

RECLAMATION

Managing Water in the West

Arizona Heritage Trail System

Draft Environmental Assessment
LC-16-14

Lower Colorado Region, Boulder City, NV



U.S. Department of the Interior
Bureau of Reclamation
National Park Service
Boulder City, NV

April 2017

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

Cover Photo: Looking south towards Bullhead City and Laughlin from proposed Heritage Trail System segment south of Davis Camp entrance.

Contents

Table of Contents

1.0	Introduction and Purpose and Need	1
1.1	Background for the Purpose and Need	1
1.2	Purpose and Need.....	2
1.3	Previous NEPA Documents and Actions.....	2
1.4	Related Laws, Policies, and Planning Documents.....	3
2.0	Description of Alternatives	3
2.1	No Action Alternative.....	4
2.2	Proposed Action Alternative 1	4
2.2.1	Trailheads.....	4
2.2.2	Trails	5
2.2.3	Day-Use Facilities.....	6
2.2.4	Transportation.....	6
2.2.5	Interpretive Signs	7
2.2.6	Fencing.....	7
2.2.7	Utilities.....	7
2.2.8	Operation and Maintenance of the Trail	8
2.2.9	Road closures and Associated Seeding and Native Vegetation Planting	8
2.3	Alternative 2 Trail	8
2.4	Design Features and Mitigation Measures.....	8
2.5	Alternatives Considered but Not Evaluated in Detail	10
3.0	Affected Environment and Environmental Consequences.....	18
3.1	Past, Present, and Reasonably Foreseeable Future Projects	18
3.1.1	Past Projects	18
3.1.2	Present Actions	19
3.1.3	Reasonably Foreseeable Future Projects	19
3.2	Resources Considered but not Discussed Further.....	19
3.3	Resources Discussed Further	20
3.3.1	Air Quality/Greenhouse Gases/Climate Change	20
3.3.1.1	Affected Environment.....	21
3.3.1.2	Environmental Consequences	21
3.3.2	Visual Resources.....	23
3.3.2.1	Affected Environment.....	23
3.3.2.2	Environmental Consequences	23
3.3.3	Biological Resources	24
3.3.3.1	Affected Environment.....	24
3.3.3.2	Environmental Consequences	26
3.3.4	Cultural Resources/Traditional Cultural Properties/Sacred Sites	28
3.3.4.1	Affected Environment.....	28
3.3.4.2	Environmental Consequences	29
3.3.5	Floodplains.....	30
3.3.5.1	Affected Environment.....	30
3.3.5.2	Environmental Consequences	30
3.3.6	Hydrology and Water Quality.....	32

**Arizona Heritage Trail Draft EA
LC-16-14**

3.3.6.1 Affected Environment.....	32
3.3.6.2 Environmental Consequences	34
3.3.7 Soil	35
3.3.7.1 Affected Environment.....	35
3.3.7.2 Environmental Consequences	35
3.3.8 Socioeconomics and Environmental Justice.....	35
3.3.8.1 Affected Environment.....	36
3.3.8.2 Environmental Consequences	37
3.3.9 Recreation	38
3.3.9.1 Affected Environment.....	38
3.3.9.2 Environmental Consequences	38
4.0 Coordination and Consultation.....	40
4.1 Agencies Consulted.....	40
4.2 National Historic Preservation Act Consultation.....	40
4.3 Endangered Species Act Consultation	41
4.4 Scoping/Public Involvement	41
5.0 References	43
6.0 List of Preparers and Contributors	47

List of Figures

Figure 1- Project Location Map.....	11
Figure 2- Proposed Trail Alternative 1	12
Figure 3- Proposed Trail Alternative 2	13
Figure 4- Mohave Spur Section	14
Figure 5- Davis Dam Road and Desert Trail Sections.....	15
Figure 6- Davis Camp Section.....	16
Figure 7- Laughlin Bullhead City Bridge Section	17
Figure 8- Wetlands.....	31

List of Tables

Table 1: Estimated Equipment List, Fuel Use, and CO ² Emissions	22
Table 2: Cultural Sites Recorded in the Project Area	29
Table 3: Summary of Well Data	34
Table 4: Summary of Population and Poverty Percentages.....	36

