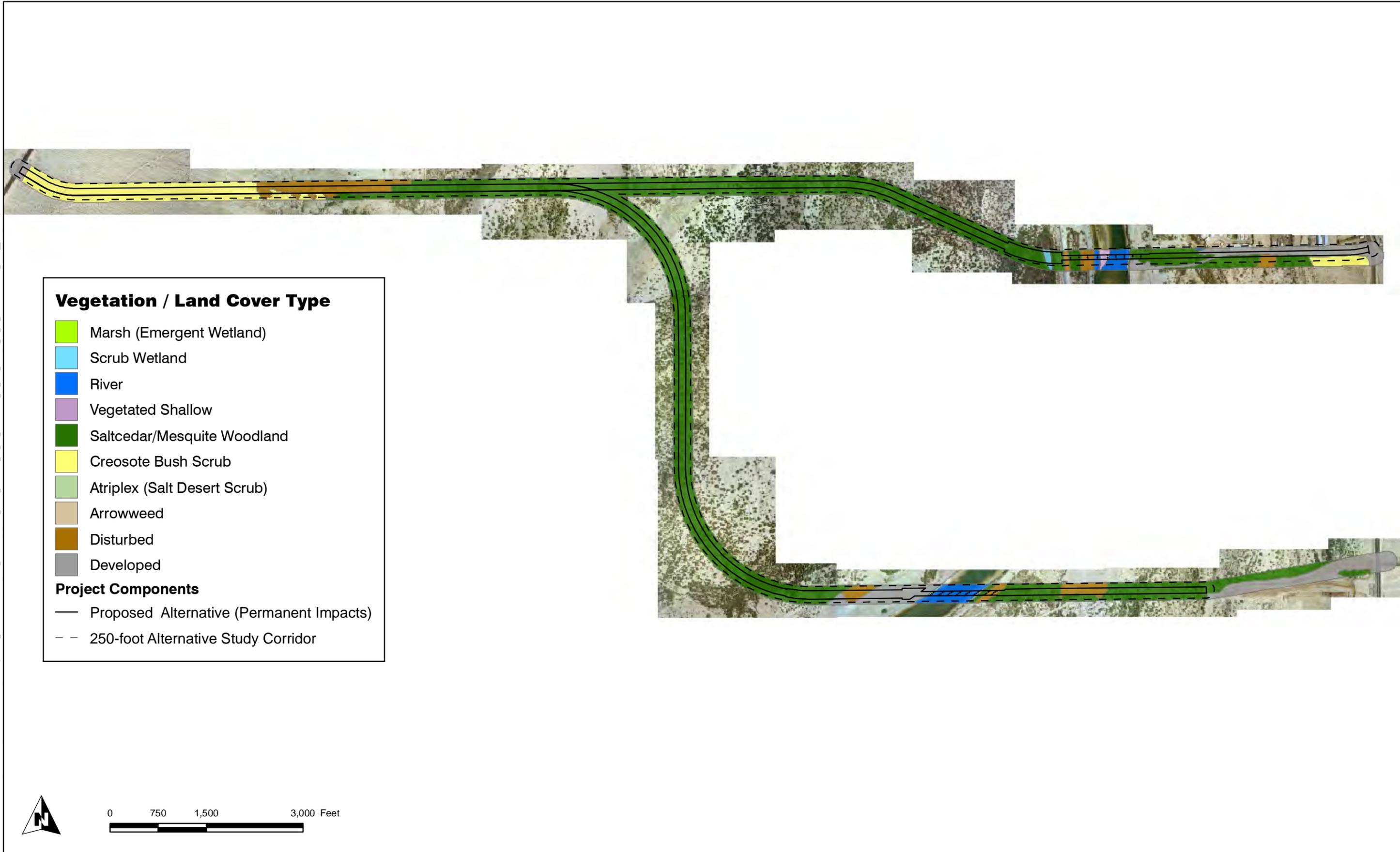
##### 16 **2.6.1.1.2 Proposed Parkway Alternative**

17 After splitting from the proposed Rainbow Alternative, the proposed Parkway Alternative heads  
18 directly south for approximately 0.7 mile before turning west toward the river. The majority of  
19 the Nevada side within the 250-foot study corridor for alternative is saltcedar-mesquite woodland  
20 with the exception of 1,200 feet at the river's edge, which has modified banks, graded roads, and  
21 artificial levees (Figure 17). This area is so disturbed that it does not support any natural  
22 vegetation; therefore, it is considered "developed" land cover type in the key on Figure 17. The  
23 Arizona portion within the 250-foot study corridor for this alternative is saltcedar-mesquite  
24 woodlands with some disturbed areas. At the southeastern portion of this proposed alternative,  
25 the land is currently being developed into a commercial property.

##### 26 **2.6.1.1.3 Proposed Rainbow Alternative**

27 After the proposed Parkway Alternative splits to the south, the proposed Rainbow Alternative  
28 proceeds primarily east crossing saltcedar-mesquite woodland, part of which includes a scrub  
29 wetland area adjacent to the secondary levee (Figure 17). The land directly adjacent to the river  
30 is a developed area of artificial levees and modified riverbanks. The Colorado River is  
31 approximately 700 feet wide at this location. Within the river is a vegetated shallow or gravel  
32 bar that is exposed when the water level is low and is dominated by Bermuda grass, streambed  
33 bristlegrass and knotweed (*Setaria leucopila*) in this area. On the Arizona side of the river, the  
34 vegetation is primarily composed of saltcedar-mesquite woodlands that are interspersed with  
35 disturbed areas. The proposed alternative follows a dirt road that starts close to the river and as it

Source: Aerials from Aztec, 2007. Alignments from Jacobs, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODEL\EA\Rainbow\_Pkwy\_Veg.mxd | Last Updated: 04-07-10



1 progresses eastward becomes a two-lane paved road that extends to SR 95. A housing  
2 development is present on the north side of the proposed alternative (Figure 17).

3 **2.6.1.1.4 Proposed Riverview Alternative**

4 Desert scrub is the predominant vegetation in the upland area of Nevada. This desert scrub  
5 community is mostly dominated by creosote bush (*Larrea tridentata*) with other upland species  
6 such as Mormon tea (*Ephedra nevadensis*) and including a variety of cactus species such as  
7 beavertail cactus (*Opuntia sp.*), pencil cholla (*Opuntia sp.*), barrel cactus (*Echinocactus sp.*), and  
8 others. This vegetation community starts at the Needles Highway and continues west along a  
9 gentle grade on the bajada that drops into the historic floodplain. The historic floodplain starts  
10 with a strip of saltcedar-mesquite woodland that is composed mostly of large specimens of athel  
11 (*Tamarix aphylla*) with some honey mesquite and screwbean mesquite (*Prosopis pubescens*).  
12 Adjacent to this strip is a small area of arrowweed, a large area of salt desert scrub containing  
13 mostly *Atriplex* species including fourwing saltbush (*Atriplex canescens*), desert holly (*Atriplex*  
14 *hymenelytra*), and littleleaf saltbush (*Atriplex polycarpa*) extends from the area to the first of two  
15 levees. Beyond the first levee, the alternative crosses a wetland area with emergent shrub  
16 species including cattails, bulrush, and arrowweed. The vegetation becomes sparse closer to the  
17 second levee at the river as the area is mostly disturbed with some small areas of saltcedar-  
18 mesquite and arrowweed. The bank of the river on the Nevada side is a disturbed area with a  
19 road extending to the edge of the river. The river is approximately 600 feet wide from bank to  
20 bank.

21 On the Arizona side of the river, the bank is developed into a public park with picnic tables,  
22 baseball fields, play area, and minimal landscaping. The remaining length of this proposed  
23 alternative is an existing road right-of-way adjacent to a developed housing area to the north and  
24 east of Rotary Park. The northeastern portion of the alternative is an empty lot that contains  
25 primarily creosote bush scrub and a small amount of saltcedar-mesquite woodlands (Figure 18).

26 **2.6.1.2 *Impacts***

27 **2.6.1.2.1 No Build Alternative**

28 No impacts to vegetation are associated with the No Build Alternative.

29 **2.6.1.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

30 Vegetation within construction zones would be removed during grading activities. Vegetation  
31 outside construction zones may be temporarily impacted as a result of equipment storage and  
32 vehicle movement. Loss of existing vegetation would indirectly affect resident wildlife that  
33 depends on it for forage and cover. Tables 9, 10, and 11 summarize the general Vegetation  
34 Association or Land Cover acreages to be permanently or temporarily impacted for each  
35 proposed build alternative. In each table, the first column of permanent impacts is the acreage of  
36 a vegetation association or land cover type that would be permanently replaced by roadway and  
37 other associated structures such as drainage features. The second column addresses permanent

Source: Aerials from Aztec, 2007. Alignments from Jacobs, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\RiverView\_Veg.mxd | Last Updated: 04-07-10

### Vegetation / Land Cover Type

- Marsh (Emergent Wetland)
- Scrub Wetland
- River
- Saltcedar/Mesquite Woodland
- Creosote Bush Scrub
- Atriplex (Salt Desert Scrub)
- Arrowweed
- Disturbed
- Developed
- Proposed Alternative Corridor (Permanent Impacts)



0 500 1,000 2,000 Feet

1 impacts from bridge shading, which are the acres of vegetation that would be permanently  
 2 impacted by the shadowing effect of the bridge, potentially resulting in reduced production and  
 3 potential loss of some vegetative species. Permanent impacts due to pier placement are the  
 4 amount of vegetation or land cover that may be permanently replaced with pier columns.  
 5 Temporary impacts represent additional acreage of vegetation or land cover type within the  
 6 remaining 250-foot study corridor that may be subjected to temporary impacts associated with  
 7 construction activities.

8 *2.6.1.2.3 Proposed Parkway Alternative*

9 Table 9 presents the amount of the vegetation associations and land cover types that would be  
 10 impacted by this alternative alignment. A relatively large area of saltcedar-mesquite woodland  
 11 (approximately 35 acres) is impacted by the proposed alternative ROW. In total, approximately  
 12 46 acres of previously undisturbed vegetation (not including areas previously disturbed,  
 13 developed, or covered by river water) would be permanently affected by roadway and associated  
 14 structures, bridge shade, and/or pier placement.

15 **Table 9. Summary of Temporary and Permanent Impacts to Vegetation / Land Cover**  
 16 **Acreage for the proposed Parkway Alternative**

Vegetation/ Land Cover Type	Permanent Impacts from Roadway and Associated Structures	Permanent Impacts from Bridge Shading	Permanent Impacts due to Pier Placement	Temporary Impacts due to Construction Activities
Creosote Bush Scrub	9.706			12.842
Developed	3.186	0.243		3.913
Disturbed	7.102	0.294	0.012	7.567
River		1.115	0.036	3.091
Saltcedar/Mesquite Woodland	35.489	0.242		48.564
Scrub Wetland		0.097	0.012	0.192
<b>Grand Total</b>	<b>55.483</b>	<b>2.037</b>	<b>0.052</b>	<b>76.171</b>

17 *2.6.1.2.4 Proposed Rainbow Alternative*

18 Table 10 presents the amount of the vegetation associations and land cover types that would be  
 19 impacted by proposed the Rainbow Alternative. A relatively large area of sensitive saltcedar-  
 20 mesquite woodland (approximately 30 acres) is impacted by the proposed alternative ROW. In  
 21 total, approximately 41 acres of previously undisturbed vegetation (not including areas  
 22 previously disturbed, developed, or covered by river water) would be permanently affected by  
 23 roadway and associated structures, bridge shade, and/or pier placement.

1 **Table 10. Summary of Temporary and Permanent Impacts to Vegetation / Land Cover**  
 2 **Acreage for the proposed Rainbow Alternative**

Vegetation or Land Cover Type	Permanent Impacts from Roadway and Associated Structures	Permanent Impacts from Bridge Shading	Permanent Impacts due to Pier Placement	Temporary Impacts due to Construction Activities
Creosote Bush Scrub	9.421			14.648
Developed	3.462	0.000		8.069
Disturbed	4.824	0.440	0.0036	6.393
River		0.643	0.012	1.811
Saltcedar/Mesquite Woodland	29.915	0.802	0.014	41.649
Scrub Wetland	0.418	0.031		0.262
Vegetated Shallow		0.202	0.0024	0.529
<b>Grand Total</b>	<b>48.040</b>	<b>2.152</b>	<b>0.0428</b>	<b>70.424</b>

3 **2.6.1.2.5 Proposed Riverview Alternative**

4 As shown in Table 11, the proposed Riverview Alternative affects the least total acreage of  
 5 vegetation as a result of its shorter length in previously undisturbed areas. A greater diversity of  
 6 vegetation associations would be affected by this proposed alternative compared to the other  
 7 proposed alternatives, including an emergent wetland and salt scrub, but only a relatively small  
 8 amount of the sensitive saltcedar-mesquite woodland habitat is impacted compared to the other  
 9 proposed alternatives (approximately 1.5 acres). In total, approximately 22 acres of previously  
 10 undisturbed vegetation (not including areas previously disturbed, developed, or covered by river  
 11 water) would be permanently affected by roadway and associated structures, bridge shade, and/or  
 12 pier placement.

13 **2.6.1.3 Mitigation**

14 **2.6.1.3.1 No Build Alternatives**

15 No mitigation will be required because no impacts to vegetation are associated with the No Build  
 16 Alternative.

17 **2.6.1.3.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

18 All construction and associated activities will occur within, and be limited to, the 250-foot  
 19 corridor for each proposed build alternative. Clearing of vegetation will be limited to the areas  
 20 necessary for construction, areas where future maintenance is required, and areas where safety  
 21 concerns exist. Areas disturbed outside the required maintenance zones will be graded and the  
 22 disturbed areas will be seeded with certified weed-free species mixes. Prior to any construction  
 23 activity, the project boundaries will be flagged and cactus, yucca, mesquite, and other Nevada  
 24 and Arizona protected plant species will be salvaged (in coordination with landowner such as

1 **Table 11. Summary of Temporary and Permanent Impacts to Vegetation / Land Cover**  
 2 **Acres for the proposed Riverview Alternative**

Vegetation/Land Cover Type	Permanent Impacts from Roadway and Associated Structures	Permanent Impacts from Bridge Shading	Permanent Impacts due to Pier Placement	Temporary Impacts due to Construction Activities
Arrowweed	1.093	0.069	0.0036	0.484
Atriplex (Salt Desert Scrub)	3.425	0.053		5.600
Creosote Bush Scrub	15.406			13.883
Developed	17.595	0.101		22.264
Disturbed		1.055	0.014	2.928
Emergent Wetland		0.116	0.0012	0.307
River		0.975	0.018	2.785
Saltcedar/Mesquite Woodland	1.476			1.231
Scrub Wetland		0.405	0.006	1.022
<b>Grand Total</b>	<b>38.995</b>	<b>2.801</b>	<b>0.0448</b>	<b>50.504</b>

3  
 4 Clark County, Nevada). Plant species identified as protected by the State of Nevada will be  
 5 removed in accordance with Nevada Administrative Code (NAC) 527.100. Plant species  
 6 identified as protected by the State of Arizona will be removed in accordance with Arizona  
 7 Statute 3-903. Protected plant species will be avoided, if possible, during construction activities.  
 8 Disturbed soils will be stabilized as soon as possible using BMPs for erosion control.

9 **2.6.2 Noxious Weeds**

10 **2.6.2.1 Existing Conditions**

11 Saltcedar was the only documented noxious weed (Classified as a category C weed in Nevada)  
 12 along each proposed build alternative (LBHCBP 2009e).

13 **2.6.2.2 Impacts**

14 **2.6.2.2.1 No Build Alternative**

15 The No Build Alternative would result in no direct project-related impacts on the spread of  
 16 noxious or invasive plant species

17 **2.6.2.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

18 Native soil and vegetation disturbances increase the potential for noxious weed invasions. Once  
 19 established, these opportunistic plants out-compete native vegetation, creating monocultures,  
 20 which provide minimal benefit to wildlife. The likelihood of a noxious weed invasion increases  
 21 if adjacent sites contain an infestation or if vehicles transport seed from an infested area into a

1 disturbed site. Few invasive weeds were observed in the project and surrounding areas so this  
2 project is not likely to increase the expansion of noxious weeds. Each proposed build alternative  
3 increases the potential for introduction of additional noxious weeds into the biological study  
4 area. The proposed Riverview Alternative may have a lower likelihood of such impacts due to  
5 the shorter length of the alternative. However, this alternative ROW also crosses a small area of  
6 emergent wetlands, which are more susceptible to establishment of species such as saltcedar.

### 7 **2.6.2.3 Mitigation**

#### 8 **2.6.2.3.1 No Build Alternative**

9 No mitigation will be required because no project-induced noxious weeds would be introduced  
10 into the area.

#### 11 **2.6.2.3.2 Proposed Parkway and Rainbow Alternatives**

12 Noxious weeds in the project area require mitigation (i.e., weed control or removal) by either  
13 federal or state law (Arizona Department of Agriculture 2010, Nevada Department of  
14 Agriculture 2005). Mitigation for the prevention of invasive weeds will be developed in  
15 coordination with the local jurisdictions. Common mitigation is to have the contractor wash  
16 their equipment before arriving on site and to wash before leaving site. In compliance with  
17 Executive Order 13112 regarding noxious weeds, all earth-moving and hauling equipment will  
18 be washed prior to arriving onsite to prevent the introduction of noxious weed and invasive weed  
19 seeds. Noxious weed control and abatement will be implemented as part of ongoing project  
20 maintenance by the local jurisdictions' public works departments. Contract documents will  
21 specify a noxious weed management plan to control noxious weeds.

#### 22 **2.6.2.3.3 Proposed Riverview Alternative**

23 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
24 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
25 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

### 26 **2.6.3 Wildlife**

#### 27 **2.6.3.1 Existing Conditions**

28 A large portion of the biological study area is saltcedar-mesquite woodland (LBHCBP 2009e).  
29 Saltcedar provides little value to birds or other wildlife, but the presence of the native mesquite  
30 in the area may supplement the low forage value of the saltcedar, making these areas suitable  
31 habitat for some species. Upland vegetation including creosote bush scrub and salt desert scrub  
32 is also extensive within the biological study area. Many specialized wildlife species that can  
33 endure harsh desert conditions use this habitat. Bird species known to use these habitats include  
34 Crissal Thrasher (*Toxostoma crissale*), Loggerhead Shrike (*Lanius ludovicianus*), Phainopepla  
35 (*Phainopepla nitens*), Lucy's Warbler (*Vermivora luciae*), Black-throated Sparrows (*Amphispiza*  
36 *bilineata*), Burrowing Owls (*Athene cunicularia*), and Roadrunners (*Geococcyx californianus*).

1 Some of the other wildlife species that may inhabit the area include chuckwalla (*Sauromalus*  
2 sp.), Great Basin collard lizard (*Crotaphytus bicinctores*), and ringtail cat (*Bassariscus astutus*).  
3 In the rockier terrain, burrowing animals such as kit fox common animals may include (*Vulpes*  
4 *macrotis*) and desert pocket mouse (*Chaetodipus pencillatus*). Long-nosed leopard lizard  
5 (*Gambelia wislizenii*) and desert iguanas (*Dipsosaurus dorsalis*) may be present in the sandier  
6 habitat. Many other species may use the Colorado River as a natural migratory or movement  
7 corridor. These species may include deer and other small mammals.

### 8 **2.6.3.2 Impacts**

#### 9 **2.6.3.2.1 No Build Alternative**

10 No impacts would occur to wildlife with the No Build Alternative.

#### 11 **2.6.3.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

12 Wildlife occupying the site would be permanently impacted through loss of habitat. Direct  
13 mortality to some species with small home ranges, such as small mammals and reptiles, may be  
14 caused by construction activities, particularly during the initial grading phase. There are  
15 numerous bird, small mammal, reptile, and aquatic species in the biological study area and  
16 further development may alter their movements, habitat, and foraging areas. Roads create  
17 barriers to migratory movement because they bisect and isolate habitat. This increases the  
18 potential for vehicle/wildlife collisions. An increase in vehicle noise may cause wildlife to avoid  
19 certain areas that are presently used for foraging and nesting. The potential for human  
20 interactions, and attacks by feral dogs and cats (from residential communities) would increase  
21 affecting native animal species (i.e., domestic cats kill native birds, etc.). Some individuals of  
22 these species may succeed in relocating to adjacent lands.

### 23 **2.6.3.3 Mitigation**

#### 24 **2.6.3.3.1 No Build Alternative**

25 No mitigation will be required since no impacts to wildlife are associated with the No Build  
26 Alternative.

#### 27 **2.6.3.3.2 Proposed Parkway and Rainbow Alternatives**

28 To minimize impacts to wildlife, equipment and vehicles will remain within the 250-foot study  
29 corridors. Grading, access, and storage areas will be limited to areas that fall within construction  
30 limits. A litter control plan will be implemented. All trash will be collected and put in proper  
31 receptacles so ravens and other predators are not attracted to the site, and subsequently prey on  
32 juvenile tortoises. Receptacles will be emptied at the end of each workweek so ravens don't  
33 congregate around dumpsters. Specific mitigation for state and federal special status species are  
34 addressed below.

35

1 2.6.3.3.3 Proposed Riverview Alternative

2 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
3 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
4 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

5 **2.6.4 State Protected Species**

6 **2.6.4.1 Existing Conditions**

7 Species listed by the states of Nevada (NAC 2007) and Arizona (Arizona Game and Fish  
8 Department [AGFD] 2007) as protected that were either documented in the area during site visits  
9 or have the potential to occur in the area according to Nevada Department of Wildlife (NDOW),  
10 Nevada Natural Heritage Program, and Arizona Game and Fish Department (AGFD) include  
11 banded Gila monster (*Heloderma suspectum*), burrowing owl, loggerhead shrike, and pale  
12 kangaroo mouse (*Microdipodops pallidus*) (LBHCBP 2009e). Species-specific surveys for state  
13 protected species were not conducted for this project.

14 **2.6.4.2 Impacts**

15 2.6.4.2.1 No Build Alternative

16 No impacts to state protected species would occur with the No Build alternative.

17 2.6.4.2.2 Proposed Parkway and Rainbow Alternatives

18 Direct impacts may include direct mortality related to construction activities. Indirect impacts  
19 may include habitat fragmentation and disruption of normal activity patterns.

20 **2.6.4.3 Mitigation**

21 2.6.4.3.1 No Build Alternative

22 No mitigation will be required since no impacts to state protected species are associated with the  
23 No Build Alternative.

24 2.6.4.3.2 Proposed Parkway and Rainbow Alternatives

25 Gila monsters will be removed during preconstruction surveys for desert tortoises in accordance  
26 with guidelines established by NDOW (2005). Impacts to loggerhead shrikes and burrowing  
27 owls will be coordinated with the USFWS as identified under the Migratory Bird Treaty Act.

28 2.6.4.3.3 Proposed Riverview Alternative

29 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
30 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
31 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
32

1 **2.6.5 Saltcedar-Mesquite Woodland and Associated Species**

2 **2.6.5.1 Existing Conditions**

3 Saltcedar-mesquite woodlands are considered sensitive habitat along the lower Colorado River  
4 (Lower Colorado River Multi-Species Conservation Program [LCR MSCP] 2004a). Many  
5 species covered by the LCR MSCP depend on saltcedar-mesquite woodland including but not  
6 limited to the southwestern willow flycatcher (*Empidonax traillii extimus*), vermilion flycatcher  
7 (*Pyrocephalus rubinus*), Arizona Bell's vireo (*Vireo bellii arizonae*), Sonoran yellow warbler  
8 (*Dendroica petechia sonorana*), and pale Townsend's big-eared bat (*Corynorhinus townsendii*  
9 *pallescens*) (Section 2.7 Federally Listed Threatened and Endangered Species and Migratory  
10 *Birds*) (LBHCBP 2009e).

11 **2.6.5.2 Impacts**

12 **2.6.5.2.1 No Build Alternative**

13 No impacts to saltcedar-mesquite woodland and associated species would occur with the No  
14 Build Alternative.

15 **2.6.5.2.2 Proposed Parkway Alternative**

16 Approximately 35 acres of saltcedar-mesquite woodland would be permanently removed and  
17 replaced with roadway and associated structures and 0.242 acres may be permanently impacted  
18 by bridge shade. Additionally, a maximum of 49 acres may be temporarily impacted during  
19 construction activities within the 250-foot study corridor.

20 **2.6.5.2.3 Proposed Rainbow Alternative**

21 Approximately 30 acres of saltcedar-mesquite woodland would be permanently removed and  
22 replaced with roadway and associated structures. Approximately 0.014 acre of saltcedar-  
23 mesquite woodland may be permanently replaced with pier columns and 0.802 acre may be  
24 permanently impacted by bridge shade. Additionally, a maximum of 42 acres may be  
25 temporarily impacted during construction activities within the 250-foot study corridor.

26 **2.6.5.2.4 Proposed Riverview Alternative**

27 Approximately 1.5 acres of saltcedar-mesquite woodland would be permanently removed and  
28 replaced with roadway and associated structures. Additionally, a maximum of approximately 1.2  
29 acres of saltcedar-mesquite woodland may be temporarily impacted during construction activities  
30 within the 250-foot study corridor.

31 **2.6.5.3 Mitigation**

32 **2.6.5.3.1 No Build Alternative**

33 No mitigation will be required since no impacts to saltcedar-mesquite woodland and associated  
34 species are associated with the No Build Alternative.

1 2.6.5.3.2 Proposed Parkway and Rainbow Alternatives

2 Mitigation for these proposed build alternatives includes BMPs that confine disturbance to the  
3 least amount of area possible to avoid unnecessary removal of saltcedar-mesquite woodland and  
4 associated species.

5 2.6.5.3.3 Proposed Riverview Alternative

6 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
7 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
8 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

9 **2.7 Federally Listed Threatened and Endangered Species and Migratory**

10 **Birds**

11 Six species protected under the Endangered Species Act and numerous migratory birds were  
12 either observed or have the potential to occur within the project limits or on adjacent lands  
13 (LBHCBP 2009e). Federally listed threatened or endangered species include desert tortoise  
14 (*Gopherus agassizii*), southwestern willow flycatcher, Yuma clapper rail (*Rallus longirostris*  
15 *yumanensis*), bonytail chub (*Gila elegans*), razorback sucker (*Xyrauchen texanus*) and  
16 flannelmouth sucker (*Catostomus latipinnis*); a species of concern by USFWS) (Appendix N).  
17 Additionally, migratory birds have been addressed in this section because impacts to migratory  
18 birds are federally regulated by the USFWS. The Migratory Bird Treaty Act (MBTA) of 1918  
19 (16 USC 703-712 as amended) made it illegal for people to "take" migratory birds, their eggs,  
20 feathers or nests. "Take" is defined in the MBTA to include by any means or in any manner, any  
21 attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird,  
22 nest, egg, or part thereof. The following is a detailed habitat assessment and/or field survey  
23 results for each federal status species along each proposed build alternative.

24 **2.7.1 Desert Tortoise (Threatened)**

25 **2.7.1.1 Existing Conditions**

26 The westernmost portion of the Project Area is creosote bush scrub and is desert tortoise habitat.  
27 Surveys were conducted within the 250-foot ROW with 100% coverage, and zone-of-influence  
28 (ZOI) surveys were conducted at 200, 600, and 1200 feet parallel to the corridor, in accordance  
29 with USFWS survey protocol.

30 **2.7.1.1.1 Common Segment of the Proposed Parkway and Rainbow Alternatives**

31 The Parkway and Rainbow Alternatives consist of one alternative ROW near the Needles  
32 Highway that splits into two corridors east of the desert tortoise habitat, so the results can be  
33 summarized together. Four active burrows and one inactive burrow were found within the  
34 proposed alternatives ROW. Seven active burrows, three inactive burrows, and two scat were  
35 found in the 200-foot ZOI. Additionally, one live tortoise was found within this area during

1 subsequent cultural resource surveys. Scat also was found in the 600-ft ZOI. Tortoise habitat is  
2 not present on the remaining sections of the proposed Parkway and Rainbow Alternatives.

3 *2.7.1.1.2 Proposed Riverview Alternative*

4 Along the proposed Riverview Alternative, two active burrows and three inactive burrows were  
5 found within the alternative ROW. One desert tortoise and one active burrow were found in the  
6 200-foot ZOI area. Two active burrows were found within the 600-foot ZOI. The proposed  
7 Riverview Alternative alignment was modified in 2009 after the original surveys were  
8 conducted. The modifications were minor within the desert tortoise habitat and the original  
9 surveys covered the area containing the new alternative ROW so no new surveys were  
10 performed.

11 *2.7.1.2 Impacts*

12 *2.7.1.2.1 No Build Alternative*

13 No impacts to desert tortoise are associated with the No Build Alternative.

14 *2.7.1.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives*

15 Though tortoise densities in the area are low, tortoises may be killed or injured during  
16 construction activities. Tortoises in the action area during initial ground clearing and grading  
17 activities may be buried in burrows or crushed. Tortoises in the action area would also be  
18 directly affected by the project as a result of the increased noise and disturbances associated with  
19 the construction and operation of the new roadway. These impacts to the species would be  
20 limited due to the relatively low density of tortoises in the area.

21 *2.7.1.2.3 Proposed Parkway Alternative*

22 This proposed alternative ROW would bisect a relatively large amount of creosote bush scrub  
23 /desert tortoise habitat. This proposed alternative ROW would permanently remove  
24 approximately 10 acres of desert tortoise habitat. Additionally, a maximum of 13 acres of  
25 creosote bush scrub/desert tortoise habitat within the 250-foot study corridor may be temporarily  
26 impacted during construction activities.

27 *2.7.1.2.4 Proposed Rainbow Alternative*

28 This proposed alternative ROW would bisect a relatively large amount of creosote bush  
29 scrub/desert tortoise habitat. This proposed alternative ROW would permanently remove  
30 approximately 9 acres of desert tortoise habitat and replace it with roadway and associated  
31 structures. Additionally, a maximum of 15 acres of creosote bush scrub/desert tortoise habitat  
32 within the 250-foot study corridor may be temporarily impacted during construction activities.

33 *2.7.1.2.5 Proposed Riverview Alternative*

34 This proposed alternative ROW isolates a relatively small patch of tortoise habitat north of the  
35 proposed roadway, bounded on the west by the Needles Highway and on the east by the

1 Colorado River. The proposed alternative ROW would permanently remove approximately 15  
2 acres of creosote bush scrub/desert tortoise habitat and replace it with roadway and associated  
3 structures. Additionally, a maximum of 14 acres of creosote bush scrub/desert tortoise habitat  
4 within the 250-foot study corridor may be temporarily disturbed during construction activities.

### 5 **2.7.1.3 Mitigation**

#### 6 **2.7.1.3.1 No Build Alternatives**

7 No mitigation will be required since no impacts to desert tortoise are associated with the No  
8 Build Alternative.

#### 9 **2.7.1.3.2 Proposed Parkway and Rainbow Alternatives**

10 The construction contractor will be responsible for providing biological oversight of construction  
11 activities and payment of desert tortoise mitigation fees (copies of receipts must be provided to  
12 the applicable DOT environmental divisions prior to the initiation of project construction) to  
13 comply with mitigation measures set forth in the Biological Opinion issued by the USFWS. To  
14 minimize direct mortality to desert tortoises, preconstruction surveys will be conducted and any  
15 tortoises found in the area will be removed. Tortoise burrows will be collapsed within the  
16 project area. A monitoring biologist may be required on site to educate construction workers on  
17 the presence of desert tortoises and to remove any desert tortoises encountered in the  
18 construction area and/or temporary fencing may be required around construction areas. All trash  
19 will be collected and put in proper receptacles so ravens and other predators are not attracted to  
20 the site, and subsequently prey on juvenile tortoises. Receptacles will be emptied at the end of  
21 each workweek so ravens don't congregate around dumpsters.

#### 22 **2.7.1.3.3 Proposed Riverview Alternative**

23 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
24 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
25 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

### 26 **2.7.2 Southwestern Willow Flycatcher (Endangered)**

#### 27 **2.7.2.1 Existing Conditions**

28 The southwestern willow flycatcher may occur in the project area along all three proposed build  
29 alternatives. Field efforts determined that suitable breeding habitat within the project area was  
30 not present. However, since the southwestern willow flycatcher winters in Mexico and migrates  
31 along the Colorado River corridor to northern breeding sites, it is likely that the species may be  
32 found during migratory periods in saltcedar-mesquite woodland areas.

33

1 **2.7.2.2 Impacts**

2 **2.7.2.2.1 No Build Alternative**

3 No impacts to southwestern willow flycatcher are associated with the No Build Alternative.

4 **2.7.2.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

5 Habitat within the biological study area is not suitable breeding habitat, as it does not meet the  
6 primary constituent elements as such. The loss of a small patch of vegetation and the  
7 construction of a large road may produce a slight impediment to birds passing through the area  
8 during migration possibly resulting in direct mortality. However, such an impact should be  
9 minimal and negligible given the birds are able to fly over the bridge and associated roads as  
10 they do throughout their range.

11 Although temporary in nature, indirect effects may occur as a result of increased noise levels  
12 associated with the construction activities. Once the project is constructed, permanent increases  
13 in noise levels would result from vehicular traffic along the roadway and may affect forage,  
14 migration, and dispersal patterns. No suitable nesting habitat is found within the biological study  
15 area so nest success should not be affected.

16 **2.7.2.2.3 Proposed Parkway Alternative**

17 This proposed alternative would remove approximately 35 acres of saltcedar-mesquite woodland  
18 that is potential southwestern willow flycatcher habitat. Approximately 0.242 acre may be  
19 permanently impacted by bridge shade. Additionally, a maximum of 49 acres may be  
20 temporarily impacted during construction activities within the 250-foot study corridor.

21 **2.7.2.2.4 Proposed Rainbow Alternative**

22 This proposed alternative would remove approximately 30 acres of saltcedar-mesquite woodland  
23 that is potential southwestern willow flycatcher habitat. Approximately 0.014 acre of saltcedar-  
24 mesquite woodland may permanently be replaced with pier columns and 0.802 acre may be  
25 permanently impacted by bridge shade. Additionally, a maximum of 42 acres may be  
26 temporarily impacted during construction activities within the 250-foot study corridor.

27 **2.7.2.2.5 Proposed Riverview Alternative**

28 This proposed alternative would remove the least amount of potential southwestern willow  
29 flycatcher habitat, approximately 1.5 acres of saltcedar-mesquite woodland. Additionally, a  
30 maximum of 1.2 acres of saltcedar-mesquite woodland may be temporarily impacted during  
31 construction activities within the 250-foot study corridor.

1 **2.7.2.3 Mitigation**

2 **2.7.2.3.1 No Build Alternative**

3 No mitigation will be required as no impacts to the southwestern willow flycatcher are associated  
4 with the No Build Alternative.

5 **2.7.2.3.2 Proposed Parkway and Rainbow Alternatives**

6 The construction contractor will be responsible for providing biological oversight of construction  
7 activities to comply with mitigation measures set forth in the Biological Opinion issued by the  
8 USFWS. Land clearing activities would not take place in the saltcedar-mesquite woodland  
9 within the migratory bird season (March 1 – July 31). BMPs would restrict activities to within  
10 the ROW to avoid unnecessary disturbances to potential southwestern willow flycatcher habitat.

11 **2.7.2.3.3 Proposed Riverview Alternative**

12 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
13 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
14 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

15 **2.7.3 Yuma Clapper Rail (Endangered)**

16 **2.7.3.1 Existing Conditions**

17 According to the USFWS (Appendix N – Spangle 2007), the Yuma clapper rail is found in  
18 cattail marsh areas south of the action area, and may move through the action area during  
19 dispersal of juvenile birds. A small amount of cattail/bulrush cover is present within the action  
20 area. A habitat assessment was performed within a 250-foot study corridor along each of the  
21 proposed alternatives.

22 **2.7.3.1.1 Proposed Parkway Alternative**

23 Yuma clapper rail habitat is not present within the proposed Parkway Alternative.

24 **2.7.3.1.2 Proposed Rainbow Alternative**

25 Yuma clapper rail habitat is not present within the proposed Rainbow Alternative.

26 **2.7.3.1.3 Proposed Riverview Alternative**

27 A total of approximately 0.392 acre of emergent wetland that is potential Yuma clapper rail  
28 habitat is present within the 250-foot study corridor in Nevada between the primary and  
29 secondary levees. Adjacent to the emergent wetland is approximately 1.109 acres of scrub  
30 wetland, which may also be utilized by Yuma clapper rails. In addition, Yuma clapper rails are  
31 known to breed in Laughlin Lagoon (approximately 3 RM north) as well as other areas in the  
32 general vicinity. Surveys were conducted in wetland areas within and adjacent to this alternative  
33 on March 18, 2008 and April 22, 2008. No birds were observed or heard during surveys.

1 **2.7.3.2 Impacts**

2 **2.7.3.2.1 No Build Alternative**

3 No impacts to Yuma clapper rail are associated with the No Build Alternative.

4 **2.7.3.2.2 Proposed Parkway and Rainbow Alternatives**

5 No direct impacts are expected due to lack of habitat within these proposed build alternatives.  
6 Indirectly, noise from construction and operation of the road may disturb Yuma clapper rail in  
7 the vicinity.

8 **2.7.3.2.3 Proposed Riverview Alternative**

9 The proposed bridge crosses over one small patch of potential habitat and passes near two others.  
10 Only a small amount (approximately 0.008 acre) of emergent or scrub wetland would be  
11 removed due to pier placement. Additional acres of scrub and emergent wetland habitats would  
12 not be removed but may possibly be disturbed during construction of the bridge or associated  
13 structures. However, construction activities may harm or harass the birds if present in these  
14 locations. Although unlikely, noise related to the construction of project segments may disrupt  
15 possible dispersal patterns and behaviors of the Yuma clapper rail known to exist upstream and  
16 downstream of the project area. Indirectly, the bridge would shade the existing vegetation  
17 possibly affecting photosynthetic rates, and subsequently, vegetation density, cover, and/or plant  
18 communities. Permanent increases in noise levels that result from vehicular traffic along the  
19 roadway may affect normal behavior patterns.

20 **2.7.3.3 Mitigation**

21 **2.7.3.3.1 No Build Alternative**

22 No mitigation will be required as no impacts to the Yuma clapper rail are associated with the No  
23 Build Alternative.

24 **2.7.3.3.2 Proposed Parkway and Rainbow Alternatives**

25 No mitigation is required as no impacts to Yuma clapper rail are associated with these proposed  
26 build alternatives

27 **2.7.3.3.3 Proposed Riverview Alternative**

28 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
29 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
30 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

31

1 **2.7.4 Bonytail Chub (Endangered), Razorback Sucker (Endangered) and Flannelmouth**  
2 **Sucker (Species of Concern)**

3 **2.7.4.1 Existing Conditions**

4 According to the literature, all of these species may be present within the biological study area  
5 where suitable habitat is present. Temporary or permanent sand and gravel shallows may  
6 provide suitable spawning habitat in isolated areas throughout this river reach. Below is a  
7 summary of only the habitat found along each of the 250-foot study corridors of the proposed  
8 build alternatives based on observations from shore and does not include a habitat assessment for  
9 this entire river reach. The habitat requirements for all of these species are similar and are  
10 addressed together.

11 **2.7.4.1.1 Proposed Parkway Alternative**

12 No suitable spawning habitat is found at this proposed alternative

13 **2.7.4.1.2 Proposed Rainbow Alternative**

14 A substantial vegetated gravel/sand bar is present within the river at this location that may be  
15 spawning habitat for these species. This bar creates two disproportionately sized channels of the  
16 river with the western channel being relatively shallow compared to the main channel (specific  
17 flow volumes are not available because of the substantial fluctuations of water releases from  
18 Davis Dam). The bed of the secondary channel has cobble and gravel that appears to have some  
19 submerged vegetation in portions of the channel (species could not be determined due to water  
20 depth during site visits). This bar has well-established vegetation on the upper elevations,  
21 including a deep stand of Bermuda grass, knotgrass, and streambed bristlegrass, with occasional  
22 specimens of cocklebur.

23 **2.7.4.1.3 Proposed Riverview Alternative**

24 No suitable spawning habitat was found along this proposed alternative

25 **2.7.4.2 Impacts**

26 **2.7.4.2.1 No Build Alternative**

27 No impacts to bonytail chub, razorback sucker, or flannel mouth sucker are associated with the  
28 No Build Alternative.

29 **2.7.4.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

30 Direct effects of this project on these fish species may include aquatic and riparian habitat  
31 disturbance and potential death or injury of individual fish. Several activities may cause these  
32 impacts, including pier installation, equipment movement, and bridge construction. Construction  
33 of the new bridge would adversely affect habitat for the fishes with the installation of bridge  
34 piers within the river channel. Temporary or permanent spawning habitat may occur in the  
35 project area based on available information; however, bridge infrastructure would only result in

1 the permanent removal of relatively small amounts of river substrate (less than 0.0012 acres per  
2 pier column see *Section 2.5 Wetlands and Jurisdictional Waters*). No additional permanent  
3 disturbance within the channel is anticipated. Increased sediment may result from the  
4 disturbance of the shoreline, but these impacts should be minimal in relation to the available  
5 habitat near the biological study area. Given the low density of fish in the area and lack of likely  
6 spawning habitat, the death or injury of the fish is highly unlikely.

7  
8 Indirect effects of the proposed action are those effects related to the construction. Adverse  
9 effects of construction would be temporary, generally occurring during the period of construction  
10 and not extending beyond that period. Construction-related activities may cause juvenile and  
11 adult fish, if present, to temporarily avoid using the affected habitat area due to harassment from  
12 noise and vibration. During construction, accidental discharge of contaminants (spills of oils,  
13 hydraulic fluids, and gasoline) or resuspension of contaminants from disturbed riverbed  
14 sediments may adversely affect survival, growth, and reproduction of fish species. Construction  
15 activities may disturb substrate and cause sedimentation of potential spawning and rearing  
16 habitat, if pockets of such habitat are present.

17 **2.7.4.2.3 Proposed Parkway Alternative**

18 Habitat within this 250-foot study corridor is typical for this reach of the river. However, the  
19 current design requires skewing of the piers. Such design may require substantial armoring to  
20 prevent scour, which may provide additional sheltering opportunities for the fish.

21 **2.7.4.2.4 Proposed Rainbow Alternative**

22 Impacts within the 250-foot study corridor are similar to the general description above.  
23 However, the vegetated gravel bar in the river at this alignment provides potential but  
24 undocumented spawning and rearing habitat, as well as an area of shelter from the river flows.  
25 Piers may be necessary in this area, so potential habitat may be impacted.

26 **2.7.4.2.5 Proposed Riverview Alternative**

27 Habitat within this 250-foot study corridor is typical for this reach of the river and impacts from  
28 this proposed alternative would be consistent with the description above.

29 **2.7.4.3 Mitigation**

30 **2.7.4.3.1 No Build Alternative**

31 No mitigation will be required as no impacts to federal status fish species are associated with the  
32 No Build Alternative.

33 **2.7.4.3.2 Proposed Parkway and Rainbow Alternatives**

34 The construction contractor will be responsible for providing biological oversight of construction  
35 activities to comply with mitigation measures set forth in the Biological Opinion issued by the  
36 USFWS. In order to minimize impacts to fish at any build alternative, cofferdams will be used

1 to contain the work area for the piers. Cofferdams will be constructed in sections to minimize  
2 the potential for trapped fish. A fish salvage will be performed prior to closing of the cofferdam  
3 to remove any trapped fish. Contractors will be responsible for having either a fisheries/wildlife  
4 biologist on-site and/or coordinating with either USFWS or NDOW when performing fish  
5 salvages. When cofferdams are dewatered, either a ‘fish pump’ or proper screening methods will  
6 be used to allow fish larvae to be pumped back into the river, unharmed. The discharge pipe will  
7 be submerged in the river to allow “soft entry” for larvae (and fish if a fish pump is used).  
8 Cofferdams should help contain concrete and other spills at the site (except in rare event  
9 catastrophe). Cofferdams will stay in place until all concrete is dry so that wet concrete does not  
10 affect water quality.

11 Shorelines will be avoided to minimize sediment influx into the river. Trapped silt and debris  
12 will be removed from the river before removing cofferdams to minimize sediment release into  
13 the river. BMPs will be used when pumping all concrete. A Spill Prevention Notification and  
14 Cleanup Plan will be prepared prior to start of construction. All fuel or hazardous waste leaks,  
15 spills, or releases will be reported immediately to the Contracting Officer and the appropriate  
16 Federal and State agencies that administer the land where the incident occurs. When gasoline  
17 diesel fuel, antifreeze hydraulic fluid or any other chemical contained within the vehicle is  
18 released to the pavement, ground, or river, contractors will immediately implement proper  
19 corrective cleanup and safety actions. Construction equipment will be cleaned before  
20 mobilization to the site and maintained in order to minimize potential runoff contamination from  
21 petroleum, oils, and other liquids. Equipment near aquatic habitat will contain a hazardous  
22 materials response kit to prevent impacts to aquatic habitat. Staging and material storage will be  
23 at least 150 feet from the river.

24 All solid waste or waste materials (i.e., concrete wash-out water) will be removed and disposed  
25 of in accordance with local, regional, and federal regulations.

26 The owner/operator (Clark County and Bullhead City) of the bridge will be responsible for the  
27 implementation of an operational spill prevention and countermeasures control plan. This will  
28 cover spills and stormwater accumulation and run-off.

29 2.7.4.3.3 Proposed Riverview Alternative

30 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
31 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
32 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
33

1 **2.7.5 Migratory Birds**

2 **2.7.5.1 Existing Conditions**

3 The lower Colorado River historically serves as a migratory corridor for neotropical species that  
4 move between wintering and breeding sites. Although comprehensive surveys were not  
5 conducted in the biological study area, it is assumed that a wide range of these migratory birds  
6 occur within and adjacent to the project area (LBHCBP 2009e). Some displacement of these  
7 species and their nests may occur due to the loss of habitat and increased activity in the area  
8 during construction and operation of the new bridge and roadway.

9 **2.7.5.2 Impacts**

10 **2.7.5.2.1 No Build Alternative**

11 No impacts to migratory birds are associated with the No Build Alternative.

12 **2.7.5.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

13 Impacts for all proposed build alternatives are similar because of the loss of habitats. However,  
14 the proposed Riverview Alternative is the shortest alternative and therefore affects the least  
15 amount of habitat that may be used by migratory or nesting birds. Removal of both upland and  
16 woody riparian vegetation may directly affect migratory or other sensitive avian species (Section  
17 2.5.3 *Impacts to Wetlands* for impacts to vegetation). Indirect impacts may include harassment  
18 due to construction activities and increased use of the area. Increased noise levels during  
19 construction may cause birds temporarily to abandon the area.

20 **2.7.5.3 Mitigation**

21 **2.7.5.3.1 No Build Alternative**

22 No mitigation will be required as no impacts to migratory birds are associated with the No Build  
23 Alternative.

24 **2.7.5.3.2 Proposed Parkway and Rainbow Alternatives**

25 In order to mitigate impacts to migratory birds, land-clearing activities will not occur during  
26 migratory bird breeding season (March – July).

27 **2.7.5.3.3 Proposed Riverview Alternative**

28 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
29 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
30 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

31

## 2.8 Cultural Resources

Cultural resources generally include archaeological sites; historic buildings and structures; artifacts; and places of traditional, religious, and cultural significance. “Historic properties” are prehistoric and historic cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470) requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the State Historic Preservation Office (SHPO) and other parties with a demonstrated interest a reasonable opportunity to comment on such undertakings. Regulations for Protection of Historic Properties (36 CFR 800) implement Section 106 of the NHPA. These regulations define a process for responsible federal agencies to consult with the State and/or Tribal Historic Preservation Officer, Native American groups, other interested parties, and when necessary, the Advisory Council on Historic Preservation (ACHP) to ensure that historic properties are duly considered as federal projects are planned and implemented. FHWA is the lead federal agency responsible for Section 106 compliance for the Laughlin-Bullhead City Bridge Project. On behalf of FHWA, NDOT coordinates and creates reports for the Section 106 compliance activities. Consultation with SHPOs and Native American Tribes is discussed in detail in *Section 3.3.5 SHPO and ACHP Coordination and Consultation* and *Section 3.3.6 Native American Tribal Consultation*.

To be determined eligible for inclusion in the NRHP, cultural resource properties must be important in American history, architecture, archaeology, engineering, or culture (LBHCBP 2009f). In addition, properties must possess integrity of location, design, settings, materials, workmanship, feeling, and association, and meet at least one of four criteria:

- Criterion A: be associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B: be associated with the lives of persons significant in our past
- Criterion C: embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction
- Criterion D: have yielded, or may be likely to yield, information important in prehistory or history

Properties may be of local, state, or national importance. Typically, historic properties are at least 50 years old, but younger properties may be considered for listing if they are of exceptional importance. Archeological sites which may be eligible to the NRHP only under Criterion D are exempt from Section 4(f) evaluation [CFR 774.13(6)(§)].

1 **2.8.1 Existing Environment**

2 The project alternatives have been completely surveyed for cultural resources. The results are  
3 reported in *A Class III Cultural Resources Survey in Support of the Environmental Assessment,*  
4 *Laughlin Bullhead-City Bridge Project* (LBHCBP 2008a) and *A Supplemental Class III Cultural*  
5 *Resources Survey for the Laughlin-Bullhead City Bridge Project, Clark County, Nevada, and*  
6 *Mohave County, Arizona* (LBHCBP 2009f). The area of potential effects (APE) for the project  
7 was defined as corridor footprints for archaeological resources and the corridor footprints plus  
8 adjacent developed property parcels for historic architectural resources. The APE was concurred  
9 by the Arizona-SHPO on October 30, 2007 and by the Nevada-SHPO on December 12, 2007  
10 (Appendix O).

11 Prior to performing the Class III cultural resources survey, record checks and archive research  
12 was conducted to identify previous projects and recorded sites within 1 mile of the proposed  
13 alternative corridors. Record checks were conducted on AZSITE, the Arizona-SHPO, the  
14 Arizona State Archives, and the Southern Nevada Archaeological Archives at the Harry Reid  
15 Center for Environmental Studies, the BLM's Arizona State Office and Las Vegas Field Office,  
16 the Laughlin Public Library, the Colorado River Museum in Bullhead City, and the NRHP web  
17 site.

18 The Class III cultural resources survey documented eight historic properties within the proposed  
19 corridors, three prehistoric sites, three historic sites, and two multi-component sites (Table 12).  
20 Two of the sites are on the Arizona side of the project area. Six of the sites are on the Nevada  
21 side of the project area.

22 The prehistoric sites include two lithic procurement (quarry) sites and one lithic scatter. The  
23 historic sites include a gauging station, a scatter of cut boards, and an artifact scatter. The multi-  
24 component sites include combinations of prehistoric lithic scatters, trails, cleared circles and  
25 other rock alignments, and historic habitation features and trash concentrations. In general, sites  
26 associated with the first terrace floodplain included a scatter of cut boards and an historic  
27 gauging station. Historic and prehistoric habitation sites were concentrated along the edge of the  
28 second terrace. Lithic procurement areas, or quarry sites, were associated with the upper and  
29 lower alluvial fans.