List of Appendices

Appendix A- Floodplain Statement of Findings	
Appendix B- Photographs	

List of Acronyms and Abbreviations

Acronym or abbreviation	Term
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
ADEQ	Arizona Department of Environmental Quality
APE	Area of Potential Effect
ASTM	American Standards for Testing and Materials
BE	Biological Evaluation
BMPs	Best Management Practices
CAAA	Clean Air Act Amendment
CEQ	Council on Environmental Quality
Corps	U.S. Army Corps of Engineers
CO ₂	Carbon Dioxide
CWA	Clean Water Act
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
FONSI	Finding of no Significant Impact
FUP	Flood Plain Use Permit
GPM	Gallons per Minute
GHG	Greenhouse Gases
HUC	Hydrologic Unit Code
IPAC	Information for Planning and Conservation
ITA	Indian Trust Assets
KOP	Key Observation Point
kV	Kilovolt
LMNRA	Lake Mead National Recreation Area
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969, as amended
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRA	Natural Resource Area
NRHP	National Register of Historic Places
NVDOT	Nevada Department of Transportation
PM ₁₀	Particulate Matter less than 10 microns
PVC	Polyvinyl Chloride
Reclamation	Bureau of Reclamation
ROW	Right-of-Way
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
USFWS	U. S. Fish and Wildlife Service
VRM	Visual Resource Management

1.0 Introduction and Purpose and Need

This Environmental Assessment (EA) has been prepared by the Bureau of Reclamation (Reclamation) as the lead federal agency with the National Park Service (NPS), Bullhead City, Mohave County, and Clark County as cooperating agencies to fulfill the requirements of the National Environmental Policy Act (NEPA) (42 U.S.C. §4321-4370).

Reclamation and NPS are proposing to construct, operate, and maintain the approximately 3.6 mile Arizona Heritage Trail System (Heritage Trail System) on Federal lands managed by Reclamation and the NPS within Lake Mead National Recreation Area (LMNRA). The LMNRA is a unit of the National Park Service. The recreational trail would be managed by the City of Bullhead and Mohave County through agreements with Reclamation and NPS.

Reclamation and the NPS will use this EA to evaluate the potential impacts of the Proposed Action on the physical and human environment and determine if there would be significant impacts requiring the preparation of an Environmental Impact Statement. If significant impacts are not identified, Reclamation and the NPS will each issue their own Finding of No Significant Impact.

1.1 Background for the Purpose and Need

The Heritage Trail System would be located in Mohave County, Arizona, adjacent to the Colorado River (River) and the City of Bullhead City, Arizona at the northern end of the Mohave Valley directly south of Lake Mohave. The rugged and sparsely vegetated Black, Newberry, and Dead Mountains surround the project area of Mohave Valley to the east, north and west, respectively (Figure 1). The Colorado River runs south through the valley separating Laughlin from Bullhead City.

In 1999, Bullhead City initiated planning for several pedestrian and bicycle paths to connect to the then proposed Colorado River Heritage Greenway Trail to create an urban greenway to provide residents and visitors with an educational, recreational, and scenic experience on a network of paths and trails. In recent years, Bullhead City has constructed pedestrian and bike paths on several streets, including the Bullhead Parkway that will connect to the now proposed Heritage Trail System (Bullhead City 2016).

The 2003 Colorado River Greenway Heritage Trail Master Plan (Phillips 2003) outlined a vision for an innovative 30-mile multi-use trail that starts at Davis Dam and travels through Bullhead City and Laughlin to the California border. The Master Plan has been developed over time in sections, for example the 13-mile long Laughlin Colorado River Greenway Heritage Trail on the Nevada-side of the River. The Heritage Trail System would complete an additional 3.5 miles of this Master Plan.

The Heritage Trail System would begin on the Arizona side of Davis Dam and end at the Laughlin/Bullhead City Bridge (Figures 1, 2, and 3). The Heritage Trail System would provide access to Lake Mohave and recreational sites on the Arizona side of the River such as Davis Camp and the Colorado River Museum. The Heritage Trail System would highlight areas of historical, archeological, and ecological significance, and provide increased opportunities for recreational activities such as walking, running, bicycling, picnicking, bird watching, fishing,

and kayaking. Moreover, as part of the trail development, Reclamation would add gates, close some old roads, and patrol the area to reduce current unauthorized off-road activities (Martin 2016a).

Bullhead City has approximately 40,000 residents and 2 million visitors per year, plus winter residents who increase the population by as much as 15 percent. In addition to being an economic and retail hub for Western Mohave County, Bullhead City also focuses on tourism, due in part to visitors to the resorts in Laughlin (AZCA 2016), which is Bullhead City's sister city on the west bank of the Colorado River. With the expanding residential population and swelling numbers of visitors in the area, there is considerable demand for public space and outdoor recreation opportunities.