30 Four sites have been determined eligible for the NRHP under Criterion D for their information  
31 potential: 26Ck1412, 26Ck7833, 26Ck7835, and 26Ck7836. Four sites have been determined  
32 not eligible for the National Register because of a lack of integrity and/or their information  
33 potential has been exhausted: AZ F:14:127 (ASM), AZ F:14:372 (ASM), 26Ck7834, and  
34 26Ck7837.

35 In addition to the archaeological survey, an inventory of historic architecture identified 11  
36 residential properties (all in Arizona) that were between the ages of 40 to 49 years old  
37 (inclusive): parcels 218-05-078, 218-05-098, 218-07-004, 218-07-057, 218-07-086, 218-12-400,

1 **Table 12. Historic Properties**

Site	Type	Age	Jurisdiction	State	Alignment	NRHP Eligibility
AZ F:14:127 (ASM)	Lithic scatter	Prehistoric	ASLD	AZ	Riverview	Not eligible (mitigated)
AZ F:14:372 (ASM)	Gauging station	Historic	Private	AZ	Rainbow	Not eligible
26Ck1412	Artifact scatter	Prehistoric and Historic	Clark County, Private	NV	Rainbow, Parkway	Eligible (D)
26Ck7833	Habitation, artifact scatter, trails	Prehistoric and Historic	Clark County	NV	Riverview	Eligible (D)
26Ck7834	Cut board scatter	Historic	Clark County	NV	Rainbow	Not eligible
26Ck7835	Lithic procurement	Prehistoric	Clark County	NV	Rainbow, Parkway	Eligible (D)
26Ck7836	Lithic procurement	Prehistoric	Clark County	NV	Rainbow, Parkway	Eligible (D)
26Ck7837	Artifact scatter	Historic	Private, Clark County	NV	Rainbow, Parkway	Not eligible

2

3 219-08-172A, 219-08-175, 220-08-011B, 220-08-013A, and 220-16-001. All eleven of the  
 4 building properties lack architectural distinction and historical significance under Criterion A, B,  
 5 C, or D, and therefore have been determined not eligible for the NRHP. The inventory also  
 6 identified one structure over 50 years of age (200-22-164H in Arizona) and completed an  
 7 Arizona Historic Property Inventory Form. It was determined that the building was not eligible  
 8 for the NRHP because it had no known significant associations with history or history. The  
 9 Arizona–SHPO concurred with FHWA’s determination of eligibility for historic properties on  
 10 July 18, 2008 (Appendix O). The Nevada–SHPO concurred with FHWA’s determination of no  
 11 historic properties on August 4, 2008 (Appendix O).

12 **2.8.2 Impacts**

13 **2.8.2.1 No Build Alternative**

14 No impacts to historic properties are associated with the No Build Alternative.

15 **2.8.2.2 Proposed Parkway Alternative**

16 There are four historic properties impacted by the western segments of the proposed Parkway  
 17 Alternative (i.e., the joint segment of Rainbow and Parkway). Sites 26Ck7835 and 26Ck7836  
 18 are lithic procurement areas determined eligible for the NRHP under Criterion D. Site 26Ck1412  
 19 is a multi-component artifact scatter determined eligible for the NRHP under Criterion D. Site  
 20 26Ck7837 is a historic artifact scatter determined not eligible for the National Register.

1 **2.8.2.3 Proposed Rainbow Alternative**

2 There are four historical properties impacted by the western segments of the proposed Rainbow  
 3 Alternative (i.e., the joint segment of Rainbow and Parkway). Sites 26Ck7835 and 26Ck7836  
 4 are lithic procurement areas determined eligible for the NRHP under Criterion D. Site 26Ck1412  
 5 is a multi-component artifact scatter determined eligible for the NRHP under Criterion D. Site  
 6 26Ck7837 is a historic artifact scatter determined not eligible for the NRHP.

7 The eastern half of the proposed Rainbow Alternative, the segment that is separate from the  
 8 proposed Parkway Alternative, contains two additional sites. Site AZ F:14:372 (ASM) is a  
 9 gauging station on the Arizona side of the river. Site 26Ck7834 is a scatter of cut boards on the  
 10 Nevada side of the river. Both sites were determined not eligible for the NRHP.

11 **2.8.2.4 Proposed Riverview Alternative**

12 The proposed Riverview Alternative contains two historic properties (Table 13). Site 26Ck7833  
 13 is a multi-component site determined eligible for the NRHP under Criterion D. Site AZ F:14:127  
 14 (ASM) is a previously mitigated prehistoric lithic scatter determined not eligible for the NRHP.

15 **Table 13. Summary of Historic Properties by Proposed Build Alternative**

Proposed Build Alternative	NRHP Eligible	NRHP Ineligible	Total
Parkway	3	1	4
Rainbow	3	3	6
Riverview	1	1	2

16 **2.8.3 Mitigation**

17 **2.8.3.1 No Build Alternative**

18 No mitigation will be required as no impacts to historic properties are associated with the No  
 19 Build Alternative.

20 **2.8.3.2 Proposed Parkway and Rainbow Alternatives**

21 All three proposed Alternatives would affect historic properties determined to be eligible for the  
 22 NRHP under Criterion D for their information potential. As a result, FHWA has determined the  
 23 project would result in an “adverse effect” to historic properties. The adverse impacts to the  
 24 NRHP-eligible sites will require mitigation. Typically, mitigation for the types of sites  
 25 encountered by the project may include archaeological excavations, historical and archival  
 26 research, ethnographic studies, and others. A Programmatic Agreement (PA) (Appendix O) will  
 27 be executed between FHWA and the SHPO (Nevada and Arizona) offices, and with the other  
 28 agencies and Tribes as concurring parties, as appropriate, to ensure mitigation measures are  
 29 developed and implemented.

30 Mitigation for inadvertent discoveries will include the following:

1 **Human Remains**

2 In the event that human remains are discovered during this project, construction in the immediate  
3 vicinity shall be halted and FHWA shall be notified immediately. If human remains and/or  
4 associated grave goods are found on federal lands, the appropriate land managing agency shall  
5 be notified immediately, and the provisions of Native American Graves Protection and  
6 Repatriation Act (43 CFR 10) shall be followed. If human remains are found on state or private  
7 lands, the notification procedures and provisions of the appropriate state shall be followed. The  
8 project contractors will be required to employ qualified Native American monitors for the  
9 duration of ground disturbance on the project. The project proponent shall ensure that any  
10 human remains found during this project are treated with respect.

- 11 • For discoveries on private lands in Arizona, the procedures and provisions of Arizona  
12 Revised Statute (ARS) 41-865 shall be followed.
- 13 • For discoveries on state, county, city, or municipal lands in Arizona, the procedures  
14 and provisions of ARS 41-844 shall be followed.
- 15 • For discoveries on state, county, city, municipal, or private lands in Nevada, the  
16 procedures and provisions of Nevada Revised Statute (NRS) 383 shall be followed.

17 **Discovery Situations**

- 18 • Prior to initiating any activities within the APE, the Project Contractor will provide  
19 FHWA and the appropriate land managing agencies with a list of and schedule for  
20 project proponent employees or their consultants who are empowered to halt all  
21 activities in discovery situations and who will be responsible for notifying FHWA of  
22 any discoveries. At least one of these employees shall be present during all  
23 construction activities.
- 24 • If cultural resources are discovered, undertaking-related activities within 100 feet of  
25 the discovery will cease immediately and the Project Contractor shall notify FHWA.  
26 FHWA shall notify the appropriate SHPO (Nevada or Arizona), the appropriate land  
27 managing agency and appropriate Native American groups(s), regarding the nature of  
28 the find. A professional archaeologist shall examine the find to determine if it is  
29 cultural and to make an initial recommendation of eligibility to the NRHP. If the find  
30 is found to be non-cultural, then project activities may be allowed to proceed. If  
31 FHWA determines the find to be ineligible in consultation with the appropriate land  
32 managing agency, FHWA shall request concurrence from the appropriate SHPO  
33 (Nevada or Arizona) on that determination and proceed with project activities.  
34 FHWA shall ensure that the procedures for determining eligibility, assessing effects,  
35 and avoidance or treatment outlined in the PA are followed, in consultation with the  
36 appropriate SHPO (Nevada or Arizona) and the appropriate land managing agency,  
37 Native Americans, and interested parties as appropriate.
- 38 • If FHWA and the appropriate SHPO (Nevada or Arizona) agree that a historic  
39 property is eligible for listing to the NRHP, then FHWA in cooperation with the

1 appropriate land managing agency and Native American Groups will evaluate the  
2 potential effect to that historic property. If FHWA finds that the project, upon final  
3 design, will have an adverse effect to the eligible property, then FHWA will either  
4 continue to avoid the adverse effects through design modifications, or will develop a  
5 Treatment Plan in consultation with the appropriate SHPO (Nevada or Arizona) and  
6 appropriate concurring parties. Once a final draft of the treatment plan was  
7 completed, the FHWA will submit the plan to the appropriate SHPO (Nevada or  
8 Arizona) for review and comment.

- 9 • For such discovery situations, the appropriate SHPO (Nevada or Arizona) and the  
10 land management agencies agree to handle requests and provide review comments on  
11 an expedited basis of not more than five (5) working days from their receipt.
- 12 • Should disputes arise concerning discovery situations that cannot be otherwise  
13 resolved, FHWA shall seek the assistance of the ACHP in resolving the dispute. To  
14 facilitate this process, FHWA will provide the ACHP with copies of all information  
15 on the discovery. In addition, consultation with the ACHP shall be by the most  
16 expeditious means available, including telephone, e-mail, or fax. The ACHP shall  
17 provide its comments, if any, within three (3) working days of a request, and having  
18 received all relevant information from FHWA. If the Council fails to respond within  
19 three (3) working days of the receipt of a request, FHWA shall presume concurrence  
20 with FHWA's findings and recommendations and proceed accordingly. FHWA shall  
21 take any ACHP comment into account, and FHWA shall notify the ACHP and the  
22 appropriate SHPO (Nevada or Arizona), and any consulting party, of its resolution of  
23 the issue. The parties may continue all actions under this agreement that are not the  
24 subject of the dispute (if any).
- 25 • FHWA shall ensure that reports of mitigation efforts for discovery situations are  
26 completed in a timely manner and conform to the Secretary of Interior's Standards  
27 and Guidelines for Archaeology and Historic Preservation. Drafts of such reports  
28 shall be submitted to the appropriate SHPO, appropriate agencies, and appropriate  
29 Native American groups for a 30-day review and comment period. Final reports shall  
30 address review comments and shall be submitted to appropriate land managing  
31 agencies, the appropriate SHPO (Nevada or Arizona), ACHP, and interested persons  
32 as appropriate for information purposes.
- 33 • Construction activities in the area of the discovery will be halted until FHWA notifies  
34 the Project Contractor that mitigation is complete and activities can resume.

### 35 **2.8.3.3 Proposed Riverview Alternative**

36 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
37 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
38 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
39

## 2.9 Title VI and Environmental Justice

Title VI of the Civil Rights Act of 1964, requires that “no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.” Executive Order (EO) 12898 is a renewed focus on the Title VI law with respect to minority populations and adds low-income populations as an emphasis area when addressing environmental justice concerns.

EO 12898, “Federal Actions to Address Environmental Justice (EJ) in Minority and Low-Income Populations”, was signed by the President on February 11, 1994. The EO and accompanying memorandum focus federal attention on the environmental and human health conditions in minority and low-income communities, enhance the provision of nondiscrimination in federal programs affecting human health and the environment, and promote meaningful opportunities to the access of public information and participation in matters relating to minority and low-income communities and their environment.

As defined in FHWA Order 6640.23, minority means a person who is Black, Hispanic, Asian American (including Pacific Islander), or American Indian or Alaskan Native. This assessment identifies the minority population that may be affected by the proposed project. *Minority Population* is defined by FHWA as any readily identifiable group of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed FHWA program, policy, or activity.

FHWA Order 6640.23 also defines a low-income person as “...a person whose median household income is at or below the Department of Health and Human Services (DHHS) poverty guidelines.” The project EJ assessment identifies the Low-Income Population affected by the proposed project as defined by FHWA as “any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed FHWA program, policy, or activity.”

The CEQ’s December 10, 1997 document entitled “*Environmental Justice Guidance under the National Environmental Policy Act*” states that minority populations should be identified where either:

- the minority population of the affected area exceeds 50 percent; or
- the minority population percentage of the affected area is “meaningfully greater” than the minority population percentage in the general population or other appropriate unit of geographic analysis.

1 This guidance also states that low-income populations should be identified with the annual  
2 statistical poverty thresholds from the U.S. Census Current Population Reports, Series P-60 on  
3 Income and Poverty. In identifying low-income populations, agencies may consider as a  
4 community either a group of individuals living in a geographic proximity to one another, or a set  
5 of individuals (such as migrant workers or Native Americans), where either type of group  
6 experiences common conditions of environmental exposure or effect.

7 The two terms *minority* and *low-income* populations should not be presumptively combined  
8 when conducting an EJ analysis. There are minority populations of all income levels, and low-  
9 income populations may be minority, non-minority, or a mix in a given area.

10 EO 13166, “Improving Access to Services for Persons with Limited English Proficiency (LEP)”,  
11 requires all recipients of federal funds to provide meaningful access to persons who are limited  
12 in their English proficiency. The U.S. Department of Justice (DOJ) defines LEP individuals as  
13 those “who do not speak English as their primary language and who have a limited ability to  
14 read, write, speak, or understand English” (67 CFR 41459).

### 15 **2.9.1 Existing Conditions**

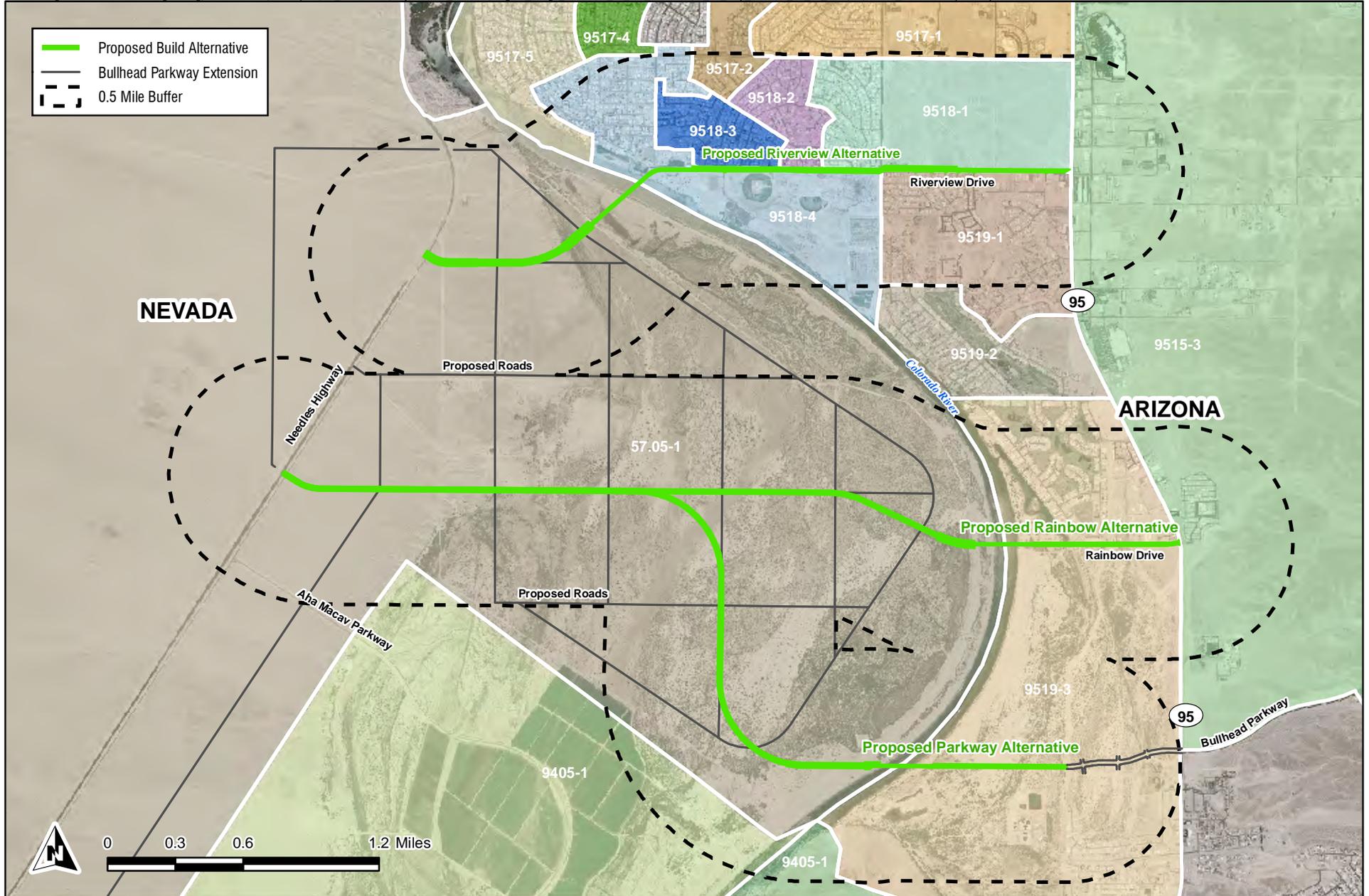
16 An EJ Assessment (LBHCBP 2010a) was completed using methods described in the FHWA’s  
17 Resource Center Interim Guidance “*Addressing Environmental Justice in Environmental*  
18 *Assessments/Environmental Impact Statements*” (FHWA 2003), and in project memorandums  
19 dated June 8, 2009 (LBHCBP 2009c), and July 1, 2010 (LBHCBP 2010f), respectively. This  
20 assessment considered potential effects of the proposed project on EJ populations specifically  
21 within a 0.5-mile radius (buffer) of the centerline for each of the proposed build alternatives  
22 (Figure 19), known as the EJ study corridors. While LEP is not included in the definition of an  
23 EJ population, an analysis was performed to determine the potential effects of the proposed  
24 project on these groups because many LEP people can also be low-income and/or minority.

25 The Bullhead City portion of the proposed EJ project study area, compared to that of the  
26 Laughlin side, contains the more densely populated area. Because of this, the Bullhead City  
27 portion contains the greater opportunity for EJ populations to exist. The Laughlin portion only  
28 has a few residential structures since most of the land on the Laughlin side was previously owned  
29 by the Colorado River Commission (now owned by Clark County) and has had limited  
30 opportunities for development.

31 U.S. Census data (year 2000) was used to identify and analyze the various populations because  
32 no newer data was available. The most recent U.S. Census (2009) *American Community Surveys*  
33 do not provide block-group level data for the Laughlin CDP or Bullhead City area.

#### 34 **2.9.1.1 Public Information and Outreach Efforts to Potential EJ Populations**

35 An informal public outreach effort was specifically designed to provide minority, low-income,  
36 and LEP populations with the opportunity to comment on, or provide information relevant to, the



1 Purpose and Need of the proposed project, and the potential significant social, economic, or  
2 environmental issues related to the proposed project. This outreach effort included door-to-door  
3 and telephone surveys in both English and Spanish. RTCSNV staff conducted door-to-door  
4 neighborhood surveys in Bullhead City within the EJ study area on June 29-30 and July 1, 2009.  
5 The RTCSNV had two survey teams, each consisting of one man and one woman, of which one  
6 of the individuals spoke fluent Spanish. The RTCSNV conducted the neighborhood surveys  
7 systematically. The surveys were based on pre-established appointments that were received  
8 through a telephone “hotline” number provided on the previously distributed flyers to the area  
9 (approximately 100 calls were received). When the RTCSNV did not make contact at the  
10 residence, a comment card (“Sorry We Missed You”) was left behind for the people to respond  
11 to. The RTCSNV directly canvassed about 500 residences during the process. For those  
12 residents who wished to participate by telephone, RTCSNV staff conducted a telephone survey  
13 that asked the same questions as the door-to-door survey. During the survey process, three  
14 residents did not speak English as their primary language but they did not have a limited ability  
15 to read, write, speak, or understand English; therefore, they are not considered LEP populations  
16 as defined by 67 CFR 41459. None of the Spanish surveys were completed. Copies of the 146  
17 completed surveys and 37 comment cards are presented in Appendix K.

18 The survey asked questions about which proposed build alternative did they live closest to; how  
19 long had they lived in the neighborhood; what affected their decision to move to their  
20 neighborhood; what characteristics tie their neighborhood together; travel habits to goods and  
21 services; travel habits to community facilities; if they were aware of the proposed project; would  
22 the proposed project alter their neighborhood; would the proposed project negatively impact  
23 travel patterns to goods, services, or and/or community facilities; if they currently used transit;  
24 would they be in favor of the proposed project if it were built in their neighborhood; if they have  
25 any other overall concerns about the proposed project if it were built in their neighborhood; and  
26 which did they favor based on what they currently knew about the project. General themes of  
27 issues raised included the following: location preference, support and opposition for the  
28 proposed project, increased traffic, pedestrian safety, large vehicle accessibility, access within  
29 their neighborhood, evacuation routes, air quality, noise impacts, visual impacts, and impacts to  
30 Rotary Park. Received surveys and comments may or may not represent the actual EJ  
31 populations with the EJ study area. However, the information collected through this public  
32 information and outreach effort was compared to the published U.S. Census data in order to help  
33 define the populations living in the EJ study area.

### 34 ***2.9.1.2 Existing Minority Populations***

35 A threshold of 10% or higher (“meaningfully greater”) than the minority population percentage  
36 in the reference area (Bullhead City or Laughlin CDP) was established as the percentage  
37 threshold to identify minority populations in the EJ project study area (affected area) (LBHCBP  
38 2010f). Table 14 indicates the proportion and distribution of population and income within the  
39 reference areas Bullhead City and the Laughlin Census Defined Place (CDP), and in each of the

## Environmental Impacts and Mitigation

1 block groups that are located within the EJ study area (Figure 19). A U.S. Census block group is  
2 a cluster of blocks within a tract. A block is the smallest geographic unit used by the U.S.  
3 Census Bureau for tabulation of 100-percent data (data collected from all houses, rather than a  
4 sample of houses). Block groups are the smallest geographic unit used for tabulation of sample  
5 data. For this EJ analysis, block group data was available and analyzed for population and  
6 income.

7 Based on block group data as indicated in Table 14, the largest distribution of minorities are  
8 grouped within the Arizona portion of the EJ Study Area, specifically to the north of Riverview  
9 Drive in Block Groups 9517-4 (47.9%), 9518-2 (38.2%), and 9518-3 (40.7%). A smaller  
10 distribution of minorities, Block Group 9405-1 (36.8%) is located within the southern most part  
11 of the Nevada portion. These block groups have a percentage of minority residents that exceeds  
12 the Bullhead City percentage (24.6%) or the Laughlin CDP percentage (17.6%), respectively, by  
13 10% or greater. However, because only 0.01% of Block Group 9517-4 and the 3.7% of Block  
14 Group 9405-1 (all vacant agricultural lands/no residences) are located within the EJ study area,  
15 they were not considered to be a potentially affected EJ population.

Environmental Impacts and Mitigation

1 **Table 14. Summary of Population and Income**

Geographic area	Proposed Alternative(s) Study Corridor <sup>1</sup>	Percent of Block Group in Study Area	Total Population	Percent of Population that is Minority	Median household income in 1999 (dollars)	Percent of Total Persons living below poverty level (as a percentage of Total Population) <sup>2</sup>	Percent of Total Population that do not Speak English well or at all
<b>REFERENCE AREAS</b>							
Bullhead City	PARK, RAIN, RIV	–	33,769	24.6	30,221	15.1	3.6
Laughlin CDP	PARK, RAIN, RIV	–	7,076	17.6	36,885	9.6	0.6
<b>BLOCK GROUPS</b>							
<b>Nevada Portion of the EJ Study Area</b>							
57.05-1	PARK, RAIN, RIV	7.8	1,177	12.0	58,421	0.6	0.0
9405-1	PARK, RAIN	3.7	19	<b>36.8</b>	55,625	0.0	<b>18.8</b>
<b>Arizona Portion of the EJ Study Area</b>							
9405-1	PARK	0.2	1,069	19.2	39,950	5.5	<b>4.6</b>
9515-3	RAIN,RIV	6.1	5,547	18.8	32,717	10.8	1.3
9517-1	RIV	3.7	1,306	29.9	<b>23,843</b>	<b>17.1</b>	<b>10.2</b>
9517-2	RIV	27.4	636	24.7	30,446	6.0	3.5
9517-4	RIV	0.01	863	<b>47.9</b>	<b>21,341</b>	<b>21.7</b>	<b>9.1</b>
9517-5	RIV	8.2	1,636	28.4	<b>26,071</b>	<b>16.2</b>	<b>6.4</b>
9518-1	RIV	100.0	604	24.3	<b>29,722</b>	12.5	3.1
9518-2	RIV	100.0	809	<b>38.2</b>	<b>28,750</b>	<b>22.5</b>	<b>10.3</b>
9518-3	RIV	100.0	922	<b>40.7</b>	<b>16,108</b>	<b>38.9</b>	<b>4.3</b>
9518-4	RV	89.8	1,218	31.9	<b>29,107</b>	<b>16.1</b>	<b>7.2</b>
9519-1	RIV	84.8	1,345	23.0	31,989	2.9	2.1
9519-2	RIV	0.1	688	15.8	34,922	10.1	<b>7.2</b>
9519-3	PARK, RAIN	67.1	1,253	23.0	38,393	<b>15.6</b>	0.8

Source: U.S. Census (year 2000) Tract and Block Groups

<sup>1</sup> PARK = Proposed Parkway Alternative; RAIN = Proposed Rainbow Alternative; RIV = Proposed Riverview Alternative

<sup>2</sup> Poverty status is based on the number of persons for whom poverty status is determined. The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level."

1 Block information for minority populations was also available and analyzed to better depict the  
 2 locations of these potentially affected EJ populations. Table 15 and Figure 20 (labeled blocks)  
 3 indicate the blocks within Block Groups 9518-2 and 9518-3 that have a percentage of minority  
 4 residents that exceeds the Bullhead City percentage (24.6%) by 10% or greater. Six of 13 total  
 5 blocks of Block Group 9518-2 exceed the 34.6% threshold. Twelve of 19 total blocks of Block  
 6 Group 9518-3 exceed the 34.6% threshold.

7 **Table 15. Minority Populations in Block Groups 9518-2 and 9518-3**

Block Groups and Blocks	Percent Minority Population	Difference from Bullhead City Percentage <sup>1</sup>
<b>9518-2</b>	38.1	+13.5
Block 2001	57.4	+32.8
Block 2002	59.7	+35.1
Block 2003	45.2	+20.6
Block 2004	50.0	+25.4
Block 2006	55.7	+31.1
Block 2007	46.4	+21.8
<b>9518-3</b>	40.2	+15.9
Block 3000	34.7	+10.1
Block 3004	62.3	+19.5
Block 3005	36.7	+12.1
Block 3006	52.3	+27.7
Block 3007	35.7	+11.1
Block 3008	56.5	+31.9
Block 3010	50.0	+25.4
Block 3012	60.9	+36.3
Block 3013	55.6	+31.0
Block 3014	57.7	+33.1
Block 3016	50.0	+25.4
Block 3018	44.1	+19.5

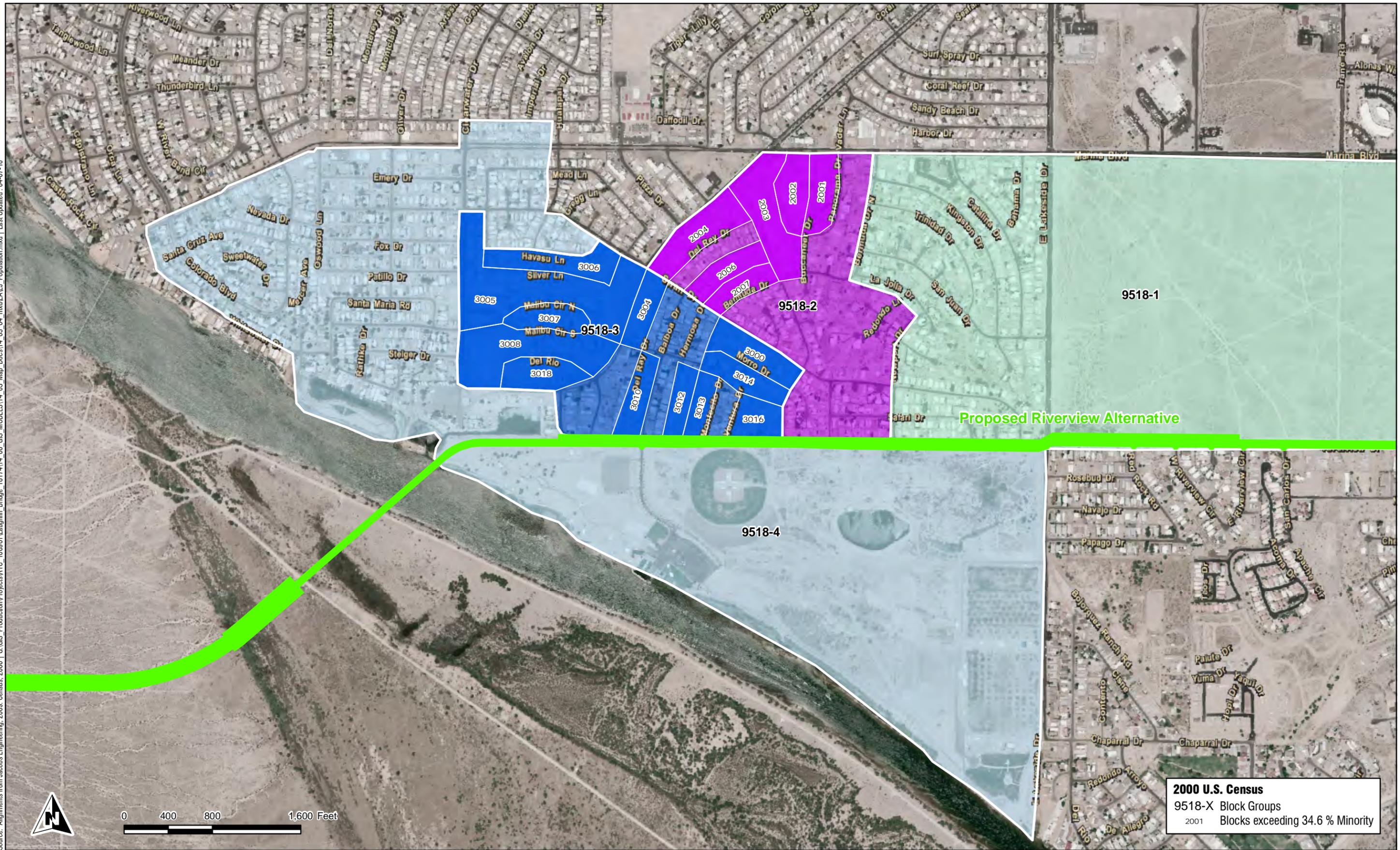
Source U.S. Census Bureau 2000, SF-1, Table P8

<sup>1</sup>Bullhead City rate is 24.6%

8 **2.9.1.3 Existing Low-Income and Poverty Populations**

9 As indicated in Table 14, the average median household income within Bullhead City (\$30,221)  
 10 was below the average within the Laughlin CDP (\$36,885). No block groups within the Nevada  
 11 portion of the EJ Study Area were below that of the Laughlin CDP. Seven block groups within  
 12 the Arizona portion of the EJ Study Area had a median household income that was below the  
 13 median of the households within Bullhead City. These are Block Groups 9517-1 (\$23,843),  
 14 9517-4 (\$21,341), 9517-5 (\$26,071), 9518-1 (\$29,722), 9518-2 (\$28,750), 9518-3 (\$16,108), and  
 15 9518-4 (\$29,107).

Source: Alignments from Jacobs Engineering, 2009. Census, 2000 | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EA\J\_Population.mxd | Last Updated: 04-07-10



1 Also indicated in Table 14, the poverty rate of Bullhead City (15.1%) is higher than that of the  
2 Laughlin CDP (9.6%). The poverty rates (0.06% and 0.00%) of the block groups in the Nevada  
3 portion of the EJ study area are lower than the Laughlin CDP rate (9.6%). Seven block groups  
4 within the Arizona portion of the EJ Study Area had a poverty rate that was higher than the  
5 Bullhead City rate (15.1%). These are Block Groups 9517-1 (17.1%), 9517-4 (21.7%), 9517-5  
6 (16.2%), 9518-2 (22.5%), 9518-3 (38.9%), 9518-4 (16.1%), and 9519-3 (15.6%).

7 Similar to the composition of the minority populations, the proposed Riverview Alternative EJ  
8 study corridor contains a higher percentage of the population with lower than average median  
9 household incomes and that live below the poverty level. However, because the majority of the  
10 area establishing Block Groups 9517-1, 9517-4, and 9517-5 are outside of the EJ study area (see  
11 Table 14 for the percentage of how much of each block group is within the EJ study area), they  
12 are not representative block groups of existing EJ populations. Block Groups 9517-1, 9517-4,  
13 and 9517-5 are still considered in the following discussion, however, because they are near and  
14 contiguous with other block groups in the proposed Riverview Alternative EJ study corridor that  
15 support minority and/or low-income populations.

#### 16 **2.9.1.4 Existing LEP Populations**

17 As indicated in Table 14, Bullhead City (3.6%) has a higher percentage of the population that do  
18 not speak English well or not at all (potential LEP populations) as compared to the population in  
19 the Laughlin CDP (0.6%). One block group within the Nevada portion, Block Group 9405-1,  
20 had a higher percentage (18.8%) of the population that does not speak English well or not at all  
21 as compared to the population within the Laughlin CDP. Eight block groups within the Arizona  
22 portion of the EJ Study Area had a higher percentage of the population that does not speak  
23 English well or not at all as compared to the population within Bullhead City. These Block  
24 Groups are 9405-1 (4.6%), 9517-1 (10.2%), 9517-4 (9.1%), 9517-5 (6.4%), 9518-2 (10.3%),  
25 9518-3 (4.3%), 9518-4 (7.2%), and 9519-2 (7.2%).

26 Additionally, 356 households (3%) of the total households of the block groups within the EJ  
27 Study Area reported to the U.S. Census Bureau (year 2000) that their household was  
28 linguistically isolated. The presence of linguistically isolated households within the EJ study  
29 area is slightly less than the Bullhead City reference area (3.6%). Although the EJ Study Area  
30 linguistically isolated households (3%) is higher than the Laughlin CDP reference area (0.6%),  
31 only two of the 356 households are within the Nevada portion of the EJ study area (and they may  
32 or may not be linguistically isolated) so they would not be truly representative of this higher total  
33 for the reference area.

34 Similar to the composition of the minority and low-income populations, the proposed Riverview  
35 Alternative EJ study corridor contains a higher percentage of the population that do not speak  
36 English well or not at all (potential LEP populations). However, because the majority of the area  
37 establishing Block Groups 9517-1, 9517-4, 9517-5, and 9519-2 are outside of the EJ study area

1 (see Table 14 for the percentage of how much of each block group is within the EJ study area),  
2 they are not representative block groups of existing EJ populations. The portion of Block Group  
3 9405-1 in Nevada that occurs within the southern most extent of the EJ study area includes only  
4 vacant agricultural lands and no residences. The portion of Block Group 9405-1 in Arizona  
5 occurs within the southern most extent of the EJ study area and includes only vacant land with  
6 no residences. Therefore, they are not representative block groups of existing EJ populations.

#### 7 **2.9.1.5 Existing EJ Populations**

8 This determination must be prefaced with the fact that the available U.S. Census tract, block  
9 group, and block data, for both reference areas is over 10 years old and that it may not truly  
10 indicate 2010 existing conditions. For example, the population for Bullhead City has increased  
11 from 33,769 in 2000 to 41,187 in 2009 (Arizona Department of Commerce, 2010). The percent  
12 of population that is minority, the median household income, and the percent of total population  
13 that do not speak English well or at all may have increased or decreased over the last decade.

14 Based upon the EJ analysis, results indicate that the proposed Riverview Alternative EJ study  
15 corridor appears to support the largest concentration of potentially affected EJ populations.  
16 Block Groups 9518-2 and 9518-3 appear to include minority populations that are also low-  
17 income and do not speak English well or not at all. Also, these block groups are located entirely  
18 within the proposed Riverview Alternative EJ study corridor, therefore Block Groups 9518-2 and  
19 9518-3 are considered to be representative block groups of existing EJ populations (Figure 20).  
20 Block Group 9518-4, which occurs almost entirely within the proposed Riverview Alternative EJ  
21 study corridor, appears to include a low-income population that has a percentage of the  
22 population that does not speak English well or at all that is higher than the Bullhead City rate.  
23 This block group is also considered an existing EJ population (Figure 20). Block Group 9518-1,  
24 which occurs entirely within the proposed Riverview Alternative study area, appears to include a  
25 low-income population that is higher than the Bullhead City rate. This block group is also  
26 considered an existing EJ population (Figure 20).

#### 27 **2.9.2 Impacts**

28 This EA assessed potential environmental (social and economic) and construction impacts, and  
29 whether their effects on EJ populations within the EJ study area (specifically Block Groups  
30 9518-1, 9518-2, 9518-3, and 9518-4) are disproportionately high and adverse, as defined under  
31 FHWA 6640.23. Results of these effects are included in *Section 2.1 Construction Methods*,  
32 *Section 2.10 Socioeconomics*, *Section 2.11 Air Quality*, *Section 2.12 Noise*, *Section 2.13 Visual*  
33 *Resources*, *Section 2.14 Hazardous Materials*, *Section 2.15 Mobility and Access*, and *Section*  
34 *2.16 Safety*.

1 As defined under FHWA 6640.23, “FHWA Actions to Address Environmental Justice in  
2 Minority Populations and Low-Income Populations,” a *disproportionately high and adverse*  
3 *effect* on minority and low-income populations means an adverse effect that:

- 4 • is predominately borne by a minority population and/or a low-income population; or
- 5 • will be suffered by the minority population and/or low-income population and is
- 6 appreciably more severe or greater in magnitude than the adverse effect that will be
- 7 suffered by the nonminority population and/or non low-income population.

8 *Adverse effects* means the totality of significant individual or cumulative human health or  
9 environmental effects, including interrelated social and economic effects, which may include, but  
10 are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution  
11 and soil contamination; destruction or disruption of man-made or natural resources; destruction  
12 or diminution of aesthetic values; destruction or disruption of community cohesion or a  
13 community's economic vitality; destruction or disruption of the availability of public and private  
14 facilities and services; vibration; adverse employment effects; displacement of persons,  
15 businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or  
16 separation of minority or low-income individuals within a given community or from the broader  
17 community; and the denial of, reduction in, or significant delay in the receipt of, benefits of  
18 FHWA programs, policies, or activities.

19 **2.9.2.1 No Build Alternative**

20 No impacts are associated with the No Build Alternative.

21 **2.9.2.2 Proposed Parkway Alternative**

22 There are no potential EJ impacts since there are no representative EJ populations in this  
23 proposed build alternative.

24 **2.9.2.3 Proposed Rainbow Alternative**

25 There are no potential EJ impacts since there are no representative EJ populations in this  
26 proposed build alternative.

27 **2.9.2.4 Proposed Riverview Alternative**

28 As outlined in the above Section 2.9.1 and as shown on Figure 20, the area that includes Block  
29 Groups 9518-1, 9518-2, 9518-3, and 9518-4 includes minority and/or low-income populations  
30 and/or populations that do not speak English well or at all, at a rate higher than the reference area  
31 (Bullhead City). This area occurs within the proposed Riverview Alternative EJ study corridor  
32 of the EJ study area.

33 In summary, potential impacts to residents of Block Groups 9518-1, 9518-2, 9518-3, and 9518-4  
34 would be as follows:

- 1       • **Construction:** All residents (not just the identified EJ block groups) within this EJ  
2       study corridor would experience construction-related impacts such as noise, travel  
3       inconvenience, and air quality effects regardless of race, ethnicity, income, or English  
4       proficiency. Proposed mitigation measures within *Section 2.1 Construction Methods*  
5       address these impacts. Construction impacts would affect all the EJ and non-EJ  
6       populations within the proposed Riverview Alternative EJ study corridor; therefore,  
7       the project would not result in disproportionate or high adverse construction effects to  
8       the EJ populations.
  
- 9       • **Socioeconomics:** No residences or businesses would be displaced within the  
10      proposed Riverview Alternative EJ study corridor.
  
- 11     • **Air Quality:** The proposed Riverview Alternative would not result in air quality  
12      impacts.
  
- 13     • **Noise:** Of the 45 sensitive receivers for residences within the proposed Riverview  
14      Alternative EJ study corridor, nine of nine receivers within Block Group 9518-1, six  
15      of six within Block Group 9518-2, nine of nine within Block Group 9518-3, and one  
16      of three within Block Group 9518-4, would experience noise levels that exceed the  
17      ADOT Noise Abatement Criteria (NAC) for Category B (residences) of 64 dBA.  
18      None of the receivers in any block group would experience noise levels that  
19      “substantially exceeds” the existing noise levels and all affected receivers would be  
20      eligible for noise abatement consideration. ADOT defines “substantially exceeds” in  
21      this context as 15 dBA or greater. Proposed mitigation measures within *Section 2.12*  
22      *Noise* address these impacts with proposed noise barriers. Potential EJ populations in  
23      residences that are not directly along Riverview Drive, as indicated above, or in the  
24      immediate vicinity, would not experience noise impacts because their residences  
25      would be far enough away and the noise impacts would be reduced by distance and  
26      physically blocked by the prior row of residences. Noise impacts would affect all the  
27      EJ and non-EJ populations within the proposed Riverview Alternative EJ study  
28      corridor; therefore, the project would not result in disproportionate or high adverse  
29      noise effects to the EJ populations.
  
- 30     • **Visual Resources:** If built, noise barriers (to mitigate for noise impacts) would affect  
31      the views of all persons living directly along Riverview Drive. Proposed mitigation is  
32      intended to address concerns related to lighting, screening, and integration of  
33      architectural elements but residents could still be affected by the presence of a noise  
34      wall (if built). The potential impact is related to mitigation for noise, so when noise  
35      barrier designs are being considered during final design, the project proponent  
36      (Bullhead City) would coordinate with all residents to ensure that no one group feels  
37      that the impact is disproportionate. Since Bullhead City would ensure that the

1 process is fair and impartial, the construction of noise barriers to mitigate noise  
 2 impacts would not be expected to result in disproportionate or high adverse impacts  
 3 to EJ populations. Potential EJ populations in residences that are not directly along  
 4 Riverview Drive, as indicated above, or in the immediate vicinity, would not  
 5 experience visual impacts because their residences would be out of the line-of-sight to  
 6 the proposed noise barriers. Proposed mitigation measures within *Section 2.13 Visual*  
 7 *Resources* address these impacts. Visual resource impacts would affect all the EJ and  
 8 non-EJ populations within the proposed Riverview Alternative EJ study corridor;  
 9 therefore, the project would not result in disproportionate or high adverse visual  
 10 effects to the EJ populations.

- 11 • **Hazardous Materials:** The proposed Riverview Alternative would not result in  
 12 hazardous materials impacts.
  
- 13 • **Mobility and Access:** The proposed Riverview Alternative would affect access  
 14 patterns to Riverview Drive, including potential rerouting of special needs and regular  
 15 school bus routing. Also, the proposed roadway design configurations (frontage  
 16 roads) would restrict some pedestrian, bicycle, and vehicular access from driveways  
 17 and streets directly accessing Riverview Drive within the residential areas, which  
 18 might be considered as disturbing the peace, harmony, and lifestyle of families who  
 19 live there. Currently, 16 streets along Riverview Drive west of Lakeside Drive have  
 20 direct access to Riverview Drive. With the proposed build alternative, 12 of these  
 21 streets would restrict direct access and require rerouting to Riverview Drive.  
 22 Ultimately, all vehicular travelers would still be able to access Riverview Drive  
 23 without adding substantial mileage (approximately 0.6 mile) or time (approximately  
 24 30 seconds). For pedestrians utilizing the proposed designated crosswalks for direct  
 25 access to Riverview Drive, it would require travel rerouting up to approximately 0.6  
 26 mile, which equates to 14.5 minutes of additional time for pedestrians at a walking  
 27 pace of 4 feet/second (worst-case scenario if your residence is located at the mid-  
 28 point of the neighborhood near Riverview Way).

29 With the proposed build alternative, sidewalks, multi-use pathway, crosswalks, and  
 30 potentially warranted signalized intersections would create safer benefits for access  
 31 management of people, bicycles, and vehicles. Impacts would not affect emergency  
 32 access or the ability for residents to access transit or other services, and residents  
 33 would still have access to the same areas through minor rerouting. The proposed  
 34 build alternative would not affect access to transit. Proposed mitigation as described  
 35 in *Section 2.15 Mobility and Access* would ensure that all residents maintain mobility  
 36 and access through and around the EJ study corridor, both during and after  
 37 construction. Mobility and access impacts would affect all the EJ and non-EJ  
 38 populations within the proposed Riverview Alternative EJ study corridor, therefore,

1 the project would not result in disproportionate or high adverse construction effect to  
2 the EJ populations.

- 3 • **Safety:** the proposed Riverview Alternative would increase traffic along the  
4 alignment. This increase may adversely affect the actual or perceived safety of  
5 persons walking, crossing, or riding bicycles along this road. Construction related  
6 activity associated with any of the three proposed build alternatives may temporarily  
7 affect pedestrian and bicycle safety. Proposed mitigation as described in *Section 2.16*  
8 *Safety* would ensure that all residents maintain safe access through and around the EJ  
9 study corridor, both during and after construction. Safety impacts would affect all the  
10 EJ and non-EJ populations within the proposed Riverview Alternative EJ study  
11 corridor; therefore, the project would not result in disproportionate or high adverse  
12 safety effects to the EJ populations.

### 13 **2.9.3 Mitigation**

#### 14 *2.9.3.1.1 No Build Alternative*

15 No mitigation is proposed since no EJ impacts are associated with the No Build Alternative.

#### 16 *2.9.3.1.2 Proposed Parkway Alternative*

17 No mitigation is proposed since there are no representative EJ populations in this EJ study  
18 corridor or impacts. The proposed Parkway Alternative has been identified as the preferred  
19 alternative and would avoid potential impacts to EJ populations.

#### 20 *2.9.3.1.3 Proposed Rainbow Alternative*

21 No mitigation is proposed since there are no representative EJ populations in this EJ study  
22 corridor or impacts. The proposed Rainbow Alternative would avoid potential impacts to EJ  
23 populations.

#### 24 *2.9.3.1.4 Proposed Riverview Alternative*

25 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
26 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
27 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 28 **2.10 Socioeconomics**

29 This section discusses social and economic aspects of the study area, including population and  
30 employment, community facilities and characteristics, and the existing business climate.

### 31 **2.10.1 Existing Conditions**

32 The study area for socioeconomic resources is defined as the area delineated by the Traffic  
33 Analysis Zones and includes Bullhead City, and portions of Mohave County, Arizona; Laughlin  
34 and portions of Clark County, Nevada; and a portion of San Bernardino County, California. The

1 California portion is not represented in the analysis, as there is no population currently residing  
2 in this section of the study area (LBHCBP 2010a). The socioeconomic conditions for the  
3 proposed build alternatives would generally be limited to Bullhead City. The Nevada side of the  
4 project is currently almost completely undeveloped.

5 **2.10.1.1 Population, Dwelling Units, and Employment**

6 As stated in *Section 1.2 Purpose and Need*, Bullhead City is one of Arizona’s fastest growing  
7 communities. It is the sister city to Laughlin which is located across the Colorado River from  
8 Bullhead City.

9 The projected land use and socioeconomic data was developed based on available documents  
10 and coordination with the Town of Laughlin, Clark County, Bullhead City, Mohave County, and  
11 NDOT Traffic Division. Data sources included the following:

- 12 • 2000 U.S. Census
- 13 • Town of Laughlin Land Use Plan, May 2007
- 14 • Laughlin, Nevada Economic Strategic Plan, 2007
- 15 • Las Vegas Convention and Visitors Authority
- 16 • Laughlin Chamber of Commerce
- 17 • Bullhead City General Plan, June 2002, as amended by the
- 18 Laughlin Ranch General Plan Amendment, October 2005
- 19 • Clark County Regional Flood Control District Master Plan Update 2009 Outlying Areas:
- 20 Laughlin, January 2009
- 21 • SR 95 Realignment Study, April 2005

22 The following land use and socioeconomic projection assumptions were utilized in developing  
23 the interim 2015 and planning horizon 2030 forecasts:

- 24 • approximately five percent growth in Laughlin; the majority of which is divided
- 25 between the Southland area and the Bureau of Land Management lands
- 26 • approximately three percent growth in unincorporated Mohave County
- 27 • approximately two percent growth in Bullhead City
- 28 • casino employment increases 60 percent by 2030
- 29 • dwelling unit vacancy rates in Bullhead City and Mohave County are reduced over
- 30 time from over 20 percent in 2009 to 15 percent by 2030

31 The population, dwelling unit, and employment estimates for 2009, 2015, and 2030 within the  
32 model area are summarized in Table 16.

33

34

1 **Table 16. Year 2009, 2015 and 2030 Population, Dwelling Units, and Employment Data**

Location	Year 2009			Year 2015			Year 2030		
	Population	Dwelling Units	Employees	Population	Dwelling Units	Employees	Population	Dwelling Units	Employees
Laughlin/Clark County	9,284	4,442	13,830	12,445	5,954	15,459	25,134	12,026	24,602
Bullhead City	41,984	22,991	11,570	46,914	24,237	12,656	63,140	30,701	16,229
Mohave County	12,123	6,241	2,755	14,208	7,248	3,432	21,085	10,126	5,082
Total*	63,391	33,674	28,155	73,567	37,439	31,547	109,359	52,853	45,913

2 \* Note: Within modeled boundary area (LBHCBP 2009a).

3 Population increases are associated with the need for additional goods, services, and jobs. Based  
 4 on projected growth, it is anticipated that the population within the study area would increase by  
 5 approximately 16 percent between 2009 and 2015 and by 73 percent between 2009 and 2030.

6 Tourism is the primary economic activity in the area centering on the resort/gaming industry in  
 7 Laughlin. Residents of Bullhead City are also important to the economy of nearby Laughlin and  
 8 provide most of the workforce that supports Laughlin’s gaming industry. Because it is larger and  
 9 more developed than other cities and towns in the region, Bullhead City is a diverse economic  
 10 center. Many residents of Laughlin travel to Bullhead City to shop and to obtain services.