1.2 Purpose and Need

The purpose of the project is to provide a recreation trail that connects with the Laughlin Colorado River Greenway Heritage trail, creating an approximately 12.5-mile trail system that connects the communities of Bullhead City and Laughlin. The project is needed to improve public enjoyment of the recreational lands adjacent to the Colorado River and Lake Mohave, protect the cultural and natural resource values of these lands, and meet the recreational needs of the growing numbers of visitors and residents in the area.

The proposed project addresses the following Reclamation recreation management objectives (Reclamation 2009):

- Fulfill Reclamation's stewardship responsibilities by providing appropriate recreation opportunities, facilities, and services on Reclamation land and water,
- Engage visitors and residents on the importance and history of the Colorado River, natural and cultural resources, and the importance of the Davis Dam area through interpretive opportunities.
- Provide enhanced active management of the area.

The proposed project also addresses the following NPS purpose statement for Lake Mead National Recreational Area (NPS 1986 and 2002):

- Provide diverse public recreation, benefit, and use on Lakes Mead and Mohave and surrounding lands in a manner that preserves ecological, geological, cultural, historical, scenic, scientific, and wilderness resources of the park.

1.3 Previous NEPA Documents and Actions

Previous studies related to the development of recreational facilities in the project area include a Class III cultural resources survey (SRI 2016), a biological evaluation (DSG 2016), the *Final Environmental Impact Statement (FEIS), Lake Mead National Recreation Area General Management Plan* (NPS 1986), and the *Final Environmental Impact Statement (FEIS) / Lake Management Plan* (NPS 2002) which tiers from the 1986 FEIS, and the *Laughlin Regional Park and Regional Heritage Greenway Trails-North Reach Final EA* (NewFields 2007) and *Findings of No Significant Impact (FONSI)* (Reclamation 2007, NPS 2007).

1.4 Related Laws, Policies, and Planning Documents

This EA complies with all applicable environmental, natural resource, and cultural resource statutes, regulations, and guidelines. These additional statutes, regulations, and guidelines may require permits, approvals, consultations with outside agencies, or implementation of mitigation measures.

The following federal, state, and local statutes and regulations are relevant to the proposed project.

- Archaeological Resources Protection Act of 1979
- Boulder Canyon Project Act of 1928
- Bullhead/Davis Dam per the Reclamation Project Act of 1939
- Clean Air Act of 1970 and amendments of 1977 and 1990
- Clean Water Act of 1970 and National Pollution Discharge Elimination System, as amended
- Department of the Interior Secretarial Order 3226: Evaluating Climate Change Impacts in Management Planning
- Executive Order 11514: Protection and Enhancement of Environmental Quality
- Executive Orders 11988 and 13690: Floodplain Management
- Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Executive Order 13287: Preserve America
- Executive Order 13423: Strengthening Federal Environmental, Energy, and Transportation Management
- Federal Water Project Recreation Act of 1965 (Pub. L. 89-72), as amended
- Native American Graves Protection and Repatriation Act of 1990
- Noise Control Act of 1972
- National Environmental Policy Act of 1969
- National Historic Preservation Act of 1966, as amended
- Recreational Enhancement Act of 2005
- Safe Drinking Water Act of 1974

2.0 Description of Alternatives

The alternatives presented in this EA were developed by Reclamation, NPS, Bullhead City, and Mohave County with consideration of the purpose and need for the project, desired features of the Heritage Trail System, the terrain of the project area, and public scoping comments.

This chapter provides a description of the No Action Alternative and the two Action Alternatives (Alternative 1 and Alternative 2) associated with the Heritage Trail System project. In addition to the alternatives description, the discussion below includes an Alternative 3 considered but eliminated, and elements common to all action alternatives.

2.1 No Action Alternative

The No Action Alternative is included here as a means to compare the action alternatives to the existing baseline conditions. Under the No Action Alternative, the recreational opportunities provided by the Heritage Trail System as described in the Bullhead City General Plan (2016), the Davis Camp Park Master Plan (WLB 2009) and the Davis Dam Lands Commercial Recreation Facilities and Services Alternatives and Recommendations (Aukerman, 2001) would not be authorized or constructed, and Federal land in the project area would remain difficult for pedestrians and other recreational enthusiasts to access from Bullhead City. Day-use for visitors and residents along the Colorado River and Lake Mohave in this area would continue to be informal and dispersed. Previously disturbed sections of the project area would remain, and unauthorized off-road use in the area would continue.