11 All of the proposed build alternatives would increase regional connectivity, which may affect the  
 12 operation of businesses in the region. In Laughlin, all of the proposed build alternatives would  
 13 affect business opportunities in the area zoned for Major Development Projects (MDP) and  
 14 Business Design Research Park (BDRP). In Bullhead City, all of the proposed build alternatives  
 15 would increase access to and visibility of existing businesses along their respective corridors,  
 16 Riverview Drive, Rainbow Drive, and Bullhead Parkway.

17 **2.10.1.2 Conformance with Applicable Land Use Plans**

18 Land on the Nevada side of the study area (Laughlin), where all three proposed build alternatives  
 19 would be located is mostly undeveloped and the majority of this land is owned by Clark County.  
 20 In addition, there are currently a few parcels near Camel Trail Drive in private ownership  
 21 adjacent to the joint alignment portion (western end) of the proposed Rainbow and Parkway  
 22 Alternatives. According to Deborah Murray, Laughlin Community Development Manager, the  
 23 undeveloped lands of the study area do not have any infrastructure currently constructed that  
 24 would support residential or commercial development (Murray 2009). All of the proposed build  
 25 alternatives on the Laughlin side of the project begin at Needles Highway heading east and are  
 26 located within land identified for future development (MDP).

1 Land on the Arizona side of all three proposed build alternatives is within the limits of the City  
2 of Bullhead City. Between the Colorado River and Lakeside Drive, the proposed Riverview  
3 Alternative passes by residential development north of the existing Riverview Drive. Between  
4 the Colorado River and Lakeside Drive south of existing Riverview Drive are BLM-administered  
5 lands (i.e., Rotary Park). Between Lakeside Drive and SR 95 south of Riverview Drive, the  
6 Riverview Alternative passes by residential development and then commercial uses that are  
7 located near the intersection of SR 95. State-owned land is located between Lakeside Drive and  
8 SR 95 north of Riverview Drive. According to Janice Paul, Bullhead Development Services  
9 Director, the state-owned land north of Riverview Drive between Lakeside Drive and SR 95 may  
10 be developed in the future, but any prospective developers would need to go through a state-  
11 administered process to acquire land and/or rights to develop the land.

12 The proposed Parkway Alternative passes south of undeveloped privately owned parcels and  
13 north of land that is administered by the Arizona Game and Fish Department and Bureau of Land  
14 Management and managed under a cooperative agreement as the Colorado River Nature Center.  
15 A wastewater treatment plant lies just south of the proposed build alternative on land that is  
16 administered by the City of Bullhead City.

17 The proposed Rainbow Alternative passes through areas that are designated for medium density  
18 residential development immediately east of the river. A proposed residential development  
19 called Clearwater Shores was planned for this land south of the existing Rainbow Drive that is  
20 between the river and a large undeveloped Arizona State Land Department (ASLD) area.  
21 However, the zoning and submitted preliminary plan of development have expired as of  
22 September 9, 2009. The owner of the parcel is undecided if they are going to continue with the  
23 project in the future (Paul 2009). North of Rainbow Drive between Country Club Drive and SR  
24 95, the proposed Rainbow Alternative passes through areas developed as and designated for light  
25 industrial uses north of Rainbow Drive.

26 All of the proposed build alternatives pass through an area identified for future growth in  
27 Laughlin. This area is expected to develop regardless of whether the project is constructed.  
28 Construction of any of the proposed build alternatives may affect the timing and distribution of  
29 growth, with the proposed Parkway Alternative having the greatest potential to affect the rate  
30 (since infrastructure would need to be provided to this remote area) and the proposed Riverview  
31 Alternative having the least potential to affect the rate (since it is closest to currently planned  
32 infrastructure extension).

33 In Bullhead City, none of the proposed build alternatives would open up any major new areas to  
34 development or induce changes in land use types and densities. Any of the alternatives may  
35 affect the rate of growth.

36 Because the project is a transportation project, compatibility issues were also addressed in  
37 regards to the specific transportation plans of the land use planning and zoning process.

1 The Clark County Transportation Element, amended December 2008, depicts a proposed  
2 roadway network in the undeveloped “Southland” area of Laughlin. All of the proposed  
3 alternatives would follow streets indicated as collectors in the functional classification system.  
4 Collector streets direct traffic from arterial streets to activity centers and residential areas  
5 bringing traffic to their ultimate destinations or to local streets. Collector streets can be critical  
6 to regional commuting, but may be suitable candidates for bicycle lanes or other components of  
7 the approved non-motorized trail system. The guideline and design standard for a collector street  
8 is 80 feet ROW and typically carry volumes less than 3,500 vehicles per day. The proposed  
9 alternatives’ ROW would vary between 107 and 200 feet wide in the Laughlin portion of the  
10 study area. The actual ROW of the built roadway and multi-use pathway would be 74 feet for all  
11 proposed build alternatives; the remainder of the total ROW would be required for drainage  
12 areas. All proposed build alternatives would require a larger ROW and carry more AADT across  
13 the bridges ranging from 20,600 to 37,700. However, project team coordination efforts with the  
14 Clark County Comprehensive Planning and Public Works Departments have confirmed that this  
15 proposed ROW, speed limit, and lane widths are acceptable, and that the Transportation Element  
16 was just a preliminary guideline at this time to include a concept roadway network to reserve  
17 ROW for the project and would later be amended once project approval and additional  
18 engineering design was final.

19 The Circulation Element of 2002 Bullhead City General Plan currently lists Riverview Drive as a  
20 Minor Arterial within the functional classification system. Primary Function establishes the type  
21 of transportation service that is provided. Directly related to the type of transportation service  
22 provided is the degree of access control. Increasing control of access allows traffic to travel in a  
23 uniform manner, allowing posted speeds to be increased. Minor arterial streets provide  
24 functional service to retail, commercial, and industrial land uses. Minor arterial roadways are  
25 moderate traffic volume transportation facilities that carry a medium proportion of the total  
26 traffic on a moderate amount of mileage. Minor arterial roadways are fully or partially  
27 controlled access facilities spaced at approximately 1-mile intervals. In Bullhead City, minor  
28 arterial roadways should develop with five to six total lanes consisting of four main through  
29 lanes and one to two additional turn lanes separated by a landscaped barrier median where  
30 possible. Left-turn lanes should be provided within the median and right-turn lanes should be  
31 provided where high traffic volumes necessitate right in/out turning movements to abutting  
32 parcels. The design requirements of a given street depend, in part, upon the function of the  
33 facility as well as the magnitude and characteristics of the projected traffic volumes. Standard  
34 Detail Street Sections that are illustrated within the Circulation Element depict the recommended  
35 design for a minor arterial street. According to the Circulation Element, the guidelines and  
36 design standards for a Minor Arterial are 84 to 110 feet ROW, Primary Function is mobility, four  
37 main through lanes, design capacity for AADT is 30,000, and the Degree of Private Access  
38 Control is high. Currently, the posted speed limits along Riverview Drive are 30 m.p.h. west of  
39 Lakeside Drive and 35 m.p.h. east of Lakeside Drive. As indicated in the Circulation Element,  
40 Bullhead City Public Works’ staff will continually assess existing roadways for unique

1 circumstances that may require modification of the accepted design standards. The proposed  
2 Riverview Alternative ROW would vary between 72 and 123 feet wide. The proposed posted  
3 speed limit would be 35 m.p.h. all along Riverview Drive. The proposed design would have 11  
4 feet wide travel lanes, which is one foot narrower than the current guidelines and design  
5 standards of the Circulation Element of 2002 Bullhead City General Plan. However, project  
6 team coordination efforts with Bullhead City Public Works Department have confirmed that this  
7 proposed ROW, speed limit, and lane widths are acceptable. This proposed alternative is  
8 designed with four main through lanes and the highest AADT (26,000) which would occur on  
9 Riverview Drive west of Lakeside Drive is below the design standard limit of 30,000. Therefore,  
10 the proposed project would be in conformance as a Minor Arterial within the functional  
11 classification system of the General Plan in Arizona.

12 Rainbow Drive is not planned in the Circulation Element of the June 2002 Bullhead City General  
13 Plan. Project team coordination efforts with Bullhead City Public Works Department have  
14 confirmed that since it is not a Major Arterial, Minor Arterial, or Collector, it should be  
15 considered a Local street functional classification system. The current speed limit on Rainbow  
16 Drive is 25 m.p.h. Local streets are generally utilized in residential areas where frequent access  
17 points cause and require a reduction in vehicle speed. Local streets serve abutting land uses and  
18 provide access to higher-level roadway categories. The guidelines and design standards for a  
19 Local street are as follows: 60 feet ROW, Primary Function is accessibility, two main through  
20 lanes, design capacity for AADT is indicated as not applicable but the AADT should be less than  
21 a Collector which is at 10,000 AADT, and the Degree of Private Access Control is none. The  
22 proposed Rainbow Alternative ROW would be 79 feet wide. The proposed design would have  
23 11 feet wide travel lanes, which is one foot narrower than the current guidelines and design  
24 standards of the Circulation Element of 2002 Bullhead City General Plan. However, project  
25 team coordination efforts with Bullhead City Public Works Department have confirmed that this  
26 proposed ROW and lane widths are acceptable. This proposed alternative is designed with four  
27 main through lanes and the highest AADT (26,200) which would occur on Rainbow Drive is  
28 substantially higher. The proposed posted speed limit would be 35 m.p.h. Therefore, the  
29 proposed project would not be in conformance as a Local street within the functional  
30 classification system of the General Plan in Arizona.

31 The Circulation Element of 2002 Bullhead City General Plan currently lists Bullhead Parkway as  
32 a Major Arterial within the functional classification system. The current speed limit on Bullhead  
33 Parkway is 50 m.p.h. east of SR 95 and 25 m.p.h. west of SR 95. Major Arterials are high traffic  
34 volume transportation facilities that carry a high proportion of the total traffic on a minimum  
35 amount of mileage. Optimally, Major Arterials are fully controlled access facilities. Major  
36 Arterials may be a part of a state highway system or other inter-regional facility. The guidelines  
37 and design standards for a Major Arterial are 110 to 130 feet ROW, Primary Function is  
38 mobility, four main through lanes, design capacity for AADT is 40,000, and the Degree of  
39 Private Access Control is very high. The proposed Parkway Alternative ROW would be 100 feet

1 wide. The proposed posted speed limit would be 35 m.p.h. The proposed design would have 11  
 2 feet wide travel lanes, which is one foot narrower than the current guidelines and design  
 3 standards of the Circulation Element of 2002 Bullhead City General Plan. However, project  
 4 team coordination efforts with Bullhead City Public Works Department have confirmed that this  
 5 proposed ROW, speed limit, and lane widths are acceptable. This proposed alternative is  
 6 designed with four main through lanes and the highest AADT (26,900) which is below the  
 7 design standard limit of 40,000. Therefore, the proposed project would be in conformance as a  
 8 Major Arterial within the functional classification system of the General Plan in Arizona.

9 The proposed Parkway and Riverview Alternatives would abide by either current or future land  
 10 use plans/transportation elements for Laughlin and Bullhead City. However, the proposed  
 11 Rainbow Alternative would not abide by either current or future land use plans/transportation  
 12 elements for Bullhead City

13 **2.10.2 Impacts**

14 **2.10.2.1 Right-of-Way Acquisition and Displacements**

15 All of the proposed build alternatives would require the conversion of land to a transportation  
 16 use. Table 17 summarizes the conversions associated with each proposed build alternative.

17 **Table 17. Summary of Land Converted to a Transportation Use by Each Proposed Build**  
 18 **Alternative**

	Acres Converted to Transportation Use		
	Proposed Parkway Alternative	Proposed Rainbow Alternative	Proposed Parkway Alternative
<b>Laughlin, Nevada TOTAL</b>	<b>48.2</b>	<b>41.8</b>	<b>16.6</b>
Publicly administered land (Clark County)	45.2	38.8	16.6
Residential land	3.0	3.0	0
<b>Bullhead City, Arizona TOTAL</b>	<b>7.6</b>	<b>3.2</b>	<b>5.9</b>
Publicly-administered land for Rotary Park (BLM-lands)	0	0	2.7
Publicly administered land (Arizona State Land Department Sovereign Lands)	1.5	1.6	2.0
Residential land	6.1	1.6	1.2
<b>TOTAL</b>	<b>55.8</b>	<b>45</b>	<b>22.5</b>

19 As shown in Table 17, the proposed Parkway Alternative would result in the most land converted  
 20 and the proposed Riverview Alternative would result in the least land converted. Most of the  
 21 land to be converted with all of the proposed build alternatives is publicly administered land that  
 22 does not currently have development on the Laughlin side of the project study area.

1 Currently no residential or business displacements would occur with any of the proposed build  
2 alternatives. Refer to *Section 2.1 Construction Methods* for more detailed information. No  
3 ROW acquisitions or displacements would occur with the No Build Alternative.

#### 4 **2.10.2.2 Public Facilities and Services**

5 All of the proposed build alternatives would be constructed within mostly vacant land in  
6 Laughlin that does not currently support any public facilities. The No Build Alternative and the  
7 proposed Parkway and Rainbow Alternatives would not affect or displace any public facilities or  
8 services. In Bullhead City, the proposed Riverview Alternative would require the acquisition  
9 and conversion of 2.7 acres of Rotary Park, which is situated south of the existing Riverview  
10 Drive between the river and Lakeside Drive. As part of the environmental process for this  
11 project, a Section 4(f) *de minimis* determination was prepared although could not be sustained  
12 (Appendix F—Attachment 6).

### 13 **2.10.3 Mitigation**

#### 14 **2.10.3.1 No Build Alternative**

15 No mitigation will be required as there would be no ROW acquisitions, displacements, or public  
16 facilities and services impacts associated with the No Build Alternative.

#### 17 **2.10.3.2 Proposed Parkway and Rainbow Alternatives**

18 The local jurisdictions ROW division of the public works department (Bullhead City) and  
19 Department of Development Services (Clark County), under the guidance of the Relocation  
20 Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act), will negotiate with  
21 the property owners directly impacted, ensuring they receive fair market value for the ROW  
22 acquired. Landscaping, signs, and other items located within the acquired ROW will be  
23 relocated, replaced, or compensated as required by the Uniform Act. Legally permitted property  
24 access will be perpetuated in the after-condition. Approaches and intersections, not proposed to  
25 be improved or realigned, will be at a minimum, matched to existing conditions. Transportation  
26 management plans will be developed in coordination with residents and businesses and specified  
27 in the contract documents to maintain traffic safety and access during construction.

#### 28 **2.10.3.3 Proposed Riverview Alternative**

29 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
30 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
31 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

## 32 **2.11 Air Quality**

33 The 1990 Clean Air Act Amendments (CAAA) (40 CFR 50-97) require that air quality impacts  
34 be addressed in the preparation of environmental documents. As required by the CAAA, the  
35 EPA set National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants and

1 identified nonattainment areas (areas that exceed the NAAQS) for those pollutants. Both  
2 Nevada and Arizona use the NAAQS and do not have state-specific ambient air quality  
3 standards.

4 In the Laughlin-Bullhead City Bridge project area, PM<sub>10</sub> is the pollutant of primary concern.  
5 The project falls within the Bullhead City Particulate Matter Maintenance Area. A maintenance  
6 area is a former nonattainment area that has been redesignated to attainment after monitoring  
7 data for several years shows the area is meeting the NAAQS (LBHCBP 2009g). Redesignation  
8 requires a maintenance plan demonstrating that the area will continue to meet the NAAQS for at  
9 least a 10-year period. A qualitative evaluation was conducted for PM<sub>10</sub> and mobile source air  
10 toxics (MSATs). The analyses for PM<sub>10</sub> and MSATs are described below.

11 Although a project-level carbon monoxide (CO) analysis is not required for areas in attainment  
12 for carbon monoxide, a quantitative hot-spot analysis for CO was conducted in response to  
13 resident concerns regarding air quality impacts from the proposed project. The CO analysis did  
14 not reveal any impacts that would result from the proposed project (LBHCBP 2009g). Refer to  
15 the Air Quality Technical Report (LBHCBP 2009g) for detailed information on the project-level  
16 CO analysis.

### 17 **2.11.1 Existing Conditions**

18 The Arizona portion of this project lies within an area that is designated as attainment with a  
19 maintenance plan for PM<sub>10</sub>. The Bullhead City Particulate Matter Maintenance Area  
20 encompasses the greater Bullhead City area in Arizona (upper Colorado River Planning  
21 Area/Lake Mohave Basin airshed). The Nevada portion of the project area, including Laughlin,  
22 lies within an area designated as attainment for each of the NAAQS (Colorado River  
23 Basin/Colorado River Valley sub-basin 213 airshed).

24 The Bullhead City Particulate Matter Maintenance Area was originally classified as a moderate  
25 nonattainment area in 1993. The State of Arizona submitted a plan in 1995 to achieve attainment  
26 and was given a five-year deadline to December 2000. On February 15, 2002, the EPA  
27 determined that the Bullhead City area had attained the 24-hour and annual PM<sub>10</sub> NAAQS by the  
28 December 2000 deadline. The ADEQ subsequently submitted the Bullhead City Moderate Area  
29 PM<sub>10</sub> Maintenance Plan and Request for Redesignation to Attainment. In August 2002, the EPA  
30 approved the maintenance plan and redesignated the Bullhead City area to attainment with a  
31 maintenance plan (ADEQ 2002). Annual reports are submitted to the EPA to document  
32 continued compliance with the NAAQS.

33 The ADEQ maintains a network of air monitoring sites throughout Arizona, while the Nevada  
34 Department of Conservation and Natural Resources, Division of Environmental Protection  
35 maintains a network of air monitoring sites throughout Nevada (NDEP 2010). There are no  
36 monitoring sites within the immediate area of the three proposed build alternatives. The nearest  
37 monitoring site to the project area is the Bullhead City site located at SR 95 and 7th Street. The

1 monitoring site collects data on concentrations of PM<sub>10</sub>. All concentrations monitored by ADEQ  
 2 in 2008, the most current data available, at the Bullhead City site were below the NAAQS. A  
 3 summary of the concentrations monitored at this location is presented in Table 18.

4 **Table 18. 2008 Air Quality Monitoring Data Maximum Ambient Concentrations**

Pollutant	Averaging Time	Concentration	Number of Exceedances
Particulate Matter (PM <sub>10</sub> )	24-hour	46 µg/m <sup>3</sup>	0

Source: Arizona Department of Environmental Quality (2009 Air Quality Annual Report); Bullhead City Monitoring Site; 990 Highway 95; Latitude 35.15°, Longitude -114.57°, Elevation 561 feet

µg/m<sup>3</sup> = micrograms per cubic meter

<sup>a</sup> NAAQS for 24-hour PM<sub>10</sub> is 150 µg/m<sup>3</sup>

<sup>b</sup> NAAQS for annual PM<sub>10</sub> was revoked, although it is still measured at this site.

5 **2.11.2 Impacts**

6 **2.11.2.1 Particulate Matter**

7 In terms of particulate matter, the proposed project is a “project of air quality concern” as  
 8 defined in 40 C.F.R. § 93.123(b)(1)(i). A qualitative PM<sub>10</sub> hot-spot analysis was conducted for  
 9 the proposed project, in conformance with the joint EPA/FHWA guidance document dated  
 10 March 29, 2006, entitled *Transportation Conformity Guidance for Qualitative Hot-spot Analysis*  
 11 *in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas* (FHWA 2006). Some examples of a  
 12 “project of air quality concern” that would be covered by 40 C.F.R. § 93.123(b)(1)(i) are: a  
 13 project on a new highway or expressway that serves a significant volume of diesel truck traffic,  
 14 such as facilities with greater than 125,000 AADT, and 8% or more of such AADT is diesel  
 15 truck traffic.

16 A comparison approach was used for this analysis, in which anticipated traffic volumes on the  
 17 proposed Laughlin-Bullhead City Bridge Project were compared with those on other major  
 18 roadways and highways near existing air quality monitoring sites. The project is tentatively  
 19 scheduled for construction beginning in late 2011. Traffic volumes for the year of 2015 and the  
 20 future design year of 2030 were obtained from the Updated Travel Demand Model Analysis,  
 21 prepared in September 2009 (LBHCBP 2009a).

22 The qualitative analysis of the potential impacts associated with the proposed project began with  
 23 a review of future traffic conditions on the affected roadways. AADT volumes and the  
 24 percentage of trucks were reviewed, and all truck traffic was assumed to consist of diesel trucks  
 25 because further breakdowns of these data were not available (LBHCBP 2009a).

26 As a standard practice for this analysis, the proposed alternative with the worst-case traffic  
 27 scenario (i.e., the proposed Riverview Alternative) (highest combined traffic volumes) for the  
 28 two bridges for the build condition (with the proposed Laughlin-Bullhead City Bridge Project

1 built) in 2015 and 2030 are summarized in Table 19. The base year (2009) is included for  
 2 comparison (LBHCBP 2009a).

3 **Table 19. Worst-case Traffic Scenarios under the Existing and Future Build Conditions**

Year and configuration	Roadway segment	Percentage diesel trucks	Average annual daily traffic
2009 base condition	Existing bridge	12% (3,864)	32,200
2015 build condition <sup>a</sup>	Existing bridge	10% (4,970)	30,200
	New bridge at Riverview	10% (4,970)	19,500
2030 build condition <sup>a</sup>	Existing bridge	7% (6,132)	49,900
	New bridge at Riverview	7% (6,132)	37,700

<sup>a</sup> with the proposed Laughlin-Bullhead City Bridge project built

4 The AADT along the existing Laughlin Bridge west of SR 95 was approximately 32,200 during  
 5 2009 (LBHCBP 2009a). By 2015, with the new bridge along the Riverview alignment, the  
 6 existing Laughlin Bridge would have an AADT of approximately 30,200, and the new bridge  
 7 would have an AADT of approximately 19,500. The percentage of trucks on each of the two  
 8 bridges would be slightly less than the 2009 value on the existing Laughlin Bridge. By 2030, the  
 9 existing Laughlin Bridge would have an AADT of approximately 49,900, and the new bridge  
 10 would have an AADT of approximately 37,700. The percentage of trucks on the two bridges  
 11 would continue to decline as the overall AADT increases. This is because the number of trucks  
 12 is increasing at a slower rate than the overall AADT. The main factor in the increase in AADT is  
 13 local growth from car traffic in the Laughlin–Bullhead City area, but the demand for truck traffic  
 14 doesn’t increase as fast.

15 Based on the projected AADT volumes, the existing Laughlin Bridge segment for 2015 and 2030  
 16 was selected for a qualitative analysis of PM<sub>10</sub> impacts. The analysis was a comparative  
 17 approach that reviewed ambient concentrations of PM<sub>10</sub> within the Bullhead City area. The  
 18 analysis included vehicle-related emissions such as tailpipe exhaust, brake wear particles, tire  
 19 wear particles, and re-entrained road dust, which is released into the air from passing vehicles.  
 20 According to EPA guidance, emissions from construction activities were not included in the  
 21 analysis. Ideally, PM<sub>10</sub> comparison analyses use ambient data from several monitoring sites  
 22 throughout the region. However, there is only one monitoring site in Mohave County that  
 23 collects data on PM<sub>10</sub> concentrations. The monitoring site is located at SR 95 and 7<sup>th</sup> Street in  
 24 Bullhead City, which is about 1.5 miles south from the existing Laughlin Bridge. The  
 25 monitoring site, ambient concentrations of PM<sub>10</sub> obtained during 2008, nearest roadway, traffic  
 26 volumes, and diesel truck percentages are presented in Table 20.

1 **Table 20. PM<sub>10</sub> Concentrations in Mohave County in 2008**

Location	PM <sub>10</sub> concentrations (µg/m <sup>3</sup> ) <sup>a</sup>		Number of exceedances	Nearest roadway	Distance from roadway	AADT <sup>c</sup>	Percentage diesel trucks
	Maximum 24-hour <sup>b</sup>	Second maximum 24-hour					
Bullhead City	46	44	0	SR 95 <sup>d</sup>	100 feet	34,600	12

Source: Arizona Department of Environmental Quality (2009 Air Quality Annual Report)

<sup>a</sup> micrograms per cubic meter

<sup>b</sup> NAAQS for 24-hour PM<sub>10</sub> is 150 µg/m<sup>3</sup>

<sup>c</sup> average annual daily traffic

<sup>d</sup> State Route 95

2  
3 The Bullhead City monitoring location, near SR 95 and 7th Street, is situated within 100 feet of  
4 SR 95 and is surrounded by a mix of residential, commercial, and light industrial land uses, as  
5 well as undeveloped land. Ambient concentrations of PM<sub>10</sub> at this location were below 24-hour  
6 standard in 2008.

7 **2.11.2.1.1 No Build Alternative**

8 Particulate matter impacts are anticipated from the No Build Alternative due to increased travel  
9 time and traffic congestion on the existing bridge.

10 **2.11.2.1.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

11 Site characteristics of the Bullhead City monitoring location closely resemble those  
12 characteristics projected for the existing Laughlin Bridge and the proposed Riverview  
13 Alternative (highest combined traffic volumes) in 2015 and 2030. Based on the review of the  
14 monitoring data and the projected traffic characteristics of these two bridges, it is unlikely that  
15 the proposed Laughlin-Bullhead City Bridge Project (regardless of the selected build alternative)  
16 would cause or contribute to an exceedance of the PM<sub>10</sub> standards. This conclusion is based on  
17 the following reasons:

- 18 • Diesel exhaust is not a major contributor to ambient concentrations of PM<sub>10</sub>.
- 19 • Fugitive dust sources in the Bullhead City area are the largest contributors to ambient  
20 concentrations of PM<sub>10</sub>. Fugitive dust emissions may be reduced as the area further  
21 develops into more urban and suburban land uses.
- 22 • The proposed second bridge crossing would improve the traffic conditions throughout  
23 the area and would reduce travel time and traffic congestion on the existing bridge.
- 24 • The emission factor for PM<sub>10</sub> in 2015 is projected to be less than half of the 2009  
25 value. The emission factor in 2030 is projected to be about one quarter of the 2009  
26 value.
- 27 • Ambient concentrations of PM<sub>10</sub> measured in the area are well below the NAAQS.

1 The proposed improvements would have the anticipated net effect of reducing the regional  
2 impacts on air quality from those that would occur if the Laughlin-Bullhead City Bridge Project  
3 was not completed. This conformity determination meets all of the applicable CAA Section  
4 176(c) requirements for federally funded or approved transportation projects. Specifically, the  
5 requirements for particulate matter hot-spot analyses are codified at 40 CFR § 93.116 and  
6 § 93.123. By meeting these regulatory requirements, as well as other requirements in the  
7 conformity regulations, this conformity determination demonstrates compliance with the  
8 requirements of CAA Section 176(a)(1).

9 ***2.11.2.2 Mobile Source Air Toxics***

10 A qualitative evaluation (Level 2) was conducted for this project because it has a low potential  
11 for MSAT effects, based on the projected traffic volumes for each of the proposed build  
12 alternatives (AADT is less than 140,000). For purposes of this scenario, minor highway  
13 widening projects are those in which the design year traffic is predicted to be less than 140,000  
14 to 150,000 AADT. Widening projects that surpass these criteria are subject to a quantitative  
15 analysis based on FHWA guidance. The complete qualitative assessment is presented in the Air  
16 Quality Technical Report for this project (LBHCBP 2009g).

17 ***2.11.2.2.1 No Build Alternative***

18 MSAT emission impacts are anticipated to increase from the No Build Alternative throughout  
19 the project area due to the inefficiency of the transportation network.

20 ***2.11.2.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives***

21 For each proposed build alternative, the amount of MSATs emitted would be proportional to the  
22 vehicle miles traveled (VMT) (Table 21). The VMT estimated for each of the proposed build  
23 alternatives is slightly lower than that for the No Build Alternative, because the additional bridge  
24 increases the efficiency of the transportation network and reduces the travel length required to  
25 cross the river. This decrease in VMT would lead to lower MSAT emissions for the proposed  
26 build alternatives throughout the project area, but would result in a localized increase in MSAT  
27 emissions along the build alternative corridors. The emissions changes are further offset by  
28 lower MSAT emission rates due to increased speeds according to EPA's MOBILE6.2 emissions  
29 model; emissions of all of the priority MSATs except for diesel particulate matter decrease as  
30 speed increases (FHWA 2009). The extent to which these speed-related emissions decreases  
31 would offset VMT-related emissions increases cannot be reliably projected due to the inherent  
32 deficiencies of technical models.

33  
34  
35  
36  
37

1 **Table 21. Vehicle Miles Traveled**

Proposed Build Alternative	Base Year 2009	Future Year 2015	Future Year 2030
Existing bridge / No Build Alternative	1,145,705	1,516,995	2,745,454
Parkway Alternative	-	1,391,426	2,362,214
Rainbow Alternative	-	1,394,884	2,355,715
Riverview Alternative	-	1,391,499	2,367,985

2 Because the estimated VMT under each of the proposed build alternatives are nearly the same,  
 3 varying by less than one percent, it is expected there would be no appreciable difference in  
 4 overall MSAT emissions among the various proposed alternatives. Additionally, regardless of  
 5 the alternative chosen, emissions would likely be lower than present levels in the design year as a  
 6 result of EPA’s national control programs that are projected to reduce MSAT emissions by 72  
 7 percent between 1999 and 2050. Local conditions may differ from these national projections in  
 8 terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the  
 9 magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth)  
 10 that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

11 **2.11.2.3 Construction**

12 **2.11.2.3.1 *No Build Alternative***

13 No air quality impacts from construction would occur with the No Build Alternative.

14 **2.11.2.3.2 *Proposed Parkway, Rainbow, and Riverview Alternatives***

15 Some short-term deterioration of air quality may be experienced during construction of the  
 16 project due to the operation of construction equipment and the slower traffic speeds associated  
 17 with a construction zone. However, this would be a localized condition that would discontinue  
 18 when the project is completed.

19 **2.11.3 Mitigation**

20 **2.11.3.1 *No Build Alternative***

21 No mitigation is proposed for air quality impacts with the No Build Alternative.

22 **2.11.3.2 *Proposed Parkway and Rainbow Alternatives***

23 No mitigation is required for particulate matter or MSATs originating from traffic effects based  
 24 on project operations.

25 Mitigation for air quality impacts from construction is as follows: construction activities will be  
 26 controlled in accordance with federal, state, and local standard specifications, as well as other  
 27 local rules and ordinances.

1 **2.11.3.3 Proposed Riverview Alternative**

2 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
3 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
4 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

5 **2.11.4 Conformity**

6 The federal Clean Air Act Amendments of 1977 and 1990 require federal agencies and  
7 metropolitan planning organizations to demonstrate that all transportation projects conform to  
8 the approved air quality State Implementation Plan (SIP), which is defined as “conformity to a  
9 SIP’s purpose of eliminating or reducing the severity and number of violations of the national  
10 ambient air quality standards (NAAQS)” (Federal Register, 1993, p. 62188).

11 The Bullhead City portion of the project is located in an isolated rural maintenance area. For the  
12 Bullhead City PM<sub>10</sub> Maintenance Area, the relevant SIP is the Maintenance Plan, which was  
13 approved by EPA in August 2002. Consistent with the Clean Air Act, the Bullhead City  
14 Moderate Area PM<sub>10</sub> Maintenance Plan contains 1) a regional emissions inventory; 2) statutes  
15 and regulations adopted by the state; 3) air quality analyses that include demonstrations that  
16 adequate controls are in place to meet the NAAQS; and 4) contingency measures to promptly  
17 correct any violation of the NAAQS. The Bullhead City Maintenance Plan was found adequate  
18 under the EPA’s Conformity Adequacy Review.

19 In general, for nonattainment areas and attainment areas with a maintenance plan, the  
20 transportation conformity rule provides that conformity can be demonstrated by showing that the  
21 expected emissions from planned actions are consistent with the emissions budget for the area.  
22 However, under the limited maintenance plan option, emissions budgets are treated as essentially  
23 not constraining for the length of the maintenance period because it is unreasonable to expect  
24 that the area would experience so much growth in that period that a NAAQS violation would  
25 result.

26 The Bullhead City Moderate Area PM<sub>10</sub> Maintenance Plan was approved under the Limited  
27 Maintenance Plan Option, so it is not subject to the emissions budget test, although the area  
28 remains subject to other transportation conformity requirements contained in 40 CFR § 93,  
29 subpart A. Transportation conformity requirements specific to the Bullhead City PM<sub>10</sub>  
30 Maintenance Area are included in the EPA’s redesignation action published in the Federal  
31 Register, volume 67, number 123, page 43020 (67 FR 43020 [2002-06-26]). They specify that  
32 the state must ensure that 1) transportation plans and projects provide for timely implementation  
33 of SIP transportation control measures (TCMs); 2) transportation plans and projects comply with  
34 fiscal constraint elements; 3) the state’s interagency consultation procedures meet applicable  
35 requirements; 4) conformity of transportation projects is demonstrated in accordance with  
36 specified timing requirements; 5) the latest planning assumptions and emissions model are used;

1 6) projects do not cause or contribute to any new localized CO or PM<sub>10</sub> violation; and 7) project  
2 sponsors provide written commitments for project-level mitigation and control measures.

3 **2.11.4.1 Timely Implementation of TCMs**

4 The Laughlin-Bullhead City Bridge Project is included in the *Arizona STIP for Fiscal Years*  
5 *2010-2013*, which was approved by the FHWA and FTA on January 27, 2010. By the inclusion  
6 of this project in the STIP, ADOT has demonstrated that it provides for the timely  
7 implementation of the TCMs contained in the Bullhead City Moderate Area PM<sub>10</sub> Maintenance  
8 Plan, in accordance with 40 CFR 93.113.

9 **2.11.4.2 Fiscal Constraint**

10 The project is included in the STIP, which was developed in compliance with the fiscal  
11 constraint elements contained in 40 CFR § 93.108. See *Section 1.4.7 Funding* for further  
12 detailed information regarding fiscal constraint.

13 **2.11.4.3 Interagency Consultation**

14 Both the STIP and the Bullhead City Moderate Area PM<sub>10</sub> Maintenance Plan were developed  
15 using the provisions of the interagency consultation procedures as specified in 40 CFR § 93.105.  
16 Further, the air quality analysis for this project included consultations with numerous federal,  
17 state, regional, and local transportation and air quality agencies, as well as public involvement  
18 through the NEPA process (Appendix H).

19 **2.11.4.4 Timing Requirements**

20 Conformity determinations must be made for FHWA projects prior to their adoption, acceptance,  
21 approval, and funding. This demonstration of project-level conformity is made in accordance  
22 with the timing requirements of 40 CFR § 93.104(d).

23 **2.11.4.5 Latest Planning Assumptions and Emissions Models**

24 The planning and design of this project, as well as the STIP and the Bullhead City Moderate  
25 Area PM<sub>10</sub> Maintenance Plan, used the latest planning assumptions, in accordance with 40 CFR  
26 §93.110. Further, this air quality analysis used the latest emissions models, in accordance with  
27 40 CFR § 93.111.

28 **2.11.4.6 No Project-related Violations**

29 As shown in the qualitative PM<sub>10</sub> hot-spot analysis conducted for this project and documented in  
30 this section, as well as the quantitative CO analysis documented in the Final Air Quality  
31 Technical Report, the project is not likely to cause any new violations or contribute to the  
32 severity or number of existing violations of the NAAQS, in accordance with 40 CFR § 93.123.

33 **2.11.4.7 Written Commitments for Mitigation**

34 By their approval of this Environmental Assessment, the project sponsors (FHWA and DOTs)  
35 are providing their written commitment that the mitigation measures contained in this document

1 will be implemented and enforced during project construction, in accordance with 40 CFR §  
2 93.125.

3 **2.11.4.8 Project-level Conformity Determination**

4 In summary, as demonstrated in this analysis, the project is not likely to cause any new violations  
5 or contribute to the severity or number of existing violations of the NAAQS. Further, the project  
6 is not likely to interfere with the timely implementation of any of the TCMs contained in the  
7 Bullhead City Moderate Area PM<sub>10</sub> Maintenance Plan. Based on the factors discussed above and  
8 the results of this analysis, project-level conformity has been demonstrated for the Laughlin-  
9 Bullhead City Bridge Project. FHWA will make the final conformity determination based on  
10 this demonstration of project-level conformity.

11 **2.12 Noise**

12 **2.12.1 Existing Conditions**

13 Existing noise level readings were taken at five monitoring sites within the Study Area (Table  
14 22). The monitoring sites are described below and are shown in Figures 21a-21e.

15 **Table 22. Noise Monitoring Results**

Monitoring Site	Location	Ambient Noise Levels <sup>a</sup>
M-4	Proposed Parkway Alternative, approximately 0.5 mile west of SR 95	39
M-1	Proposed Rainbow Alternative, near Easy Street	40
M-2	Proposed Riverview Alternative at Rotary Park	46
M-3	Proposed Riverview Alternative, east of Riverview Circle	48
M-5	Proposed Riverview Alternative at Rotary Park near river	59

<sup>a</sup> measured in dBA LAeq1h

16 The existing noise levels throughout the Study Area ranged from a low of 39 dBA LAeq1h to a  
17 high of 59 dBA LAeq1h (LBHCBP 2009h). There were no dominant noise sources at any of the  
18 monitoring sites, because much of the area is sparsely developed. Background noises consisted  
19 of occasional aircraft, recreational activity at some sites, light traffic at some sites, birds, and  
20 construction noises at some sites.

21 **2.12.2 Impacts**

22 Noise levels were evaluated for 68 receivers located along the three proposed build alternatives  
23 (Figures 21a-21e and Appendix D). The receivers were generally located between 400 and 600  
24 feet of the proposed roadway centerlines. The receivers were evaluated for the action  
25 alternatives, with the planned improvements and the future (2030) peak-hour traffic volumes  
26 (LBHCBP 2009h and 2010d).

27

Source: Aerial Imagery from i-cube, 2009. Alignments from Jacobs Engineering, 2009. | G:\GIS\_Production\Projects\RTC\_100961\Laughlin\_Bridge\_18174\14\_00\_GIS\_MODEL\14\_03\_Map\_Docs\14\_03\_04\_mxd\EParkway\_noise\wall.mxd | Last Updated: 6-6-10







Source: Aerial Imagery from Clark County GIS, 2007. Alignments from Jacobs Engineering, 2009. | G:\GIS Production\Projects\RTC 100961\Laughlin Bridge 1817414\_00 GIS MODELS\14\_03 Map Docs\14\_03\_04 mxd\Noise Riverview.mxd | Last Updated : 6-6-10

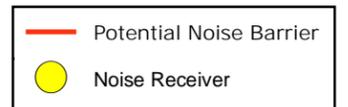


0 150 300 450 Feet



- Potential Noise Barrier
- Noise Receiver

Source: Aerial Imagery from Clark County GIS, 2007. Alignments from Jacobs Engineering, 2009. | G:\GIS Production\Projects\RTC 100961\Laughlin Bridge 1817A14 00 GIS MODELS\14 03 Map Docs\14 03 04 mxd\Noise Riverview.mxd | Last Updated : 6-6-10



1 **2.12.2.1 No Build Alternative**

2 Noise impacts from the No Build Alternative would be caused by traffic along existing arterial  
 3 streets and would be shifted to receivers, many of which may be other than those modeled for the  
 4 proposed Laughlin–Bullhead City Bridge Project build alternatives. In addition, based on the  
 5 projected growth throughout the region identified in the Travel Demand Model Analysis  
 6 (LBHCBP 2009a), traffic congestion would increase with this alternative, which would reduce  
 7 travel speeds, thereby reducing traffic noise levels. The No Build Alternative would generally  
 8 result in lower noise levels at the selected receivers than would any of the proposed build  
 9 alternatives, but would result in higher noise levels at other locations, such as along arterial  
 10 streets. Under the No Build Alternative, noise would be generated by traffic on neighborhood  
 11 and arterial streets and by non-traffic noise sources and other general neighborhood activity.  
 12 Therefore, it is difficult to predict noise levels from the No Build Alternative.

13 **2.12.2.2 Proposed Parkway Alternative**

14 Predicted future peak hour noise levels along the Parkway Alternative would range from 53 dBA  
 15  $L_{eq}$  to 64 dBA  $L_{eq}$  at the seven receivers (Figure 21a and Appendix D). The predicted noise  
 16 levels would not exceed the ADOT mitigation criterion at any of the receivers. No predicted  
 17 noise levels “substantially exceed” existing noise levels. However, previous planned  
 18 development (Clearwater Shores) approvals expired on September 9, 2009, and therefore as  
 19 undeveloped lands, it is no longer considered as noise-sensitive receivers.

20 **2.12.2.3 Proposed Rainbow Alternative**

21 Predicted future peak hour noise levels along the Rainbow Alternative would range from 54 dBA  
 22  $L_{eq}$  to 70 dBA  $L_{eq}$  at the ten receivers (Figure 21b and Appendix D). The predicted noise levels  
 23 at two of the ten receivers would exceed the ADOT mitigation criterion. However, no noise  
 24 levels “substantially exceed” existing noise levels. The two affected receivers along this  
 25 alternative would be eligible for noise abatement consideration.

26 **2.12.2.4 Proposed Riverview Alternative**

27 Predicted future peak hour noise levels along the Riverview Alternative would range from 54  
 28 dBA  $L_{eq}$  to 71 dBA  $L_{eq}$  at the 51 receivers (Figures 21c-21e and Appendix D). The predicted  
 29 noise levels at 42 of the 51 receivers would exceed the ADOT mitigation criterion. However, no  
 30 noise levels “substantially exceed” existing noise levels. The 42 affected receivers along this  
 31 alternative would be eligible for noise abatement consideration.

32 **2.12.3 Mitigation**

33 Predicted future noise levels would approach or exceed the NAC for activity category B at 44 of  
 34 the 56 receiver locations (Appendix D). Predicted future noise levels do not approach or exceed  
 35 the NAC for activity categories C or D at any of the 11 receiver locations. Noise mitigation  
 36 measures were evaluated for the impacted receivers. Such measures, in the form of noise walls

1 or earthen berms, are discussed for the appropriate action alternatives. Noise walls and earthen  
2 berms are the most common types of noise mitigation measures used along roadway projects.  
3 Other noise mitigation strategies that may be applied in addition to, or instead of, standard noise  
4 walls or earthen berms are discussed later in this section.

5 According to ADOT policy, noise mitigation should achieve a reduction of 5 dBA and result in a  
6 noise level below the NAC approach level (ADOT 2005). In other words, for residential and  
7 other noise sensitive land uses, noise mitigation should reduce noise levels by at least 5 dBA and  
8 result in noise levels below 64 dBA.

9 Also according to ADOT policy, noise barriers should be designed, at a minimum, to break the  
10 line-of-sight between the homes and traffic on the roadway. For each of the barriers evaluated  
11 below, every practical attempt was made to break the line-of-sight in accordance with ADOT  
12 policy. In some instances, however, this may not be possible, due to required sight distances at  
13 intersections or other engineering constraints.

14 The noise analysis was based on preliminary design and traffic information. Numerous  
15 assumptions were made to complete the noise analysis. As the design of Laughlin-Bullhead City  
16 Bridge Project is further developed, additional noise analyses will be necessary. The results of  
17 this analysis and the mitigation recommendations contained herein should not be considered final  
18 and will need to be verified and refined after the project design is finalized.

### 19 ***2.12.3.1 No Build Alternative***

20 The No Build Alternative assumes that Laughlin-Bullhead City Bridge Project would not be  
21 constructed. According to FHWA regulations (23 CFR 772), noise mitigation can be provided  
22 only as part of a Type 1 construction project, which is one that adds a transportation facility on a  
23 new alignment or increases the capacity of an existing transportation facility. Consequently,  
24 with the No Build Alternative, noise mitigation measures will not be provided for any of the  
25 receivers.

### 26 ***2.12.3.2 Proposed Parkway Alternative***

27 No noise impacts exist; therefore, no mitigation is proposed.

### 28 ***2.12.3.3 Proposed Rainbow Alternative***

29 One barrier was evaluated to reduce noise levels in accordance with the ADOT NAP along the  
30 proposed Rainbow Alternative. The potential barrier would be 7 feet high and would reduce  
31 noise levels at the two receivers to 63 dBA  $L_{eq}$ . The potential barrier would amount to  
32 approximately 2,730 square feet in area. Using the standard cost of \$33 per square foot as  
33 recommended by ADOT, the cost of the noise mitigation for the proposed Rainbow Alternative  
34 would be approximately \$90,050. The potential barrier would reduce noise levels at two  
35 residential homes. The cost per benefited developed property for the potential barrier is \$45,020,  
36 which meets the ADOT cost guideline of \$46,000 per benefited developed property.

#### 1 **2.12.3.4 Proposed Riverview Alternative**

2 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
3 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
4 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

### 5 **2.13 Visual Resources**

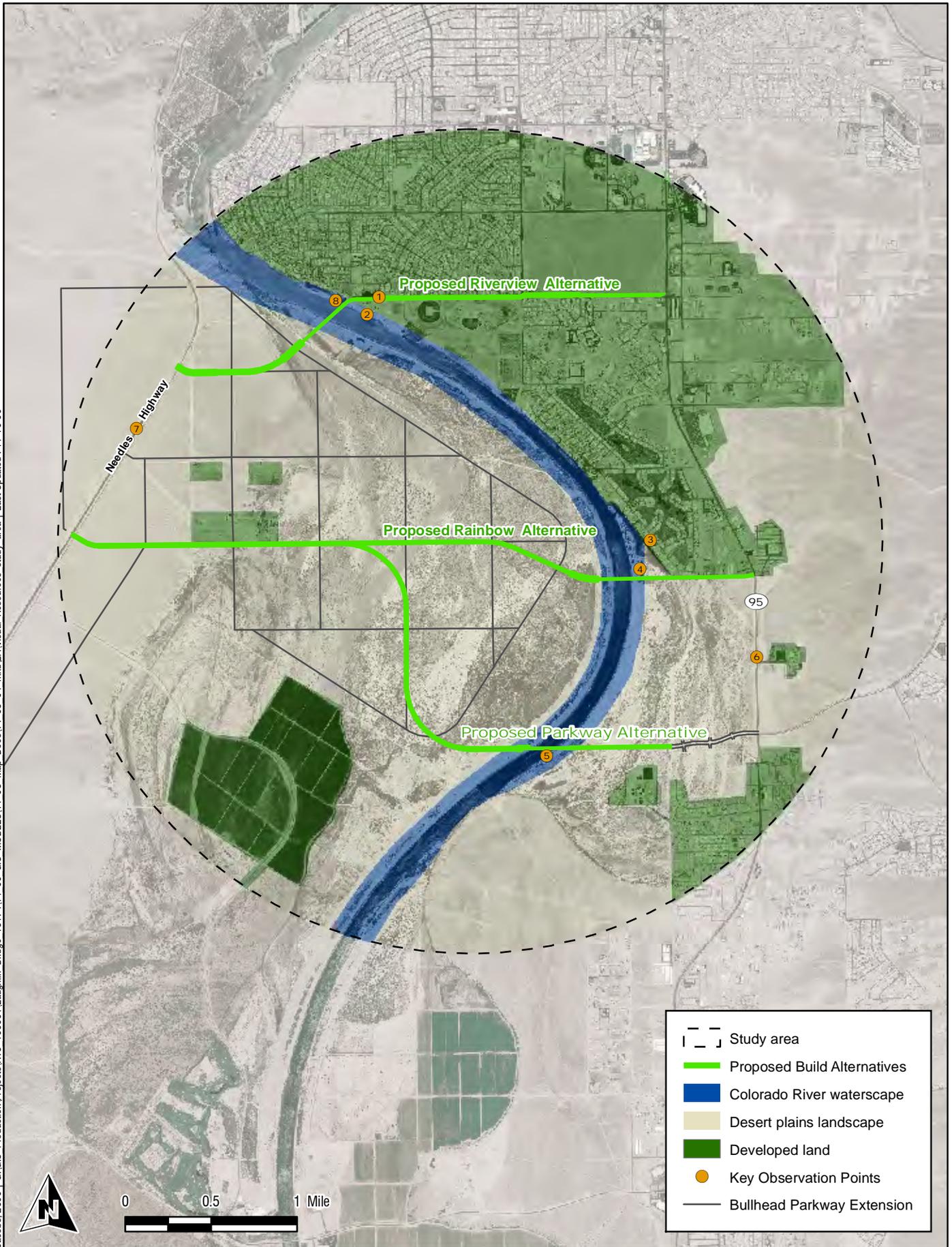
6 A Visual Resources Assessment and Technical Memorandum were prepared to determine the  
7 degree of change and the viewer response to the change after the proposed facility is introduced  
8 into the environment (LBHCBP 2009i and LBHCBP 2010e). The methodology used for this  
9 visual analysis was based on FHWA and BLM processes for evaluating visual resources. These  
10 agency methodologies are similar in that they both establish a baseline for visual characteristics  
11 and compare the baselines to the impact from the proposed project. Criteria used to help  
12 determine the level of impact included viewer exposure to the project, view sensitivity,  
13 simulations and visual contrast ratings. Other factors that also contributed to this impact  
14 assessment included cultural significance of the area and local values. A visual resource  
15 specialist utilized all these factors to assign each proposed build alternative a visual impact level.  
16 Impacts for the proposed project were considered for both portions of the project, the bridge, and  
17 the roadway.

18 The BLM has completed a Visual Resource Inventory for the BLM-administered lands on the  
19 Arizona side of the study area, and published the results in the Lake Havasu Field Office  
20 (LHFO) Resource Management Plan (RMP) 2007. BLM uses a visual resources management  
21 system (VRM) and classifies visual resources on BLM lands in one of four categories: Class I,  
22 II, III, or IV—with Class I having the highest visual sensitivity and Class IV being the least  
23 sensitive. BLM land located with the project area is limited to Rotary Park, which is leased to  
24 the City of Bullhead City. In the existing LHFO RMP, these public lands are considered a VRM  
25 Class III designation. The BLM Class III objective is to partially retain the existing character of  
26 the landscape. For Class III areas, a moderate level of change is acceptable.

#### 27 **2.13.1 Existing Conditions**

28 The visual resources study area for the proposed project was defined as the area wherein  
29 potential undesirable visual effects from construction, road use, and maintenance of the proposed  
30 project may be observed (Figure 22). Typical views, called key observation points (KOPs), were  
31 selected in the study area to represent different types of views. Eight KOPs were selected to  
32 represent the visual resources of the study area. The proposed project would occur within a  
33 typical basin and range landscape, which consists of a broad open valley surrounded by three  
34 mountain ranges that extend in a north-south direction: Dead Mountains (southwest), Newberry  
35 Mountains (northwest), and Black Mountains (east). The other defining feature in the proposed  
36 project area is the Colorado River. The river bisects the partially developed valley floor creating  
37 two distinct communities, Laughlin and Bullhead City, as well as a natural boundary between the  
38 two states. Because of the proximity of both communities to the river, the Laughlin/Bullhead  
39

Jacobs, 2009 | G:\GIS Production\Projects\RTC\_100961\Laughlin Bridge\_1817\14\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EAV\Visual Resources\_study\_area | Last Updated - 11-16-09



1 City region is a popular recreational destination. River-oriented development, such as parkland,  
2 single-family housing, and commercial development is prevalent in addition to vacant lands in  
3 the study area.

#### 4 **2.13.2 Impacts**

##### 5 ***2.13.2.1 No Build Alternative***

6 Though land uses may change, the introduction of the proposed facilities would not occur for this  
7 alternative, resulting in no change to the current viewing conditions due to the proposed project.

##### 8 ***2.13.2.2 To Motorists from the Proposed Parkway, Rainbow, and Riverview Alternatives***

9 All of the proposed build alternatives involve the construction of a new roadway and bridge in an  
10 area that is currently undeveloped in Laughlin. This desert area is mostly owned by Clark  
11 County. People traveling on Needles Highway, the road in Laughlin to which all of the proposed  
12 build alternatives connect, see a sparsely vegetated desert to the east. Views of the river from the  
13 Needles Highway are limited. Construction of a new roadway through this area would result in a  
14 minor impact to motorists (low viewer sensitivity rating) and the community's aesthetic  
15 character. This change would not be out of character with the overall visual environment along  
16 Needles Highway since there are existing roads in this area. In addition, motorists tend to have  
17 less extended time exposure to the viewshed due to constant motion and tend not to be focused  
18 exclusively on the surrounding scenery for safe driving reasons. The new bridge would be  
19 visible by motorists (low viewer sensitivity rating) from portions of Needles Highway; this  
20 change would be a moderate visual impact due to the introduction of a new vertical structure.

21 In Bullhead City, motorists traveling on SR 95 may be ultimately connected to all of the  
22 proposed roadways heading west and would see either developed or undeveloped lands. Views  
23 of the river from SR 95 are limited. Construction of a new roadway through the undeveloped  
24 areas of the proposed build alternatives would result in a minor impact to motorists (low viewer  
25 sensitivity rating) and the community's aesthetic character. This change would not be out of  
26 character with the overall visual environment since there are existing roads in this immediate  
27 area. The new bridge would be visible by motorists (low viewer sensitivity rating) from portions  
28 of SR 95; this change would be a moderate visual impact due to the introduction of a new  
29 vertical structure.

##### 30 ***2.13.2.3 To Recreationalists and Residents from the Proposed Parkway Alternative***

31 The proposed bridge would produce a moderate level of visual change for recreationalists  
32 utilizing the river and nearby public facilities. KOP 5 was located near the edge of the Colorado  
33 River. The distance from this KOP to the proposed bridge is approximately 0.04 mile (200 feet)  
34 (Photo 1). KOP 5 was selected at the banks of the Colorado River based on the number of  
35 recreationalists that utilize the Colorado River. There are currently no residences along this  
36 proposed build alternative. A simulation of the proposed bridge for the proposed Parkway  
37 Alternative was performed for this KOP (Photo 2).

1 **Photo 1. KOP 5 is a representative view from Colorado River banks at the proposed Parkway**  
2 **Alternative**



4 **Photo 2. Simulation of the proposed Parkway Alternative for KOP 5**



6 ***2.13.2.4 To Recreationalists and Residents from the Proposed Rainbow Alternative***

7 The proposed bridge would produce a moderate level of visual change for both the residents that  
8 live adjacent to Rainbow Drive and recreationalists utilizing the river and nearby public facilities  
9 because the bridge would a new vertical structure over the river. The proposed roadway impacts  
10 would produce a major level of visual change for residential viewers because one noise barrier 7  
11 feet high, if built, would impede views for residents adjacent to Rainbow Drive.

12 KOP 3 was located at a vacant lot in the residential neighborhood on Camino Del Rio between  
13 Camino Court and Country Club Way (Photo 3). The distance from this KOP to the proposed  
14 bridge is approximately 0.27 mile (1,400 feet). KOP 3 was selected based on the residential  
15 neighborhood due to the larger number of viewers that utilize these areas.

1 **Photo 3. KOP 3 is a representative view from the residential area near the proposed Rainbow**  
2 **Alternative**



3  
4 KOP 4 was located near the edge of the Colorado River. The distance from this KOP to the  
5 proposed bridge is approximately 0.07 mile (380 feet) (Photo 4). KOP 4 was selected at the  
6 banks of the Colorado River based on the number of recreationalists that utilize the Colorado  
7 River. A simulation of the proposed bridge for the proposed Rainbow Alternative was  
8 performed for this KOP (Photo 5).  
9

1 **Photo 4. KOP 4 is a representative view from Colorado River banks at the proposed Rainbow**  
2 **Alternative**



3

4 **Photo 5. Simulation of the proposed Rainbow Alternative at KOP 4**



5

6 ***2.13.2.5 To Recreationalists and Residents from the Proposed Riverview Alternative***

7 The proposed Riverview Alternative bridge would touch down on an undeveloped vacant parcel  
8 and the roadway would continue into an area that supports residential development and a public  
9 park. People living or recreating in the vicinity would continue to have a view of the road but  
10 would also experience a view of the new bridge. The proposed bridge would produce a  
11 moderate level of visual change for both the residents (high viewer sensitivity rating) that live  
12 adjacent to Riverview Drive and recreationalists (medium viewer sensitivity rating) utilizing the  
13 river and nearby public facilities (Rotary Park) because these groups tend to have more extended  
14 time exposure to the viewshed from their stationary homes and traveling to/from the park.

## Environmental Impacts and Mitigation

1 The proposed roadway impacts would produce a moderate level of visual change for recreational  
2 viewers. However, noise barriers 8-12 feet high are associated with the proposed roadway as  
3 mitigation and, if built, would impede views for the residents adjacent to Riverview Drive  
4 resulting in a major impact.

5 KOP 1 was located at the northwest corner of the intersection of Riverview Drive and Balboa  
6 Drive looking west towards the Colorado River (Photo 6). The distance from this KOP to the  
7 proposed bridge is approximately 0.27 mile (1,400 feet). This location represents a typical view  
8 from the residential neighborhood on Riverview Drive looking towards the proposed bridge. A  
9 visual representation of the proposed project from a “zoomed-out” vantage point is represented  
10 in Photo 7.

11 Additionally, Rotary Park is BOR withdrawn land that is administered by the BLM and leased to  
12 the City of Bullhead City near the proposed Riverview Alternative; however, the bridge structure  
13 would be located on acquired private property and not on BLM-administered land; therefore,  
14 BLM visual resource objectives are not applicable for this portion of the proposed project.  
15 However, the roadway portion of the project does cross existing BLM land (i.e., Rotary Park),  
16 but, development of a roadway does meet BLM Class III objectives.

17 KOP 2 was located in Rotary Park near the edge of the Colorado River. The distance from this  
18 KOP to the proposed bridge is approximately 0.17 mile (900 feet). From this location, the view  
19 is typical for recreational viewers on the river or those using park facilities (such as the beach or  
20 picnic ramadas) (Photo 8). A simulation of the proposed bridge for the proposed Riverview  
21 Alternative was performed for this KOP (Photo 9).

22 The bridge would produce a major level of visual change for recreationalists (with a medium  
23 viewer sensitivity rating) utilizing Arizona Veterans Memorial Park, the Memorial Plaza (a  
24 dramatic scenic venue for viewing the monument), and adjacent public areas. A Section 4(f) *de*  
25 *minimis* determination was issued (Appendix F—Attachment 6), it was concluded that the  
26 Riverview Alternative cannot be sustained and would no longer be considered as a proposed  
27 build alternative due to visual and noise impacts. A summary of this determination indicated that  
28 one of the main features and attributes of Rotary Park is that it contains a beach and views along  
29 the Colorado River. Currently, there is no visual obstruction between Rotary Park and the  
30 Colorado River. The proposed bridge would introduce a visual obstruction for park users. A  
31 new vertical structure would obstruct views of the river and would adversely affect the park’s  
32 features and attributes (i.e., the scenic view of the Colorado River).

1 **Photo 6. KOP 1 is a representative view from Riverview neighborhood looking west towards the**  
2 **Colorado River**



3

4 **Photo 7. Visual Representation of proposed Riverview Alternative near KOP 1**



5

6

1 **Photo 8. KOP 2 is a representative view from Colorado River banks at Rotary Park at the**  
2 **proposed Riverview Alternative**



3

4 **Photo 9. Simulation of proposed Riverview Alternative at KOP 2**



5

6 KOP 8 was located in the Arizona Veterans Memorial Plaza. The distance from this KOP to the  
7 proposed bridge is approximately 0.045 mile (240 feet). This KOP was specifically chosen  
8 because recreational viewers at the plaza have a dramatic scenic venue for viewing the  
9 monument and are rated at medium viewer sensitivity. From this location, the view is to the  
10 south towards the memorial and Rotary Park (Photo 10). A simulation of the proposed bridge  
11 for the proposed Riverview Alternative was performed for this KOP (Photo 11). In addition,  
12 there is a potential visual Section 4(f) “constructive use” issue because the monument provides a  
13 dramatic venue to view the Colorado River that would also be impacted.

1 **Photo 10. KOP 8 is a representative view from the plaza at Arizona Veterans Memorial Park at the**  
2 **proposed Riverview Alternative**



3

4 **Photo 11. Simulation of the proposed Riverview Alternative at KOP 8**



5

6

7 **2.13.3 Mitigation**

8 **2.13.3.1 No Build Alternative**

9 No mitigation will be required as there would be no visual impacts are associated with the No  
10 Build Alternative.

1 **2.13.3.2 Proposed Parkway and Rainbow Alternatives**

2 Visual impact mitigation measures are intended to reduce the impact of the proposed project  
3 within the existing landscape. Some mitigation measures will be incorporated into the final  
4 design of the bridge and roadways and context-sensitive solutions can be sought to minimize  
5 impacts on natural and cultural resources. The overall goal of employing mitigation methods is  
6 to visually blend the proposed project with the environment and provide a sense of visual  
7 integration.

8 Long-term mitigation measures that will contribute to the reduction of visual impacts include:

- 9 • low lighting or lighting shields (No light shall be located in such a way as to be a  
10 nuisance to a neighboring property. This may include low mast for lighting  
11 structures, low output, and/or shielding.)
- 12 • vegetation or natural landform screening
- 13 • structural screening (landscaped buffering for potential noise barriers)
- 14 • integration of complementary architectural features of the bridge (e.g., bridge façade,  
15 bridge and road design, fences, use of earthtone colors)

16 Replacing, repairing, or improving any disturbance to vegetated areas such as re-stabilizing  
17 disturbed soils and generally restoring or improving natural resources that have been disrupted  
18 will also mitigate aesthetic conditions. Reducing earthwork contrasts by retaining rocks, trees,  
19 shrubs, and adding mulch or topsoil and repairing any disruption to existing drainages will also  
20 help relieve visual changes.

21 Additionally, the consideration of the bridge location and orientation will reduce potential  
22 shadow effects. The proposed bridge alternatives are all oriented in an east-westerly pattern thus  
23 generally reducing the effects of shadowing on the adjacent landscape.

24 **2.13.3.3 Proposed Riverview Alternative**

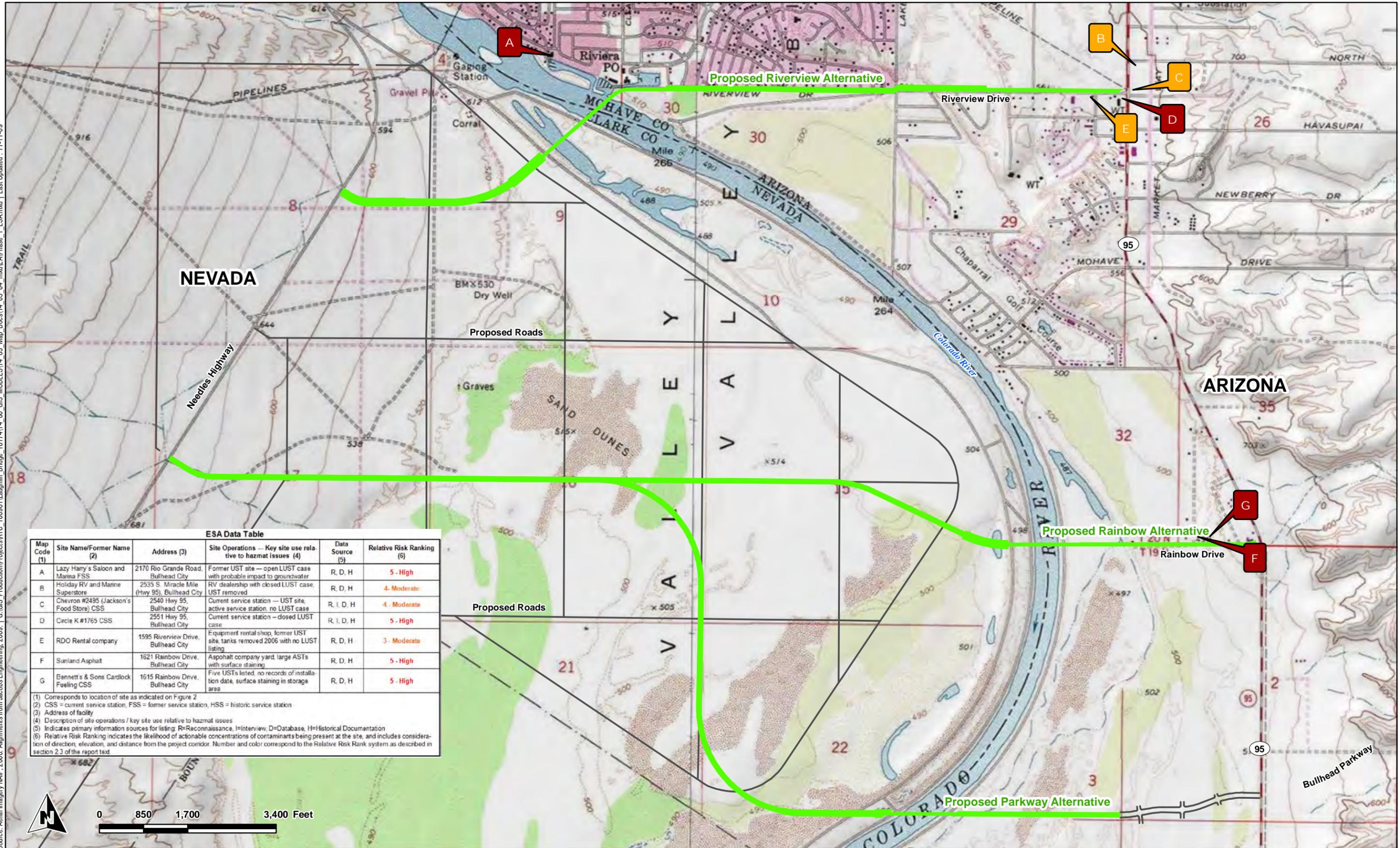
25 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
26 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
27 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

28 **2.14 Hazardous Materials**

29 **2.14.1 Existing Conditions**

30 A Phase I Environmental Site Assessment (ESA) (LBHCBP 2008a) of the project area was  
31 completed in April 2008, focusing on the three proposed build alternatives. In April 2009, a  
32 portion of the proposed Riverview Alternative alignment was modified; however, the ESA  
33 included this modification area, and the modification did not change any of the previous ESA's  
34 conclusions. The ESA investigative protocol generally conformed to the ASTM E 1527-05  
35 standard, which meets the requirements of "All Appropriate Inquiry" as defined in the 2002  
36

Source: Aerial Imagery NMAP, 2006. Alignments from Jacobs Engineering, 2009. | G:\GIS Production\Projects\FTC\_100961\Laughlin Bridge\_18171\14\_00\_GIS MODEL\S14\_03\_Map Docs\14\_03\_04\_mxd\EA\Phase 1\_ESA.mxd | Last Updated: 11-11-09

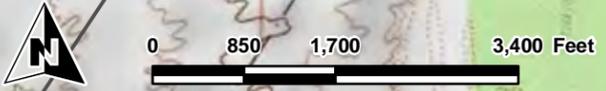


NEVADA

ARIZONA

Map Code (1)	Site Name/Former Name (2)	Address (3)	Site Operations — Key site use relative to hazmat issues (4)	Data Source (5)	Relative Risk Ranking (6)
A	Lazy Harry's Saloon and Marina FSS	2170 Rio Grande Road, Bullhead City	Former UST site — open LUST case with probable impact to groundwater	R, D, H	5 - High
B	Holiday RV and Manne Superstore	2535 S. Miracle Mile (Hwy 95), Bullhead City	RV dealership with closed LUST case, UST removed	R, D, H	4 - Moderate
C	Chevron #2495 (Jackson's Food Store) CSS	2540 Hwy 95, Bullhead City	Current service station — UST site, active service station, no LUST case	R, I, D, H	4 - Moderate
D	Circle K #1765 CSS	2551 Hwy 95, Bullhead City	Current service station — closed LUST case	R, I, D, H	5 - High
E	RDO Rental company	1595 Riverview Drive, Bullhead City	Equipment rental shop, former UST site, tanks removed 2006 with no LUST listing	R, D, H	3 - Moderate
F	Sunland Asphalt	1621 Rainbow Drive, Bullhead City	Asphalt company yard, large ASTs with surface staining	R, D, H	5 - High
G	Bennett's & Sons Cardlock Fueling CSS	1615 Rainbow Drive, Bullhead City	Five USTs listed, no records of installation date, surface staining in storage area	R, D, H	5 - High

(1) Corresponds to location of site as indicated on Figure 2  
 (2) CSS = current service station, FSS = former service station, HSS = historic service station  
 (3) Address of facility  
 (4) Description of site operations / key site use relative to hazmat issues  
 (5) Indicates primary information sources for listing: R=Reconnaissance, I=Interview, D=Database, H=Historical Documentation  
 (6) Relative Risk Ranking indicates the likelihood of actionable concentrations of contaminants being present at the site, and includes consideration of direction, elevation, and distance from the project corridor. Number and color correspond to the Relative Risk Rank system as described in section 2.3 of the report text



1 Brownfields Act. The ESA consisted of an environmental database review, a site reconnaissance  
2 by a qualified Environmental Professional (as defined by ASTM), performance of targeted  
3 interviews, and a review of historical information sources.

4 The ESA identified seven sites of potential concern within the project area, relative to hazardous  
5 material releases to the subsurface (Figure 23). Each of the seven sites was ranked according to  
6 a relative risk ranking system. Four of the seven sites were ranked as High Risk, and three were  
7 ranked as Moderate Risk. Low risk sites were not tabulated, since they would have no effect on  
8 the property acquisition or construction process.

9 ***2.14.1.1 Proposed Parkway Alternative***

10 No sites of concern regarding hazardous materials releases were noted along the Parkway  
11 corridor. This corridor is in a less-developed area, but commercial development (including “big-  
12 box” stores and retail properties) was being built at the time of the assessment near the eastern  
13 terminus of this corridor.

14 ***2.14.1.2 Proposed Rainbow Alternative***

15 Two sites of concern regarding potential hazardous materials releases are located along the  
16 Rainbow corridor. Both sites are ranked as High Risk sites, due to USTs that are out of  
17 compliance, large above ground storage tanks with surface staining, or other petroleum staining  
18 on bare ground. These sites are not listed as LUST cases with ADEQ, but the assessor  
19 performing the site reconnaissance felt that the apparent operations at the sites, combined with  
20 the presence of surface staining, was sufficient to rank these sites as High Risk. These sites are  
21 located just west of Easy Street, approximately 0.25 mile west of SR 95. Any acquisition of  
22 property at these sites would likely result in costs for site cleanup.

23 ***2.14.1.3 Proposed Riverview Alternative***

24 Five sites of potential concern regarding hazardous materials releases are located along the  
25 Riverview corridor. Four of the sites are located in a cluster, near the eastern terminus on either  
26 SR 95 or Riverview Drive. Three of the sites are ranked as Moderate Risk and one is High Risk.  
27 Each site’s issue of concern was the presence or past usage of underground storage tanks (USTs).  
28 Three of the sites have had leaking underground storage tank (LUST) cases associated with the  
29 facility, but each case has been closed by the ADEQ. Case “closure” means that ADEQ has  
30 determined that minimal risk to public health exists at the site due to cleanup operations or  
31 natural attenuation of a release. The fourth site in this cluster is a UST site that has not had a  
32 reported release. The fifth site is located on the Arizona bank of the Colorado River,  
33 approximately 0.33 mile northwest (up-gradient) of the project corridor. This site is an open  
34 LUST case with probable impacts to groundwater, and no cleanup operations have been  
35 completed to date. Of these five sites, only one is likely to affect the project (Circle K #1765,  
36 located at the southwest corner of SR 95 and Riverview). Although this site’s LUST case has

1 been closed by ADEQ, any acquisition of property would be in close proximity to the existing  
2 UST system.

### 3 **2.14.2 Impacts**

#### 4 ***2.14.2.1 No Build Alternative***

5 No impacts from the handling of hazardous materials and/or substances, such as contaminated  
6 soils, as no construction and/or disturbance of corridor study areas are associated with the No  
7 Build Alternative.

#### 8 ***2.14.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives***

9 No sites of concern related to hazardous materials releases were noted on the entire Nevada side  
10 of the study area. The sites noted on the Arizona side on the Rainbow and Riverview corridors  
11 are typical of commercial / light industrial areas. No hazardous material sites were noted within  
12 the proposed Parkway Alternative. Although the proposed Riverview corridor had five  
13 Moderate to High-risk sites, and the proposed Rainbow corridor had two High-risk sites, none of  
14 the identified sites present obstacles to construction that are outside of the norm for any  
15 construction project. Hydrocarbon releases (gasoline, diesel fuel, asphalts, etc.) constitute a  
16 condition that would need to be considered during scoping, costing, and construction staging.

### 17 **2.14.3 Mitigation**

#### 18 ***2.14.3.1 No Build Alternative***

19 No mitigation will be required as no impacts to from the handling of hazardous materials and/or  
20 substances, such as contaminated soils, as no construction and/or disturbance of corridor study  
21 areas are associated with the No Build Alternative.

#### 22 ***2.14.3.2 Proposed Parkway Alternative***

23 No sites were identified along the proposed Parkway Alternative; however, contractor mitigation  
24 will include detecting and excavating impacted media, and documenting the appropriate  
25 handling, transport, and disposal of impacted media in compliance with applicable  
26 environmental laws and regulations.

#### 27 ***2.14.3.3 Proposed Rainbow Alternative***

28 If the proposed Rainbow Alternative is chosen, two identified sites (Sites F and G, see Figure 23)  
29 will be further investigated. Additional investigation should be in the form of a targeted Phase II  
30 (subsurface investigation) of sufficient scope as to identify and quantify impacts that may  
31 adversely affect the proposed construction project. In addition, throughout the project area, the  
32 construction contractor will be prepared for the possibility of encountering impacted soils that  
33 were not identified in this ESA. Contractor mitigation will include detecting and excavating  
34 impacted media, and documenting the appropriate handling, transport, and disposal of impacted  
35 media in compliance with applicable environmental laws and regulations.

1 **2.14.3.4 Proposed Riverview Alternative**

2 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
3 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
4 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

5 **2.15 Mobility and Access**

6 **2.15.1 Bicycle and Pedestrian**

7 **2.15.1.1 Existing Conditions**

8 Along each proposed build alternatives in Nevada, the land is undeveloped and currently no  
9 developed access is available for pedestrians or bicyclists although some dirt roads exist  
10 throughout the project area (LBHCBP 2009j). In Bullhead City, residents can currently walk or  
11 ride their bicycles along the Riverview Drive, Rainbow Drive, and Bullhead Parkway road  
12 shoulders and cross whenever they want. Regionally, bicyclists and pedestrians have limited  
13 access and mobility between Laughlin and Bullhead City. Currently, there is a sidewalk located  
14 on the south side of the existing Laughlin Bridge.

15 **2.15.1.2 Impacts**

16 **2.15.1.2.1 No Build Alternative**

17 The No Build Alternative would not improve bicycle or pedestrian mobility or access between  
18 the communities of Laughlin and Bullhead City.

19 **2.15.1.2.2 Proposed Parkway Alternative**

20 The proposed Parkway Alternative would be constructed within vacant land in Laughlin that  
21 does not currently provide access to pedestrians or bicyclists. This proposed build alternative  
22 includes a 12-foot-wide multi-use pathway throughout the alignment, which would create  
23 regional connectivity and non-vehicular access between Laughlin and Bullhead City in a safe  
24 manner. In Bullhead City, this proposed build alternative would increase traffic along the  
25 alignment. This increase may adversely affect the actual or perceived safety of persons walking,  
26 crossing, or riding bicycles along this extension of Bullhead Parkway.

27 Construction of this proposed build alternative may temporarily affect pedestrian and bicycle  
28 access to and through the work area. The construction impacts would be considered short-term.

29 **2.15.1.2.3 Proposed Rainbow Alternative**

30 The proposed Rainbow Alternative would be constructed within vacant land in Laughlin that  
31 does not currently provide access to pedestrians or bicyclists. This proposed build alternative  
32 includes a 12-foot-wide multi-use pathway throughout the alignment, which would create  
33 regional connectivity and non-vehicular access between Laughlin and Bullhead City in a safe  
34 manner. In Bullhead City, this proposed build alternative would increase traffic along the

1 alignment. This increase may adversely affect the actual or perceived safety of persons walking,  
2 crossing, or riding bicycles along Rainbow Drive.

3 Construction of this proposed build alternative may temporarily affect pedestrian and bicycle  
4 access to and through the work area. The construction impacts would be considered short-term.

5 *2.15.1.2.4 Proposed Riverview Alternative*

6 The proposed Riverview Alternative would be constructed within vacant land in Laughlin,  
7 Nevada that does not currently provide access to pedestrians or bicyclists. This proposed build  
8 alternative includes a 12-foot-wide multi-use pathway throughout the alignment, which would  
9 create regional connectivity and non-vehicular access between Laughlin and Bullhead City in a  
10 safe manner. In Bullhead City, this proposed build alternative would increase traffic along the  
11 alignment. This increase may adversely affect the actual or perceived safety of persons walking,  
12 crossing, or riding bicycles along Riverview Drive.

13 The proposed Riverview Alternative would affect access patterns to Riverview Drive. The  
14 proposed roadway design configurations (frontage roads) would restrict some bicycle and  
15 pedestrian access from driveways and streets directly accessing Riverview Drive within the  
16 residential areas, which might be viewed as disturbing the peace, harmony, and lifestyle of  
17 families who live there. Currently, 16 streets along Riverview Drive west of Lakeside Drive  
18 have direct access to Riverview Drive. With the proposed build alternative, 12 of these streets  
19 would restrict direct access and require rerouting to Riverview Drive. For pedestrians utilizing  
20 the proposed designated crosswalks for direct access to Riverview Drive, it would require travel  
21 rerouting up to approximately 0.6 mile, which equates to 14.5 minutes of additional time for  
22 pedestrians at a walking pace of 4 feet/second (worst-case scenario if your residence is located at  
23 the mid-point of the neighborhood near Riverview Way).

24 *2.15.1.3 Mitigation*

25 *2.15.1.3.1 No Build Alternative*

26 No mitigation is proposed for the No Build Alternative.

27 *2.15.1.3.2 Proposed Parkway and Rainbow Alternatives*

28 Each of the proposed build alternatives includes a multi-use pathway throughout the alignments  
29 and ADA-compliant sidewalks near neighborhoods, which would create regional connectivity  
30 and non-vehicular access between Laughlin and Bullhead City in a safe manner.

31 Each of the bridges would also be designed to accommodate current and future connections of  
32 the Colorado River Heritage Trail underneath the bridges along the river so that at-grade  
33 crossings are not necessary. Each of the proposed project pathways would create regional  
34 connectivity and non-vehicular access between Laughlin and Bullhead City. The multi-use  
35 pathway and ADA-compliant sidewalks within each proposed build alternative would create new

1 opportunities for pedestrians between Laughlin and Bullhead City and have a beneficial long-  
2 term impact. Since the long-term impacts of the proposed build alternatives are beneficial and  
3 would improve pedestrian and bicycle access, no mitigation is proposed. Impacts to access and  
4 mobility for bicyclists and pedestrians during construction activities would be minimized by the  
5 development of transportation management plans.

6 *2.15.1.3.3 Proposed Riverview Alternative*

7 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
8 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
9 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

10 **2.15.2 Public Transportation**

11 *2.15.2.1 Existing Conditions*

12 Limited transit service is available in Laughlin through two Silver Rider lines, Route 777 and  
13 Route 888. Both routes are in the major developed part of Laughlin, which is north of the study  
14 area. The Silver Rider service of the Southern Nevada Transit Coalition (SNTC) collaborates  
15 with the Bullhead Area Transit System (BATS) to provide cross-river service on a route that  
16 travels to and between Laughlin and the Western Arizona Regional Medical Center, the  
17 Riverview Mall, Wal-Mart, and Target in Bullhead City (SNTC 2009).

18 BATS provides curb-to-curb services through its DIAL-A-BATS program. This service is  
19 available to seniors age 60 and older, persons with a qualified disability, individuals that live or  
20 whose destination is outside the scheduled route service area, or individuals for whom the fixed  
21 route service is unable to accommodate. A connection between BATS and Laughlin's Silver  
22 Rider lines is available for an additional charge.

23 BATS currently operates three regular transit routes within Bullhead City: Red, Blue, and Green  
24 (Bullhead City 2009b). The Red Line is a north-south running line that follows SR 95. The Blue  
25 Line is an east-west route that winds through an area of the city that is just north of Riverview  
26 Drive. The Green Line is a circuitous route that serves the far northern part of Bullhead City.

27 None of the transit lines in Nevada or Arizona directly serve the Laughlin part of the study area.  
28 In Bullhead City, none of the BATS lines directly serve Bullhead Parkway, Rainbow Drive, or  
29 Riverview Drive along any of the proposed build alternatives.

30 Bullhead City Elementary School District #15 and the Colorado River Union High School  
31 District school buses currently have routing stops and direct access to residences and local streets  
32 along the proposed Riverview Alternative. There are no routing stops along the proposed  
33 Parkway or Rainbow Alternatives.

1 **2.15.2.2 Impacts**

2 *2.15.2.2.1 No Build Alternative*

3 The No Build Alternative would not affect the DIAL-A-BATS curb-to-curb service or regular  
4 transit lines that directly serve Laughlin or Bullhead City.

5 *2.15.2.2.2 Proposed Parkway Alternative*

6 The proposed Parkway Alternative would not affect the DIAL-A-BATS curb-to-curb service.  
7 There are no regular transit lines that directly serve this alternative in Laughlin or in Bullhead  
8 City.

9 There is no current school bus routing along the extension of Bullhead Parkway, therefore, it  
10 would not be impacted by the project if the proposed Parkway Alternative were to be selected  
11 (Smith 2009 and Wilhelm 2009).

12 *2.15.2.2.3 Proposed Rainbow Alternative*

13 The proposed Rainbow Alternative would not affect the DIAL-A-BATS curb-to-curb service.  
14 There are no regular transit lines that directly serve this alternative in Laughlin or in Bullhead  
15 City.

16 Current school bus routing along the Rainbow Drive corridor would not be impacted by the  
17 project if the proposed Rainbow Alternative were to be selected (Smith 2009 and Wilhelm  
18 2009).

19 *2.15.2.2.4 Proposed Riverview Alternative*

20 The proposed Riverview Alternative would not affect the DIAL-A-BATS curb-to-curb service.  
21 There are no regular transit lines that directly serve this alternative in Laughlin or in Bullhead  
22 City. Regular transit service does travel within 0.1 mile of the proposed Riverview Alternative  
23 in Bullhead City, but construction of that option would not affect access to these transit stops.

24 Based on coordination efforts with the transportation administrators from Bullhead City  
25 Elementary School District #15 and the Colorado River Union High School District, current  
26 school bus routing along the Riverview Drive corridor would be impacted by the project if the  
27 proposed Riverview Alternative were to be selected (Smith 2009 and Wilhelm 2009).

28 **2.15.2.3 Mitigation**

29 *2.15.2.3.1 No Build Alternative*

30 No mitigation is proposed.

31 *2.15.2.3.2 Proposed Parkway Alternative*

32 No mitigation is proposed.

1 2.15.2.3.3 Proposed Rainbow Alternative

2 No mitigation is proposed.

3 2.15.2.3.4 Proposed Riverview Alternative

4 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
5 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
6 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

7 **2.15.3 Vehicular**

8 **2.15.3.1 Existing Conditions**

9 Along each of the proposed build alternatives in Nevada, the land is undeveloped but some dirt  
10 roads exist throughout the project area providing limited access for vehicles.

11 2.15.3.1.1 Proposed Parkway Alternative

12 Bullhead Parkway is currently constructed as a paved four-lane roadway (two lanes in each  
13 direction) from SR 95 to about halfway to the Colorado River where there is an entrance to the  
14 commercial shopping center. No other residential or commercial streets connect to Bullhead  
15 Parkway. ADA compliant sidewalks, curbs, and gutters are present along the newly built portion  
16 partial roadway.

17 2.15.3.1.2 Proposed Rainbow Alternative

18 Rainbow Drive is currently constructed as a paved two-lane roadway from SR 95 to about  
19 halfway to the Colorado River, the remainder is an unofficial dirt road. There are no constructed  
20 curb, gutter, or sidewalks. Currently, two streets (Easy Street and Friendly Place) are connected  
21 to Rainbow Drive to the north.

22 2.15.3.1.3 Proposed Riverview Alternative

23 Riverview Drive is currently constructed as a paved two-lane roadway from SR 95. There are no  
24 constructed curb, gutter, or sidewalks along Riverview Drive. There is a four-way stop located  
25 at Lakeside Drive and a signalized intersection at SR 95. Currently, 24 residential streets are  
26 connected to Riverview Drive. Additionally, residents and visitors currently can park just about  
27 anywhere along Riverview Drive.

28 **2.15.3.2 Impacts**

29 2.15.3.2.1 Proposed Parkway, Rainbow, and Riverview Alternatives

30 The following is a summary of impacts common to all the proposed build alternatives, and  
31 specific impacts for each proposed build alternative are discussed immediately below this  
32 section.

33 Any of the proposed build alternatives would provide a new connection that would improve

1 vehicular access between the communities of Laughlin and Bullhead City, thus providing  
2 additional mobility. Many residents of Laughlin and Bullhead City would have increased access  
3 to businesses, employment centers, public services, and the existing regional road network.  
4 None of the proposed build alternatives would result in long-term effects on vehicular access to  
5 businesses or public services.

6 However, construction of any of the proposed build alternatives may temporarily affect vehicular  
7 access to and through the work area. In Bullhead City, the proposed build alternatives may result  
8 in short-term business effects during construction.

9 *2.15.3.2.2 Proposed Parkway Alternative*

10 No impacts to mobility and access are associated with the proposed Parkway Alternative.

11 *2.15.3.2.3 Proposed Rainbow Alternative*

12 The proposed Rainbow Alternative would allow continued access to Rainbow Drive from Easy  
13 Street and Friendly Place; therefore, no long-term impacts to mobility and access are associated  
14 with the proposed Rainbow Alternative.

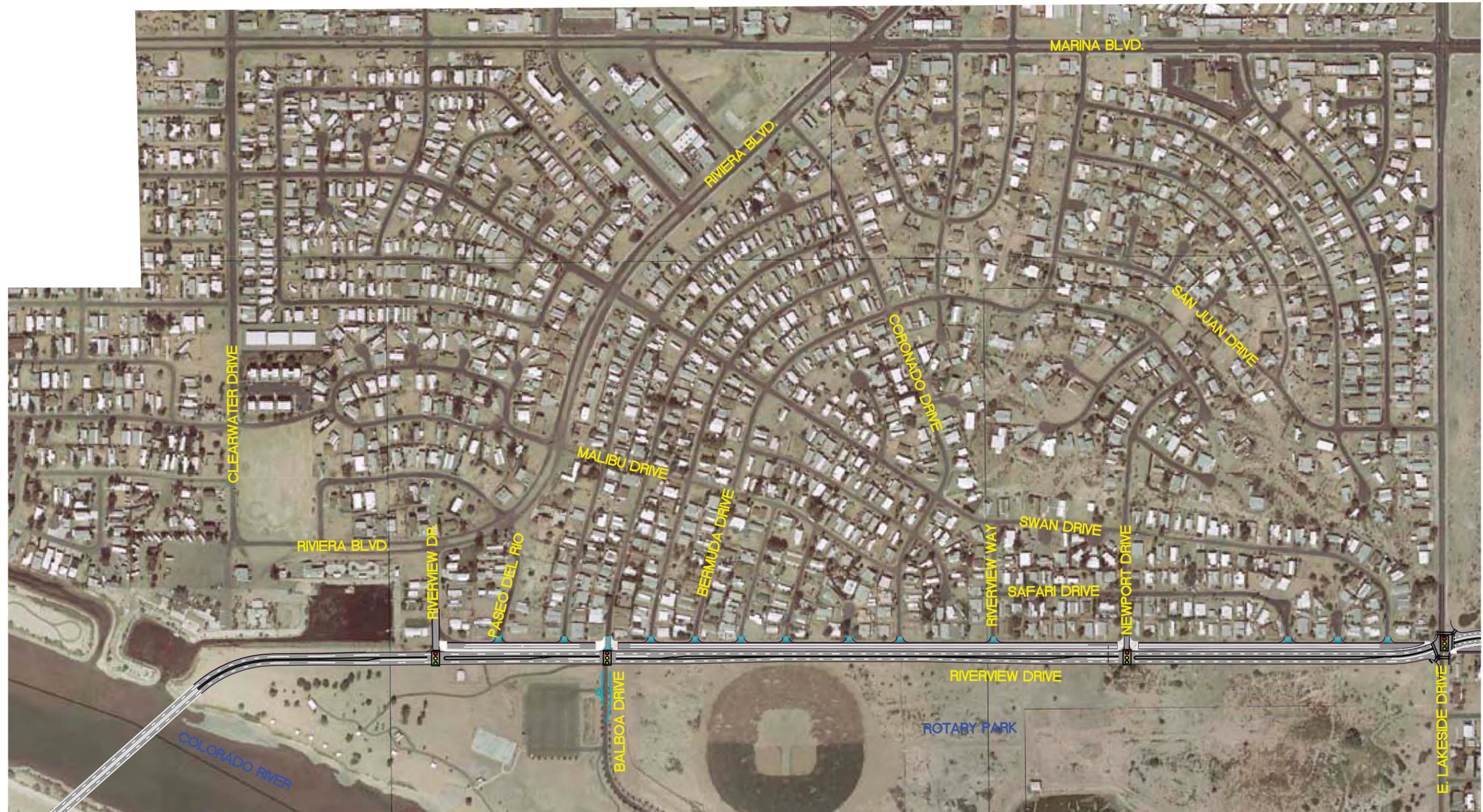
15 *2.15.3.2.4 Proposed Riverview Alternative*

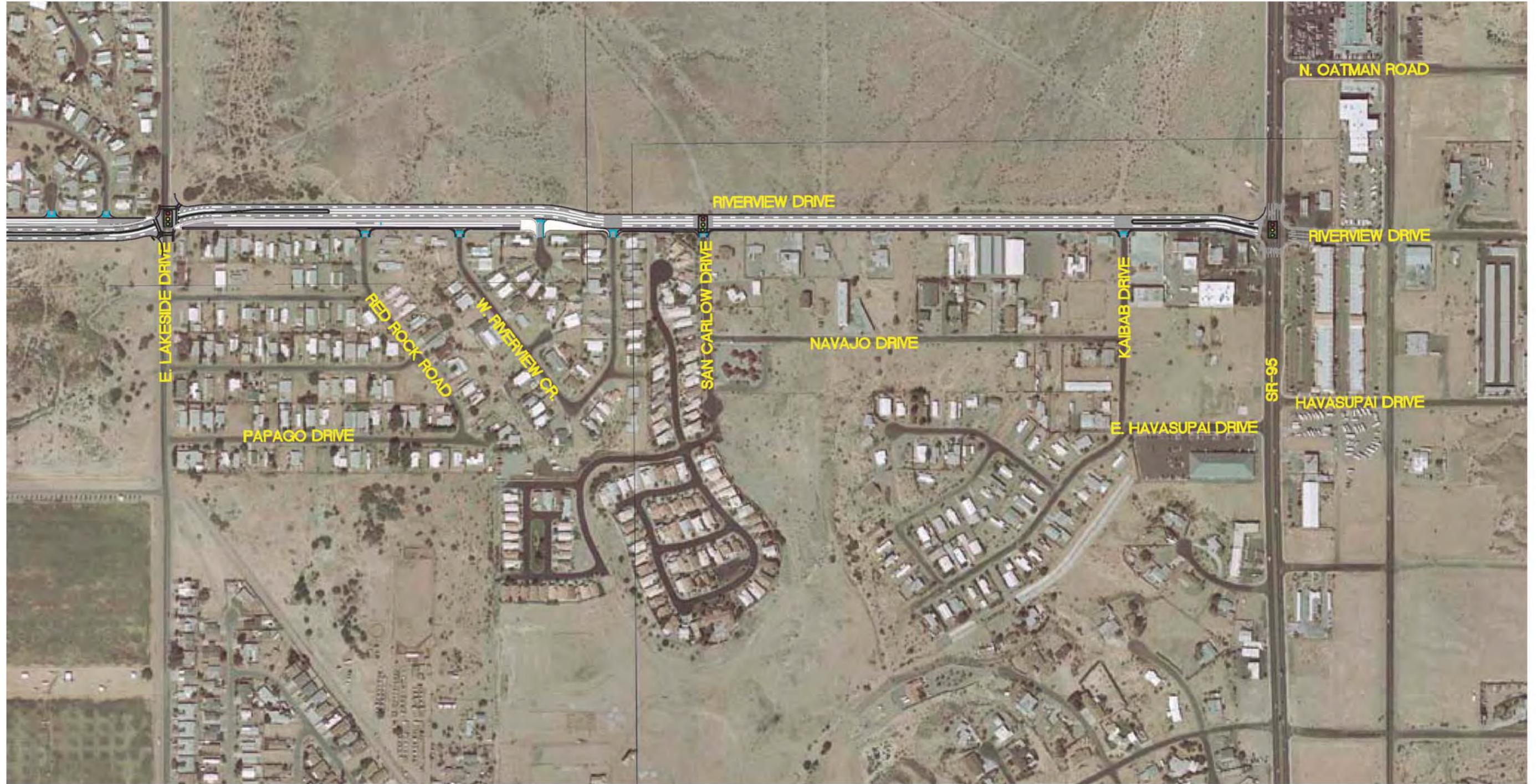
16 The proposed Riverview Alternative would restrict direct access from driveways accessing  
17 Riverview Drive and from the following streets along Riverview Drive (Figures 24 and 25), thus  
18 reducing direct access from 14 of 24 access points:

- 19 • Paseo Del Rio
- 20 • Del Rey Drive
- 21 • Hermosa Drive
- 22 • Bermuda Drive
- 23 • Montecito Drive
- 24 • Ventura Drive
- 25 • Alpine Cove
- 26 • Coronado Drive
- 27 • Riverview Way
- 28 • East Safari Drive
- 29 • Riverview Cove
- 30 • East Swan Drive
- 31 • Redrock Road
- 32 • West Riverview Circle

33 The proposed roadway design configurations (frontage roads) would restrict direct vehicular  
34 access within certain residential areas to Riverview Drive. Ultimately, vehicular travelers would  
35 still be able to access Riverview Drive without adding substantial mileage (approximately 0.6  
36 mile) or time (approximately 30 seconds).

37





1 **2.15.3.3 Mitigation**

2 **2.15.3.3.1 No Build Alternative**

3 No mitigation will be required as no impacts to mobility and access are associated with the No  
4 Build Alternative.

5 **2.15.3.3.2 Parkway and Rainbow Alternatives**

6 No mitigation is proposed because no long-term impacts to mobility and access are associated  
7 with the proposed Parkway and Rainbow Alternatives. Mitigation for short-term construction  
8 impacts will include the development of transportation management plans by project contractor  
9 to manage and minimize these impacts to vehicular mobility and access.

10 **2.15.3.3.3 Proposed Riverview Alternative**

11 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
12 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
13 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

14 **2.16 Safety**

15 **2.16.1 Bicycle and Pedestrian**

16 **2.16.1.1 Existing Conditions**

17 Locally, no sidewalks exist along Riverview or Rainbow Drives in either Laughlin or Bullhead  
18 City. An ADA compliant sidewalk is present along the currently constructed portion of Bullhead  
19 Parkway west of SR 95. Additionally, no multi-use pathway or bike lane is present along  
20 Riverview Drive, Rainbow Drive, Bullhead Parkway, or the existing Laughlin Bridge.

21 **2.16.1.2 Impacts**

22 **2.16.1.2.1 No Build Alternative**

23 No safety impacts to bicycles and pedestrians would be associated with the No Build Alternative.

24 **2.16.1.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

25 In Bullhead City, each of the proposed build alternatives would increase traffic along the  
26 alignments. This increase may adversely affect the actual or perceived safety of persons  
27 walking, crossing, or riding bicycles along these roads. Construction related activity associated  
28 with any of the three proposed build alternatives may temporarily affect pedestrian and bicycle  
29 safety.

30

1 **2.16.1.3 Mitigation**

2 **2.16.1.3.1 No Build Alternative**

3 No impacts to bicycle or pedestrian safety are associated with the No Build Alternative;  
4 therefore, no mitigation is proposed.

5 **2.16.1.3.2 Proposed Parkway and Rainbow Alternatives**

6 These will include ADA compliant sidewalks and a multi-use pathway that would help increase  
7 safety for bicyclists and pedestrians. Mitigation for short-term construction impacts will include  
8 the development of transportation management plans by project proponents to manage and  
9 minimize these safety impacts to pedestrians and bicyclists.

10 **2.16.1.3.3 Proposed Riverview Alternative**

11 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
12 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
13 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

14 **2.16.2 Evacuation Routes**

15 **2.16.2.1 Existing Conditions**

16 **2.16.2.1.1 Proposed Parkway Alternative**

17 No designated evacuation routes exist within the proposed Parkway Alternative.

18 **2.16.2.1.2 Proposed Rainbow Alternative**

19 No designated evacuation routes exist within the proposed Rainbow Alternative.

20 **2.16.2.1.3 Proposed Riverview Alternative**

21 In the event of a flood potentially from a failure of the Hoover or Davis Dams, the lowest lying  
22 (topographic) populated areas within the two communities lies within the residential area of  
23 Bullhead City known as the Riviera neighborhood which consists of the largely populated  
24 peninsula area north of Riverview Drive and west of SR 95. For this reason, Riverview Drive is  
25 designated as an Evacuation Route for this area on the Bullhead City Evacuation Map of the  
26 Emergency Evacuation and Shelter Locations Information brochure dated April 21, 2009. In  
27 April of 2008, the Bullhead City Office of Emergency Management conducted an evacuation  
28 study to determine the time frame that it would take to evacuate an estimated 11,540 vehicles  
29 from the Riviera neighborhood of Bullhead City in the event of an emergency or disaster. Under  
30 existing conditions, the study indicated that the estimated time to evacuate the Riviera area  
31 moving all the residents to the east on Riverview Drive would be approximately 8 to 12 hours  
32 based on the vertical alignment constraints, limited sight distance, speed limits, direct driveway  
33 access, and limited stop control at the intersections. In addition, emergency service staff such as  
34 police, fire, or National Guard would not be able to comprehensively and effectively direct and

1 control traffic from each of the numerous residential driveways or local feeder streets, which  
2 have direct access to Riverview Drive. This would result in a traffic jam along the evacuation  
3 route, which would be very detrimental to efficiently evacuating the residents in a timely  
4 manner.

5 **2.16.2.2 Impacts**

6 **2.16.2.2.1 No Build Alternative**

7 The No Build Alternative would adversely affect the emergency evacuation routes and times in  
8 the study area.

9 **2.16.2.2.2 Proposed Parkway Alternative**

10 No designated evacuation routes exist along this alternative; therefore, no impacts associated  
11 with the proposed Parkway Alternative.

12 **2.16.2.2.3 Proposed Rainbow Alternative**

13 No designated evacuation routes exist along this alternative; therefore, no impacts associated  
14 with the proposed Rainbow Alternative.

15 **2.16.2.2.4 Proposed Riverview Alternative**

16 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
17 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
18 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

19 **2.16.2.3 Mitigation**

20 **2.16.2.3.1 No Build Alternative**

21 No mitigation is proposed.

22 **2.16.2.3.2 Proposed Parkway Alternative**

23 No mitigation is proposed.

24 **2.16.2.3.3 Proposed Rainbow Alternative**

25 No mitigation is proposed.

26 **2.16.2.3.4 Proposed Riverview Alternative**

27 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
28 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
29 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
30

1 **2.16.3 Emergency Response**

2 **2.16.3.1 Existing Conditions**

3 No emergency medical centers are located in Laughlin. Due to the lack of critical care facilities  
 4 the local residents need to travel to Bullhead City in the event that a hospital visit is required or  
 5 for a medical emergency. The current emergency route is across the existing Laughlin Bridge.

6 **2.16.3.2 Impacts**

7 **2.16.3.2.1 No Build Alternative**

8 The No Build Alternative would adversely affect emergency response in the study area.

9 **2.16.3.2.2 Proposed Parkway, Rainbow, and Riverview Alternatives**

10 In general, any of the proposed build alternatives would increase mobility within and between  
 11 the communities of Laughlin and Bullhead City, so additional emergency response routes would  
 12 be available if a new bridge were built. The results of travel demand modeling show that, when  
 13 compared to a scenario where no new bridge is constructed, a bridge in any of the proposed build  
 14 alternatives locations would substantially improve emergency response times in the region  
 15 (LBHCBP 2009a).

16 Standard distance measurements to determine the emergency response vehicle times for  
 17 comparison were developed. The urban residential centers and urban employment centers for  
 18 both Laughlin and Bullhead City were determined using the socioeconomic projections with a  
 19 base year of 2009 and a horizon outlook of 2030. The distances from each of these centroids  
 20 was then measured in miles to the center point of each of the three proposed bridge alternatives;  
 21 therefore, all measurements were comparable. Then, response times were determined based on  
 22 these distance measurements. Table 23 summarizes the 2030 emergency response times  
 23 associated with each proposed alternative. As shown, construction of a new bridge at the  
 24 Riverview Alternative would result in the fastest emergency response time when compared to the  
 25 other proposed build alternatives (LBHCBP 2009a). All of the proposed build alternatives  
 26 would increase emergency response availability by providing new access to areas of Laughlin  
 27 and Bullhead City.