2.2 Alternative 1 (Proposed Action)

The Heritage Trail System Alternative 1 would include the Desert Trail, Spur Trails, and Adventure Trail, and would be approximately 3.65 miles long occupying approximately 44 acres.

The following actions in Alternative 1 are common to both action alternatives associated with the proposed project. Together, these actions comprise a system of pedestrian and bike trails, trailheads, fishing nodes/kayak launch, picnic shelters, bike racks, wayfinding shelters, restrooms, entry monuments, vehicle parking, pedestrian bridges, and native landscape improvements. Interpretive signs, shade shelters, trail lights, trash receptacles and fencing would be included as appropriate. All proposed day-use facilities and associated amenities would be located in Sections 18, 19 and 30 (Figures 2 and 3) on lands managed by Reclamation and NPS. Reclamation and NPS would enter into agreements / or use authorizations with Bullhead City and Mohave County for construction, operation, potential use fees for special events such as organized runs, maintenance, patrol, and removal of the Heritage Trail System. All elements proposed under this alternative are described by facility type below:

2.2.1 Trailheads

Davis Dam Trailhead

This trailhead would be located near the east end of the Davis Dam between Davis Dam Road and Lake Mohave (Figures 2, 3, and 4). Facilities at the Davis Dam Trailhead would include a wayfinding shelter/trail map, interpretive panels, bike racks/trash receptacles, and vault restrooms. Portions of the trailhead would be replanted with native vegetation provided by the NPS or a source approved by Reclamation and the NPS. Access to the Lake Mohave Spur Trail would be from this trailhead. Facilities along the spur trail would include solar lights along the trail, several fishing nodes, and a kayak launch.

Davis Camp Trailhead

This trailhead would be located east of the Davis Camp entrance (Figures 2, 3 and 6). Amenities at the Davis Camp Trailhead would include a wayfinding shelter/trail map, interpretive panels, bike racks/trash receptacles, vault restrooms, potable water, picnic shelters, an entry monument, and a maintenance entrance gate. Portions of the trailhead would be replanted with native

vegetation provided by the NPS or a source approved by Reclamation and the NPS. A spur trail lined with lights would lead from this trailhead into Davis Camp would be maintained by Mohave County.

Vehicles would access this trailhead from McCormick Boulevard off State Route 68. Pedestrians and bicycles may also reach the Davis Camp Trailhead from the Davis Dam Trailhead via the proposed trails and pedestrian bridges that span the large drainage wash.

2.2.2 Trails

Trails within the system are planned to be 12-foot wide with 2-foot shoulders to accommodate mixed uses with the exception of the Mohave Spur Trail which would be 8-foot wide with 2-foot shoulders.

Desert Trail

The hardened surface Desert Trail would start at the security barrier on the east end of Davis Dam and terminate at the Laughlin/Bullhead City Bridge (Figures 2 and 3).

The Desert Trail would start at the north side of Davis Dam and parallel Davis Dam Road 750 feet to the proposed Davis Dam Trailhead adjacent to the west side of the Lake Mohave Spur Trail.

From the Lake Mohave Spur Trail, the Desert Trail would cross Davis Dam Road approximately 1,850 feet east of the Davis Dam Trailhead. The road crossing would be equipped with a crosswalk with yellow flashing lights. The trail would then parallel Davis Dam Road to the southeast on an existing dam construction-era road until it intersects and follows the centerline of a Davis Dam service road. The service road would be equipped with an entry monument and gate (Figure 4). The entry monument would be large enough to identify the entry to the trail as well as highlight this area as a place of significance and special character. The design would reflect the area's natural history and setting.

The Desert Trail would continue south on an existing transmission line right-of-way (ROW). At the top of hill a small spur trail would lead to a proposed scenic overlook that would provide open views to the Colorado River valley, Davis Camp, Davis Dam, and the skylines of Laughlin and Bullhead City (Figure 5). A shade shelter bench, and interpretive panels would be placed at the overlook.

From the scenic overlook, the Desert Trail would continue south along the top of the ridgeline within the transmission line ROW and then onto an old construction road until it crosses a large east-west trending wash. A bridging structure would span the large wash as the trail continues south to the Davis Camp Trailhead (Figure 2).

From the Davis Camp Trailhead, the Desert Trail would parallel McCormick Boulevard to the intersection of State Route 68. The trail would then parallel State Route 68 south to the Laughlin/Bullhead City Bridge. A small bridge or culvert would be installed on a small drainage just north of the Laughlin/Bullhead City Bridge (Figures 6 and 7).