28 **Table 23. Emergency Response Times (2030)**

Emergency Response Time (minutes)			
No Build Alternative	Proposed Parkway Alternative	Proposed Rainbow Alternative	Proposed Riverview Alternative
37.6	21.7	21.4	20.4

Source: LBHCBP 2009a

1 **2.16.3.3 Mitigation**

2 **2.16.3.3.1 No Build Alternative**

3 No mitigation is proposed.

4 **2.16.3.3.2 Proposed Parkway and Rainbow Alternatives**

5 Since either of the proposed build alternatives would decrease emergency response times, no  
6 mitigation is proposed.

7 **2.16.3.3.3 Proposed Riverview Alternative**

8 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
9 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
10 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

11 **2.17 Potential Section 4(f) and Section 6(f) Resources (Recreation Resources)**

12 **2.17.1 Introduction**

13 Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49  
14 U.S.C. 303, declares that “it is the policy of the United States Government that special effort  
15 should be made to preserve the natural beauty of the countryside and public park and recreation  
16 lands, wildlife and waterfowl refuges, and historic sites.”

17 Section 4(f) specifies that “the Secretary [of Transportation] may approve a transportation  
18 program or project... requiring the use of publicly owned land of a public park, recreation area,  
19 or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site  
20 of national, State, or local significance (as determined by the federal, state or local officials  
21 having jurisdiction over the park, area, refuge, or site) only if:

- 22 • there is no prudent and feasible alternative to using that land; and  
23 • the program or project includes all possible planning to minimize harm to the park,  
24 recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.”

25 Section 4(f) further requires consultation with the Department of the Interior and, as appropriate,  
26 the involved offices of the Department of Agriculture and Department of Housing and Urban  
27 Development in developing transportation projects and programs that use lands protected by  
28 Section 4(f).

29 Use is defined in 23 CFR 774.17 as follows:

30 *Use* occurs when:

- 31 • Land is permanently incorporated into a transportation facility,  
32 • there is temporary occupancy of the land that is adverse in terms of the statute’s  
33 preservationist purposed as determined by the criteria in CFR 774.13(d); or

- 1 • there is a “constructive use” of a Section 4(f) property as determined by the  
2 criteria in CFR 774.15.

3 “*Constructive Use*” occurs when the transportation project does not incorporate land from a  
4 section 4(f) resource, but the project’s proximity impacts are so severe that the protected  
5 activities, features, or attributes that qualify a resource for protection under section 4(f) are  
6 substantially impaired. Substantial impairment occurs when the protected activities, features, or  
7 attributes of the resource are substantially diminished.

8 In August of 2005, SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity  
9 Act: A Legacy for Users) was enacted as Public Law 109-59. Section 6009(a) of SAFETEA-  
10 LU amended existing Section 4(f) legislation to simplify the processing and approval of projects  
11 that have only *de minimis* impacts on lands protected by Section 4(f).

12 A *de minimis* use is defined as follows in the *Guidance for Determining De Minimis Impacts to*  
13 *Section 4(f) Resources* (FHWA/FTA, December 13, 2005):

14 A finding of *de minimis* impact on a historic site may be made when:

- 15 • the process required by Section 106 of the NHPA results in the determination of  
16 “no adverse effect” or “no historic properties affected” with the concurrence of  
17 the SHPO...;
- 18 • the SHPO..., is informed of FHWA’s or FTA’s intent to make a *de minimis*  
19 impact finding based on their written concurrence in the Section 106  
20 determination; and
- 21 • FHWA or FTA has considered the views of any concurring parties participating in  
22 the Section 106 consultation.

23 A finding of *de minimis* impact on a park, recreation area, or wildlife and waterfowl refuge may  
24 be determined when:

- 25 • the transportation use of the Section 4(f) resource, including consideration of  
26 impact avoidance, minimization, and mitigation or enhancement measures, does  
27 not adversely affect the activities, features, and attributes that qualify the resource  
28 for protection under Section 4(f).
- 29 • the Secretary has determined, after public notice and opportunity for public  
30 review and comment, that the transportation program or project will not adversely  
31 affect activities, features, and attributes of the park, recreation area, or waterfowl  
32 refuge eligible for protection under this section; and
- 33 • the finding of the Secretary has received concurrence from the officials with  
34 jurisdiction over the park, recreation area, or wildlife or waterfowl refuge.

1 In accordance with FHWA regulations and guidelines and the analyses of the proposed  
2 Riverview Alternative, a Section 4(f) *de minimis* determination was issued which concluded that  
3 the Riverview Alternative cannot be sustained and would no longer be considered as a proposed  
4 build alternative due to noise, visual, and land use impacts. Also, there are two other avoidance  
5 alternatives that are feasible and prudent avoidance alternatives (Parkway and Rainbow) that  
6 were studied in detail which did not include potential Section 4(f) impacts.

7 Therefore, the Riverview Alternative is no longer a valid reasonable alternative and discussing  
8 mitigation is unnecessary. The Riverview Alternative would be considered one of the  
9 alternatives that were studied but eliminated.

## 10 **2.17.2 Existing Conditions of Section 4(f) and Section 6(f) Properties**

### 11 ***2.17.2.1 Historic Properties***

12 There are no historic or architectural properties, waterfowl refuges, or existing or planned public  
13 school sites (with access to public recreational opportunities) that are subject to Section 4(f) and  
14 Section 6(f) evaluation associated with any of the proposed build alternatives on the Bullhead  
15 City portion of the study area. No public owned parks, recreation areas, wildlife or waterfowl  
16 refuges, historic or architectural properties or existing or planned public school sites (with access  
17 to public recreational opportunities) that are subject to Section 4(f) and Section 6(f) evaluation  
18 are located within the Laughlin portion of the study area.

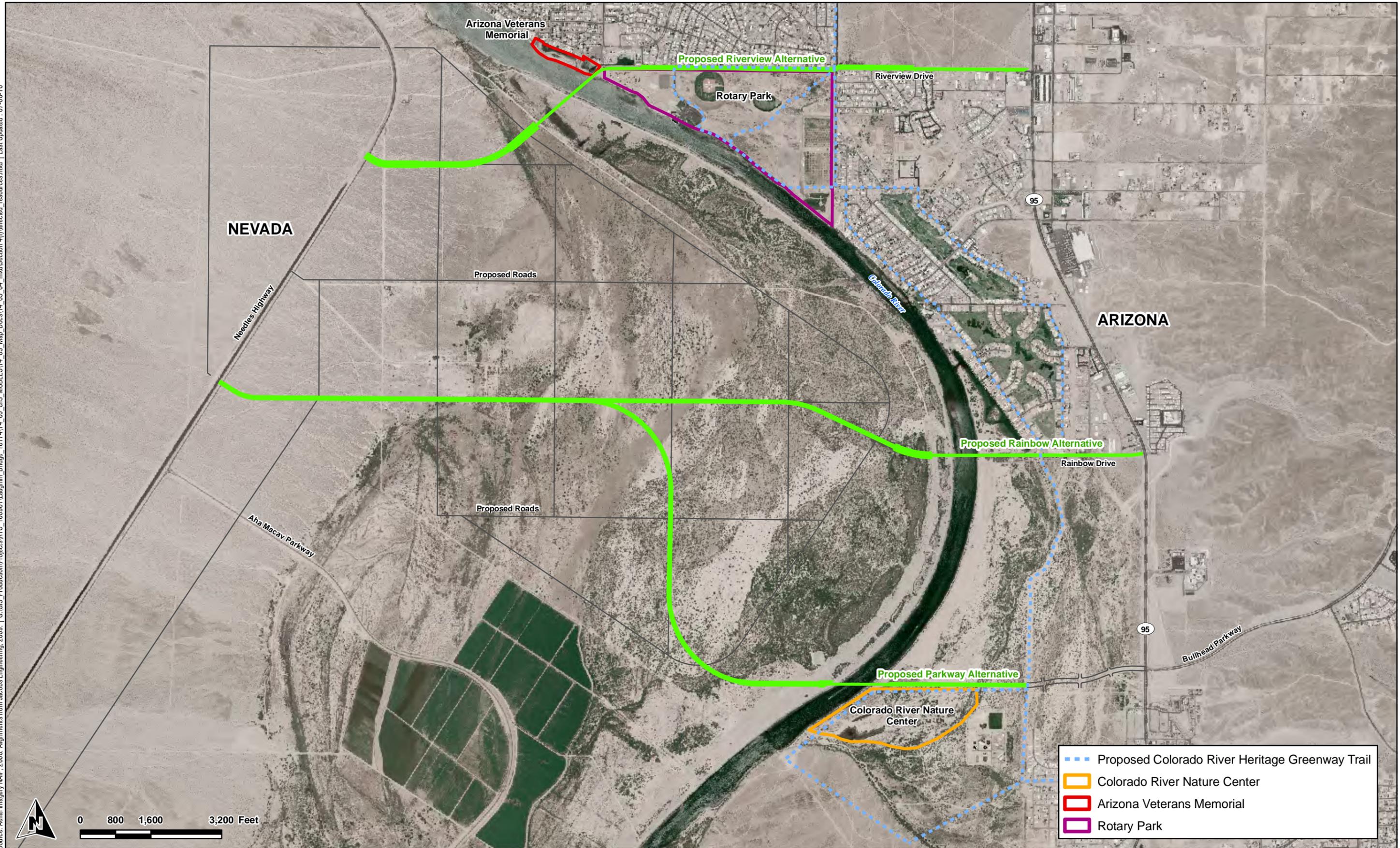
### 19 ***2.17.2.2 Recreation Properties***

20 The following public recreation resources (parks, trail, and nature center) are located within the  
21 Bullhead City portion of the study area for the project: Rotary Park, the Arizona Veterans  
22 Memorial Park, the Colorado River Heritage Greenway Trail, and the Colorado River Nature  
23 Center (Figure 26). All of these recreation resources are subject to Section 4(f) and Section 6(f)  
24 evaluation, and therefore are discussed together in this section (LBHCBP 2010c). Section 4(f)  
25 and Section 6(f) are also discussed together because it is common for recreational resources to  
26 receive Land and Water Conservation Fund Act funding, making Section 6(f) integral to the  
27 Section 4(f) process. Additional detailed information is located in Appendix F.

#### 28 **Rotary Park**

29 Rotary Park, the largest regional park (212-acres) in Bullhead City, is located about a mile west  
30 of SR 95 and is bordered by Lakeside Drive on the east, Riverview Drive on the north, and the  
31 Colorado River on the southwest. Rotary Park is previously withdrawn BOR land and currently  
32 is leased by Bullhead City from the BLM. Rotary Park is accessible by  
33 vehicles/bicycles/pedestrians from Lakeside and Riverview drives, and by watercraft along the  
34 Colorado River. Rotary Park has a number of recreational facilities, including basketball courts;  
35 softball, baseball, and soccer fields; a covered playground; skate park; amphitheater; model  
36 airplane runway; and a marina and non-motorized boat launch with picnic areas, gazebos, and

Source: Aerial Imagery NAD, 2006. Alignments from Jacobs Engineering, 2009. | G:\GIS Production\Projects\FTC - 100961\Laughlin Bridge - 18174\14\_00\_GIS MODEL\14\_03\_Map Docs\14\_03\_04\_mxd\Section 4(f)\affected\_resources.mxd | Last Updated: 07-08-10



1 ramadas. Additionally, numerous natural interpretive trails/paths (known as the Riverview Trail  
2 running along the river) join the northeast corner of the park that connects to the Colorado River  
3 Heritage Greenway Trail (Heritage Trail). According to the Rotary Park Plan Update 2006, a  
4 dog park, disc golf turf, exercise stations, additional volleyball and soccer fields, and a fishing  
5 platform are planned for the park (Bullhead City 2006) (Appendix F—Figure 7). In 2006,  
6 Rotary Park received a (National Park Service, Land, & Water Conservation Fund [LWCF])  
7 grant, which is Section 6(f) funding, to install soccer field lighting.

#### 8 **Arizona Veterans Memorial Park**

9 Arizona Veterans Memorial Park is a 12-acre site on the Colorado River just northwest of  
10 Riverview Drive. The park is administered by Bullhead City on Arizona state trust lands as a  
11 collaborative community effort project with the Arizona Veterans Memorial, Inc., a non-profit  
12 association. As planned, it includes a monument built on an out-cropping of land between two  
13 bays and faces out toward the Colorado River, providing a dramatic venue for the monument.  
14 The park includes a beach, ramadas, a speaker's gazebo, two pedestrian bridges, a memorial  
15 plaza with a fountain and monument with the names of the fallen soldiers, beneath nine flags  
16 including: American, Arizona, American Legion, Army, Navy, Marine Corps, Air Force, Coast  
17 Guard and Prisoners Of War. The "Trail of Memories" is a key element in the Arizona Veterans  
18 Memorial, extending over 1,600 feet through the memorial park, passing by monuments to  
19 Congressional Medal of Honor winners and ending at the Arizona Veterans Memorial Plaza,  
20 containing over 3,000 fallen service men and women from World War I to the present.

#### 21 **The Colorado River Heritage Greenway Trail**

22 The Colorado River Heritage Greenway Project is a community-based effort to establish a river  
23 and land trail system for the residents and visitors of Bullhead City. The trails would link  
24 canoeists, kayakers, boaters, walkers, and bicyclists to the region's family of parks including  
25 Lake Mead National Recreation Area, Davis Camp, Community Park, Rotary Park, Ken  
26 Fovargue Park, and the Colorado River Nature Center. A Colorado River Heritage Greenway  
27 Master Plan was developed for the Bullhead City Parks, Recreation, and Community Services  
28 Department (PRCSD) and the Colorado River Heritage Greenway Trail Association in October  
29 2003. Local citizens, business owners, and government officials are working together in a  
30 public-private partnership to develop this plan. Four segments of the trail have been completed  
31 to date, with trailheads located at Davis Camp, Heritage Park (just south of the existing Laughlin  
32 Bridge), Ken Fovargue Park, and Rotary Park. Eventually, the River Trail would travel along  
33 the Colorado River by Rotary Park in Bullhead City.

#### 34 **The Colorado River Nature Center**

35 The Colorado River Nature Center is a wildlife sanctuary and a daytime public recreation area  
36 cooperatively managed by Bullhead City, BLM, and AGFD. The Colorado River Nature Center  
37 is located south and west of the Mohave Crossroads Shopping Center. The property is accessed  
38 by vehicle from the west end of Richardo Avenue or from the Colorado River by watercraft. The

1 Colorado River Nature Center is approximately 140 acres in size and is located on lands deeded  
2 to the AGFD by the Arizona State Lands Department (Appendix F—Figure 10). The primary  
3 management objective for the Colorado River Nature center is to provide for riparian/wetland  
4 protection (to create habitat) and compatible wildlife-oriented recreation such as swimming,  
5 fishing, boating, hiking, and bird-watching. The overall goal is to provide for management of  
6 wildlife and public recreation through restoring the historic backwater that occurred in the area.

### 7 **2.17.3 Impacts to Section 4(f) Properties and Section 6(f) Properties**

#### 8 ***2.17.3.1 No Build Alternative***

9 With the No Build Alternative, new ROW would not be required; therefore, no impacts to public  
10 recreational resources would occur.

#### 11 ***2.17.3.2 Proposed Parkway Alternative***

##### 12 **Colorado River Nature Center**

13 Engineering design considerations were implemented so that the proposed Parkway Alternative  
14 would not require an acquisition or conversion, change in land use or amenities of this wildlife  
15 and recreational area.

16 Noise levels produced by traffic in 2030 would be between 53 and 64 dBA. Receivers PKWY-  
17 1 through PKWY-7 would not exceed the FHWA mitigation criterion (NAC established land use  
18 category B of 67 dBA). Therefore, the proposed Parkway Alternative would not have a  
19 “constructive use” noise impact to the Colorado River Nature Center. However, the Colorado  
20 River Nature Center Interdisciplinary Team (local officials having jurisdiction of the Colorado  
21 River Nature Center) has identified the proposed Parkway Alternative to have potential noise  
22 impacts that would likely deter wildlife from using the Nature Center. Therefore, this would be  
23 in conflict with the goal to manage this area for high-value wildlife habitat unless proposed  
24 mitigation measures were implemented.

25 Based on visual impacts analysis datapoint KOP 5, the proposed bridge would produce a  
26 moderate level of change for recreationalists (with a medium viewer sensitivity rating) utilizing  
27 the river and adjacent public areas. Please refer to *Section 2.13 Visual Resources* for additional  
28 information on visual impacts. The roadway would likely not be seen due to the elevation of the  
29 roadway is flush with the land and vegetation would impede the view. However, the Colorado  
30 River Nature Center Interdisciplinary Team has identified the proposed Parkway Alternative to  
31 have potential light pollution (from any proposed street lights) impacts that would likely deter  
32 wildlife from using the Nature Center and therefore would be in conflict with the goal to manage  
33 this area for high-value wildlife habitat unless proposed mitigation measures were implemented.  
34 In addition, the Nature Center is designated as Visual Resource Management Class III. Per the  
35 BLM Resource Management Plan, this designation states that the BLM would manage the area  
36 to partially retain the existing character of the landscape, the level of change to the characteristic

1 landscape should be moderate, and management activities may attract attention but should not  
2 dominate the view of the casual observer.

3 Mobility and access to and within the park and parking lots would be maintained for watercraft,  
4 vehicles, bicycles, and pedestrians. In fact, mobility and access would be increased based on the  
5 construction of a 12-foot multi-use pathway associated with the proposed Parkway Alternative  
6 along the southern border of the project. Thus, it provides another connection opportunity for  
7 the trail network. This would enhance regional connectivity between park users of both  
8 Laughlin and Bullhead City.

9 Public safety access to the Colorado River Nature Center would be maintained for emergency  
10 service vehicles (police, fire, and ambulance).

11 BLM formally responded on behalf of the Colorado River Nature Center Interdisciplinary Team  
12 regarding potential Section 4(f) “constructive use” impacts from the proposed Parkway  
13 Alternative to the Colorado River Nature Center (Appendix F—Attachment 7). However, their  
14 letter concluded that if proposed mitigation measures were incorporated into the proposed  
15 Parkway Alternative, potential “constructive use” impacts to the Colorado River Nature Center  
16 could be considered mitigated. Therefore, the proposed Parkway Alternative would not have  
17 “constructive use” impacts to the Colorado River Nature Center based on the mitigation  
18 measures discussed below. The potential impacts associated with the Parkway Alternative  
19 would not substantially diminish the utility of the Section 4(f) resources and the activities,  
20 features, and attributes of the Colorado River Nature Center would not be substantially impaired.

### 21 **Colorado River Heritage Greenway Trail**

22 Trail connections for this portion of the Colorado River Heritage Greenway Trail are not  
23 currently constructed in this area. Engineering design considerations were implemented so that  
24 the proposed Parkway Alternative would not require an acquisition or conversion, change in land  
25 use or amenities of the Colorado River Heritage Greenway Trail.

26 Potential noise and visual impacts to recreationalists using the Colorado River Heritage  
27 Greenway Trail from the proposed Parkway Alternative would be similar to those previously  
28 discussed above for the Colorado River Nature Center. This is due to the fact that the trail would  
29 be constructed within the same nearby areas. However, recreational trail users vary from the  
30 typical stationary park users. They tend to have less extended exposure time to the noise impacts  
31 and viewshed due to constant motion and they tend not to be exclusively focused on the  
32 surrounding scenery.

33 Mobility and access to and within the future planned trail would be maintained for bicycles and  
34 pedestrians. In fact, mobility and access would be increased based on the construction of a 12-  
35 foot multi-use pathway associated with the proposed Parkway Alternative along the southern  
36 border of the project. Thus, it provides another connection opportunity for the trail network.

1 This would enhance regional connectivity between park users of both Laughlin and Bullhead  
2 City.

3 Public safety access to the Colorado River Heritage Greenway Trail would be maintained for  
4 emergency service vehicles (police, fire, and ambulance).

5 The proposed Parkway Alternative would not have “constructive use” impacts to the Colorado  
6 River Heritage Greenway Trail.

### 7 ***2.17.3.3 Proposed Rainbow Alternative***

#### 8 **Colorado River Heritage Greenway Trail**

9 Trail connections for this portion of the Colorado River Heritage Greenway Trail are not  
10 currently constructed in this area. Engineering design considerations were implemented so that  
11 the proposed Rainbow Alternative would not require an acquisition or conversion, change in land  
12 use or amenities of the Colorado River Heritage Greenway Trail.

13 Potential noise and visual resources impacts to recreationalists using the Colorado River Heritage  
14 Greenway Trail from the proposed Rainbow Alternative were not evaluated because users would  
15 have extremely limited interaction at this location. Recreational trail users differ from the typical  
16 stationary park users. They tend to have less extended exposure time to the noise impacts and  
17 viewshed due to constant motion and they tend not to be exclusively focused on the surrounding  
18 scenery. This is evident due to the fact that this planned portion of the trail would cross the  
19 proposed Rainbow Alternative at only one small location in a north-south direction.

20 Mobility and access to and within the future planned trail would be maintained for bicycles and  
21 pedestrians. In fact, mobility and access would be increased based on the construction of a 12-  
22 foot multi-use pathway associated with the proposed Rainbow Alternative along the southern  
23 border of the project. Thus, it provides another connection opportunity for the trail network.  
24 This would enhance regional connectivity between park users of both Laughlin and Bullhead  
25 City.

26 Public safety access to the Colorado River Heritage Greenway Trail would be maintained for  
27 emergency service vehicles (police, fire, and ambulance).

28 The proposed Rainbow Alternative would not have “constructive use” impacts to the Colorado  
29 River Heritage Greenway Trail.

### 30 ***2.17.3.4 Proposed Riverview Alternative***

#### 31 **Rotary Park**

32 A Section 4(f) *de minimis* determination was issued (Appendix F—Attachment 6), and  
33 concluded that the Riverview Alternative cannot be sustained and would no longer be considered  
34 as a proposed build alternative due to noise, visual, and land use impacts. Also, there are two

1 other avoidance alternatives that are feasible and prudent that were studied in detail which did  
 2 not include potential Section 4(f) impacts. Discussed below in detail are the impacts that were  
 3 studied prior to the Section 4(f) *de minimis* determination issued.

4 The 2.7 acres of Rotary Park land that would be required for the project include primarily vacant  
 5 parklands and a small peripheral portion of the future planned disc golf turf along the northern  
 6 border of the park. This required land would be located south from the existing Riverview Drive  
 7 between the river and Lakeside Drive. This land acreage estimate is based on an initial  
 8 acquisition and conversion of 3.5 acres of Rotary Park (Table 24). Also, there would be an  
 9 acquisition of the entire 1.2-acre private parcel (Mohave County Assessor Parcel #219-11-019)  
 10 near the river and the most northwestern area of Rotary Park. However, this full parcel acreage  
 11 (1.2 acres) is not required for the proposed Riverview Alternative, only 0.4 acres is required, thus  
 12 leaving a remaining 0.8 acre that would be reverted from a transportation use back to Rotary  
 13 Park (a net gain). This gain (0.8 acre) added to the required 3.5 acres equates to the total of 2.7  
 14 acres of Rotary Park that would be required and have a Section 4(f) land use impact. In addition,  
 15 the park main entrance sign would need to be relocated (Appendix F–Photo 1). Although Rotary  
 16 Park received a LWCF grant [Section 6(f) lands] to install soccer field lighting, the lighting is  
 17 not impacted by this project.

18 **Table 24. Rotary Park and Private Parcel Land Use Impacts for the proposed Riverview**  
 19 **Alternative**

Land Acquisition	Acreage
Rotary Park (recreation use)	3.5
Private Parcel (transportation use)	1.2
<b>Initial Subtotal</b>	<b>4.7</b>
Rotary Park (recreation use)	3.5
Private parcel reverted from transportation use (net benefit recreation use for Rotary Park)	<0.8>
<b>Recreation Use Subtotal</b>	<b>2.7</b>
Private Parcel (transportation use)	0.4
<b>Final Subtotal</b>	<b>3.1</b>

20  
 21 Based on predicted future peak-hour noise levels at receivers, RIV-14, which is located at the  
 22 northern extent of the ball fields within Rotary Park, noise level would approach (within 3 dBA)  
 23 but not exceed the ADOT noise abatement criterion (established land use category B of 67 dBA).  
 24 Please refer to *Section 2.12 Noise* for additional details for the noise impacts in this area.  
 25 According to the ADOT NAP, noise barriers would be constructed to mitigate noise impacts  
 26 unless the majority of impacted customers are opposed to their construction. In this case,  
 27 Bullhead City, which is responsible for planning and operating Rotary Park, has opposed the  
 28 construction of a potential noise barrier, which would screen the park from the roadway.

## Environmental Impacts and Mitigation

1 Based on the assessed potential visual impacts at KOP 2, the bridge would produce a moderate  
2 level of visual change for recreationalists (with a medium viewer sensitivity rating) utilizing the  
3 river and adjacent public areas. Please refer to *Section 2.13 Visual Resources* for additional  
4 information on the visual impacts in this area. The proposed roadway would not likely be seen  
5 due to the difference in elevations; therefore, it would not produce a level of change for the  
6 viewers.

7 Mobility and access to and within the park and parking lots would be maintained for watercraft,  
8 vehicles, bicycles, and pedestrians. Requests from and coordination with Bullhead City staff has  
9 ensured that potential trail connections would be maintained (including under the proposed  
10 bridge) and would provide increased access. Bullhead City PRCS staff is considering a  
11 pedestrian bridge connection between the most northwest portion of Rotary Park and the  
12 southern most portion of the Arizona Veterans Memorial Park to provide another connection for  
13 the Colorado River Heritage Greenway Trail network. Mobility and access would also be  
14 increased based on the construction of a 12-foot-wide multi-use pathway associated with the  
15 proposed Riverview Alternative along the northern border of Rotary Park. These new  
16 connections would increase recreational opportunities and enhance regional connectivity  
17 between park users of both Laughlin and Bullhead City.

18 Public safety access to and within Rotary Park would be maintained for emergency service  
19 vehicles (police, fire, and ambulance).

20 Rotary Park is the largest park in Bullhead City, Arizona. It is a 212-acre regional park leased by  
21 Bullhead City from the Bureau of Land Management. Rotary Park abuts the Colorado River,  
22 and provides many amenities for park users. One of the main features and attributes of Rotary  
23 Park is that it contains a beach and views of the Colorado River. There is currently no visual  
24 obstruction between Rotary Park and the Colorado River. The beach area has picnic armadas so  
25 that park users can enjoy a picnic along the park's unobstructed view of the Colorado River.

26 Approximately 2.7 acres of Rotary Park would be permanently incorporated into the proposed  
27 Riverview Alternative. In addition to the 2.7 acres acquired from Rotary Park, the construction  
28 of the proposed Riverview alternative would also change the function of the overall park  
29 amenities because of increased noise and visual impacts to Rotary Park.

30 The introduction of a new visual obstruction (i.e., the new bridge and accompanying traffic)  
31 would adversely affect the features and attributes of Rotary Park for park users. Additionally,  
32 the approach fill and bridge piers would affect the visual quality of the beach area. Regardless of  
33 whether the proposed bridge would cause a "moderate" or "significant" adverse visual impact,  
34 even a "moderate" adverse impact is more than a minor or *de minimis* impact.

35 The level of controversy generated by the proposed use of Rotary Park also shows that the  
36 proposed project will have more than a *de minimis* impact. The proposed project would also

1 bring new traffic noise to an area that does not currently have vehicular traffic noise from the  
2 riverfront area of the park.

3 Although the scope of the Riverview Alternative was reduced with proposed avoidance,  
4 minimization, enhancements, and mitigation, there were still adverse noise, visual, and land use  
5 impacts to Rotary Park.

6 Therefore, the proposed Riverview Alternative would adversely affect the park amenities, the  
7 activities, features, or attributes that qualify Rotary Park for protection under Section 4(f).

#### 8 **Arizona Veterans Memorial Park**

9 The proposed Riverview Alternative would not require an acquisition or conversion, change in  
10 land use or amenities of this recreational park.

11 Based on the assessed potential visual impacts at KOP 8, the bridge would produce a major level  
12 of visual change for recreationalists (with a medium viewer sensitivity rating) utilizing the park,  
13 the plaza, adjacent public areas, and the river. Please refer to *Section 2.13 Visual Resources* for  
14 additional information on visual impacts. This would be considered a potential “constructive  
15 use” visual impact because it substantially impairs the aesthetic features of the plaza. The  
16 proposed roadway would not likely be seen due to the difference in elevations; therefore, it  
17 would not produce a level of change for the viewers.

18 Mobility and access to and within the Arizona Veterans Memorial Park and parking lots would  
19 be maintained for watercraft, vehicles, bicycles, and pedestrians. Bullhead City PRCSO staff is  
20 considering a pedestrian bridge connection between the most northwest portion of Rotary Park  
21 (this land is what would be reverted from right-of-way acquisition of the private parcel to  
22 construct the proposed Riverview Alternative) and the Arizona Veterans Memorial Plaza to  
23 provide another connection for the Colorado River Heritage Greenway Trail network. This  
24 pedestrian walkway would increase recreational opportunities.

25 Public safety access to and within Arizona Veterans Memorial Park would be maintained for  
26 emergency service vehicles (police, fire, and ambulance).

27 Based on predicted future peak-hour noise levels at receivers, RIV-52 would not exceed the  
28 FHWA mitigation criterion (NAC established land use category B of 67 dBA). Please refer to  
29 *Section 2.12 Noise* for additional information on noise impacts. Therefore, the proposed  
30 Riverview Alternative would not have a “constructive use” noise impact to Arizona Veterans  
31 Memorial Park.

#### 32 **Colorado River Heritage Greenway Trail**

33 Trail connections for this portion of the Colorado River Heritage Greenway Trail are currently  
34 constructed within Rotary Park. Engineering design considerations were implemented so that

1 the proposed Riverview Alternative would not require an acquisition or conversion, change in  
2 land use or amenities of this recreational area.

3 Potential noise and visual impacts to recreationalists using the Colorado River Heritage  
4 Greenway Trail from the proposed Riverview Alternative would be similar to that in Rotary  
5 Park. However, recreational trail users vary from the typical, stationary park users. They tend to  
6 have less extended exposure time to the noise impacts and viewshed due to constant motion and  
7 they tend not to be exclusively focused on the surrounding scenery. Please refer to *Section 2.12*  
8 *Noise* for additional information on noise impacts.

9 Mobility and access to and within the Colorado River Heritage Greenway Trail would be  
10 maintained for bicycles and pedestrians. Bullhead City PRCS staff is considering a pedestrian  
11 bridge connection between the most northwest portion Rotary Park and the southern most  
12 portion of the Arizona Veterans Memorial Park to provide another connection for the Colorado  
13 River Heritage Greenway Trail network. This new connection would increase recreational  
14 opportunities and enhance regional connectivity between park users of both Laughlin and  
15 Bullhead City.

16 Public safety access to and within the Colorado River Heritage Greenway Trial would be  
17 maintained for emergency service vehicles (police, fire, and ambulance).

#### 18 **2.17.4 Mitigation**

##### 19 ***2.17.4.1 No Build Alternative***

20 No mitigation will be required as no impacts to Section 4(f) resources are associated with the No  
21 Build Alternative.

##### 22 ***2.17.4.2 Proposed Parkway Alternative***

###### 23 **Colorado River Nature Center**

24 As previously discussed, the Colorado River Nature Center Interdisciplinary Team has identified  
25 the proposed Parkway Alternative to have potential impacts that would likely deter wildlife from  
26 using the Nature Center and therefore would be in conflict with the goal to manage the area for  
27 high-value wildlife habitat (Appendix F—Attachment 7). However, their letter concluded that if  
28 proposed mitigation measures were incorporated into the proposed Parkway Alternative,  
29 potential “constructive use” impacts to the Colorado River Nature Center could be mitigated.

30 To address potential impacts from light pollution, shields will be installed to ensure that the  
31 lights on the bridge and roadway are directed at the roadway and not permitted to contribute to  
32 light pollution in the area. Noise will be reduced by creating a vegetated earthen berm between  
33 the Colorado River Nature Center and the proposed Parkway Alternative. This earthen berm will  
34 be made of fill already existing within the Colorado River Nature Center. This removal of fill  
35 will create a portion of the planned wetland, furthering the development plans of the Colorado

1 River Nature Center and providing additional opportunities for wildlife within the area. Off-  
2 Highway Vehicle (OHV) access issues will be solved through the installation of a fence near the  
3 earthen berm and barriers installed under the bridge.

4 These mitigation suggestions will be incorporated into the proposed Parkway Alternative during  
5 final design processes by the project proponents. Preliminary design and size specifications  
6 (approximately 2,900 feet [length] by 58 feet [width] by 6 feet [height]), and the location of the  
7 vegetated earthen berm are indicated on Appendix F—Figure 10 (minimum 25 feet south of  
8 northern border of parcel for maintenance access). The earthen berm has been proposed at a 6-  
9 foot height (similar to an effective noise barrier) which would reduce projected traffic noise  
10 affects approximately 5 dBA. The Colorado River Nature Center Interdisciplinary Team has  
11 committed to ensuring a water supply will be available for irrigation of the vegetation on the  
12 earthen berm.

13 Extensive agency coordination and public involvement efforts have been associated with the  
14 Colorado River Nature Center (Appendix F—Section 6.5). This includes numerous agency  
15 meetings, public information and neighborhood meetings, door-to-door surveys, and the receipt  
16 of extensive public comments. All received comments are included and summarized in  
17 Appendix H of this EA. In addition, agency coordination efforts are further summarized in  
18 Appendix F—Section 3.0.

19 Therefore, the proposed Parkway Alternative does not have “constructive use” impacts to the  
20 Colorado River Nature Center. The potential impacts associated with the Parkway Alternative  
21 would not substantially diminish the utility of the Section 4(f) resources and the activities,  
22 features, and attributes of the Colorado River Nature Center would not be substantially impaired.

### 23 **Colorado River Heritage Greenway Trail**

24 Trail connections for this portion of the Colorado River Heritage Greenway Trail are not  
25 currently constructed in this area. Engineering design considerations were implemented so that  
26 the proposed Riverview Alternative would not require an acquisition or conversion, change in  
27 land use or amenities of the Colorado River Heritage Greenway Trail.

28 This new trail connection to the proposed Parkway Alternative via the multi-use pathway across  
29 the bridge would increase recreational opportunities and enhance regional connectivity between  
30 trail users of both Laughlin and Bullhead City.

31 Extensive agency coordination and public involvement efforts have been associated with the  
32 Colorado River Heritage Greenway Trail (Appendix F—Section 6.5). This includes numerous  
33 agency meetings, public information and neighborhood meetings, door-to-door surveys, and the  
34 receipt of extensive public comments. All received comments are included and summarized in  
35 Appendix H of this EA. In addition, agency coordination efforts are further summarized in  
36 Appendix F—Section 3.0.

1 The proposed Parkway Alternative does not have “constructive use” impacts to the Colorado  
2 River Heritage Greenway Trail.

### 3 **2.17.4.3 Proposed Rainbow Alternative**

#### 4 **Colorado River Heritage Greenway Trail**

5 Trail connections for this portion of the Colorado River Heritage Greenway Trail are not  
6 currently constructed in this area. Engineering design considerations were implemented so that  
7 the proposed Riverview Alternative would not require an acquisition or conversion, change in  
8 land use or amenities of the Colorado River Heritage Greenway Trail.

9 This new trail connection to the proposed Rainbow Alternative via the multi-use pathway across  
10 the bridge would increase recreational opportunities and enhance regional connectivity between  
11 trail users of both Laughlin and Bullhead City.

12 Extensive agency coordination and public involvement efforts have been associated with the  
13 Colorado River Heritage Greenway Trail (Appendix F—Section 6.5). This includes numerous  
14 agency meetings, public information and neighborhood meetings, door-to-door surveys, and the  
15 receipt of extensive public comments. All received comments are included and summarized in  
16 Appendix H of this EA. In addition, agency coordination efforts are further summarized in  
17 Appendix F—Section 3.0.

18 The proposed Rainbow Alternative does not have “constructive use” impacts to the Colorado  
19 River Heritage Greenway Trail.

### 20 **2.17.4.4 Proposed Riverview Alternative**

21 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
22 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
23 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.  
24 Mitigation that was previously proposed can be found in (Appendix F—Section 6.4).

## 25 **2.18 Indirect Effects**

26 This proposed project is in response to the growth planned within the Laughlin and Bullhead  
27 City region, which would require a new Colorado River bridge crossing to serve the existing and  
28 predicted increase in AADT traffic as planned developments build out to capacity in the next 20  
29 years.

30 NEPA requires that the potential direct, indirect, and cumulative impacts of a federal-funded or  
31 approved project be identified and evaluated. Within the context of NEPA, CEQ defines indirect  
32 effects as:

33 “...effects, which are caused by the action and are later in time or farther removed in  
34 distance, but are still reasonably foreseeable. Indirect effects may include growth

1 inducing effects and other effects related to induced changes in the pattern of land use,  
2 population density or growth rate, and related effects on air and water and other natural  
3 systems, including ecosystems” (40 CFR 1508.8).”

4 In many cases, these indirect effects would occur outside of the project ROW. As to the cause  
5 and effect relationship between the project and the indirect impact, CEQ states that indirect  
6 effects may include induced changes to land use resulting in resource impacts (40 CFR 1508.8).  
7 Other indirect effects include the potential alteration of, or encroachment on, the affected  
8 environment. Examples of this include fragmentation of a habitat and functional effects to water  
9 resources.

10 The National Cooperative Highway Research Program (NCHRP) Report 466, *Desk Reference*  
11 *for Estimating Indirect Effects of Proposed Transportation Projects* (National Research Council,  
12 2002), states that “development effects are most often found up to 1 mile around a freeway  
13 interchange, up to two to five miles along major feeder roadways to the interchange, and up to  
14 one-half mile around a transit station”. The NCHRP Report 466 goes on to say that there are  
15 certain general circumstances, which may influence the likelihood of induced development shifts  
16 (National Research Council, 2002). Thus, the two- to five-mile boundary serves as a guideline,  
17 and individual projects must be analyzed on a case-by-case basis.

18 The study area for the indirect effects analysis, or Area of Influence (AOI), is the same as the  
19 study area for the Community Impact Assessment (CIA) (LBHCBP, 2010b). The study area for  
20 a CIA usually includes the communities within and adjacent to the project’s proposed build  
21 alternatives. The study area for the CIA and the AOI for the indirect effects analysis associated  
22 with the Laughlin–Bullhead City Bridge Project is a radius comprised of the areas adjacent to  
23 each of the three proposed build alternatives (called the proposed Riverview, Rainbow, and  
24 Parkway Alternatives).

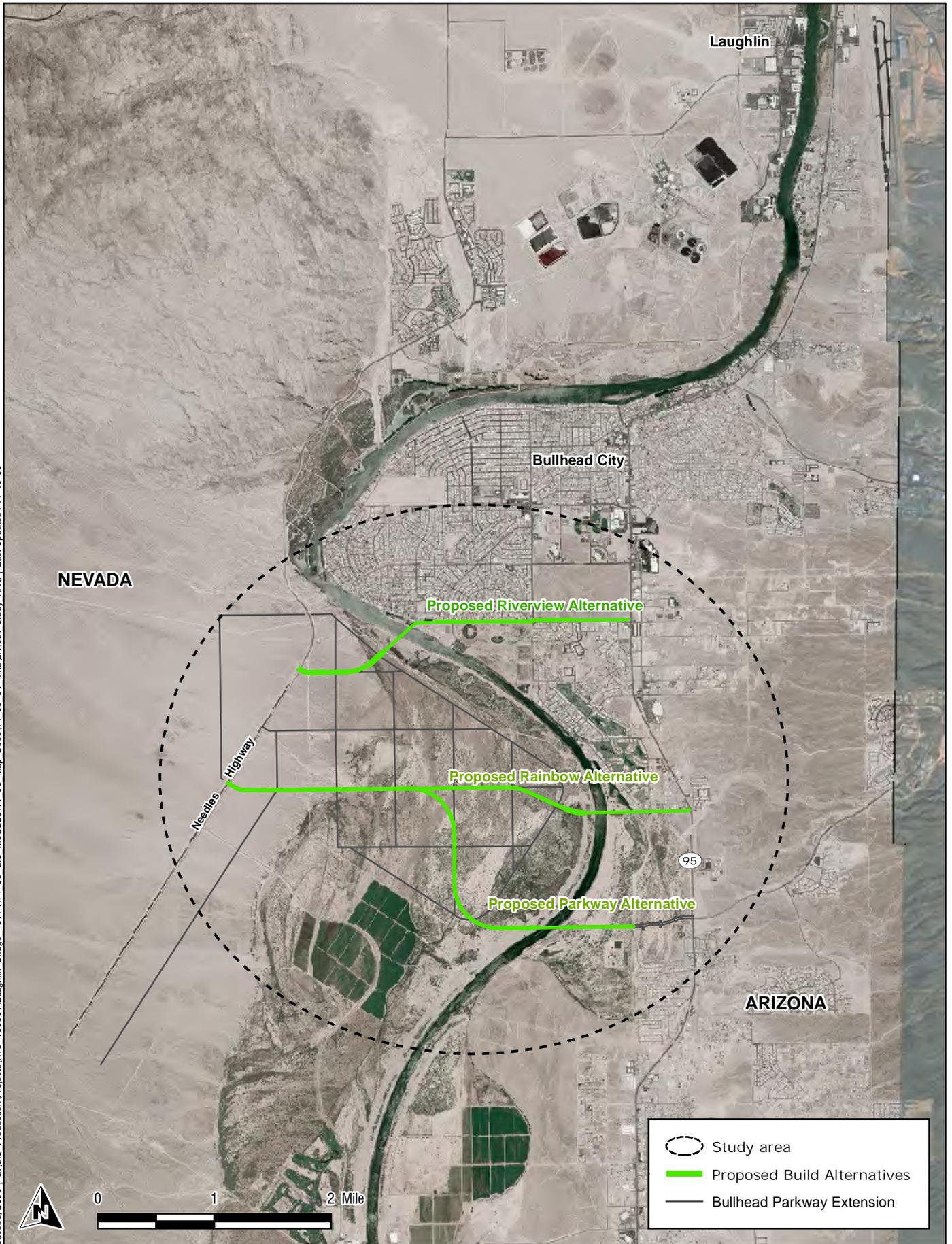
25 Figure 27 shows the location of each proposed build alternative in the AOI. As shown on Figure  
26 27, the AOI is within the limits of Laughlin, an unincorporated town administered by Clark  
27 County, Nevada, and the City of Bullhead City, Mohave County, Arizona.

### 28 **2.18.1 Planned Development and Development Potential in the Area of Influence**

29 The following sections summarize the planned development and the development potential  
30 within the AOI around the proposed build alternatives. This information is provided to better  
31 understand and evaluate the potential indirect effects of the proposed alternatives. The  
32 information is presented by State and by proposed Alternative to support a more concise  
33 presentation of the material.

34

Jacobs, 2009 | G:\GIS Production\Projects\RTC\_100961\Laughlin Bridge\_1817414\_00\_GIS\_MODELS\14\_03\_Map\_Docs\14\_03\_04\_mxd\EACIA\_Study\_Area\_Last\_Updated\_11-16-09



1 **2.18.1.1 Planned Development**

2 *2.18.1.1.1 Nevada for the No Build Alternative*

3 There would be no indirect effects associated with the No Build Alternative.

4 *2.18.1.1.2 Nevada for the proposed Bullhead Parkway, Rainbow, and Riverview Alternatives*

5 Land on the Nevada side of the AOI, where all three proposed build alternatives would be  
6 located is mostly undeveloped and the majority of this land is owned by Clark County. In  
7 addition, there are currently a few parcels near Camel Trail Drive in private ownership adjacent  
8 to the joint alignment portion (western end) of the proposed Rainbow and Parkway Alternatives.  
9 According to a town representative, the undeveloped lands of the AOI do not have any  
10 infrastructure currently constructed that may support residential or commercial development  
11 (Murray 2009).

12 Laughlin is currently planning the development of a 400-acre industrial park on the west side of  
13 Needles Highway, which is just outside of the AOI for the proposed build alternatives.  
14 Development of this area would result in the extension of infrastructure to a point just south of  
15 the existing Big Bend State Park property (Murray 2009). The area that would support the  
16 industrial park is identified as BDRP on the current Laughlin Planned Land Use Map (Clark  
17 County 2008b).

18 The west end of the proposed Parkway and Rainbow Alternatives begins at Needles Highway  
19 heading east sharing a joint portion of alignment then splits about half-way to the river and each  
20 portion curves southeast and continues east through the designated MDP lands. According to a  
21 town representative, this particular portion of the MDP area surrounding the proposed Rainbow  
22 and Parkway Alternatives is not expected to receive infrastructure or develop for 10 to 20 years,  
23 possibly longer (Murray 2009).

24 The proposed Riverview Alternative begins at Needles Highway heading east and is located  
25 within land identified for future development (Major Development Plan, or MDP). According to  
26 a Laughlin representative, this area may only be developed after county approval of a  
27 development plan and there are currently no proposed development plans submitted (Murray  
28 2009). This area would be adjacent to infrastructure developed as part of the designated  
29 industrial park lands (BDRP) mentioned above, so the MDP area near the proposed Riverview  
30 Alternative may be developed sooner than similarly designated land farther to the south near the  
31 proposed Rainbow and Parkway Alternatives.

32 Land in the Laughlin portion of the AOI is mostly designated for future development that would  
33 require a development agreement. This part of Laughlin does not currently have infrastructure to  
34 support residential or commercial development, although planned development of an industrial  
35 park just south of the southern boundary of Big Bend State Park would bring infrastructure  
36 closest to the proposed Riverview Alternative.

1 2.18.1.1.3 Arizona for the No Build Alternative

2 There would be no indirect effects associated with the No Build Alternative.

3 2.18.1.1.4 Arizona for the proposed Parkway, Rainbow, and Riverview Alternatives

4 Land on the Arizona side of all three proposed build alternatives is within the limits of Bullhead  
5 City. Land in the Bullhead City area ranges from developed residential and commercial uses  
6 along the proposed Rainbow and Riverview Alternatives to publicly administered lands along the  
7 all three proposed build alternatives. The proposed Parkway and Rainbow Alternatives would  
8 require the construction of new road through undeveloped area, which would provide  
9 continuations of roadways that are not currently constructed all the way to the Colorado River,  
10 but the proposed Riverview Alternative would follow and widen existing roadway.

11 The proposed Parkway Alternative passes south of undeveloped privately owned parcels and  
12 north of land that is administered by the AGFD and BLM and managed under a cooperative  
13 agreement as the Colorado River Nature Center (Paul 2009). A wastewater treatment plant lies  
14 just south of the proposed alternative alignment on land that is administered by the City of  
15 Bullhead City.

16 The proposed Rainbow Alternative passes through areas that are designated for medium density  
17 residential development immediately east of the river. A proposed residential development  
18 called Clearwater Shores was planned for this land south of the existing Rainbow Drive that is  
19 between the river and a large undeveloped ASLD area. However, the zoning designation and  
20 submitted preliminary plan of development have expired as of September 9, 2009. The owner of  
21 the parcel is undecided if they are going to continue with the project in the future (Paul 2009).  
22 North of Rainbow Drive between Country Club Drive and SR 95, the proposed Rainbow  
23 Alternative passes through areas developed as and designated for light industrial uses north of  
24 Rainbow Drive.

25 Between the Colorado River and Lakeside Drive, the proposed Riverview Alternative passes by  
26 residential development north of the existing Riverview Drive. Between the Colorado River and  
27 Lakeside Drive south of existing Riverview Drive are BLM-administered lands (i.e., Rotary  
28 Park). Between Lakeside Drive and SR 95 south of Riverview Drive, the Riverview Alternative  
29 passes by residential development and then commercial uses that are located near the intersection  
30 of SR 95. State-owned land is located between Lakeside Drive and SR 95 north of Riverview  
31 Drive. According to Janice Paul, Bullhead City Development Services Director, the Arizona  
32 state-owned land north of Riverview Drive between Lakeside Drive and SR 95 may be  
33 developed in the future, but any prospective developers would need to go through a state-  
34 administered process to acquire land and/or rights to develop the land (Paul 2009).

35

1 **2.18.1.2 Development Potential**

2 **2.18.1.2.1 Nevada for the No Build Alternative**

3 There would be no development potential associated with the No Build Alternative.

4 **2.18.1.2.2 Nevada for the proposed Parkway, Rainbow, and Riverview Alternatives**

5 Most of the land to be converted under all of the proposed build alternatives in Laughlin is  
6 publicly administered land that does not currently have the infrastructure to support further  
7 development. Even though most of the undeveloped land within the AOI in Laughlin is owned  
8 by the Clark County, Laughlin has designated this area for future development (MDP) and  
9 expects the area to develop in the future regardless of whether or not the project is constructed.  
10 None of the proposed build alternatives are expected to induce growth beyond that which is  
11 already forecasted, but any of them may change the rate at which the development occurs.  
12 Infrastructure is not currently available adjacent to any of the alternatives, but Laughlin expects  
13 infrastructure to move close to the proposed Riverview Alternative along with a 400-acre  
14 industrial park that is currently in the planning stages (Murray 2009). According to the  
15 Laughlin planning manager, short-term (over the next 10 years) development is expected to  
16 occur near the proposed Riverview Alternative since that area would have infrastructure and  
17 would not require the town or a developer to fund further extension of infrastructure to the south  
18 (Murray 2009).

19 **2.18.1.2.3 Arizona for the No Build Alternative**

20 There would be no development potential associated with the No Build Alternative.

21 **2.18.1.2.4 Arizona for the proposed Parkway Alternative**

22 Undeveloped lands along the proposed Parkway Alternative consist of the privately owned  
23 parcels that are zoned for residential development, state and federal land that is part of the  
24 Colorado River Nature Center, and city land associated with wastewater treatment facilities. The  
25 private parcel closest to the river is currently being disputed over for ownership as ASLD  
26 (sovereign lands) or private ownership. As described for the proposed Rainbow Alternative,  
27 construction of a new roadway would not be expected to affect development of the previously  
28 proposed Clearwater Shores parcel; however, the project may create new access and facilitate the  
29 opportunity for development of the disputed parcel (1.531 of 15 acres). The proposed Parkway  
30 Alternative is not expected to induce growth in the AOI.

31 **2.18.1.2.5 Arizona for the proposed Rainbow Alternative**

32 Undeveloped land along the proposed Rainbow Alternative consists of residentially-zoned land  
33 for which a previously submitted preliminary plan of development (Clearwater Shores) expired  
34 in September 2009 and undeveloped ASLD area (which would not be developed for residential  
35 uses). According to a Bullhead City representative, the private parcels are expected to develop  
36 regardless of whether or not this proposed build alternative is constructed and that a re-submittal  
37 of development plans is dependent upon economic conditions, not construction of a new bridge

1 and roadway (Paul 2009). Construction of the proposed Rainbow Alternative would not induce  
2 growth beyond that anticipated as part of previously proposed projects.

3 There are some opportunities for infill development along and near the proposed Rainbow  
4 Alternative. The rate and pattern of this infill development might change if this proposed  
5 alternative is selected and constructed, but the amount of available infill land would not change.

6 *2.18.1.2.6 Arizona for the proposed Riverview Alternative*

7 Land along or near the Bullhead City sections of the proposed build alternatives in Bullhead City  
8 ranges from fully developed along segments of the proposed Riverview and Rainbow  
9 Alternatives to undeveloped public lands along all three proposed build alternatives.

10 The undeveloped land along the proposed Riverview Alternative is dominated by a large state-  
11 owned parcel north of the existing Riverview Drive between Lakeside Drive and SR 95.  
12 According to a Bullhead City representative, the area may be developed in the future but in order  
13 for such development to take place a proponent would need to gain the state's approval (which  
14 can be an arduous process) (Paul 2009). Construction of the proposed Riverview Alternative  
15 might make development of this area seem more attractive, but as long as other vacant parcels  
16 that would be easier to develop are available in Bullhead City, it is unlikely that any  
17 development projects would be proposed for this state-owned land.

18 As with the proposed Rainbow Alternative, there are some opportunities for infill development  
19 along and near the proposed Riverview Alternative. The rate and pattern of this infill  
20 development might change if this alternative is selected and constructed, but the amount of  
21 available infill land would not change.

22 *2.18.1.3 Summary for the proposed Parkway, Rainbow, and Riverview Alternatives*

23 All of the proposed build alternatives pass through an area identified for future growth in  
24 Laughlin. This area is expected to develop regardless of whether the project is constructed.  
25 Construction of any of the proposed build alternatives may affect the timing and distribution of  
26 growth, with the proposed Parkway Alternative having the greatest potential to affect the rate  
27 (since infrastructure would need to be provided to this remote area) and the proposed Riverview  
28 Alternative having the least potential to affect the rate (since it is closest to currently planned  
29 infrastructure extension). In Bullhead City, none of the proposed build alternatives would open  
30 up any major new areas to development or induce changes in land use types and densities. Any  
31 of the alternatives may affect the rate of growth. Because the influence on the rate of growth  
32 cannot be quantified, potential indirect effects are discussed qualitatively.

33 **2.18.2 Indirect Impacts on Resources**

34 Potential indirect impacts from the proposed project are summarized in the following sections.  
35 In most cases, the potential impacts potentially resulting from the three proposed build

1 alternatives are similar and would be discussed together. In cases where indirect impacts are not  
2 consistent, those impacts are presented separately.

3 **2.18.2.1 Land Resources**

4 *2.18.2.1.1 Land Use for the No Build Alternative*

5 There would be no major new areas opened to development or induced changes in land use types  
6 and densities, or increased rates of growth associated with the No Build Alternative.

7 *2.18.2.1.2 Land Use for the proposed Parkway, Rainbow, and Riverview Alternatives*

8 Although the proposed build alternatives are not anticipated to open up any major new areas to  
9 development or induce changes in land use types and densities, rates of growth in areas available  
10 for development may increase. As previously discussed, any of the planned development would  
11 have to comply with land use plans and zoning regulations. Change from an undeveloped land  
12 use to a developed land use consistent with land use plans is not typically considered an adverse  
13 effect; however, potential indirect effects to resources that may be affected by development are  
14 evaluated in the following sections. Actual impacts to some of these resources may be reduced,  
15 as federal and state regulations and local ordinances regulate development affecting these  
16 resources. In other cases, such as historic properties, regulation of development applies only to  
17 projects requiring federal monies or permits, and these regulations mandate consideration not  
18 protection of the resource. Other resources, such as farmlands, wildlife habitat, and open space,  
19 are not effectively regulated for either public or private development.

20 No additional indirect impacts specific to any of the three proposed build alternatives are  
21 anticipated.

22 *2.18.2.1.3 Topography, Geology, and Soils for the No Build Alternative*

23 There would be no changes in topography, geology, or soils associated with the No Build  
24 Alternative.

25 *2.18.2.1.4 Topography, Geology, and Soils for the proposed Parkway, Rainbow, and*  
26 *Riverview Alternatives*

27 Although some cut and fill activities may alter slopes and contours to accommodate any future  
28 development, this effect cannot be quantified, and is consistent among the three proposed build  
29 alternatives on both sides of the river. The planned development is anticipated to be primarily  
30 residential with some commercial and industrial/mixed uses. In addition, the proposed project is  
31 expected to facilitate an increase in the rate of currently planned development, rather than induce  
32 additional development within the AOI. As a result, it is unlikely that any substantial effects to  
33 topography, geology, and soils would occur within the AOI.

34 No additional indirect impacts specific to any of the three proposed build alternatives are  
35 anticipated.

1 **2.18.2.2 Hydrology and Water Quality**

2 As previously discussed, general drainage patterns are similar for both the Nevada and Arizona  
3 sides of the river (specific distinctions are discussed in subsequent sections). The uplands above  
4 the floodplain areas are bisected by numerous small, ephemeral drainages that flow to the  
5 floodplain of the Colorado River. These washes can generally be characterized as small gullies  
6 and swales with very infrequent flows. On both sides of the river, these washes do not appear to  
7 have direct connectivity to the Colorado River. None of these dry ephemeral washes within the  
8 250-foot study corridors of the proposed build alternatives on either side of the river were  
9 delineated as jurisdictional waters since there is no significant nexus to the overall hydrological,  
10 biological, and/or physical regime of this portion of the Colorado River.

11 Currently, access roadways/levees running parallel to the river at its edge act as man-made  
12 barriers and prevent any surface drainage back to the river. The levees that flank both sides of  
13 the Colorado River are armored with riprap in certain stretches to protect residential and  
14 commercial development from erosion forces of the river and potential flooding.

15 **2.18.2.2.1 Surface Waters for the No Build Alternative**

16 There would be no changes to surface waters associated with the No Build Alternative.

17 **2.18.2.2.2 Surface Waters for the proposed Parkway, Rainbow, and Riverview Alternatives**

18 Potential effects to surface waters from development include placement of fill and degradation of  
19 function through encroachment and as a result of increased runoff. Although the extent and  
20 nature of the development that may be facilitated by the proposed project is unknown,  
21 development may result in impacts to surface waters.

22 Any existing upland ephemeral drainages that would be impacted by planned development  
23 would be designed in compliance with state and local drainage and water quality requirements,  
24 and standard BMPs would be incorporated into the design and operation of the project with  
25 concurrence from appropriate agencies. A discussion of potential indirect effects to  
26 jurisdictional waters is included in *Section 2.18.2.4 Jurisdictional Waters, Including Wetlands*.

27 No additional indirect impacts specific to any of the three proposed build alternatives are  
28 anticipated.

29 **2.18.2.2.3 Water Quality for the No Build Alternative**

30 There would be no changes to water quality associated with the No Build Alternative.

31 **2.18.2.2.4 Water Quality for the proposed Parkway, Rainbow, and Riverview Alternatives**

32 Potential development accelerated by the proposed project may result in some adverse effects to  
33 water resources through degradation of surface water and groundwater. Development effects  
34 that contribute to water quality degradation include increased impermeable surface and increased  
35 non-point source pollution (e.g., from fertilizers, pesticides, sediments, and vehicle residues).

1 Effects from an increase in the currently planned development may include increased stormwater  
2 runoff velocities and pollutant loads leading to impacts to surface waters and, subsequently,  
3 groundwater. Considering the federal water quality regulations (40 CFR 100-149) governing  
4 development, such as Section 402 of the Clean Water Act as well as the county and state  
5 regulations (NPDES and AZPDES) associated with stormwater, potential indirect effects to  
6 water quality are anticipated to be avoided and minimized to the extent practical and are not  
7 anticipated to be substantial.

8 No additional indirect impacts specific to any of the three proposed build alternatives are  
9 anticipated.

### 10 ***2.18.2.3 Floodplains***

#### 11 ***2.18.2.3.1 Floodplain for the No Build Alternative***

12 There would be no changes to floodplains associated with the No Build Alternative.

#### 13 ***2.18.2.3.2 Floodplains for the proposed Parkway, Rainbow, and Riverview Parkway*** 14 ***Alternatives***

15 In general, floodplains pose a constraint to development regardless of whether it is facilitated by  
16 the proposed project. Executive Order 11988 (1977), “Floodplain Management”, as well as  
17 county and local ordinances, would minimize floodplain encroachment, to the extent allowable  
18 within the regulations, thereby preserving some of a floodplain’s natural values. While these  
19 ordinances do not prohibit development within the floodplain, they limit and regulate  
20 development to eliminate or reduce potential damage from future floods. There is a small  
21 amount of floodplain within the AOI. The proposed project is expected to facilitate an increase  
22 in the rate of currently planned development, rather than induce additional development within  
23 the study area, and any development would have to comply with local floodplain regulations.  
24 The area of the Colorado River between bank levees on each side of the river is designated as the  
25 Colorado River Floodway, and no structures are allowed to be constructed within the floodway  
26 without coordination with the BOR and other federal agencies, as necessary. As a result of the  
27 regulations governing development within floodplains, potential indirect effects to floodplains  
28 are anticipated to be negligible.

29 No additional indirect impacts specific to any of the three proposed build alternatives are  
30 anticipated.

### 31 ***2.18.2.4 Jurisdictional Waters, Including Wetlands***

#### 32 ***2.18.2.4.1 Jurisdictional Waters, Including Wetlands for the No Build Alternative***

33 There would be no changes to jurisdictional waters or wetlands associated with the No Build  
34 Alternative.

35

1 2.18.2.4.2 Jurisdictional Waters, Including Wetlands for the proposed Parkway Alternative

2 There would be no changes to jurisdictional waters or wetlands associated with the proposed  
3 Parkway Alternative.

4 2.18.2.4.3 Jurisdictional Waters, Including Wetlands for the proposed Rainbow Alternative

5 The proposed Rainbow Alternative crosses an area behind one of the levees on the Laughlin side  
6 of the river that was delineated as wetlands. Development of this alternative would have direct  
7 effects on those wetlands, and the facilitated development of lands adjacent to the alignment may  
8 have indirect impacts on these jurisdictional wetlands from disturbance and littering.

9 2.18.2.4.4 Jurisdictional Waters, Including Wetlands for the proposed Riverview Alternative

10 As previously discussed, the Colorado River is identified as a Traditional Navigable Waterway;  
11 therefore, it is a non-wetland jurisdictional water of the U.S. under the Clean Water Act and is  
12 crossed by all proposed build alternatives. Potential effects to jurisdictional waters, including  
13 wetlands, from development include placement of fill and degradation of function through  
14 encroachment and as a result of increased runoff.

15 To the extent that the surface waters are considered jurisdictional, they would be subject to  
16 protection under Sections 404 and 401 of the Clean Water Act, which regulates the filling of and  
17 encroachment on these resources. The USACE administers Section 404 of the Clean Water Act  
18 and operates under “no net loss” policy for wetlands, requiring avoidance and minimization of  
19 impacts and compensatory mitigation for unavoidable impacts. Therefore, substantial indirect  
20 effects to jurisdictional waters are not anticipated.

21 The proposed Riverview Alternative crosses an area between the two levees on the Laughlin side  
22 of the river that was delineated as wetlands. Development of this alternative would have direct  
23 effects on those wetlands, and the facilitated development of lands adjacent to the alignment may  
24 have indirect impacts on these jurisdictional wetlands from disturbance and littering.

25 ***2.18.2.5 Biological Resources and Sensitive Species***

26 Within the AOI, the predominant upland vegetation communities are salt desert scrub and  
27 creosote bush scrub. The salt desert scrub community is primarily composed of *Atriplex* species  
28 including fourwing saltbush, desert holly, and littleleaf saltbush. The creosote bush community  
29 is dominated by creosote bush with other upland species such as Mormon tea and includes a  
30 variety of cactus species such as beavertail cactus, pencil cholla, barrel cactus, and others. In  
31 addition, saltcedar-mesquite woodlands are considered sensitive habitat along the lower  
32 Colorado River (LCR MSCP 2004b) and support a variety of species, including the southwestern  
33 willow flycatcher.

34 2.18.2.5.1 Vegetation for the No Build Alternative

35 There would be no changes to vegetation associated with the No Build Alternative.

1 2.18.2.5.2 Vegetation for the proposed Parkway and Rainbow Alternatives

2 The proposed Parkway and Rainbow Alternatives pass through a relatively large stand of old  
3 mesquite and saltcedar trees on the Laughlin side of the project. While the area is currently  
4 slated for development, and thus the potential destruction of this habitat, development of these  
5 alternatives may facilitate the development of this portion of the parcel more so than would  
6 occur from the No Build or the proposed Riverview Alternative.

7 2.18.2.5.3 Vegetation for the proposed Riverview Alternative

8 Although the planned development would result in the conversion of upland vegetation to  
9 developed uses, the development would occur with or without the project. The potential indirect  
10 effects to vegetation are not anticipated to be substantial because the proposed project is  
11 expected to facilitate an increase in the rate of currently development rather than induce  
12 additional development. In addition, there is ample undeveloped land containing similar habitat  
13 adjacent to the study area. Potential impacts to saltcedar-mesquite woodlands, which primarily  
14 occur within the floodplain areas of the lower Colorado River, are anticipated to be minimal  
15 based on the regulations governing development within floodplains.

16 2.18.2.5.4 Wildlife for the No Build Alternative

17 There would be no changes to wildlife associated with the No Build Alternative.

18 2.18.2.5.5 Wildlife for the proposed Parkway and Rainbow Alternatives

19 As discussed above, the proposed Parkway and Rainbow Alternatives may result in the  
20 accelerated removal of a relatively large stand of old mesquite and saltcedar trees on the  
21 Laughlin side of the project adjacent to the alignments. Removal of this habitat may affect a  
22 variety of wildlife species that utilize the habitat for feeding and shelter. While the area is  
23 currently slated for development, and thus the potential destruction of this habitat, development  
24 of these proposed build alternatives may facilitate an increase in the rate of currently planned  
25 development of this portion of the parcel more so than would occur from the No Build or the  
26 proposed Riverview Alternative.

27 2.18.2.5.6 Wildlife for the proposed Riverview Alternative

28 The primary indirect effect to wildlife would be the aforementioned conversion of  
29 vegetation/habitat to developed uses. In addition to loss of habitat as development occurs,  
30 potential indirect effects include habitat alteration or encroachment and fragmentation. Habitat  
31 modification cannot be quantified as an indirect effect, but it is an important effect to consider.  
32 An example of habitat alteration would be clearing shrub/brush vegetation for a developed land  
33 use. The developed land use would require that some open space become managed grasses,  
34 which would change the species composition of vegetation and wildlife. In addition, these  
35 altered habitats may encroach upon adjacent scrub/brush habitat as species co-mingle at the edge  
36 of each habitat. Habitat fragmentation may also take place. A change from undeveloped to  
37 developed use may divide vegetation and wildlife habitats. To the extent that commercial or

1 residential development occurs as a result of the proposed project, alteration, encroachment,  
2 fragmentation, or loss of wildlife habitat may occur. The potential indirect effects to wildlife  
3 habitat are not anticipated to be substantial because the proposed project is expected to facilitate  
4 an increase in the rate of currently planned development, rather than induce additional  
5 development. In addition, there is ample undeveloped land containing similar habitat adjacent to  
6 the AOI.

7 *2.18.2.5.7 State Protected Species for the No Build Alternative*

8 There would be no changes to state protected species associated with the No Build Alternative.

9 *2.18.2.5.8 State Protected Species for the proposed Parkway, Rainbow, and Riverview*  
10 *Alternatives*

11 A number of state protected species may occur within the AOI: including banded Gila monster,  
12 burrowing owl, loggerhead shrike, and pale kangaroo mouse, as well as others. A survey for the  
13 presence or absence of these species was not completed for the entire AOI; therefore, it is  
14 unknown whether these areas contain the protected species.

15 The NDOW, Nevada Division of Forestry, and AGFD have regulatory authority over state-listed  
16 species where direct take (killing or injuring) is involved, but the agency does not have authority  
17 over destruction of habitat of state protected species. For any of the development, regardless of  
18 whether it would be facilitated by the proposed project, it would be the responsibility of the  
19 individual developers, in coordination with the appropriate state entity, to determine if their  
20 projects have the potential to affect state protected species. Because the proposed project is only  
21 anticipated to facilitate an increase in the rate of currently planned development and the  
22 regulations governing protected species would prohibit direct take of state protected species,  
23 indirect effects to state protected species are not anticipated.

24 *2.18.2.6 Federally-Listed Threatened and Endangered Species and Migratory Birds*

25 *2.18.2.6.1 Federally-Listed Threatened and Endangered Species and Migratory Birds for the*  
26 *No Build Alternative*

27 There would be no changes to Federally-Listed Threatened and Endangered Species and  
28 Migratory Birds associated with the No Build Alternative.

29 *2.18.2.6.2 Federally-Listed Threatened and Endangered Species and Migratory Birds for the*  
30 *proposed Parkway and Rainbow Alternatives*

31 As discussed above for vegetation, the proposed Parkway and Rainbow Alternatives may result  
32 in the accelerated removal of a relatively large stand of old mesquite and saltcedar trees on the  
33 Laughlin side of the project adjacent to these proposed Alternatives. Removal of this habitat  
34 may affect a variety of migratory birds that utilize the habitat for feeding and shelter. While the  
35 area is currently slated for development, and thus the potential destruction of this habitat,  
36 development of these proposed alternatives may facilitate an increase in the development of this

1 portion of the parcel more so than would occur from the No Build or the proposed Riverview  
2 Alternative.

3 *2.18.2.6.3 Federally-Listed Threatened and Endangered Species and Migratory Birds for the*  
4 *proposed Riverview Alternative*

5 Six species protected under the ESA and numerous migratory birds were either observed or have  
6 the potential to occur within the AOI. Federally listed threatened or endangered species include  
7 desert tortoise, southwestern willow flycatcher, Yuma clapper rail, bonytail chub, razorback  
8 sucker and flannelmouth sucker (a species of concern by USFWS). The lower Colorado River  
9 historically served as a migratory corridor for neotropical species that move between wintering  
10 and breeding sites. Although comprehensive surveys were not conducted in the entire AOI, it is  
11 assumed that a wide range of these migratory birds may occur in the AOI.

12 Impacts to federally listed threatened and endangered species are regulated by the USFWS under  
13 Sections 7, 9, and 10 of the ESA. Presence/absence surveys for suitable habitat for these species  
14 were not completed for the entire AOI, but general habitat characteristics of the AOI were  
15 reviewed. Suitable habitat for desert tortoises and suitable non-nesting habitat for the  
16 southwestern willow flycatcher are present within the AOI adjacent to the proposed project in  
17 Nevada; therefore, anticipated development, whether or not it would be facilitated by the  
18 proposed project, may affect suitable habitat for these species. However, the ESA and the  
19 appropriate state regulations apply to public and private development. Any additional  
20 development in the study area is unlikely to result in substantial adverse effects to these species.

21 The MBTA states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport  
22 any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit  
23 issued in accordance within the MTBA policies and regulations (16 USC 703-712). Regardless  
24 of whether the development would be facilitated by the proposed project, removal of both upland  
25 and woody riparian vegetation may affect migratory or other sensitive avian species. It would be  
26 the responsibility of the developer to coordinate with the USFWS to determine whether a  
27 specific development action would affect migratory birds.

28 **2.18.2.7 Cultural Resources**

29 There are two types of indirect effects to historic properties (archeological and architectural  
30 resources eligible for or listed in the NRHP) considered in this analysis: indirect effects as  
31 defined by Section 106 of the NHPA and indirect effects as defined by the NEPA. The primary  
32 indirect effects that may adversely affect historic properties as defined under Section 106 of the  
33 NHPA include visual, auditory, and atmospheric effects created by the project on resources  
34 located within a project's APE. Indirect effects as defined by NEPA include effects to historic  
35 properties (including total physical loss and loss of historical integrity) as a result of  
36 development induced by the project.

1 Existing records were reviewed on AZSITE, at the Arizona–SHPO, and at the Bullhead City  
2 Historical Society and examined historical aerial photographs for evidence of historic properties  
3 documented within a 1-mile radius (alternative study corridor/AOI) of the proposed build  
4 alternatives. Windshield surveys were then conducted of all adjacent subdivisions to identify  
5 any potential architectural history properties. None were identified. Finally, field  
6 documentation of all adjacent buildings that were 40 years or older was conducted. None of the  
7 adjacent buildings qualified as historic properties.

8 *2.18.2.7.1 Historic Buildings and Structures for the No Build Alternative*

9 There would be no changes to historic buildings or structures associated with the No Build  
10 Alternative.

11 *2.18.2.7.2 Historic Buildings and Structures for the proposed Parkway, Rainbow, and*  
12 *Riverview Alternatives*

13 There are no known historic structures (listed in the NRHP) in the AOI; however, it is possible  
14 that some historic structures that would be considered eligible for the NRHP may be affected by  
15 development, regardless of whether or not it is facilitated by the proposed project.

16 If present, historic structures or buildings that are individually eligible for the NRHP or that are  
17 contributing elements of larger sites or districts that are eligible for the NRHP may be impacted  
18 directly by relocation, demolition, or physical alteration. They may also be impacted indirectly  
19 as a result of a change in the integrity of location, design, materials, workmanship, historic  
20 setting, feeling and/or association. For example, the typical residential and commercial  
21 development associated with either scenario would result in both the direct physical loss of some  
22 properties and the loss of historic integrity of other properties.

23 Whether or not any indirect effects would be considered substantial and adverse depends entirely  
24 on a clear understanding of the reasons why the historic resources are eligible; in other words,  
25 one needs to know the integrity of the resource to know whether the integrity has been impaired.  
26 Some development may be included under federal or state regulatory resource protection review,  
27 and therefore, historic properties must be avoided, minimized, or mitigated. If development is  
28 publicly funded, or if private development requires certain federal permits, such as a permit  
29 under Section 404 of the Clean Water Act, then it would likely be subject to federal or state  
30 regulations. Within Arizona, historic structures may be protected under the AHPA (A.R.S. 41  
31 861 et seq., as amended); however, there is not a commensurate regulation to protect historic  
32 structures in Nevada.

33 No additional indirect impacts specific to any of the three proposed build alternatives are  
34 anticipated.

35 *2.18.2.7.3 Archeology for the No Build Alternative*

36 There would be no changes to archeology associated with the No Build Alternative.

1 *2.18.2.7.4 Archeology for the proposed Parkway, Rainbow, and Riverview Alternatives*

2 Historic properties are typically affected through site clearing, grading, or excavation during  
3 development. Historic properties in the APE were identified through a Class I records search  
4 and Class III pedestrian surveys.

5 Some development may be included under federal or state regulatory resource protection review,  
6 and therefore, historic properties must be avoided, minimized, or mitigated. If development is  
7 publicly funded, or if private development requires certain federal permits, such as a permit  
8 under Section 404 of the CWA, then it would likely be subject to federal or state regulations. In  
9 addition, any development, whether or public or private, would be subject to the following state  
10 regulations: Nevada Antiquities Law (N.R.S. 381 et seq., as amended), Arizona Antiquities Act  
11 (A.R.S. 41 841 et seq., as amended), and Arizona Historic Preservation Act (A.R.S. 41 861 et  
12 seq., as amended).

13 No additional indirect impacts specific to any of the three proposed build alternatives are  
14 anticipated.

15 **2.18.2.8 Air Quality**

16 *2.18.2.8.1 Air Quality for the No Build Alternative*

17 There would be no changes to air quality associated with the No Build Alternative.

18 *2.18.2.8.2 Air Quality for the proposed Parkway, Rainbow, and Riverview Alternatives*

19 The Arizona portion of the AOI lies within an area that is designated as attainment with a  
20 maintenance plan for PM<sub>10</sub>. The Bullhead City Particulate Matter Maintenance Area  
21 encompasses the greater Bullhead City area in Arizona. The Nevada portion of the project area,  
22 including Laughlin, lies within an area designated as attainment for each of the NAAQS (exempt  
23 from PM<sub>10</sub> controls but not the standards, no place in U.S. is exempt from the standards).

24 Future development may cause degradation of air quality as a result of increased traffic volumes  
25 within the study area; however, the proposed project is anticipated to increase opportunities for  
26 development by providing improved access for previously planned development rather than  
27 induce new development. The network of future roadways and subdivision streets associated  
28 with the study area are expected to accommodate increased traffic volumes. In addition, overall  
29 emissions would likely decrease due to the rapidly improving fuel and vehicle technology and  
30 vehicle turnover in the future years. This is expected for the criteria pollutants and the MSATs.  
31 Improved traffic flow in areas of existing congestion may also result in improved air quality. As  
32 a result, potential indirect effects to air quality are not anticipated to be substantial, and air  
33 quality may improve over time.

34 No additional indirect impacts specific to any of the three proposed build alternatives are  
35 anticipated.

1 **2.18.2.9 Noise**

2 *2.18.2.9.1 Noise for the No Build Alternative*

3 There would be no changes to noise associated with the No Build Alternative.

4 *2.18.2.9.2 Noise for the proposed Parkway, Rainbow, and Riverview Alternatives*

5 Additional noise would result from future development. To the extent that this currently planned  
6 development is facilitated by the proposed project, an indirect effect of increased noise levels  
7 may occur. Noise is essentially a localized physical condition, and while development may be  
8 accelerated by the proposed project, most of the noise from the development would result from  
9 increased traffic within the AOI. The proposed project is only anticipated to facilitate an  
10 increase in the rate of currently planned development, rather than induce additional development  
11 within the AOI. As a result, potential indirect effects to noise levels are not anticipated to be  
12 substantial.

13 No additional indirect impacts specific to any of the three proposed build alternatives are  
14 anticipated.

15 **2.18.2.10 Visual Resources**

16 *2.18.2.10.1 Visual Resources for the No Build Alternative*

17 There would be no changes to visual resources associated with the No Build Alternative.

18 *2.18.2.10.2 Visual Resources for the proposed Parkway, Rainbow, and Riverview Alternatives*

19 Potential indirect effects as a result of facilitated development include continued change in land  
20 use from undeveloped to residential, commercial, and some industrial uses. Where infill  
21 development occurs, the development may be viewed by some residents as favorable where the  
22 design theme becomes more unified. Other residents may view increased development in  
23 currently undeveloped areas as unfavorable. The proposed project is only anticipated to facilitate  
24 an increase in the rate of currently planned development, rather than induce additional  
25 development within the AOI. Development is anticipated to be consistent with land use plans  
26 and zoning ordinances, and the potential changes to existing visual resources are not anticipated  
27 to be substantial.

28 No additional indirect impacts specific to any of the three proposed build alternatives are  
29 anticipated.

30 **2.18.2.11 Hazardous Materials**

31 *2.18.2.11.1 Hazardous Materials for the No Build Alternative*

32 There would be no changes to hazardous materials associated with the No Build Alternative.

1 *2.18.2.11.2 Hazardous Materials for the proposed Parkway, Rainbow, and Riverview*  
2 *Alternatives*

3 A database search was not completed for the entire AOI so during development, regardless of  
4 whether it is facilitated by the proposed project, sites contaminated with hazardous materials may  
5 be encountered. To minimize the risk of affecting these sites through land disturbing activities, a  
6 Phase I Environmental Site Assessment to identify potential hazardous materials may be  
7 conducted prior to property acquisition and development. This is a standard practice in  
8 commercial and residential subdivision land development.

9 The potential adverse effect is associated with additional costs and schedule. There would be a  
10 beneficial effect to soil and groundwater resources by remediation of the contamination.  
11 Potential indirect effects are not considered substantial. Although hazardous materials may  
12 increase from future development of commercial areas, potential effects would likely be abated  
13 from recent, more stringent regulations regarding hazardous materials management. Therefore,  
14 these potential effects are not considered substantial.

15 No additional indirect impacts specific to any of the three proposed build alternatives are  
16 anticipated.

17 ***2.18.2.12 Socioeconomics***

18 *2.18.2.12.1 Socioeconomics for the No Build Alternative*

19 There would be no changes to socioeconomics associated with the No Build Alternative.

20 *2.18.2.12.2 Socioeconomics for the proposed Parkway, Rainbow, and Riverview Alternatives*

21 Based on the CIA (LBHCBP 2010b), local officials in Laughlin and Bullhead City have stated  
22 that development would occur regardless of whether or not the proposed project is built and that  
23 the major limiter for development is the lack of infrastructure. None of the proposed build  
24 alternatives are anticipated to result in population change or redistribution. Substantial indirect  
25 effects to economic conditions are not anticipated. Adverse indirect effects to community  
26 cohesion are not anticipated. The proposed project may result in increased opportunities for  
27 interaction between the Laughlin and Bullhead City communities.

28 No additional indirect impacts specific to any of the three proposed build alternatives are  
29 anticipated.

30 ***2.18.2.13 Section 4(f) and Section 6(f) Resources (Recreation Resources)***

31 *2.18.2.13.1 Section 4(f) and Section 6(f) Resources for the No Build Alternative*

32 There would be no changes to Section 4(f) and Section 6(f) resources associated with the No  
33 Build Alternative.

1 2.18.2.13.2 Section 4(f) and Section 6(f) Resources for the proposed Parkway, Rainbow, and  
2 Riverview Alternatives

3 Based on the strong regulations protecting parkland and other recreational resources within the  
4 AOI, it is unlikely that any development, regardless of whether or not it is facilitated by the  
5 project, would result in adverse effects to recreation resources or Section 4(f) and Section 6(f)  
6 resources. Potential indirect effects to Section 4(f) or Section 6(f) resources would be regulated  
7 by federal regulations. *Section 2.17 Section 4(f) and Section 6(f) Resources (Recreation*  
8 *Resources)* provides a detailed description of the Section 4(f) and Section 6(f) resources located  
9 in proximity to the proposed build alternatives: Rotary Park, the Arizona Veterans Memorial  
10 Park, the Colorado River Heritage Greenway Trail, and the Colorado River Nature Center.  
11 Additional recreation resources within the AOI include the following: Big Bend State Park on  
12 the Laughlin side and Ken Fovargue Community Park and Chaparral Golf Course & Country  
13 Club (semi-private) on the Bullhead City side.

14 Big Bend State Park, Nevada's newest state park, opened in 1996. The park is located along the  
15 Colorado River south of the economic center of Laughlin. The park offers views of the river and  
16 surrounding mountains. Currently, popular activities are picnicking, camping, hiking, boating,  
17 fishing, and swimming. Facilities include a new 24-unit campground with full utility hookups,  
18 restrooms, and an RV dump station.

19 Ken Fovargue Community Park (2255 Trane Road) is one of Bullhead City's fastest growing and  
20 most popular parks, largely because it houses Bullhead Community Pool. In addition to the pool,  
21 the park features two lighted softball fields, a lighted basketball court, two lighted sand  
22 volleyball courts, barbecues, and playground equipment. Its playground is not your typical, run-  
23 of-the-mill swing set. The "Play World" playground equipment is tailor-made for Bullhead City  
24 sizzling summers because it offers the protection of being plastic coated, and therefore safer to  
25 the touch.

26 The Chaparral Golf Course & Country Club (semi-private) is located just north of Rainbow  
27 Blvd. (1260 E Mohave Dr) and is a nine-hole executive course. The clubhouse and patio area  
28 are available for weddings, meetings, and private parties.

29 It is anticipated that any development, regardless of whether or not it is facilitated by the  
30 proposed project, would be consistent with land use plans and zoning regulations. Land that is  
31 currently used as a recreation resource would not likely to be converted into residential,  
32 commercial, or industrial development. The proposed project would increase the opportunity for  
33 residents of Laughlin to utilize recreation resources located in Bullhead City.

34 No additional indirect impacts specific to any of the three proposed build alternatives are  
35 anticipated.

1 **2.19 Cumulative Effects**

2 Cumulative effects include a project’s direct and indirect effects, as well as other actions that are  
3 not caused by the project, but in combination with the project, add to the overall effect, whether  
4 adverse or beneficial, on the environment. It is the objective of the cumulative effects analysis to  
5 focus on resource issues, potential effects to these resources, and potential mitigation  
6 opportunities, where applicable. The cumulative effects analysis would determine the magnitude  
7 of the potential cumulative effects on the resources.

8 This cumulative effects analysis was conducted to comply with the appropriate CEQ and NEPA  
9 regulations (*Section 1.1 Introduction*) and utilized the Texas Department of Transportation  
10 (TxDOT) *Revised Guidance on Preparing Indirect and Cumulative Impact Analyses* (TxDOT  
11 2009) as a guidance document. The CEQ regulations for implementing the NEPA define  
12 Cumulative Effects as:

13 “the impact on the environment which results from the incremental impact of the action  
14 (project) when added to other past, present, and reasonably foreseeable future actions  
15 regardless of what agency (Federal or non-Federal) or person undertakes such other  
16 actions. Cumulative impacts can result from individually minor but collectively  
17 significant actions taking place over a period of time (40 CFR 1508.7).”

18 The cumulative effects analysis considers the magnitude of the cumulative effect on the resource  
19 health. Health refers to the general overall condition, stability, or vitality of the resource and the  
20 trend of that condition. Therefore, the resource health and trend are key components of the  
21 cumulative effects analysis. Laws, regulations, policies, or other factors that may change or  
22 sustain the resource trend would be considered to determine if more or less stress on the resource  
23 is likely in the foreseeable future. Opportunities to mitigate adverse cumulative effects on a  
24 stressed resource, or a resource that would continue to be stressed would be presented.

25 The TxDOT Revised Guidance on Preparing Indirect and Cumulative Impacts Analyses (TxDOT  
26 2009) was used as the basis for this analysis. This guidance was based on the methodology used  
27 by the California Department of Transportation and is currently used by Florida Department of  
28 Transportation. The following eight steps serve as guidelines for identifying and assessing  
29 cumulative effects:

- 30
- 31 • Identify the resources to consider in the analysis;
  - 32 • Define the study area for each affected resource;
  - 33 • Describe the current health and historical context for each resource;
  - 34 • Identify direct and the indirect impacts that may contribute to a cumulative impact;
  - 35 • Identify other reasonably foreseeable future actions that may affect resources;
  - 36 • Assess potential cumulative effects to each resource;
  - Report the results; and

- 1 • Assess and discuss mitigation issues for all adverse effects.
- 2 Resources that are not affected (directly or indirectly) by the project are not considered in the
- 3 cumulative effects analysis. Specific resources and environmental effects categories evaluated in
- 4 this EA are listed in Table 25. The table also summarizes each resource impact, presents a
- 5 determination of which resources would be carried forward and evaluated in the cumulative
- 6 effects analysis, and identifies why certain resources are eliminated from the cumulative effects
- 7 evaluation.

8 **Table 25. Resources Considered in the Cumulative Effects Analysis**

Resources and Other Topics Evaluated in the EA		Topic to be Included in the Cumulative Effects Analysis	Reason Eliminated from Cumulative Effects Analysis
Land Resources	Topography	No	Minor effects from cut and fill slopes are not considered adverse.
	Geology	No	No direct or indirect effects to geology are anticipated.
	Soils	No	Minor effects to soils are not considered adverse.
	Land Use	Yes	-
Hydrology and Water Quality	Surface Waters	Yes	-
	Surface Water Quality	Yes	-
	Groundwater Quality	Yes	-
Floodplain		Yes	-
Jurisdictional Waters, including Wetlands		Yes	-
Biological Resources and Sensitive Species	Vegetation	Yes	-
	Wildlife	Yes	-
	State-Protected Species	Yes	-
	Saltcedar-Mesquite Woodland and Associated Species	Yes	-
Federally-Listed Species and Migratory Birds		Yes	-
Cultural Resources	Historic Structures	No	There are no NRHP-listed or eligible structures within the APE for the proposed alternatives, and no NRHP-listed structures within the AOI.
	Historic Properties	Yes	-
Air Quality		No	No adverse effects to air quality; the

## Environmental Impacts and Mitigation

Resources and Other Topics Evaluated in the EA	Topic to be Included in the Cumulative Effects Analysis	Reason Eliminated from Cumulative Effects Analysis
		proposed project may reduce existing regional impacts on air quality
Noise	Yes	-
Visual Resources	Yes	-
Hazardous Materials	No	Generally, the effect is beneficial as contamination discovered is remediated prior to development.
Title VI and Environmental Justice	Yes	-
Section 4(f) Resources	Yes	-

1 The cumulative effects analysis considered both geographic and temporal study limits. A  
 2 Resource Study Area (RSA) was defined for each resource and is described in the appropriate  
 3 resource subsections. Cumulative effects are determined by considering the potential cumulative  
 4 effect on the health and trend of the resource within the RSA. As detailed in the *Section 2.18*  
 5 *Indirect Effects*, the AOI used for the indirect effects analysis was deemed appropriate for the  
 6 analysis of cumulative effects. This area is also used as the Land Use RSA for the cumulative  
 7 effects analysis. Other RSAs are resource-specific and discussed in the appropriate subsections.

8 Additionally, the temporal limits were considered for the cumulative effects analysis. In 1987,  
 9 Don Laughlin funded and built a bridge connecting Laughlin and Bullhead City. The bridge,  
 10 now jointly owned by the states of Nevada and Arizona, has served as a lifeline to this part of  
 11 Nevada (and Arizona) (LBHCBP 2010b). As a result, 1987 serves as the past temporal limit.  
 12 The future temporal limit is 2030, which is the planning year for the proposed project. Unless  
 13 noted in the following RSA sections, the temporal boundaries are 1987 to 2030 for all resources.

14 The historical context and health of each resource is described and presented in the resource  
 15 sections. This information is important to establish the baseline condition and trend the resource  
 16 is experiencing in order to be able to estimate the magnitude of the resource effect. The  
 17 historical context is first described to provide an explanation of the factors that have caused the  
 18 current health of the resource. As previously mentioned, health refers to the general overall  
 19 condition, stability, or vitality of the resource and the trend of that condition.

20 The cumulative effects analysis considers the direct and indirect effects, as previously described.  
 21 A summary of these effects is presented in the appropriate cumulative effects section.  
 22 Additional details regarding direct and indirect effects to resources considered in the cumulative  
 23 effects analysis are presented in *Sections 2.0 Impacts and 2.18 Indirect Effects*, respectively.

24 The anticipated development discussed in *Section 2.18.1 Planned Development and Development*  
 25 *Potential in the Area of Influence* is considered the reasonably foreseeable future actions within

1 the Land Use RSA/AOI. According to a Laughlin representative, the undeveloped lands in the  
2 area do not contain infrastructure that may support residential or commercial development  
3 (Murray 2009); however, the planned and potential developments in Laughlin include the  
4 following:

- 5 • Laughlin is currently planning the development of a 400-acre industrial park on the  
6 west side of Needles Highway, which is just outside of the area for the proposed build  
7 alternatives. This area would result in the extension of infrastructure to a point just  
8 south of the existing Big Bend State Park property.
- 9 • Near the proposed Riverview Alternative terminus at Needles Highway, there is land  
10 identified for future development; however, this area may only be developed after  
11 county approval of a development plan and there are currently no proposed  
12 development plans submitted. This area would be adjacent to infrastructure  
13 developed as part of the aforementioned industrial park.
- 14 • Near the Needles Highway terminus of the proposed Rainbow and Parkway  
15 Alternatives, there are designated MDP lands. According to a town representative,  
16 this particular portion of the MDP area surrounding the proposed Rainbow and  
17 Parkway Alternatives is not expected to receive infrastructure or develop for 10 to 20  
18 years, possibly longer; however, it may be developed by 2030, which is the future  
19 time horizon considered in this analysis.

20 The Bullhead City portion of the Land Use RSA is more developed than the Laughlin/Clark  
21 County portion. According to a city representative (Paul 2009), the planned and potential  
22 developments in Bullhead City include the following:

- 23 • The state-owned land north of Riverview Drive between Lakeside Drive and SR 95  
24 may be developed in the future, but any prospective developers would need to go  
25 through a state-administered process to acquire land and/or rights to develop the land.
- 26 • The proposed Rainbow Alternative passes through areas that are designated for  
27 medium density residential development immediately east of the river. A proposed  
28 residential development called Clearwater Shores was planned this land south of the  
29 existing Rainbow Drive that is between the river and a large undeveloped ASLD area.  
30 However, the zoning and submitted preliminary plan of development have expired as  
31 of September 9, 2009. The owner of the parcel is not going to continue with the  
32 project in the future.
- 33 • North of Rainbow Drive between Country Club Drive and SR 95, the proposed  
34 Rainbow Alternative passes through areas developed as and designated for light  
35 industrial uses north of Rainbow Drive.
- 36 • The proposed Parkway Alternative passes south of undeveloped privately owned  
37 parcels and north of land that is administered by the AGFD and BLM and managed  
38 under a cooperative agreement (with Bullhead City) as the Colorado River Nature

1 Center. A wastewater treatment plant lies just south of the proposed alternative  
2 alignment on land that is administered by the City of Bullhead City.

3 In addition, there are some opportunities for infill development along and near the proposed  
4 Riverview and Rainbow Alternatives. The rate and pattern of this infill development might  
5 change if this alternative is selected and constructed, but the amount of available infill land  
6 would not change.

7 Finally, the traffic demand model for 2030 included the following network modifications. Based  
8 on input from local officials and local planning documents, these modifications are considered  
9 reasonably foreseeable.

- 10 • Vanderslice Road as four lanes south of Bullhead Parkway
- 11 • Camp Mohave Road and Boundary Cone Road as four lanes between SR 95 and  
12 Vanderslice Road
- 13 • incorporated streets as recommended in the Bullhead City General Plan Circulation  
14 Element
- 15 • Arcadia Boulevard to Adobe Road as four lanes
- 16 • Rancho del Rio Boulevard, Rio Rancho Boulevard, Black Mountain Road, North  
17 Oatman Road, Acacia Way/Adobe Road as four lanes
- 18 • Upgraded to four lanes: Arcadia Boulevard, Adobe Road, Lakeside Drive, Marina  
19 Boulevard, McCormick Boulevard, North Oatman Road, Ramar Road (west of SR  
20 95), Riverview Drive, and Tesota Way
- 21 • Incorporated elements of the Laughlin Ranch roadway network (based on projected  
22 development)
- 23 • Proposed Realignment of SR 95 Corridor with intersection access locations at  
24 Boundary Cone Road, Silver Creek Road, Laughlin Ranch Boulevard, and SR 68

25 The following improvements were also assumed as part of the travel demand model:

- 26 • West Casino Drive as four lanes between Needles Highway and Thomas Edison  
27 Drive
- 28 • Needles Highway as four lanes north of Aha Macav Parkway to existing four lanes  
29 south of West Casino Drive
- 30 • Needles Highway as four lanes between SR 163 and Bruce Woodbury Drive

31 It was also assumed that with any of the possible bridge connections, the roadway network on  
32 the Nevada side would include a four-lane facility.

33 The cumulative effects analysis considered the direct and indirect effects of the project, together  
34 with the effects of past, present, and reasonably foreseeable future projects. The magnitude of

1 the cumulative effect was determined by comparing the effect to the health and trend of the  
2 affected resource.

3 The results of the cumulative effects analysis are reported herein. Direct effects and indirect  
4 effects are summarized in this section, as they are included in the cumulative effects analysis.  
5 The assumptions and methods used are described in the appropriate resource sections.

6 Opportunities for mitigation of adverse effects, where applicable, are discussed for each  
7 resource. These are not meant to be mitigation measures that the ADOT or NDOT would, or has  
8 the authority to implement. Rather, they are intended to disclose steps or actions that may be  
9 undertaken by local, state, and federal agencies and organizations to minimize the potential  
10 cumulative effect on each resource health and trend.

### 11 ***2.19.1.1 Land Use***

#### 12 *2.19.1.1.1 Resource Study Area*

13 For purposes of this analysis, the RSA includes the AOI, or the study area for the indirect effects  
14 analysis. The RSA is the area to which development may or has the potential to occur in the  
15 foreseeable future.

#### 16 *2.19.1.1.2 Historical Context and Current Health*

17 Clark County's history is tied to use of the Old Spanish Trail in the 1830s and 1840s and the  
18 California Trail during the 1850s, but settlement of the region was most influenced by railroad  
19 construction. Because of its water supply (especially the Colorado River) and location halfway  
20 between Los Angeles and Salt Lake City, the Las Vegas Valley was a natural connecting point  
21 for railways traveling between the two destinations.

22 Las Vegas has always been the focal point of Clark County even though the county covers a very  
23 large geographic area that has historically supported other communities that developed  
24 independent of Las Vegas. Laughlin is about 100 miles south of Las Vegas. The town's current  
25 location was established in the 1940s and was originally known as South Pointe. The original  
26 settlement consisted of a motel and bar that catered to gold and silver miners and to construction  
27 workers who built Davis Dam. The Bureau of Reclamation constructed Davis Dam in the 1940s  
28 and 1950s to re-regulate Hoover Dam releases (Hoover Dam is about 65 miles upstream) and to  
29 provide hydroelectric power. After the dam was completed, construction workers left and the  
30 community languished.

31 The town was reestablished in the mid-1960s by Don Laughlin, who opened a large casino club  
32 known as the Riverside Resort. The town was officially named Laughlin in 1968 and over the  
33 next 30 years expanded with the establishment of casino resorts.

1 In 1987, Don Laughlin funded and built a bridge connecting Laughlin and Bullhead City. The  
2 bridge, now jointly owned by the states of Nevada and Arizona, has served as a lifeline to this  
3 part of Nevada (and Arizona). In 2009, it carried about 32,200 vehicles daily (LBHCBP 2009a).  
4 This bridge and the Veterans Memorial Bridge (on Aztec Road) to the south are currently the  
5 only routes connecting Nevada and Arizona in this region (a road across Davis Dam is not open  
6 to public use).

7 Mohave County was one of the original four Arizona counties created by the First Territorial  
8 Legislature in 1864. The boundaries changed slightly over the years but settled into the current  
9 configuration in the early 1880s. Mohave County began attracting permanent settlers shortly  
10 after Nevada became part of the Union, with the first “boom” occurring in the 1860s, largely as a  
11 result of gold mining (Arizona Department of Commerce, 2009). The current county seat,  
12 Kingman, was established in 1887 by general election. Kingman was a logical location for the  
13 county seat due to its location along the rail line that was being constructed between Los Angeles  
14 and Salt Lake City.

15 Bullhead City was not located along the rail line but benefitted from being located on the banks  
16 of the Colorado River. Like Laughlin, Bullhead City’s history is also tied to construction of the  
17 Davis Dam in the 1940s and 1950s. Before construction of the dam, the area went through a  
18 mining boom-and-bust with the river providing a valuable transportation corridor. After the  
19 railroad was constructed, this area, which was then known as Hardyville, became abandoned and  
20 turned into a ghost town for many years. Construction of the Davis Dam and the development  
21 and growth of Laughlin helped spur much of the growth in Bullhead City, which was  
22 incorporated in 1984.

### 23 *2.19.1.1.3 Direct and Indirect Effects*

24 Depending on the chosen proposed build alternative, the proposed project would convert  
25 between approximately 22.5 and 55.9 acres to a transportation use. As previously discussed, the  
26 proposed project is likely to facilitate an increase in the rate of anticipated land use conversion in  
27 the study area and may result in effects to changes in land use by improving existing  
28 opportunities for development. However, the proposed project is not anticipated to induce any  
29 additional development beyond what is already planned.

### 30 *2.19.1.1.4 Effects of Other Reasonable Foreseeable Future Actions*

31 The reasonably foreseeable future actions listed previously would continue the current  
32 development trend and result in the conversion of undeveloped lands to developed uses.

### 33 *2.19.1.1.5 Results of the Cumulative Effects Analysis*

34 Adverse cumulative effects to land use are not anticipated. The change from one land use to  
35 another use consistent with local planning efforts is not typically considered an adverse effect.  
36 Some beneficial cumulative impacts may include increased mobility and better traffic congestion  
37 management.

1 *2.19.1.1.6 Mitigation*

2 Because adverse cumulative effects to land use are not anticipated, no mitigation is proposed for  
3 the project.

4 *2.19.1.2 Hydrology and Water Quality*

5 *2.19.1.2.1 Resource Study Area*

6 For purposes of this analysis, the RSA for surface waters, surface water quality, and ground  
7 water quality includes the lower Colorado River Drainage Basin area.

8 *2.19.1.2.2 Historical Context and Current Health*

9 Within lower Colorado River Valley, there are two watersheds separated by the Colorado River.  
10 The Colorado River Basin (Hydrographic Area 213) is west of the Colorado River in Nevada.  
11 The watershed east of the Colorado River in Arizona is the lower Colorado-lower Gila  
12 Watershed. Detailed descriptions of these watersheds are included in *Section 2.3 Hydrology and*  
13 *Water Quality*.

14 The majority of the 14,459-square miles watershed Colorado-lower Gila Watershed within  
15 Arizona is undeveloped federal property. Populated or developed communities are limited to  
16 areas directly adjacent to the Colorado River (e.g., Yuma, Bullhead City, and Lake Havasu City).

17 The majority of the 563-square miles watershed of the Colorado River Basin in Nevada is  
18 undeveloped federal property, with Laughlin as the only developed community.

19 *2.19.1.2.3 Direct and Indirect Effects*

20 Direct effects to surface water and groundwater would be minimal to negligible for all proposed  
21 build alternatives. Surface water impacts caused by bridge construction would be minimal due  
22 to the implementation of BMPs (to be specified in the SWPPP) to protect the Colorado River  
23 from sediment discharges. Impacts to surface water in the area where the bridge would cross the  
24 Colorado River would be minimal to non-existent during the operation and maintenance phase of  
25 the bridge. Following construction and during operation of the new bridge crossing and its  
26 associated roadway, there is a low risk potential for a release of a hazardous material from an  
27 accident involving the transport of raw materials along the transportation route. The low risk of  
28 a hazardous material release is due to increases in traffic volume and congestion, and not as a  
29 result of adding a new river crossing.

30 Potential indirect effects to surface waters from development include placement of fill and  
31 degradation of function through encroachment and as a result of increased runoff. Although the  
32 extent and nature of the development that may be facilitated by the proposed project is unknown,  
33 such development may result in impacts to surface waters and potentially to jurisdictional waters.

1 Any existing upland ephemeral drainages that would be impacted by planned development  
2 would be designed in compliance with state and local drainage and water quality requirements,  
3 and standard BMPs would be incorporated into the design and operation of the project with  
4 concurrence from appropriate agencies. A discussion of potential indirect effects to  
5 jurisdictional waters is included in *Section 2.3 Hydrology and Water Quality*.

6 Effects from potentially facilitated development may include increased storm water runoff  
7 velocities and pollutant loads leading to impacts to surface waters and, subsequently,  
8 groundwater. Considering the water quality regulations governing development, such as Section  
9 402 of the Clean Water Act (NPDES and AZPDES) as well as the county and state regulations  
10 associated with stormwater, potential indirect effects to water quality are anticipated to be  
11 avoided and minimized to the extent practical and are not anticipated to be substantial.

12 *2.19.1.2.4 Effects of Other Reasonable Foreseeable Future Actions*

13 Potential effects to surface waters from reasonably foreseeable future actions include placement  
14 of fill and degradation of function through encroachment and as a result of increased runoff.  
15 Although the extent and nature of the development that may be facilitated by the proposed  
16 project is unknown, such development may result in impacts to surface waters and potentially to  
17 jurisdictional waters.

18 Any existing upland ephemeral drainages that would be impacted by planned development  
19 would be designed in compliance with state and local drainage and water quality requirements,  
20 and standard BMPs would be incorporated into the design and operation of the project with  
21 concurrence from appropriate agencies. A discussion of potential indirect effects to  
22 jurisdictional waters is included in *Section 2.3 Hydrology and Water Quality*.

23 Development effects that contribute to water quality degradation include increased impermeable  
24 surface and increased non-point source pollution (e.g., from fertilizers, pesticides, sediments, and  
25 vehicle residues). Effects from reasonably foreseeable future development may include  
26 increased storm water runoff velocities and pollutant loads leading to impacts to surface waters  
27 and, subsequently, groundwater. Considering the water quality regulations governing  
28 development, such as Section 402 of the CWA (NPDES and AZPDES) as well as the county and  
29 state regulations associated with stormwater, potential effects from other reasonably foreseeable  
30 future actions to water quality are anticipated to be avoided and minimized to the extent practical  
31 and are not anticipated to be substantial.

32 *2.19.1.2.5 Results of the Cumulative Effects Analysis*

33 Although this resource is experiencing a declining trend in the RSA, Federal, State, and local  
34 regulations provide protection to the water resources within and beyond the RSA boundaries to  
35 minimize the cumulative effects to water resources. In addition, it is highly unlikely that all of  
36 the water resources within a given development would be impacted. Mitigation measures for  
37 impacts to these resources are typically required within the regulatory framework, which governs

1 public and private development, and are intended to offset degradation of water resources. As a  
2 result, cumulative effects to water resources are not anticipated to be substantial.

3 *2.19.1.2.6 Mitigation*

4 Within the area, several federal, state, and local conservation and water quality plans have been  
5 developed and they would continue to help further protect or improve water quality by  
6 promoting public awareness, promoting responsible conservation and restoration practices,  
7 including erosion control measures and implementation of BMPs. To the extent that surface  
8 waters are jurisdictional, potential impacts would be regulated through Sections 404 and 401 of  
9 the Clean Water Act, as discussed in *Section 2.3 Hydrology and Water Quality*.

10 *2.19.1.3 Floodplains*

11 *2.19.1.3.1 Resource Study Area*

12 For purposes of this analysis, the RSA for floodplains is the same as the Hydrology and Water  
13 Quality RSA.

14 *2.19.1.3.2 Historical Context and Current Health*

15 As a result of the Colorado Floodway Protection Act of 1986, a floodway was established along  
16 the Colorado River from Davis Dam to the U.S.-Mexican Border. Flows in the Colorado River  
17 are regulated by both Hoover Dam and Davis Dam located upstream; therefore, there are no  
18 major channels or structures other than the levees as part of the Colorado River Flood Control  
19 Project, which have been constructed to offer flood protection from events larger than a 100-year  
20 flood on the Colorado River (FEMA, Dec. 2007).

21 The primary levees constructed along the banks of the river offer protection for Colorado River  
22 events/flows larger than 100-year flood. However, the relict floodplain areas on the Arizona side  
23 of the river that lie behind the riverbank levees, are not susceptible to flooding from river water,  
24 but rather are susceptible to flooding from localized flashflood or storm events that flow and  
25 accumulate within the river bottom area. Land use regulations have been adopted by local and  
26 county authorities to control building in areas that have a high risk of flooding. The area of the  
27 Colorado River between bank levees on each side of the river is designated as the Colorado  
28 River Floodway, and no structures are allowed to be constructed within the floodway without  
29 coordination with the BOR, FEMA, and other federal agencies, as necessary.

30 *2.19.1.3.3 Direct and Indirect Effects*

31 Bridge abutments may potentially have an impact on the Colorado River Floodway or associated  
32 levees for all proposed build alternatives. Specific impacts cannot be assessed until further in the  
33 design process when a HEC-RAS analysis is performed. The majority of the roadways for the  
34 proposed build alternatives are not located within the floodplain, except for the section of the  
35 alignments that crosses the Colorado River and small backwater areas in Nevada. Therefore,  
36 anticipated impacts to the floodplain should be minimal.

1 There is a small amount of floodplain within the portions of the RSA where potential  
2 development may occur. The proposed project is only anticipated to facilitate the rate of  
3 development, rather than induce additional development within the study area, and any  
4 development would have to comply with local floodplain regulations. The area of the Colorado  
5 River between bank levees on each side of the river is designated as the Colorado River  
6 Floodway, and no structures are allowed to be constructed within the floodway without  
7 coordination with the BOR, FEMA and other federal agencies, as necessary. As a result of the  
8 regulations governing development within floodplains, potential indirect effects to floodplains  
9 are anticipated to be negligible.

10 *2.19.1.3.4 Effects of Other Reasonable Foreseeable Future Actions*

11 There is a small amount of floodplain within the portions of the RSA where potential  
12 development may occur, and any development would have to comply with local floodplain  
13 regulations. The area of the Colorado River between bank levees on each side of the river is  
14 designated as the Colorado River Floodway, and no structures are allowed to be constructed  
15 within the floodway without coordination with the BOR and other federal agencies, as necessary.  
16 As a result of the regulations governing development within floodplains, potential indirect  
17 effects to floodplains are anticipated to be negligible.

18 *2.19.1.3.5 Results of the Cumulative Effects Analysis*

19 Executive Order 11988 (1977), “Floodplain Management”, as well as county and local  
20 ordinances, would minimize floodplain encroachment, to the extent allowable within the  
21 regulations, thereby preserving some of a floodplain’s natural values. While these ordinances do  
22 not prohibit development within the floodplain, they limit and regulate development to eliminate  
23 or reduce potential damage from future floods. There is a small amount of floodplain within the  
24 portions of the RSA where potential development may occur, and any development would have  
25 to comply with local floodplain regulations. No structures are permitted to be constructed within  
26 the Colorado River Floodway without coordination with the BOR and other federal agencies, as  
27 necessary.

28 *2.19.1.3.6 Mitigation*

29 FEMA administers the National Flood Insurance Program (NFIP) and requires communities to  
30 adopt adequate land use planning and management measures to qualify for flood insurance in  
31 flood prone areas. In addition to these federal requirements, local practices may include  
32 standards that are more stringent for developers in the RSA to incorporate flood control and  
33 stormwater management into their projects to ensure that base flood elevations are not increased  
34 by alterations made to the landscape. Where locations in the RSA have experienced continued  
35 inundation or historical high water events, local entities, or counties may purchase available  
36 lands adjacent to floodways and maintain the land as natural areas or parks where structural  
37 development or encroachment of the floodplain may be prevented. In addition, regulatory  
38 agencies may collaborate on approval of new development and limit the amount of impervious

1 surfaces in a given area to reduce surface water run-off and the associated volume in drainage  
2 features.

3 **2.19.1.4 Jurisdictional Waters, Including Wetlands**

4 **2.19.1.4.1 Resource Study Area**

5 For purposes of this analysis, the RSA for jurisdictional waters is the same as the Hydrology and  
6 Water Quality RSA.

7 **2.19.1.4.2 Historical Context and Current Health**

8 The Colorado River is identified as a Traditional Navigable Waterway; therefore, it is a non-  
9 wetland jurisdictional water of the U.S. under the CWA. Both banks of the river have been  
10 heavily altered to channelize and control water flow. On the Arizona side of the river, riverbank  
11 levees have been constructed and are armored with riprap in certain stretches to protect  
12 residential and commercial development from potential flooding. On the Nevada side, a similar  
13 levee system has been constructed using primary levees that are armored with riprap in some  
14 areas and secondary levees, effectively isolating the river from the floodplain except in the most  
15 severe of flood events. Additional information about the Colorado River is included in *Section*  
16 *2.5 Wetlands and Jurisdictional Waters*. Within the study areas for the proposed build  
17 alternatives, the following types of wetlands were delineated: wetlands between primary and  
18 secondary levees, riverbank wetlands adjacent to the Colorado River, emergent wetland west of  
19 second levee, and vegetated shallows.

20 **2.19.1.4.3 Direct and Indirect Effects**

21 All proposed build alternatives would result in minor impacts to the Colorado River. Permanent  
22 removal of river substrate would be limited to the area for pier column placement. Based on  
23 preliminary geotechnical information and design approximately 0.0012 acre of substrate would  
24 be removed per pier column. The build alternatives would result between approximately 0.012  
25 and 0.036 acre of riverbed removal. *Section 2.5 Wetlands and Jurisdictional Waters* details the  
26 potential impacts to wetlands from each of the build alternatives, by wetland type; these are  
27 summarized in Table 26. Additional impacts from shading are also discussed in *Section 2.5*  
28 *Wetlands and Jurisdictional Waters*.

29

30

31

32

33

1 **Table 26. Summary of Permanent Wetland Impacts (Fill) by Build Alternative**

Wetland Type	Proposed Parkway Alternative (acres)	Proposed Rainbow Alternative (acres)	Proposed Riverview Alternative (acres)
Colorado River	0.036	0.012	0.018
Wetlands between Primary and Secondary Levees	0	0	0.007
River Bank Wetlands Adjacent to the Colorado River	0	0	0
Emergent Wetland West of Second Levee	0	0.418	0
Vegetated Shallows	0	0.0024	0
<b>Total</b>	<b>0.036</b>	<b>0.4324</b>	<b>0.0250</b>

2 Potential effects to jurisdictional waters, including wetlands, from development include  
 3 placement of fill and degradation of function through encroachment and as a result of increased  
 4 runoff. To the extent that the surface waters are considered jurisdictional, they would be subject  
 5 to protection under Sections 404 and 401 of the Clean Water Act, which regulates the filling of  
 6 and encroachment on these resources. The USACE administers Section 404 of the Clean Water  
 7 Act and operates under “no net loss” policy for wetlands, requiring avoidance and minimization  
 8 of impacts and compensatory mitigation for unavoidable impacts. Therefore, major indirect  
 9 effects to jurisdictional waters are not anticipated.

10 2.19.1.4.4 Effects of Other Reasonably Foreseeable Future Actions

11 Potential effects to jurisdictional waters, including wetlands, from development include  
 12 placement of fill and degradation of function through encroachment and as a result of increased  
 13 runoff. To the extent that the surface waters are considered jurisdictional, they would be subject  
 14 to protection under Sections 404 and 401 of the CWA, which regulates the filling of and  
 15 encroachment on these resources. The USACE administers Section 404 of the CWA and  
 16 operates under “no net loss” policy for wetlands, requiring avoidance and minimization of  
 17 impacts and compensatory mitigation for unavoidable impacts. Therefore, substantial effects to  
 18 jurisdictional waters are not anticipated.

19 2.19.1.4.5 Results of the Cumulative Effects Analysis

20 Regardless of whether the anticipated development would be public or private, these  
 21 developments would have to comply with Sections 404 and 401 of the CWA, which regulates the  
 22 filling of and encroachment on these resources. Given the regulatory requirements governing  
 23 impacts to waters of the U.S., and the mitigation measures discussed in the following section,  
 24 significant cumulative effects to these resources are not anticipated.

25

1 2.19.1.4.6 Mitigation

2 Through the permitting and mitigation process, the USACE has implemented a “no net loss”  
3 policy for permanent impacts to wetlands that are waters of the U.S. The 2008 Final Mitigation  
4 Rule (Federal Register Vol. 73, No. 70; April 10, 2008) which prioritizes compensatory  
5 mitigation projects based on likelihood of success in replacing the function of aquatic habitats  
6 would further mitigation success within the region. Additionally, FHWA implements a policy  
7 under 23 CFR 777 that requires that FHWA projects adhere to a mitigation plan that exceeds a  
8 1:1 ratio. This ensures that the loss of these wetlands would require mitigation that is greater  
9 than the loss. Because the USACE and FHWA would regulate and require mitigation for loss of  
10 these wetlands, the priced facility would meet the “no net loss” policy and not cause a  
11 cumulative impact to waters of the U.S.

12 Compensatory mitigation may include mitigation banking under specific criteria defined and  
13 approved by EPA and the USACE. The federal regulatory framework would continue to  
14 positively affect the health of the resource. Impact awareness and public education seminars  
15 may be conducted to address avoidance and minimization of permanent impacts to jurisdictional  
16 waters. This may potentially avoid future degradation of wetland quality and functionality and  
17 help prevent alterations of stream sinuosity and water quality. In addition to public awareness,  
18 future developers in the RSA should incorporate methods to avoid or minimize impacts to these  
19 resources during the planning and design processes in order to preserve existing riparian  
20 vegetation, stream bank conditions, and upland wetland features.

21 **2.19.1.5 Biological Resources and Sensitive Species**

22 2.19.1.5.1 Resource Study Area

23 The RSA for vegetation, wildlife, state-protected species, and saltcedar-mesquite woodland and  
24 associated species includes two major vegetation communities: upland and woody riparian  
25 within the Land Use RSA.

26 2.19.1.5.2 Historical Context and Current Health

27 The upland cover type can be broken down into four subcategories: creosote bush scrub,  
28 *Atriplex* (salt desert scrub), developed and disturbed. Creosote bush scrub dominated uplands  
29 were located primarily on the Nevada side of the project at higher elevations close to Needles  
30 Highway. *Atriplex* dominated uplands were found closer to the Colorado River and in between  
31 woody-riparian vegetation. Disturbed areas were found throughout the above-mentioned upland  
32 areas and included roads and structures that may contain some native and invasive vegetation.  
33 Developed areas were mainly found in Bullhead City can be defined as urbanized areas and areas  
34 that have been graded or otherwise altered to a degree that they are not expected to support any  
35 vegetation.

36 Classified under the woody riparian community are saltcedar-mesquite woodland and arrowweed  
37 associations. Within the project study area, the saltcedar-mesquite woodlands were located

1 primary in Nevada in the relict floodplain with only limited areas in Arizona. These areas did  
2 not contain monotypic stands of mesquite because most of this species was associated with  
3 saltcedar. The canopy was continuous in a few limited areas, but it was mostly open with sparse  
4 ground cover throughout most of the project study area. Within the project study area  
5 arrowweed occurs between stands of saltcedar-mesquite as well as in marsh or emergent wetland  
6 areas primarily in Nevada.

7 2.19.1.5.3 Direct and Indirect Effects

8 The proposed build alternatives would affect between approximately 39 and 55 acres of  
9 vegetation from roadway structures and between approximately 2 and 3 acres of vegetation from  
10 shading. Information that is more detailed is provided in *Section 2.6 Biological Resources and*  
11 *Sensitive Species*. Wildlife occupying the site would be permanently impacted through loss of  
12 habitat. Direct mortality to some species with small home ranges, such as small mammals and  
13 reptiles, may be caused by construction activities, particularly during the initial grading phase.  
14 Direct effects to state-listed species are not anticipated.

15 The potential indirect effects to vegetation and wildlife habitat are not anticipated to be  
16 substantial because the proposed project would only facilitate an increase in the rate of currently  
17 planned development rather than induce additional development. In addition, there is ample  
18 undeveloped land containing similar habitat adjacent to the study area. Potential impacts to  
19 saltcedar-mesquite woodlands, which primarily occur within the floodplain areas of the lower  
20 Colorado River, are anticipated to be minimal based on the regulations governing development  
21 within floodplains.

22 With regard to state-listed species, it would be the responsibility of the individual developers, in  
23 coordination with the appropriate state entity, to determine if their projects have the potential to  
24 affect threatened or endangered species. Because the proposed project is only anticipated to  
25 facilitate an increase in the rate of the currently planned development and the regulations  
26 governing state-protected species would prohibit direct take of state-listed species, indirect  
27 effects to state-listed species are not anticipated.

28 2.19.1.5.4 Effects of Other Reasonably Foreseeable Future Actions

29 According to the local officials, proposed development in the RSA is planned with or without the  
30 project. The majority of the planned development area contains the salt desert scrub and  
31 creosote bush scrub vegetation communities. Although the planned development would result in  
32 the conversion of this vegetation to developed uses, there is ample, similar vegetation near the  
33 RSA, and the planned development is not anticipated to result in major effects to vegetation and  
34 wildlife habitat.

35 With regard to state-listed species, it would be the responsibility of the individual developers, in  
36 coordination with the appropriate state entity, to determine if their projects have the potential to

1 affect threatened or endangered species. Given the regulations governing state listed species,  
2 major effects from planned development to state-listed species are not anticipated.

3 *2.19.1.5.5 Results of the Cumulative Effects Analysis*

4 The planned development area within the RSA contains the salt desert scrub and creosote bush  
5 scrub vegetation communities. Although it is likely that the planned development would result  
6 in the conversion of most of this vegetation and wildlife habitat to development uses, there is  
7 ample, similar vegetation near the RSA. The planned development is consistent with local  
8 planning efforts. Any potential habitat alteration, encroachment, and fragmentation is not  
9 anticipated to result in substantial adverse effects to vegetation and wildlife habitat because the  
10 development is limited by infrastructure, and it is anticipated that infrastructure would have to be  
11 extended from existing developed areas. As a result, major effects to vegetation and wildlife  
12 habitat are not anticipated.

13 With regard to state-listed species, it would be the responsibility of the individual developers, in  
14 coordination with the appropriate state entity, to determine if their projects have the potential to  
15 affect threatened or endangered species. Given the regulations governing state-listed species,  
16 major effects from planned development are not anticipated.

17 *2.19.1.5.6 Mitigation*

18 Because major adverse cumulative effects to vegetation and wildlife habitat are not anticipated,  
19 no mitigation has been proposed. Mitigation for potential effects to state-listed species will be  
20 coordinated with the appropriate state agency.

21 ***2.19.1.6 Federally-Listed Threatened and Endangered Species and Migratory Birds***

22 *2.19.1.6.1 Resource Study Area*

23 For this analysis, the RSA includes the Land Use RSA, with emphasis on habitat for protected  
24 species.

25 *2.19.1.6.2 Historical Context and Current Health*

26 Plants and animals with federal classifications of Endangered or Threatened are protected under  
27 the provisions of Sections 7 and 9 of the ESA, as amended. The MBTA states that it is unlawful  
28 to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young,  
29 feather or egg in part or in whole, without a federal permit issued in accordance within the  
30 MTBA's policies and regulations. Regardless of whether the development would be facilitated  
31 by the proposed project, removal of both upland and woody riparian vegetation may affect  
32 migratory or other sensitive avian species. In order to mitigate impacts to migratory birds, land-  
33 clearing activities will not occur during migratory bird breeding season (March – July).

34 Six species protected under the ESA and numerous migratory birds were either observed or have  
35 the potential to occur within the project limits or on adjacent lands. Federally listed threatened

1 and endangered species include desert tortoise, southwestern willow flycatcher, Yuma clapper  
2 rail, bonytail chub, razorback sucker, and flannelmouth sucker (a species of concern by  
3 USFWS). A survey for the presence or absence of suitable habitat for these species was not  
4 completed for the entire RSA.

5 *2.19.1.6.3 Direct and Indirect Effects*

6 Potential direct effects to federally protected species and migratory birds are typically associated  
7 with destruction of habitat, as discussed in *Section 2.7 Federally Listed Threatened and*  
8 *Endangered Species and Migratory Birds*; however, regardless of proposed build alternative  
9 chosen, mitigation measures will be coordinated with the USFWS, as applicable.

10 Because the entire RSA has not been surveyed for the presence of suitable habitat, it is unknown  
11 to what extent any increase in the currently planned development would result in effects to  
12 federally protected species or migratory birds. However, the USFWS and the appropriate state  
13 regulations apply to public and private development. Potentially facilitated development in the  
14 study area is unlikely to result in adverse effects to these species.

15 *2.19.1.6.4 Effects of Other Reasonably Foreseeable Future Actions*

16 Because the entire RSA has not been surveyed for the presence of suitable habitat, it is unknown  
17 to what extent any of the reasonably foreseeable future development would result in effects to  
18 federally protected species or migratory birds. However, the USFWS and the appropriate state  
19 regulations apply to public and private development. As a result, it is unlikely that the  
20 anticipated development would result in substantial adverse effects to these species.

21 *2.19.1.6.5 Results of the Cumulative Effects Analysis*

22 Potential cumulative effects to protected species and migratory birds would most typically occur  
23 as a result of habitat loss. While threatened and endangered species also depend on habitat for  
24 their existence, habitat suitable for threatened and endangered species is regulated by the ESA,  
25 one of the most restrictive environmental laws. Any development within the RSA must comply  
26 with the federal and state regulations.

27 *2.19.1.6.6 Mitigation*

28 Because the potential effects to federally protected species and migratory birds associated with  
29 the anticipated development are unknown, it is not possible to outline specific mitigation  
30 measures. Because public and private development is subject to regulation by the ESA,  
31 mitigation for any impacts will be coordinated with USFWS and the appropriate state agencies.

32 *2.19.1.7 Cultural Resources*

33 As detailed in Table 13 in *Section 2.8 Cultural Resources*, the cultural resources analysis is  
34 limited to historic properties.

35

1 2.19.1.7.1 Resource Study Area

2 The RSA for historic properties is the cultural resources records boundary associated with the  
3 Class III Cultural Resources Survey (LBHCBP 2008b and 2009f). This area includes the Land  
4 Use RSA with the exception of a small area to the southwest, Fort Mohave.

5 2.19.1.7.2 Historical Context and Current Health

6 Historic contexts for cultural resources are established by theme, time period, and geographic  
7 limits and provide guidance for assessing sites associated with the context. Archaeological  
8 evidence indicates that human activity in the lower Colorado River Valley spans approximately  
9 12,000 years. The region's cultural development is characterized by four main developmental  
10 periods detectable in the archaeological record: the Paleo-Archaic Period, the Archaic Period, the  
11 Ceramic Period, and the Historic Period. More information on historical contexts is available in  
12 A Supplemental Class III Cultural Resources Survey (LBHCBP 2008b).

13 2.19.1.7.3 Direct and Indirect Effects

14 All three proposed build alternatives would affect historic properties determined eligible for the  
15 NHRP under Criterion D for their information potential. As a result, FHWA has determined the  
16 project would result in an "adverse effect" to historic properties. The adverse impacts to the  
17 NHRP-eligible sites would require mitigation. A Draft PA was prepared (and will be executed  
18 prior to project NEPA approval) between the FHWA and the SHPO offices (Nevada and  
19 Arizona), and, where appropriate, with the other agencies and Tribes as concurring parties, to  
20 ensure appropriate mitigation measures are developed and implemented.

21 Historic properties are typically directly affected through site clearing, grading, or excavation  
22 during development. Historic properties in the APE were identified through Class I records  
23 review and Class III pedestrian surveys.

24 Some development may be included under federal or state regulatory resource protection review,  
25 and therefore, affects to historic properties must be avoided, minimized, or mitigated. If  
26 development is publicly funded, or if private development requires certain federal permits, such  
27 as a permit under Section 404 of the CWA, then it would likely be subject to federal or state  
28 regulations. In addition, any development, whether public or private, would be subject to the  
29 following state regulations: Nevada Antiquities Law (N.R.S. 381 et seq., as amended), Arizona  
30 Antiquities Act (A.R.S. 41 841 et seq., as amended), and Arizona Historic Preservation Act  
31 (A.R.S. 41 861 et seq., as amended).

32 2.19.1.7.4 Effects of Other Reasonably Foreseeable Future Actions

33 Private development may affect known historic properties, as it is not effectively regulated by  
34 existing state regulations; however, the exact nature of the impacts are unknown. As discussed  
35 in the previous section, some development may be included under federal or state regulatory

1 resource protection review, and therefore, affects to historic properties must be avoided,  
2 minimized, or mitigated. To the extent that this occurs, historic properties may be protected.

3 *2.19.1.7.5 Results of the Cumulative Effects Analysis*

4 Direct impacts to historic properties will be mitigated through data recovery excavations.  
5 Regardless of whether the planned development is facilitated by the proposed project, it is  
6 possible that private development may impact known historic properties, as it is not effectively  
7 regulated by existing state regulations; however, the exact nature of the impacts are unknown.  
8 As discussed in the previous section, some development may fall under federal or state  
9 regulatory protection review. To the extent that this occurs, historic properties may be protected.

10 *2.19.1.7.6 Mitigation*

11 As previously discussed, a finalized PA would be executed to ensure appropriate mitigation  
12 measures for direct effects are developed and implemented. To the extent that future  
13 development is regulated by federal and state regulations, historic properties may be protected  
14 through avoidance and minimization of potential effects or mitigation for unavoidable impacts.

15 *2.19.1.8 Noise*

16 *2.19.1.8.1 Resource Study Area*

17 For purposes of this analysis, the noise RSA is the previously described Land Use RSA.

18 *2.19.1.8.2 Historical Context and Current Health*

19 While noise is not a resource, it is an ambient condition that may affect quality of life. On the  
20 Nevada side, the RSA is sparsely developed. On the Arizona side, there is more dense  
21 development within Bullhead City, and the development is less dense as one moves outside the  
22 city limits. Noise levels are consistent with what would be expected for the current level of  
23 residential and commercial development and do not adversely affect quality of life.

24 *2.19.1.8.3 Direct and Indirect Effects*

25 Some of the sensitive receivers would experience noise increases from the proposed build  
26 alternatives, the 42 affected receivers would be eligible for noise abatement consideration.  
27 Although, none of the projected noise levels associated with the build alternatives would  
28 “substantially exceed” existing noise levels.

29 Additional noise would result from future development. To the extent that this development is  
30 induced by the proposed project, an indirect effect of increased noise levels may occur. Noise is  
31 essentially a localized physical condition, and most of the noise from the anticipated  
32 development would result from increased traffic within the study area. The proposed project is  
33 only anticipated to facilitate an increase in the rate of currently planned development, rather than  
34 induce additional development within the RSA. As a result, potential indirect effects to noise  
35 levels are not anticipated to be substantial.

1 2.19.1.8.4 Effects of Other Reasonably Foreseeable Future Actions

2 Additional noise would result from future development. Noise is essentially a localized physical  
3 condition, and most of the noise from the anticipated development would result from increased  
4 traffic within the RSA. The RSA is not rapidly developing, and the anticipated development is  
5 limited by the lack of infrastructure. It is likely that as development occurs over time, noise  
6 levels would gradually increase in the areas to be developed. As a result, potential effects to  
7 noise levels are not anticipated to be substantial.

8 2.19.1.8.5 Results of the Cumulative Effects Analysis

9 It is reasonable that the current trend in growth, including residential, commercial, and light  
10 industrial development would continue. As the population increases in the cities and  
11 development spreads into traditionally rural areas, associated noise levels would continue to  
12 increase. The RSA is not rapidly developing, and the anticipated development is limited by the  
13 lack of infrastructure. It is likely that as development occurs over time, noise levels would  
14 gradually increase in the areas to be developed. A dramatic change in noise levels is not  
15 anticipated, and it is not anticipated that noise levels associated with residential and commercial  
16 development would adversely affect the quality of life in the RSA.

17 2.19.1.8.6 Mitigation

18 Because substantial adverse cumulative effects to noise are not anticipated, no mitigation has  
19 been proposed.

20 **2.19.1.9 Visual Resources**

21 2.19.1.9.1 Resource Study Area

22 For purposes of this analysis, the RSA is the same as the Land Use RSA.

23 2.19.1.9.2 Historical Context and Current Health

24 The RSA lies within a typical basin and range landscape, which consists of a broad open valley  
25 surrounded by three mountain ranges that extend in a north-south direction: Dead Mountains  
26 (southwest), Newberry Mountains (northwest), and Black Mountains (east). The other defining  
27 feature in the proposed project area is the Colorado River. The river bisects the partially  
28 developed valley floor resulting in a dividing line with two distinct communities on either side  
29 (Laughlin and Bullhead City) as well as a natural boundary between the two states. Because of  
30 the proximity of both communities to the river, the Laughlin/Bullhead City region is a popular  
31 recreational destination. River-oriented development, such as parkland, single-family housing,  
32 and commercial development is prevalent in addition to vacant lands in the study area (LBHCBP  
33 2009i).

34 2.19.1.9.3 Direct and Indirect Effects

35 The proposed bridge and roadway would result in a moderate level of change for both the  
36 residents that live adjacent to the proposed build alternatives and for the recreationalists utilizing

1 the river and nearby public facilities (Rotary Park, Colorado River Heritage Greenway Trail, and  
2 Colorado River Nature Center). The roadway would result in a minor level of change and the  
3 bridge would result in a moderate level of change for motorists. However, there would be a  
4 major level of change for the residents living adjacent to the proposed sound barriers associated  
5 with the project. In addition, the bridge would produce a major level of visual change for  
6 recreationalists utilizing Arizona Veterans Memorial Park, the Memorial Plaza (a dramatic  
7 scenic venue for viewing the monument), and adjacent public areas. Potential indirect effects as  
8 a result of an increase in the rate of currently planned development include continued change in  
9 land use from undeveloped to residential, commercial, and some industrial uses. Where infill  
10 development occurs, the development may be viewed by some residents as favorable where the  
11 design theme becomes more unified. Other residents may view increased development in  
12 currently undeveloped areas as unfavorable. The proposed project is only anticipated to facilitate  
13 an increase in the rate of currently planned development, rather than induce additional  
14 development within the RSA. Development is anticipated to be consistent with land use plans  
15 and zoning ordinances, and the potential changes to existing visual resources are not anticipated  
16 to be substantial.

17 *2.19.1.9.4 Effects of Other Reasonably Foreseeable Future Actions*

18 Potential effects associated with reasonably foreseeable future development include continued  
19 change in land use from undeveloped to residential, commercial, and some industrial uses.  
20 Where infill development occurs, the development may be viewed by some residents as  
21 favorable where the design theme becomes more unified. Other residents may view increased  
22 development in currently undeveloped areas as unfavorable. Development is anticipated to be  
23 consistent with land use plans and zoning ordinances, and the potential changes to existing visual  
24 resources are not anticipated to be substantial.

25 *2.19.1.9.5 Results of the Cumulative Effects Analysis*

26 The cumulative effects to visual resources would be a continued change in land use from  
27 undeveloped to developed uses. Where infill development occurs, the development may be  
28 viewed by some residents as favorable where the design theme becomes more unified. Other  
29 residents may view increased development in currently undeveloped areas as unfavorable.  
30 Development is anticipated to be consistent with land use plans and zoning ordinances, and the  
31 potential changes to existing visual resources are not anticipated to be substantial.

32 *2.19.1.9.6 Mitigation*

33 Mitigation measures for the direct effects (*Section 2.13 Visual Resources*) would visually blend  
34 the proposed project with the environment and provide a sense of visual integration. Long-term  
35 mitigation measures that can contribute to the reduction of visual impacts include:

- 1 • low lighting or lighting shields (No light shall be located in such a way as to  
2 be a nuisance to a neighboring property. This may include low mast for  
3 lighting structures, low output, and/or shielding.)
- 4 • vegetation or natural landform screening
- 5 • structural screening (landscaped buffering for potential noise barriers)
- 6 • integration of complementary architectural features of the bridge (e.g., bridge  
7 façade, bridge and road design, fences, use of earthtone colors)

8 Replacing, repairing, or improving any disturbance to vegetated areas such as re-stabilizing  
9 disturbed soils and generally restoring or improving natural resources that have been disrupted  
10 would also mitigate aesthetic conditions. Reducing earthwork contrasts by retaining rocks, trees,  
11 shrubs, and adding mulch or topsoil and repairing any disruption to existing drainages would  
12 also help relieve visual changes.

13 Additionally, the consideration of the bridge location and orientation would reduce potential  
14 shadow effects. The proposed bridge alternatives are all oriented in an east-westerly pattern thus  
15 generally reducing the effects of shadowing on the adjacent landscape.

16 No other mitigation for potential changes in the visual resources associated with development is  
17 anticipated.

#### 18 ***2.19.1.10 Title VI and Environmental Justice***

##### 19 *2.19.1.10.1 Resource Study Area*

20 For the purposes of this analysis, the RSA is the totality of all three EJ study corridors, which  
21 includes a 0.5-mile radius (buffers) of the centerline for each of the proposed build alternatives.

##### 22 *2.19.1.10.2 Historical Context and Current Health*

23 The proposed Riverview Alternative EJ study corridor supports the largest concentration of  
24 potential EJ populations, particularly in Block Groups 9518-1, 9518-2, 9518-3, and 9518-4.  
25 Block Group 9518-1 is the least densely populated based on the size of the block group. Block  
26 Group 9518-3 contains the highest number amount of persons living below poverty level within  
27 the proposed Riverview Alternative EJ study corridor (and in the RSA—39 percent as a total of  
28 block group population). People living in this block group also earn the lowest median  
29 household income of all block groups within the proposed Riverview Alternative EJ study  
30 corridor. The largest numbers of persons that do not speak English well or at all are within the  
31 proposed Riverview Alternative EJ study corridor and are concentrated in both Block Group  
32 9517-1 and 9518-2 (10 percent of total block group populations).

##### 33 *2.19.1.10.3 Direct and Indirect Effects*

34 Although there are adverse direct effects to the potential EJ populations residing within the RSA,  
35 specifically those populations in Block Group 9518-2 and 9518-3 of the proposed Riverview

1 Alternative, these groups do not bear any *disproportionately high and adverse effects* from any  
2 of the three proposed build alternatives or the No Build Alternative. This is because all residents  
3 within this same RSA would bear the impact (regardless of race, ethnicity, income, or English  
4 proficiency).

5 *2.19.1.10.4 Effects of Other Reasonably Foreseeable Future Actions*

6 Potential effects associated with reasonably foreseeable future development include minor infill  
7 development. Where the design theme becomes more unified, development may be viewed by  
8 some residents as favorable. Development is anticipated to be consistent with land use plans and  
9 zoning ordinances, and the potential changes to existing EJ populations (within the proposed  
10 Riverview Alternative EJ study corridor) are not anticipated to be substantial.

11 *2.19.1.10.5 Results of the Cumulative Effects Analysis*

12 The proposed Riverview Alternative EJ study corridor is not rapidly developing and the  
13 anticipated development is limited to infill. Infill development is anticipated to be consistent  
14 with land use plans and zoning ordinances, and the potential changes to existing EJ are not  
15 anticipated to be substantial.

16 *2.19.1.10.6 Mitigation*

17 No mitigation is proposed because the proposed Riverview Alternative is no longer considered a  
18 proposed build alternative due to the Section 4(f) *de minimis* determination and the availability  
19 of other prudent and feasible avoidance alternatives to the use of land from Rotary Park.

20 ***2.19.1.11 Potential Section 4(f) and Section 6(f) Resources (Recreation Resources)***

21 *2.19.1.11.1 Resource Study Area*

22 For purposes of this analysis, the RSA is the same as the Land Use RSA.

23 *2.19.1.11.2 Historical Context and Current Health*

24 The following public recreational resources (parks, trail, and nature center) are located within the  
25 RSA: Rotary Park, the Arizona Veterans Memorial Park, the Colorado River Heritage Greenway  
26 Trail, and the Colorado River Nature Center. All of these recreational resources are subject to  
27 Section 4(f) and Section 6(f) protection. Because of the proximity of both communities to the  
28 river, the Laughlin–Bullhead City area is a popular recreational destination. River-oriented  
29 development, such as parkland, single-family housing, and commercial development is prevalent  
30 in addition to vacant lands in the RSA.

31 *2.19.1.11.3 Direct and Indirect Effects*

32 The Colorado River Nature Center Interdisciplinary Team has identified the proposed Parkway  
33 Alternative to have potential light pollution (from any proposed street lights) impacts that would  
34 likely deter wildlife from using the Colorado River Nature Center and therefore would be in

1 conflict with the goal to manage the area for high-value wildlife habitat unless proposed  
2 mitigation measures were implemented.

3 The Colorado River Nature Center is designated as Visual Resource Management Class III. Per  
4 the BLM Resource Management Plan, this designation states that the BLM would manage the  
5 area to partially retain the existing character of the landscape, the level of change to the  
6 characteristic landscape should be moderate, and management activities may attract attention but  
7 should not dominate the view of the casual observer. Based on KOP 5, the bridge for the  
8 proposed Parkway Alternative would produce a moderate level of change for recreationalists  
9 utilizing the river and the Colorado River Nature Center.

10 The Colorado River Nature Center Interdisciplinary Team has identified the proposed Parkway  
11 Alternative to potentially have additional OHV access impacts that would likely deter wildlife  
12 from using the Colorado River Nature Center and therefore would be in conflict with the goal to  
13 manage 500 acres for high-value wildlife habitat unless proposed mitigation measures were  
14 implemented.

15 In addition, they have identified a potential access issue with future projects. This would be the  
16 movement of fill from the northern area of the Colorado River Nature Center across the proposed  
17 Parkway Alternative. Construction of the proposed project may limit this opportunity. They  
18 request that future movement of fill under the bridge or across the Bullhead Parkway extension  
19 be considered when developing plans for the proposed bridge.

20 The proposed Riverview Alternative would require the net acquisition and conversion of 2.7  
21 acres of Rotary Park along the northern border of the park. Based on KOP 2, the bridge would  
22 produce a moderate level of visual change from the proposed Riverview Alternative for  
23 recreationalists utilizing the river and Rotary Park.

24 Based on KOP 8, the bridge for the proposed Riverview Alternative would produce a major level  
25 of visual change for recreationalists utilizing the Arizona Veterans Memorial Park, the Memorial  
26 Plaza and adjacent public areas.

27 *2.19.1.11.4 Effects of Other Reasonably Foreseeable Future Actions*

28 Potential effects associated with reasonably foreseeable future development include continued  
29 change in land use from undeveloped to residential, commercial, and some industrial uses.  
30 Where infill development occurs and the design theme becomes more unified, development may  
31 be viewed by some residents as favorable. Other residents may view increased development in  
32 currently undeveloped areas as unfavorable. Development is anticipated to be consistent with  
33 land use plans and zoning ordinances, and the potential changes to existing visual resources are  
34 not anticipated to be substantial.

35

1 2.19.1.11.5 Results of the Cumulative Effects Analysis

2 The cumulative effects to Section 4(f) resources would be a continued change in land use from  
3 undeveloped to developed uses. Where infill development occurs and the design theme becomes  
4 more unified, development may be viewed by some residents as favorable. Other residents may  
5 view increased development in currently undeveloped areas as unfavorable. Development is  
6 anticipated to be consistent with land use plans and zoning ordinances, and the potential changes  
7 to existing visual resources are not anticipated to be substantial.

8 2.19.1.11.6 Mitigation

9 The Colorado River Nature Center Interdisciplinary Team letter concluded that if proposed  
10 mitigation measures were incorporated into the proposed Parkway Alternative, potential  
11 “constructive use” impacts to the Colorado River Nature Center could be mitigated.

12 Therefore, proposed mitigation measures will include the installation of light shields to ensure  
13 that the lights on the bridge are directed at the roadway and not permitted to contribute to light  
14 pollution in the area. Noise would be reduced by creating a vegetated earthen berm between the  
15 Colorado River Nature Center and the proposed Parkway Alternative. This earthen berm would  
16 be made of fill already existing within the Colorado River Nature Center. This removal of fill  
17 would create a portion of the planned wetland, furthering the development plans of the Colorado  
18 River Nature Center and providing additional opportunities for wildlife within the area. OHV  
19 access issues would be solved through the installation of a fence near the earthen berm and  
20 barriers installed under the bridge.

21 These mitigation suggestions would be incorporated into the proposed Parkway Alternative  
22 during final design processes by the project proponents. Preliminary design and size  
23 specifications (approximately 2,900 feet [length] by 58 feet [width] by 6 feet [height]) and the  
24 location of the vegetated earthen berm are indicated on Appendix F—Figure 10. The earthen  
25 berm has been proposed at a 6-foot height (similar to an effective noise barrier) which would  
26 reduce projected traffic noise affects by approximately 5 dBA. The Colorado River Nature  
27 Center Interdisciplinary Team has committed to ensuring a water supply would be available for  
28 irrigation of the vegetation on the earthen berm.

29 Therefore, the proposed Parkway Alternative does not have “constructive use” impacts to the  
30 Colorado River Nature Center. The potential impacts associated with the Parkway Alternative  
31 would not substantially diminish the utility of the Section 4(f) resources and the activities,  
32 features, and attributes of the Colorado River Nature Center would not be substantially impaired.

33 Various impact avoidance, minimization, mitigation, and enhancements for potential impacts to  
34 Rotary Park from the proposed Riverview Alternative will not be implemented due to a second  
35 response as indicated in Appendix F—Section 3.0, that a Section 4(f) *de minimis* determination  
36 cannot be sustained for the potential noise, visual, and land use impacts to Rotary Park from the

1 proposed Riverview Alternative. Therefore, it has been eliminated as a reasonable or viable  
2 proposed build alternative in the approval of this EA.

### 3 **2.20 Comparison of Alternatives**

4 Four alternatives were considered in this EA for the Laughlin–Bullhead City Bridge Project: No  
5 Build Alternative, and the three proposed build alternatives (Parkway, Rainbow, and Riverview).

6 Table 27 and the following text in this section provide a brief summary of the impacts to each  
7 resource area and comparison of all the proposed alternatives.

8 Based on preliminary engineering designs, the proposed Parkway Alternative requires the  
9 longest roadway length ( $\approx 23,124$  feet) and the shortest bridge length ( $\approx 1,286$  feet).

10 Without a second bridge, the existing Laughlin Bridge would function at a LOS F in both 2015  
11 and 2030. With a second crossing, in 2015 the existing Laughlin Bridge would function at LOS  
12 D/D/C with the proposed Parkway/Rainbow/Riverview Alternatives, respectively. Regardless of  
13 location in 2030, the existing Laughlin Bridge would function at LOS F, which indicates the  
14 necessity for a third bridge. Based on the LOS of the existing Laughlin Bridge in 2015, the  
15 location of a second bridge nearest to it (most northern) would alleviate the most congestion. In  
16 this case, the proposed Riverview Alternative would most improve the existing Laughlin Bridge  
17 to a LOS C in 2015.

**Table 27. Comparison of Alternatives**

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Length of roadway alignment (in feet)</b>	Not applicable	≈23,124	≈21,308	≈15,875
<b>Length of bridge alignment (in feet)</b>	Not applicable	≈1,286	≈1,359	≈1,768
<b>Level of Service (LOS) in 2015 on existing bridge</b>	F	D	D	C
<b>Level of Service (LOS) in 2030 on existing bridge</b>	F	F	F	F
<b>Average Daily Traffic (AADT) on proposed bridge in 2015</b>	Not applicable	6,400	9,400	19,500
<b>Average Daily Traffic (AADT) on proposed bridge in 2030</b>	Not applicable	20,600	26,200	37,700
<b>Project Costs (Estimated 2013 Year of Expenditure Dollars)</b>	\$0	\$55,181,336	\$48,074,757	\$59,323,620
<b>Land Resources</b>	No impacts	No impacts related to geology. Minor potential for soil erosion; mitigated with BMPs.	No impacts related to geology. Minor potential for soil erosion; mitigated with BMPs.	No impacts related to geology. Minor potential for soil erosion; mitigated with BMPs.
<b>Hydrology and Water Quality</b>	No impacts	Minimal impacts can be mitigated with BMPs during construction and design elements for operation.	Minimal impacts can be mitigated with BMPs during construction and design elements for operation.	Minimal impacts can be mitigated with BMPs during construction and design elements for operation.

## Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Floodplain</b>	No impacts	Abutments not within floodplain, so no impacts.  Bridge piers would be designed to prevent increases (impacts) in surface water elevation of the Colorado River.	Abutments within floodplain; potential impacts to floodplain.  Bridge piers would be designed to prevent increases (impacts) in surface water elevation of the Colorado River.	Abutments within floodplain; potential impacts to floodplain.  Bridge piers would be designed to prevent increases (impacts) in surface water elevation of the Colorado River.
<b>Wetlands and other Waters of the U.S.</b>	No impacts	No wetlands are permanently removed.  ≈0.036 acre of other WOUS impacted from piers.	≈0.420 acre of wetlands permanently removed.  ≈0.012 acre of other WOUS impacted from piers.	≈0.007 acre of wetlands permanently removed.  ≈0.018 acre of other WOUS impacted from piers.
<b>Biological Resources and Sensitive Species</b>				
<b>Vegetation</b>	No impacts	≈46 acres of undisturbed vegetation would be permanently disturbed.	≈41 acres of undisturbed vegetation would be permanently disturbed.	≈22 acres of undisturbed vegetation would be permanently disturbed.
<b>Noxious Weeds</b>	No impacts	Minimal risk of expansion of noxious weeds.	Minimal risk of expansion of noxious weeds.	Minimal risk of expansion of noxious weeds.
<b>Wildlife and State Protected Species</b>	No impacts	Removal of ≈46 acres of habitat may directly or indirectly affect wildlife species.	Removal of ≈41 acres of habitat may directly or indirectly affect wildlife species.	Removal of ≈22 acres of habitat may directly or indirectly affect wildlife species.
<b>Saltcedar-Mesquite Woodland and Associated Species</b>	No impacts	Loss of ≈35 acres of this habitat.	Loss of ≈30 acres of this habitat.	Loss of ≈1.5 acres of this habitat.
<b>Federally Threatened and Endangered Species and Migratory Birds</b>				
<b>Desert Tortoise</b>	No impacts	Loss of ≈10 acres of desert tortoise habitat and potential habitat fragmentation.	Loss of ≈9 acres of desert tortoise habitat and potential habitat fragmentation.	Loss of ≈15 acres of desert tortoise habitat and potential habitat fragmentation.
<b>Southwestern Willow Flycatcher (E)</b>	No impacts	Loss of ≈35 acres of potential habitat for the transient/migratory Southwestern Willow Flycatcher.	Loss of ≈30 acres of potential habitat for the transient/migratory Southwestern Willow Flycatcher.	Loss of ≈1.5 acres of potential habitat for the transient/migratory Southwestern Willow Flycatcher.

Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Yuma Clapper Rail</b>	No impacts	No impacts	No impacts	Impacts to ≈0.12 acre of potential Yuma clapper rail habitat.
<b>Bonytail Chub (E) Razorback Sucker (E) Flannelmouth Sucker (species of concern)</b>	No impacts	Minor loss of habitat for protected fish species from pier placement; minor risk of take during construction.	Minor loss of habitat for protected fish species from pier placement; minor risk of take during construction.	Minor loss of habitat for protected fish species from pier placement; minor risk of take during construction.
<b>Migratory Birds</b>	No impacts	Removal of ≈46 acres of previously undisturbed upland, riparian or woody vegetation, which is potential migratory bird habitat, may affect migratory birds.	Removal of ≈41 acres of previously undisturbed upland, riparian or woody vegetation, which is potential migratory bird habitat, may affect migratory birds.	Removal of ≈22 acres of previously undisturbed upland, riparian or woody vegetation, which is potential migratory bird habitat, may affect migratory birds.
<b>Cultural Resources (number of known sites)</b>	No impacts	3 Nat. Reg. Eligible Site; 1 Nat. Reg. Ineligible Site	3 Nat. Reg. Eligible Site; 3 Nat. Reg. Ineligible Site	1 Nat. Reg. Eligible Site; 1 Nat. Reg. Ineligible Site
<b>Air Quality</b>	Particulate matter impacts are anticipated due to increased travel time and traffic congestion on the existing bridge.  MSAT emission impacts are anticipated to increase from the No Build Alternative throughout the project area due to the inefficiency of the transportation network.	No impacts	No impacts	No impacts
<b>Noise (potential impacts to sensitive receptors)</b>	Higher and lower noise levels depending on location of receivers.	No impacts	2 affected receivers would be eligible for noise abatement consideration.	42 affected receivers would be impacted and eligible for noise abatement consideration.

Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Visual Resources</b>	No impacts	<p>Bridge would produce a moderate level of change for recreationalists (at Colorado River Nature Center and Colorado River Heritage Greenway Trail).</p> <p>No noise barriers</p> <p>Bridge and roadway would produce a minor level of change to motorists on Needles Highway and Arizona SR 95.</p>	<p>Bridge would produce a moderate level of change for residences and recreationalists.</p> <p>Roadway and noise barriers would produce a major level of change for residents adjacent to Rainbow Drive.</p> <p>Bridge and roadway would produce a minor level of change to motorists on Needles Highway and Arizona SR 95.</p>	<p>Bridge would produce a moderate level of change for residences and recreationalists (at Rotary Park and Colorado River Heritage Greenway Trail).</p> <p>Bridge would produce a major level of change for recreationalists (at Arizona Veterans Memorial Park).</p> <p>Roadway and noise barriers would produce a major level of change for residents adjacent to Riverview Drive.</p> <p>Bridge and roadway would produce a minor level of change to motorists on Needles Highway and Arizona SR 95.</p>
<b>Hazardous Material Sites</b>	No impacts	No sites identified.	2 potential sites identified (both in immediate area).	5 potential sites identified (1 in immediate area).
<b>Construction</b>	No impacts	<p>Commercial traffic impacts from rerouting (temporary).</p> <p>Dust creation possible.</p> <p>Minimal risk of impacting water quality.</p> <p>Noise during construction.</p> <p>Water-dependent recreation access potentially affected (speed restrictions, etc.).</p>	<p>Residential and commercial traffic impacts from rerouting (temporary).</p> <p>Dust creation possible.</p> <p>Minimal risk of impacting water quality.</p> <p>Noise during construction.</p> <p>Water-dependent recreation access potentially affected (speed restrictions, etc.).</p>	<p>Residential and commercial traffic impacts from rerouting (temporary).</p> <p>Dust creation possible.</p> <p>Minimal risk of impacting water quality.</p> <p>Noise during construction.</p> <p>Water-dependent recreation access potentially affected (speed restrictions, etc.).</p>

Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
Mobility and Access				
<b>Bicycle and Pedestrian</b>	No improvements to regional connectivity or non-vehicular access between the Laughlin and Bullhead City, thus providing no additional mobility.	<p>Project would provide a 12-foot multi-use pathway throughout the alignments that would create regional connectivity and non-vehicular access between the Laughlin and Bullhead City, thus providing additional mobility.</p> <p>No pedestrian or bicycle restrictions.</p> <p>Construction may temporarily affect pedestrian and bicycle access to and through the work area; this may result in short-term impacts.</p>	<p>Project would provide a 12-foot multi-use pathway throughout the alignments that would create regional connectivity and non-vehicular access between the Laughlin and Bullhead City, thus providing additional mobility.</p> <p>No pedestrian or bicycle restrictions.</p> <p>Construction may temporarily affect pedestrian and bicycle access to and through the work area; this may result in short-term impacts.</p>	<p>Project would provide a 12-foot multi-use pathway throughout the alignments that would create regional connectivity and non-vehicular access between the Laughlin and Bullhead City, thus providing additional mobility.</p> <p>Project would restrict access from residences and 14 of 24 streets that have direct access to Riverview Drive; ultimately, when rerouted all pedestrians and bicycles would still be able to access Riverview Drive but would add more distance (≈0.6 mile) or time (≈14.5 minutes).</p> <p>Construction may temporarily affect pedestrian and bicycle access to and through the work area; this may result in short-term impacts.</p>

Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Public Transportation</b>	No impacts	No impacts	No impacts	Impacts to current elementary and high school bus routing and bus stop locations. Bus rerouting and bus stop relocations may be required in the future.
<b>Vehicular</b>	No improvement in vehicular mobility or access between the communities of Laughlin and Bullhead City.	<p>Project would provide a new connection that would improve vehicular access between the communities of Laughlin and Bullhead City, thus providing additional mobility.</p> <p>No vehicular restrictions.</p> <p>Construction may temporarily affect vehicular access to and through the work area; may result in short-term impacts to residences and businesses.</p>	<p>Project would provide a new connection that would improve vehicular access between the communities of Laughlin and Bullhead City, thus providing additional mobility.</p> <p>No vehicular restrictions.</p> <p>Construction may temporarily affect vehicular access to and through the work area; may result in short-term impacts to residences and businesses.</p>	<p>Project would provide a new connection that would improve vehicular access between the communities of Laughlin and Bullhead City, thus providing additional mobility.</p> <p>Project would restrict access from driveways and 14 of 24 streets that have direct access to Riverview Drive; ultimately, when rerouted all vehicles would still be able to access Riverview Drive without adding much more distance (≈0.6 mile) or time (≈30 seconds).</p> <p>Construction may temporarily affect vehicular access to and through the work area; may result in short-term impacts to residences and businesses.</p>

Environmental Impacts and Mitigation

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
Safety				
<b>Bicycle and Pedestrian</b>	No impacts	Traffic would increase adversely affecting the actual or perceived safety of bicyclists and pedestrians.  Design would include ADA compliant sidewalks and a 12-foot multi-use pathway that would help increase safety for bicyclists and pedestrians.  Construction activities may temporarily affect bicycle and pedestrian safety.	Traffic would increase adversely affecting the actual or perceived safety of bicyclists and pedestrians.  Design would include ADA compliant sidewalks and a 12-foot multi-use pathway that would help increase safety for bicyclists and pedestrians.  Construction activities may temporarily affect bicycle and pedestrian safety.	Traffic would increase adversely affecting the actual or perceived safety of bicyclists and pedestrians.  Design would include ADA compliant sidewalks, a 12-foot multi-use pathway, cross-walks, and warranted signalized intersections that would help increase safety for bicyclists and pedestrians.  Construction activities may temporarily affect bicycle and pedestrian safety.
<b>Evacuation Route for the Riviera Neighborhood (most densely populated area in Bullhead City not located in a safe, high-ground area)</b>	Evacuation time would not be improved (8 to 12 hours).	No designated evacuation routes exist along this alternative; therefore, no impacts associated with the proposed Parkway Alternative.	No designated evacuation routes exist along this alternative; therefore, no impacts associated with the proposed Rainbow Alternative.	Designated evacuation route. Evacuation time would be improved (2.6 to 4 hours).
<b>Emergency Response time in minutes in the year 2030</b>	37.6	21.7	21.4	20.4
Socioeconomics				
<b>Conformance with applicable Land Use Plans</b>	Not applicable	Conforms	Does not conform with Circulation Element of BHC General Plan.	Conforms

Environmental Impacts and Mitigation

1

Resource/Topic	No Build Alternative	Proposed Parkway Alternative (Preferred)	Proposed Rainbow Alternative	Proposed Riverview Alternative
<b>Right-of-Way (ROW) and Displacements</b>	No impacts	ROW ≈56 acres 0 displacements	ROW ≈45 acres 0 displacements	ROW ≈22 acres 0 displacements
<b>Title VI and Environmental Justice</b>	No impacts	0 representative EJ block groups identified.	0 representative EJ block groups identified.	Four potential EJ block groups identified. There are adverse impacts to EJ populations; however, it is not disproportionate.
<b>Section 4(f)</b>	No Impacts	No Section 4(f) “constructive use” (CFR 774.15 (f) (6)). Colorado River Nature Center would be mitigated with light shields, installation of a vegetated earthen berm, and installation of an OHV fence/barrier under the proposed bridge.	No Impacts	2.7 acres of land acquisition of Rotary Park. FHWA determined a <i>de minimis</i> determination cannot be sustained due to the potential noise, visual, and land use impacts. It can no longer be considered as a reasonable or viable proposed build alternative in the approval of this EA.  Based on KOP 8, the bridge would produce a major level of visual change for recreationalists utilizing the Arizona Veterans Memorial Park, the Memorial Plaza and adjacent public areas. It has potential “constructive use” visual impacts because it substantially impairs the aesthetic features of the plaza.

## Environmental Impacts and Mitigation

1 Based on travel demand, the location of a second bridge furthest to the north would indicate a  
2 higher demand and increased AADT in both years 2015 and 2030. The proposed Riverview  
3 Alternative would have the highest combined short-term (2015) and long-term (2030) AADT.

4 Construction costs are based on year 2013 for each of the proposed build alternatives. A 20%  
5 contingency has been included to account for proposed mitigation costs and roadway and bridge  
6 construction cost fluctuations. The proposed Rainbow Alternative would have the lowest total  
7 project costs. Followed by the proposed Parkway and Riverview Alternatives, respectively.

8 There are no impacts related to geology for any of the alternatives. Minor impacts to topography  
9 would result from minor excavation into the hillside, and minor raised roadbed construction for  
10 the Parkway, Rainbow, and Riverview Alternatives. These impacts will be mitigated with BMPs  
11 for soil erosion.

12 There would be no impacts to surface water and groundwater for the No Build Alternative and  
13 they are expected to be minimal to negligible for all build alternatives. Minimal impacts will be  
14 mitigated with BMPs during construction and design elements for operation.

15 No impacts to the flood zones are anticipated from the No Build Alternative. Both the proposed  
16 Parkway and Rainbow Alternatives' bridge abutments would be located within the floodplain on  
17 the Arizona side of the river, but not within the floodplain in Nevada. Therefore, impacts are  
18 possible in Arizona at both the proposed Parkway and Rainbow Alternatives due to placement of  
19 fill material and drainage associated with the roadway. Additionally, the elevation of the  
20 roadway may be within the floodplain (at or below the 100-year flood elevation). Specific  
21 impacts cannot be determined until a Technical Drainage Study Report is complete, which would  
22 occur later in the design process. For all proposed build alternatives, bridge piers would be  
23 designed to prevent increases (impacts) in surface water elevation of the Colorado River. The  
24 majority of the proposed Riverview Alternative is not located within the floodplain, except for  
25 the section of the alternative's alignment that crosses the Colorado River and a small backwater  
26 area in Nevada. Therefore, anticipated impacts to the floodplain should be minimal.

27 The proposed Parkway Alternative would not permanently impact any wetlands. The proposed  
28 Rainbow Alternative would permanently impact  $\approx 0.420$  acre of wetland. The proposed  
29 Riverview Alternative would permanently impact  $\approx 0.007$  acre of wetland.

30 The proposed Parkway Alternative would impact a greater area of river bottom ( $\approx 0.036$  acre)  
31 because extra piers are required due to skewing of the bridge to conform to a perpendicular  
32 alignment to the river. Additional river bottom may also be affected for this proposed alternative  
33 because extra armoring may be needed around the pier column footings to reduce scour. The  
34 proposed Rainbow Alternative would impact  $\approx 0.012$  acre of river bottom. The proposed  
35 Riverview Alternative would impact  $\approx 0.018$  acre of river bottom due to pier placement.

## Environmental Impacts and Mitigation

1 Each of the proposed build alternatives would affect vegetation, which is potential habitat for  
2 migratory birds and various wildlife species. Impacts to habitat include removal of undisturbed  
3 upland and woody vegetation. The proposed Parkway and Rainbow Alternatives would have  
4 more impacts on habitat and species affecting  $\approx 46$  acres and  $\approx 41$  acres, respectively. The  
5 proposed Riverview Alternative would remove the least amount of undisturbed upland and  
6 woody vegetation ( $\approx 22$  acres); therefore, would have the least impacts on habitat and species.

7 Each proposed build alternative ROW increases the potential for introduction of additional  
8 noxious weeds into the project area. However, few invasive weeds were observed in the project  
9 and surrounding areas so this project is not likely to increase the expansion of noxious weeds.

10 Based on preliminary design and potential impacts due to permanent construction, the proposed  
11 Parkway and Rainbow Alternatives would impact  $\approx 35$  acres and  $\approx 30$  acres, respectively. The  
12 proposed Riverview Alternative would impact the least amount of of saltcedar-mesquite  
13 woodland,  $\approx 1.5$  acres.

14 Each of the proposed build alternatives would affect desert tortoise habitat. Impacts to habitat  
15 include the removal and fragmentation of desert tortoise habitat. The proposed Parkway and  
16 Rainbow Alternatives would remove comparable amounts of desert tortoise habitat  $\approx 10$  acres and  
17  $\approx 9$  acres, respectively. The proposed Riverview Alternative would remove the most desert  
18 tortoise habitat,  $\approx 15$  acres.

19 Loss of this potential habitat could affect transient/migratory southwestern willow flycatchers for  
20 all of the proposed build alternatives. The proposed Rainbow and Parkway Alternatives would  
21 impact  $\approx 30$  acres and  $\approx 35$  acres, respectively. As discussed above, the proposed Riverview  
22 Alternative would impact  $\approx 1.5$  acres of salt-cedar mesquite woodland.

23 Both the proposed Parkway and Rainbow Alternatives do not have any potential Yuma Clapper  
24 Rail habitat, so no impacts to this species are associated with these build alternatives. The  
25 proposed Riverview Alternative would impact (remove) a small amount of potential Yuma  
26 clapper rail habitat ( $\approx 0.0012$  acre).

27 Construction of a new bridge would directly and adversely affect habitat for the fishes with the  
28 installation of bridge piers within the river channel for any of the proposed build alternatives.  
29 Temporary or permanent spawning habitat may occur in the project area based on available  
30 information; however, bridge infrastructure would only result in the permanent removal of  
31 relatively small amounts of river substrate. No additional permanent disturbance within the  
32 channel is anticipated. Increased sediment may result from the disturbance of the shoreline, but  
33 these impacts should be minimal in relation to the available habitat in the vicinity of the  
34 biological study area. Given the low density of fish in the area and lack of likely spawning  
35 habitat, the death of or injury to the fish is highly unlikely.

## Environmental Impacts and Mitigation

1 The No Build Alternative would provide the most protection (least impact) to cultural resources.  
2 But, since there is a demonstrated need for the project, one of the three remaining proposed build  
3 alternatives must be considered. Based on number of sites alone, the proposed Parkway  
4 Alternative has three eligible sites and one non-eligible site; and the proposed Rainbow  
5 Alternative has three eligible sites and three non-eligible sites. The proposed Riverview  
6 Alternative has the least potential to impact cultural resources, with one eligible site and one not-  
7 eligible site.

8 With the No Build Alternative, particulate matter (air quality) impacts are anticipated due to  
9 increased travel time and traffic congestion on the existing bridge. MSAT emission impacts are  
10 also anticipated to increase from the No Build Alternative throughout the project area due to the  
11 inefficiency of the transportation network. No air quality impacts are associated with any of the  
12 proposed build alternatives.

13 The No Build Alternative would create higher and lower noise levels depending on location of  
14 receivers. The proposed Parkway Alternative would not impact any receivers since there is no  
15 current or proposed development along this build alternative. The proposed Rainbow  
16 Alternative would impact two receivers. The two affected receivers would be eligible for noise  
17 abatement consideration. One barrier 7 feet high would be needed to reduce noise levels at the  
18 two receivers to by at least 5 dBA. The proposed Riverview Alternative would impact 42 noise  
19 receivers. The 42 affected receivers along this proposed alternative would be eligible for noise  
20 abatement consideration. Seven noise barriers ranging from 8-12 feet high would be needed to  
21 reduce noise levels by at least 5 dBA for at least 34 of the 42 receivers.

22 For the proposed Parkway Alternative, the bridge would produce a moderate level of change for  
23 recreationalists (at Colorado River Nature Center and Colorado River Heritage Greenway Trail).  
24 There are no residences or noise barriers. The bridge and roadway would produce a minor level  
25 of change to motorists on Needles Highway and Arizona SR 95.

26 For the proposed Rainbow Alternative, the bridge would produce a moderate level of change for  
27 residences and recreationalists. The roadway and noise barriers would produce a major level of  
28 change for residents adjacent to Rainbow Drive. The bridge and roadway would produce a  
29 minor level of change to motorists on Needles Highway and Arizona SR 95.

30 For the proposed Riverview Alternative, the bridge would produce a moderate level of change  
31 for residences and recreationalists (at Rotary Park and Colorado River Heritage Greenway Trail).  
32 The bridge would produce a major level of change for recreationalists (at Arizona Veterans  
33 Memorial Park). The roadway and noise barriers would produce a major level of change for  
34 residents adjacent to Riverview Drive. The bridge and roadway would produce a minor level of  
35 change to motorists on Needles Highway and Arizona SR 95.

## Environmental Impacts and Mitigation

1 There are no sites of concern regarding potential hazardous materials releases for the proposed  
2 Parkway Alternative. Two sites of concern regarding potential hazardous materials releases are  
3 located along the proposed Rainbow Alternative corridor. These sites are both ranked as High  
4 Risk sites. Five sites of concern regarding potential hazardous materials releases are located  
5 within the proposed Riverview Alternative corridor. Of these five sites, only one is likely to  
6 impact the project.

7 For all of the proposed build alternatives, there would be temporary commercial traffic impacts  
8 from traffic rerouting during construction activities. Construction activities would also create  
9 dust and noise impacts for any of the proposed build alternatives. Project construction would  
10 have minimal risk of impacting water quality. But, water-dependent recreation access would  
11 potentially be affected (speed restrictions, etc.) during construction of the bridge at any of the  
12 build locations. There are currently no residences on the proposed Parkway Alternative, so there  
13 would not be any temporary construction impacts. But, there would be temporary construction  
14 impacts to residences for the proposed Rainbow and Riverview Alternatives

15 There would be no improvements to regional connectivity or access (for vehicles, pedestrians, or  
16 bicycles) between Laughlin and Bullhead City for the No Build Alternative, thus providing no  
17 additional mobility. All of the proposed build alternatives would provide a 12-foot-wide multi-  
18 use pathway throughout the alignments that would create regional connectivity and non-  
19 vehicular (bicycle and pedestrian) access and new vehicular access between Laughlin and  
20 Bullhead City, thus providing additional mobility. Construction may temporarily affect bicycle,  
21 pedestrian, and vehicular access to and through the work area; this may result in short-term  
22 impacts for all of the proposed build alternatives. There would be no access restrictions for  
23 bicycles, pedestrians, or vehicles with the proposed Parkway and Rainbow Alternatives. The  
24 proposed Riverview Alternative would restrict access from residences and 14 of 24 streets that  
25 have direct access to Riverview Drive; ultimately, when rerouted all bicycles, pedestrians, and  
26 vehicles would still be able to access Riverview Drive but would add more distance ( $\approx 0.6$  mile)  
27 or time ( $\approx 14.5$  minutes for bicycles and pedestrians;  $\approx 30$  seconds for vehicles).

28 In regards to public transportation, there would be no effects to public transportation with either  
29 the proposed Parkway or Rainbow Alternatives. But, the proposed Riverview Alternative would  
30 affect current elementary and high school bus routing and bus stop locations. Bus rerouting and  
31 bus stop relocations may be required in the future.

32 When considering public safety, increased traffic from any of the proposed build alternatives  
33 would adversely affect the actual or perceived safety of bicyclists and pedestrians. Although, the  
34 proposed project engineering designs for all of the proposed build alternatives would include  
35 ADA compliant sidewalks and a 12-foot-wide multi-use pathway (and cross-walks and  
36 warranted signalized intersections for the proposed Riverview Alternative) that would help

## Environmental Impacts and Mitigation

1 increase safety for bicyclists and pedestrians. Construction activities may temporarily affect  
2 bicycle and pedestrian safety.

3 In the event of a flood potentially from a failure of the Hoover or Davis Dams, the lowest lying  
4 (topographic) populated areas within the two communities lies within the residential area of  
5 Bullhead City, Arizona known as the Riviera neighborhood, which consists of the largely  
6 populated peninsula area north of Riverview Drive and west of SR 95. For this reason,  
7 Riverview Drive is designated as an Evacuation Route for this area. With the No Build  
8 Alternative, the estimated evacuation time for this area would not be improved (8 to 12 hours).  
9 There are no designated evacuation routes along either the proposed Parkway or Rainbow  
10 Alternatives; therefore, there would be no effects. With the proposed Riverview Alternative, the  
11 estimated evacuation time for this area would be improved (2.6 to 4 hours).

12 Emergency response times would greatly increase in 2030 (37.6 minutes) on the existing bridge  
13 if there were no additional bridge crossing (the No Build Alternative) for access and the Veterans  
14 Memorial Bridge would need to be used as the only access option. Although, the proposed  
15 Parkway and Rainbow Alternatives are located at farther distances south, their increased  
16 operating speeds and lesser congestion levels enable them to be very comparable (less than one  
17 and one-half minutes) to utilizing the proposed Riverview Alternative. The proposed Riverview  
18 Alternative has the shortest comparable time (20.4 minutes).

19 The proposed Parkway, Rainbow, and Riverview Alternatives abide by current and future land  
20 use plans and transportation elements for Laughlin. The proposed Parkway and Riverview  
21 Alternatives also abide by the current and future land use plans and transportations elements for  
22 Bullhead City. However, the proposed Rainbow Alternative does not conform with the  
23 Circulation Element of the Bullhead City General Plan.

24 There would be no displacements of residences or businesses with any of the proposed build  
25 alternatives. Approximately 56 acres of ROW would be required for the proposed Parkway  
26 Alternative. Approximately 45 acres would be required for the proposed Rainbow Alternative.  
27 Approximately 22 acres would be required for the proposed Riverview Alternative.

28 No representative EJ block groups were identified within the proposed Parkway or Rainbow  
29 Alternatives. Within the proposed Riverview Alternative, four potential EJ block groups were  
30 identified, but had no disproportionately high or adverse effects.

31 The proposed Parkway would not likely affect the Colorado River Nature Center (a protected  
32 Section 4(f) resource). However, proposed mitigation measures will be incorporated into the  
33 proposed Parkway Alternative and potential “constructive use” impacts would be considered  
34 mitigated. The proposed Rainbow Alternative would not affect any Section 4(f) resources. With  
35 the proposed Riverview Alternative, 2.7 acres of land would be required from Rotary Park (a  
36 protected Section 4(f) resource). Based on KOP 8, the bridge for the proposed Riverview

1 Alternative would produce a major level of visual change for recreationalists utilizing the  
2 Arizona Veterans Memorial Park, the Memorial Plaza and adjacent public areas. This has  
3 potential Section 4(f) “constructive use” visual impacts because it substantially impairs the  
4 aesthetic features of the plaza. A *de minimis* determination cannot be sustained due to the  
5 potential noise, visual, and land use impacts to Rotary Park. It can no longer be considered as a  
6 reasonable or viable proposed build alternative in the approval of this EA.

### 7 **2.21 Preferred Alternative (proposed Parkway Alternative)**

8 The proposed Parkway Alternative would be approximately 23,124 feet (approximately 4.4  
9 miles) in length and approximately 12.2 miles downstream of the existing bridge (Figure 4) at  
10 approximate RM 256.4. This alternative would require constructing approximately 18,652 feet  
11 of roadway in Nevada, an approximately 1,286-foot-long bridge, and approximately 3,186 feet of  
12 roadway in Arizona. The IDT reviewed the results of the alternatives analysis (as discussed in  
13 *Section 3.2 Project Management Team and Interdisciplinary Team Coordination*) and concluded  
14 that the proposed Parkway Alternative had the highest overall quantified ranking for being  
15 considered as the preferred alternative (since the proposed Riverview Alternative has been  
16 eliminated as a viable build alternative). The proposed Parkway build alternative would have:

- 17 • shortest length of bridge alignment across the Colorado River
- 18 • construction cost savings
- 19 • no wetland impacts
- 20 • no noise impacts or noise barriers
- 21 • no visual impacts from noise barriers
- 22 • no hazardous material sites
- 23 • no bicycle, pedestrian, or vehicular mobility/access restrictions
- 24 • no public transportation impacts
- 25 • conformity with land use plans
- 26 • no impacts to Title VI or EJ populations
- 27 • no Section 4(f) use impacts
- 28 • no Section 4(f) “constructive use” of the Colorado River Nature Center

## 3.0 COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

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### 3.1 Scoping Process

Early and continuing coordination with appropriate resource agencies and the public is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project has been accomplished through a variety of formal and informal methods, including stakeholder meetings, agency coordination meetings and letters, and public meetings. This section summarizes the results of the RTCSNV, NDOT, ADOT, and FHWA efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

This section also discusses the agency and public involvement during the preparation of this document such as agency and public meetings, coordination, notifications, comments and responses, and other information related to agency and public participation.

Agency coordination, consultation, and public involvement efforts for this project were implemented to adhere to the compliance and regulatory requirements for public involvement and participation as listed in *Section 1.1 Introduction*.

These efforts were conducted to educate and inform citizens/stakeholders regarding the regulatory processes and give citizens/stakeholders several opportunities to identify issues, concerns, or suggestions about the proposed project. Citizens/stakeholders had the opportunity to submit comments via a variety of traditional means (i.e., comment forms and letters) or non-traditional means (i.e., emails and website). Additionally, federal, state, and local governmental agencies with jurisdictional responsibility over a potentially impacted resource and tribal governments were also invited and encouraged to be a part of the NEPA process.

The various outreach methods utilized included display advertisements in local newspapers, public meetings, project website, door-to-door surveys, project team meetings, agency meetings and coordination, and tribal consultation. Each of these is discussed in the following sections.

#### 3.1.1 Intent-to-Study Letter

An Intent-to-Study letter and the list of agencies to whom they were mailed are included in Appendix G. The individuals' personal addresses have been excluded based on privacy rights. This letter notified the recipients of FHWA's and DOT's intention to study the proposed project, invited comments, and advised interested parties of the scheduled Public Information Meetings. Comments were received from various governmental agencies and members of the public and stakeholders. Two comment response matrices (Matrix 1: Agency and Matrix 2: Public/Stakeholder) and copies of the actual received comments are included in Appendix H.

1 **3.1.2 Public Information and Neighborhood Meetings**

2 Four open-house style formal Public Information Meetings were conducted for the proposed  
3 project. Two meetings were held from 4:00 p.m. to 7:00 p.m. at the Bullhead City Hall Council  
4 Chambers, 1255 Marina Boulevard, Bullhead City, Arizona on July 18, 2007 and August 12,  
5 2009. The other two meetings were held from 4:00 p.m. to 7:00 p.m. at the Laughlin Regional  
6 Government Center Room #2, 101 Civic Way, Laughlin, Nevada on July 19, 2007 and August  
7 13, 2009. Additionally, an open-house style formal Neighborhood Meeting was conducted  
8 specifically inviting residents from the Rotary Park neighborhood area including those  
9 individuals living near the proposed Riverview Alternative. This meeting was held from 4:00  
10 p.m. to 7:00 p.m. at the Bullhead City Building, 2249 Clearwater Drive, Suite C, Bullhead City,  
11 Arizona on May 28, 2008.

12 The purpose of the first two Public Information Meetings was to notify the public of the  
13 proposed project, the initiation of the NEPA process, describe the purpose and need, introduce  
14 the proposed build alternatives, project schedule, and then garner their comments. The second  
15 set of Public Information Meetings was to describe the proposed Build Alternatives in detail,  
16 discussion of potential impacts, and proposed avoidance, minimization, enhancement, mitigation  
17 measures, and updated schedule. The Neighborhood Meeting was specifically conducted with  
18 residents living in the immediate Riviera neighborhood adjacent to Rotary Park to provide an  
19 informal setting and alternative opportunity to hear their comments and concerns about potential  
20 impacts from the proposed Riverview Alternative. Comment forms were available at all the  
21 meetings for the public to record their thoughts regarding the various alternatives.

22 Notification efforts for the Public Information Meetings included mailed invitations, display ads  
23 in the local newspapers, and notification on the project website. Copies of invitation letters that  
24 were mailed out prior to each of the meetings are included in Appendix G. Thirty-day comment  
25 periods were established for each of the five public meetings. Display advertisements for the  
26 five meetings were published 15 days prior, the day before, and the day of each meeting in the  
27 local newspapers, as permissible. Local newspapers included the Mohave Valley Daily News  
28 and the Laughlin Nevada Times.

29 Representatives from the RTCSNV, NDOT, Laughlin/Clark County, Bullhead City, and the  
30 consultant team attended all meetings and were available at each meeting to receive comments  
31 and answer questions. Additionally, other IDT members as available (such as FHWA, BLM, and  
32 ADOT) also attended some of the meetings. A court reporter was present at all five meetings to  
33 transcribe the proceedings, which included public comments and responses. Additionally, the  
34 court reporter was available to transcribe comments privately from attendees who preferred not  
35 to speak publicly. All comments are part of the Administrative Record. These private comments  
36 are included and addressed in Appendix H, Matrix 2. Copies of all the transcripts for these five  
37 meetings with the transcribed public comment and answer session after the presentations are  
38 included in Appendix I along with Matrix 3 that identifies what pages peoples' comments begin.

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1 In addition to the transcribed comments from the meetings, approximately 241 comments have  
2 been submitted to NDOT Environmental Division by mail, e-mail, fax, or telephone between  
3 July 1, 2007 and August 1, 2010 (cut-off date for finalizing the EA) from the public and  
4 stakeholders. Received comments and responses are presented in Appendix H—Matrix 2. The  
5 comment form requested specific comments about the individual alternatives and general  
6 suggestions of transportation improvement needs and possible solutions from the public  
7 regarding the project. General themes of submitted comments included:

- 8 • build the bridge as soon as possible
- 9 • convenience of alternative location
- 10 • support for an alternative
- 11 • opposition for an alternative
- 12 • increased traffic
- 13 • alleviation of traffic congestion
- 14 • pedestrian safety
- 15 • large vehicle accessibility
- 16 • access within their neighborhood
- 17 • safety and emergency response
- 18 • evacuation routes
- 19 • air quality
- 20 • noise impacts
- 21 • visual impacts
- 22 • positive and negative impacts to Rotary Park
- 23 • environmental justice impacts
- 24 • regional connectivity
- 25 • positive and negative economic impacts based on alternative location
- 26 • cost effectiveness

27 There will still be another opportunity for the public and stakeholders to provide additional  
28 comments on the proposed project (particularly those associated with this EA) during the public  
29 comment period for the Public Hearings. Any comments received after August 1, 2010 will be  
30 incorporated with the comments from the Hearings and will be addressed for inclusion in the  
31 Design Recommendation Report and request for a NEPA determination from FHWA.

32 Five informal presentations were also given by the RTCSNV to the Laughlin Town Advisory  
33 Board and Bullhead City Council to provide the two communities with project status updates.

34 Bullhead City Council passed a resolution on May 5, 2009 in support of the Laughlin–Bullhead  
35 City Bridge Project (Appendix J). The Bullhead City Council (on July 20, 2010), the Laughlin  
36 Town Advisory Board (on July 13, 2010), and Clark County Board of County Commissioners

1 (on August 3, 2010) approved resolutions of support for the proposed Parkway Alternative as the  
2 preferred alternative in this EA (Appendix J).

3 A project website [www.rtcsv.com/mpo/projects/laughlin](http://www.rtcsv.com/mpo/projects/laughlin) hosted by the RTCSNV contains  
4 pertinent project information for the environmental process, schedule, meeting announcements,  
5 meeting presentations/handouts/displays, fact sheets, maps, and schedule. All of this information  
6 is in a pdf format to facilitate downloading by the public, stakeholders, and agencies.

7 In addition, an informal public outreach effort was specifically designed to provide minority,  
8 low-income, and LEP populations with the opportunity to comment on, or provide information  
9 relevant to the purpose and need of the proposed project elements, and potential significant  
10 social, economic, or environmental issues related to the proposed project. This outreach effort  
11 included door-to-door and telephone surveys in both English and Spanish. RTCSNV staff  
12 conducted door-to-door neighborhood surveys in Bullhead City on June 29-30 and July 1, 2009  
13 (the survey did not include any residences on the Laughlin side of the project). The RTCSNV  
14 had two survey teams, each consisting of one man and one woman, of which one of the  
15 individuals spoke fluent Spanish. The RTCSNV conducted the neighborhood surveys  
16 systematically. The surveys were based on pre-established appointments that were received  
17 through a telephone “hotline” number provided on the previously distributed flyers (about 100  
18 calls received to date) for this task. When the RTCSNV did not make contact at the residence, a  
19 comment card (“Sorry We Missed You”) was left behind for the people to respond to. The  
20 RTCSNV directly contacted about 500 residences during the process. For those residents who  
21 wished to participate by telephone, RTCSNV staff conducted a telephone survey that asked the  
22 same questions as the door-to-door survey.

23 The survey asked general questions such as:

- 24 • which proposed build alternative did they live closest to
- 25 • how long had they lived in the neighborhood
- 26 • what affected their decision to move to their neighborhood
- 27 • what characteristics tie their neighborhood together
- 28 • travel habits to goods and services
- 29 • travel habits to community facilities
- 30 • if they were aware of the proposed project
- 31 • would the proposed project alter their neighborhood
- 32 • would the proposed project negatively impact travel patterns to goods, services, or
- 33 and/or community facilities
- 34 • if they currently used transit
- 35 • would they be in favor of the proposed project if it were built in their neighborhood
- 36 • if they have any other overall concerns about the proposed project if it were built in their
- 37 neighborhood

- which did they favor based on what they currently knew about the project

General themes of concerns raised included the following: increased traffic, pedestrian safety, large vehicle accessibility, access within their neighborhood, evacuation routes, air quality, noise impacts, visual impacts, and land use impacts to Rotary Park. General themes of opinions raised included the following: people surveyed preferred the proposed build alternative closest to their neighborhood and many felt a bridge in their neighborhood would be beneficial to them due to improved access to Laughlin/neighborhood revitalization/economic prosperity for neighboring businesses. Copies of the completed surveys and comment cards are presented in Appendix K.

### 3.2 Project Management Team and Interdisciplinary Team Coordination

As part of the project development process, a Project Management Team (PMT) and IDT were established. The PMT is comprised of representatives from FHWA, NDOT, ADOT, RTCSNV, and consultant staff. The purpose of the PMT is to address regulatory issues, management of the NEPA process, formal consultation, and review of the technical reports. The PMT has met as necessary from August 2004 through completion of the project to address NEPA regulatory issues for the project.

An IDT was created and members were selected by the PMT and invited to attend a series of meetings throughout the development of the EA. The IDT serves as jurisdictional and resource advisors for the project. The IDT consists of approximately 45 members, comprised of representatives from FHWA, BLM, USCG, USACE, NDOT, ADOT, AGFD, RTCSNV, Clark County, Laughlin, Bullhead City, and consultant staff. FHWA is the lead federal agency for this project, and as such is a non-voting member. Throughout the development of the EA, the IDT met (almost monthly or as necessary) from June 2004 through completion of the project to provide the necessary and valid input from their purview for the proposed project. Meeting discussion topics were:

- An introduction of the proposed project to the IDT team
- The Purpose and Need
- Preliminary road design criteria
- To obtain input from the IDT team about materials to be presented to the public at the Public Information Meetings held on July 18-19, 2007 and August 12-13, 2009; and for the Neighborhood Meeting held on May 28, 2008
- To review the proposed Build Alternatives
- To provide input as officials with jurisdiction over parks and recreation areas as to the potential impacts from the proposed build alternatives
- To provide avoidance, minimization, enhancement, and mitigation recommendations
- Support the screening criteria necessary for evaluating a preferred alternative
- Participate in the evaluation of a preferred alternative

- 1 • Support the selection of a preferred alternative
- 2 • Support the proposed project

3 As previously mentioned, the IDT developed and evaluated the range of potential build  
4 alternatives. In particular, on January 9, 2008, the IDT evaluated a summary table and  
5 accompanying report that provided the necessary information to conduct a preliminary screening  
6 of eight proposed build alternatives (Pass Canyon, Silver Creek, Lakeside, Hancock, Marina,  
7 Riverview, Rainbow, and Parkway) for the project area. Several of the potential build  
8 alternatives would not meet the project Purpose and Need or had design constraints that  
9 prohibited them from being viable options so they were eliminated from further detailed study in  
10 the EA.

11 At an IDT project meeting held on October 26, 2009, very detailed alternatives analysis  
12 documentation was provided for the proposed build alternatives (proposed Parkway, Rainbow,  
13 and Riverview Alternatives). The comparative criteria included technical data for modeled  
14 traffic, preliminary engineering, limited environmental and social impacts, land use planning  
15 conformity, infrastructure compatibility, and cost. These criteria were determined to be the  
16 critical issues to be evaluated for impacts and to fulfill the project Purpose and Need. These  
17 criteria were assigned a critical weighting factor. After the indicated criteria impacts were  
18 evaluated based on supporting documentation, a ranking factor was established for each  
19 proposed build alternative. The higher the ranking factor for the alternative, the less the impacts  
20 would be for that alternative when compared to the other alternatives. A total compilation score  
21 for each of the proposed build alternative was determined by summing each of the applicable  
22 weighting factors multiplied by the applicable ranking factors for each of the three proposed  
23 build alternatives. The highest compilation total score indicated the recommended proposed  
24 preferred alternative. The IDT reviewed the results of the alternatives analysis and concluded  
25 that the proposed Riverview Alternative had the highest overall quantified ranking for being  
26 considered as the proposed potential preferred alternative. This build alternative would provide  
27 the:

- 28 • shortest distance of travel for vehicles if the existing bridge were closed
- 29 • highest LOS on the existing bridge in 2015 (none of the alternates raise the LOS  
30 above F on the existing bridge in 2030 so this criteria was not considered significant)
- 31 • highest demand for AADT
- 32 • less impacts to Waters of the U.S. and to wetlands
- 33 • highest potential impacts to Section 4(f) recreational resources
- 34 • shortest average emergency response travel times
- 35 • most effective in providing an emergency evacuation route
- 36 • average land use planning conformity
- 37 • shortest distance to existing infrastructure
- 38 • highest potential impacts to environmental justice populations

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- 1 • highest construction costs
- 2 • least impacts to federally protected aquatic, avian, and terrestrial species
- 3 • least impacts to cultural resources and most support during Section 106 Consultation
- 4 • most impacted residences which would require mitigation with noise barriers
- 5 • most impacts involved with the engineering design, geometric suitability, and
- 6 construction

7 The proposed potential Riverview Alternative was followed by the proposed Parkway  
8 Alternative in the rankings and the proposed Rainbow Alternative had the lowest ranking. After  
9 the rankings for the three proposed bridges were evaluated, the appropriate IDT participants  
10 (Laughlin, Bullhead City, and DOTs) concurred that the proposed Riverview Alternative would  
11 be supported as the proposed potential preferred alternative in the Administrative Draft EA  
12 pending a formal Section 4(f) *de minimis* determination and other environmental factors  
13 considered.

14 Upon the initial review of the Administrative Draft EA, it was issued in a written letter to NDOT  
15 dated January 13, 2010 (Appendix F—Attachment 6) that a Section 4(f) *de minimis*  
16 determination cannot be sustained for the potential impacts (noise, visual, and land use) to  
17 Rotary Park from the proposed Riverview Alternative and that this build alternative would no  
18 longer be considered as a viable proposed build alternative or the preferred alternative in this EA.

19 At an IDT project meeting held on January 20, 2010, the appropriate IDT participants (only  
20 Laughlin, Bullhead City, and DOTs) concurred that the proposed Parkway Alternative would be  
21 supported as the preferred alternative in this EA based on it ranking the second highest in the  
22 alternatives analysis conducted on October 26, 2009. This build alternative would provide the:

- 23 • longest distance of travel for vehicles if the existing bridge were closed
- 24 • lowest LOS on the existing bridge in 2015 (none of the alternates raise the LOS
- 25 above F on the existing bridge in 2030 so this criteria was not considered significant)
- 26 • lowest demand for AADT
- 27 • less impacts to Waters of the U.S. and to wetlands
- 28 • potential impacts to Section 4(f) recreational resources
- 29 • higher average emergency response travel times
- 30 • least effective in providing an emergency evacuation route
- 31 • highest land use planning conformity
- 32 • longest distance to existing infrastructure
- 33 • lowest potential impacts to environmental justice populations
- 34 • medium construction costs
- 35 • most impacts to federally protected aquatic, avian, and terrestrial species
- 36 • medium impacts to cultural resources and least support during Section 106
- 37 Consultation

- 1 • no impacted residences (least) which would not require any noise barriers
- 2 • medium impacts involved with the engineering design, geometric suitability, and
- 3 construction

4 Additional detailed information supporting this selection is included in *Section 2.21 Preferred*  
5 *Alternative*.

6 At a PMT project meeting held on February 4 and 5, 2010, it was determined that the proposed  
7 Parkway Alternative would be supported as the new preferred alternative in the EA.

### 8 **3.3 Coordination and Consultation with Resource Agencies**

9 Several resource agencies were invited, via a letter dated June 27, 2007 (Appendix L), to initiate  
10 dialogue and participate in the proposed project development process as a Cooperating Agency.  
11 The invitation letters included the proposed project Purpose and Need, descriptions of the study  
12 limits and proposed project, the proposed build alternatives to be carried forward for detailed  
13 study in the EA, and request to attend the Agency Scoping Meeting. The resource agencies  
14 included the following: USACE, USCG, USFWS, and BLM. USACE formally became a  
15 cooperating agency on May 28, 2010 (Appendix L). USCG formally became a cooperating  
16 agency on May 18, 2010 (Appendix L). USFWS declined to be a cooperating agency on July 11,  
17 2007 (Appendix L).

18 An Agency Scoping Meeting was held on July 18, 2007 from 1:00 to 2:00 p.m. at the Bullhead  
19 City Hall Council Chambers, 1255 Marina Blvd., in Bullhead City, Arizona. The PMT briefed a  
20 representative from the AGFD on the project. Several resource agencies (USACE, USCG,  
21 BLM, and AGFD) have been active participants, as applicable, on the IDT throughout the project  
22 development process.

#### 23 **3.3.1 AGFD and BLM Coordination**

24 Additional coordination included efforts in regards to potential Section 4(f) “constructive use”  
25 impacts to the Colorado River Nature Center. These efforts are further discussed in Appendix  
26 F—Section 8.1.1.

27 On February 18, 2010, members of the PMT (FHWA, NDOT, and RTCSNV) conducted a  
28 meeting in Lake Havasu City, Arizona with members of the BLM, AGFD, and Bullhead City  
29 (officials with cooperative jurisdiction of the Colorado River Nature Center) regarding potential  
30 Section 4(f) “constructive use” impacts from the proposed Parkway Alternative.

31 BLM formally responded on behalf of the Colorado River Nature Center Interdisciplinary Team  
32 (BLM, AGFD, and Bullhead City) to the RTCSNV in a written letter dated March 19, 2010  
33 (Appendix F—Attachment 7) regarding potential Section 4(f) “constructive use” impacts from  
34 the proposed Parkway Alternative to the Colorado River Nature Center. The letter concluded  
35 that if proposed mitigation measures were incorporated into the project, impacts to the Colorado

1 River Nature Center could be mitigated. Coordination efforts with the AGFD and BLM would  
2 continue through project permitting and completion.

### 3 **3.3.2 USACE Coordination and Consultation**

4 Additional USACE coordination efforts were initiated on October 31, 2007 regarding the  
5 proposed project, the Waters of the U.S. Jurisdictional Determination technical report (LBHCBP  
6 2009d), permitting requirements, and NEPA requirements. Jurisdictional Determination letters  
7 for the project were issued by the USACE on March 3, 2008 and on November 22, 2009 (update  
8 based on project design modifications) (Appendix M). Coordination efforts with the USACE  
9 would continue through project permitting and completion.

### 10 **3.3.3 USCG Coordination and Consultation**

11 Additional USCG coordination efforts were initiated on October 31, 2007 regarding the  
12 proposed project, the Waters of the U.S. Jurisdictional Determination technical report (LBHCBP  
13 2009d), bridge permitting requirements, and NEPA requirements. Coordination efforts with the  
14 USCG would continue through project permitting and completion.

### 15 **3.3.4 USFWS Coordination and Consultation**

16 FHWA initiated formal consultation with the submittal of the Biological Assessment (BA) to the  
17 USFWS in June 2010 (Appendix N). After evaluation of the BA, USFWS would provide a  
18 Biological Opinion prior to FHWA rendering a NEPA determination for the proposed project. In  
19 addition, informal coordination efforts were initiated on August 13, 2007 regarding the  
20 following: the proposed project, the Biological Resources technical report (LBHCBP 2009e),  
21 permitting requirements, and NEPA requirements (Appendix N). Coordination efforts with the  
22 USFWS will continue through project permitting and completion.

### 23 **3.3.5 SHPO and ACHP Coordination and Consultation**

24 Copies of SHPO coordination correspondence are located in (Appendix O). FHWA initiated  
25 SHPO coordination with a letter to the Nevada SHPO on September 25, 2007 and to the  
26 Arizona–SHPO on October 3, 2007 to describe and seek concurrence on the project APE. The  
27 Arizona–SHPO provided APE concurrence in a stamped letter dated October 30, 2007. The  
28 Nevada–SHPO provided APE concurrence pending some identified conditions in a letter dated  
29 December 12, 2007. FHWA requested concurrence in a Finding of Adverse Effect for the  
30 project in letters dated July 2, 2008 to both SHPOs. The Arizona–SHPO concurred in a Finding  
31 of Adverse Effect on July 18, 2008. The Nevada SHPO concurred on sites that are eligible and  
32 not eligible for the NRHP and in a Finding of Adverse Effect on August 4, 2008. FHWA issued  
33 a letter on September 8, 2009 to the Nevada–SHPO indicating that the proposed Riverview  
34 Alternative alignment had undergone design modifications that would reduce potential cultural  
35 resources on the Nevada side of the project and requested continued concurrence in a Finding of  
36 Adverse Effect. The Nevada–SHPO concurred in a Finding of Adverse Effect on October 12,  
37 2009.

1 A PA will be executed between the FHWA and the SHPO offices (Nevada and Arizona), and,  
2 where appropriate, with the other agencies and Tribes as concurring parties, to ensure  
3 appropriate mitigation measures are developed and implemented for the proposed project prior to  
4 FHWA rendering a NEPA determination for the proposed project (the Draft PA is included in  
5 Appendix O). The ACHP have concluded that, *Criteria for Council Involvement in Reviewing*  
6 *Individual Section 106 Cases*, of their regulations, “Protection of Historic Properties” (36 CFR  
7 Part 800), does not apply to this undertaking. Accordingly, they do not believe that their  
8 participation in the consultation to resolve adverse effects are needed (Appendix O). Pursuant to  
9 36 CFR §800.6(b)(1)(iv), FHWA will file the final PA and related documentation with the  
10 ACHP at the conclusion of the consultation process. The filing of the PA and supporting  
11 documentation with the ACHP is required in order to complete the requirements of Section 106  
12 of the NHPA.

### 13 **3.3.6 Native American Tribal Consultation**

14 Native American consultation for the project was initiated by formal letter from the Federal  
15 Highway Administration-Nevada Division to the respective tribal chairpersons on June 26 and  
16 27, 2007 (Appendix P). Tribes and tribal organizations invited to participate in consultation with  
17 FHWA include:

- 18 • Chemehuevi Indian Tribe, Havasu Lake, California
- 19 • Cocopah Tribe, Somerton, Arizona (received formal response)
- 20 • Colorado River Indian Tribes, Parker, Arizona
- 21 • Fort Mojave Indian Tribe (FMIT)(Aha Macav Cultural Society), Needles, California
- 22 • Fort Yuma-Quechan Tribe, Yuma, Arizona (received formal response)
- 23 • Havasupai Tribe, Supai, Ariona
- 24 • Hopi Tribe, Kykotsmovi, Arizona (received formal response)
- 25 • Hualapai Tribe, Peach Springs, Arizona (received formal response)
- 26 • Kaibab Paiute Tribe, Fredonia, Arizona (received formal response)
- 27 • Las Vegas Indian Center, Las Vegas, Nevada
- 28 • Las Vegas Paiute Tribe, Las Vegas, Nevada
- 29 • Moapa Business Council, Moapa, Nevada
- 30 • Pahrump Paiute Tribe, Pahrump, Nevada (received formal response)
- 31 • Paiute Tribe of Utah, Cedar City, Utah
- 32 • Yavapai-Prescott Indian Tribe, Prescott, Arizona (received formal response)

33 A summary of the results of tribal consultation was furnished to the DOTs, FHWA, and the  
34 SHPOs involved in the project in June 2008 in a report entitled “Summary of Native American  
35 Concerns Regarding the Proposed Laughlin, Nevada to Bullhead City, Arizona Bridge Project:  
36 June 2007-June 2008.” Tribal consultation written comments received to date include the  
37 following (Appendix Q):

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1 **Chemehuevi Tribe** has opted to defer to FMIT (via phone call with tribal chairman July 21,  
2 2007).

3 **Cocopah Tribe** has had a blanket objection to the project based on the location of the project  
4 being of great importance to all of the Colorado River tribes. Any construction in this area  
5 would diminish the natural and cultural resources, as it is one of the last undeveloped areas along  
6 the river (objection via letter from cultural representative dated March 20, 2008).

7 **Colorado River Indian Tribes (CRIT)** had initial concerns regarding the proposed project and  
8 were then furnished with the project information and a fieldtrip, but has refused to provide  
9 additional comment. A verbal statement from the cultural representatives aide (via phone on  
10 October 23, 2007) was obtained that all three proposed build alternatives “looked fine” to her,  
11 but no official position has been able to be obtained from her boss (Dr. Michael Tsosie, CRIT  
12 museum director) or the current CRIT chairperson. Subsequent requests for an official written  
13 statement have gone unanswered.

14 **Fort Mojave Indian Tribe (FMIT)** has changed their position several times during the course  
15 of consultation and as of last contact does not support any of the remaining proposed build  
16 alternatives. The Tribe has not provided any formal statement on the project but the cultural  
17 representative has verbally objected to the remaining three proposed alternatives because they  
18 believe that any alternative has the potential to affect cultural resources and would encourage  
19 development of the surrounding area. Subsequent requests for an official written statement have  
20 gone unanswered.

21 **Fort Yuma-Quechan Tribe** has some concerns regarding the potential to impact cultural  
22 resources (via letter from cultural representative dated July 31, 2007); however, to date have not  
23 provided further detail regarding their concerns. Subsequent requests for an official written  
24 statement have gone unanswered.

25 **Havasupai Tribe** has no objections to the project as described (via phone conversation with  
26 tribal chairperson August 3, 2007).

27 **Hopi Tribe** has a very limited interest in the project. As the Colorado River is a Traditional  
28 Cultural Property (TCP) of the Hopi Tribe, they were involved in the consultation for this  
29 project. They are specifically interested in the potential impact of any prehistoric historic  
30 properties along whichever alternative is selected (via letter from cultural representative dated  
31 March 3, 2008). When the preferred alternative is selected, they have requested to receive the  
32 archaeological treatment plans (should any be necessary) so they may comment of the proposed  
33 mitigation.

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1 **Hualapai Tribe** has an overall objection to the proposed project. They would prefer that no  
2 alternative be selected and no project be built (via letter from cultural representative dated March  
3 3, 2008) due to the potential of the project to impact cultural resources.

4 **Kaibab Paiute Tribe** has no objections to the project as described (as per FHWA consultation  
5 response form dated September 6, 2007).

6 **Las Vegas Indian Center (LVIC)** was included in the consultation as a courtesy. The director  
7 did not return any official letters or verbal statements regarding the project.

8 **Las Vegas Paiute Tribe (LVPT)** has opted to defer to Tribes closer to the project area (via  
9 phone conversation with cultural representative August 3, 2007).

10 **Moapa Band of Paiutes** had initial concerns regarding the project and requested additional  
11 information and a fieldtrip. Both requests were fulfilled. During the (August 15, 2007) fieldtrip  
12 the Cultural Representative stated that she felt the proposed Riverview Alternative would be the  
13 desired alignment because it would disturb the fewest plants, animals, etc. (that corridor has  
14 already been largely disturbed, at least on the Arizona side, as opposed to the other two  
15 remaining proposed build alternatives). The proposed Parkway Alternative was viewed as being  
16 the least desirable as it would disturb the most previously undisturbed land. She also stated that  
17 there should be a pedestrian overpass constructed, if the proposed Riverview Alternative was  
18 selected as the preferred alternative, so that “kids don’t get squished.” Subsequent requests for  
19 an official written statement have gone unanswered.

20 **Pahrump Paiute Band** has opted to defer to Tribes closer to the project area.

21 **Paiute Tribe of Utah** has no objections to the proposed project as described.

22 **Yavapai-Prescott Indian Tribe (YPIT)** has concerns regarding the cultural resources that  
23 would be impacted should any of the three remaining proposed alternatives be selected. They  
24 have indicated that they would probably defer to FMIT (meeting with cultural representative  
25 January 28, 2008 and via email January 30, 2008).

### 26 **3.3.7 Traditional Cultural Properties**

27 In addition to the cultural resources identified in the Class III Cultural Survey Reports (LBHCBP  
28 2008b and 2009f), there is also the consideration of properties of religious and cultural  
29 significance, commonly referred to as traditional cultural properties (TCPs), that may be  
30 impacted by the proposed project. The Fort Mojave Indian Tribe (FMIT), as do most of the  
31 Colorado River tribes, considers Spirit Mountain to be a TCP. When questioned directly about  
32 this TCP in relation to the remaining proposed build alternatives, the FMIT representatives did  
33 not object to any of the proposed build alternatives based on their proximity to this TCP.  
34 However, they did state, “the Mountain has deep roots.” The FMIT cultural representatives

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1 elected not to elaborate on this statement, so it must be assumed that each of the remaining three  
2 proposed build alternatives would have an equal potential impact.

3 The Hopi Tribe considers the Colorado River to be a TCP, but does not feel that the project as  
4 proposed has the potential to make it any worse. None of the other tribal representatives or  
5 organizations brought up the issue of the Colorado River as a TCP. Given the tribal responses to  
6 date, there is no preference for any of the three proposed build alternatives over another, as both  
7 of the TCPs are visible from each of those alternatives.

8 Native American consultation is ongoing at this time.

### 9 **3.3.8 Other Agencies**

10 Formal comments from other resource agencies that have been received by July 1, 2010 and  
11 responses are included in Appendix H: Matrix 1.

## 1   **4.0   REFERENCES**

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