Mohave Spur Trail

The Lake Mohave Spur Trail would be an approximately 1,150 foot loop that would follow the existing dam construction-era roadway to the shore of Lake Mohave west of the Katherine Landing Access Road (Figures 2, 3, and 4).

Adventure Trail

The Adventure Trail would be included in Alternative 1 as an optional route. It would not be a separate trail under Alternative 2, but would be incorporated into the primary route of the Alternative. The Adventure Trail would veer southeast from the Desert Trail and follow the transmission line down a relatively steep ridge into a wash (Figures 2, 3, and 5). This trail would be maintained as a natural, rocky, and sandy trail to provide a natural desert experience to hikers and bikers. The trail would follow washes until it converges with the Desert Trail at the Davis Camp Trailhead (Figure 6).

Davis Camp Spur Trail

The Davis Camp Spur Trail would be a hardened surface trail running west and parallel to north side of the Davis Camp Access Road to the Mohave County-managed Davis Camp entrance (Figures 2, 3 and 6).

2.2.3 Day-Use Facilities

Fishing Nodes

Several fishing docks or piers would be constructed along the Lake Mohave shoreline off the Lake Mohave Spur Trail (Figure 4). The style of fishing node being evaluated for use is a cantilevered dock similar to those constructed as part of the Laughlin Heritage Greenway Trail. The cantilevered dock could be constructed on adjacent uplands and extend over the water.

The precise location of the fishing nodes will be determined during the final site design, pending U.S. Army Corps of Engineers (Corps) permitting, and any potential cultural and biological resource concerns in the project area. Biological and cultural surveys have been completed for the Project (DSG 2016; SRI 2016).

Kayak Launch

A kayak launch would be constructed along the Lake Mohave shoreline (Figure 4). The precise location and design of the launch will be determined during the final site design, pending Corps permitting, and any potential cultural and biological resource concerns in the project area. Biological and cultural surveys have been completed for the Project (DSG 2016; SRI 2016).

2.2.4 Transportation

Specific vehicle access traffic improvements would include the following:

- Directional signs would be installed at the intersection of State Route 68 and McCormick Boulevard. Additional signs needed for safety or identification of the trail system would be installed as needed and appropriate. The signs would be designed to provide identification of the Heritage Trail System.

- Entry signs and monuments with directional signs would be constructed at the two trailheads and the parking area by the Laughlin-Bullhead City bridge.
- A pedestrian crosswalk with flashing lights would be installed at the Desert Trail crossing at the intersection of the Katherine Landing Access Road and Davis Dam Road.
- A modular pedestrian bridging structure would be installed over the drainage as part of the Alternative 1 Desert Trail north of the Davis Camp Trailhead.

2.2.5 Interpretive Signs

A series of interpretive signs would be developed and installed at various locations, including but not limited to: the Lake Mohave Trailhead, the historic switchyard storage yard discussed in Section 3.3.4, the scenic overlook, and the Davis Camp Trailhead. Potential themes of the interpretive signs include: History of Davis Dam, History of Bullhead City, Davis Camp, Native Americans, history of NPS at Lake Mead NRA, including Lake Mohave, Plants/Wildlife, and Geology.

2.2.6 Fencing

A chain link fence would be installed on the west side of the trail in the vicinity of Davis Camp to prevent access into the Davis Camp fee area (Figures 6 and 7), as well as around the switchyard storage yard (Figure 5). The fence installed from Davis Camp south along the trail would be approximately 6-feet high and approximately 800 feet long, while the fence installed around the historic switchyard storage yard will enclose an area approximately 200 by 200 feet. The fences would be constructed with galvanized 6- to 9-gauge core mesh size and installed in accordance to all applicable American Standards for Testing and Materials (ASTM) standards.

At least three security gates would be installed along the trail (Figure 5) at the entry monument near Davis Dam Road, the historic switchyard storage yard, and at the scenic overlook. The gates would most likely be designed as schedule 40 galvanized steel pipe swing gates fabricated in compliance with all applicable ASTM standards.

2.2.7 Utilities

Proposed utilities would consist of solar or conventional lights placed along portions of the trails and at each trailhead. Potable water would be available at the Davis Camp Trailhead. Potable water would be provided by EPCOR Water Utility Company and piped in from Davis Camp. The proposed 0.25 – to 0.5-mile long line would be constructed of 2-to 4-inch diameter, schedule 80 polyvinyl chloride (PVC) pipe buried in the existing Davis Camp entrance road ROW. The water line would be constructed in accordance with an Approved Water Line Construction Plan.

The restrooms at the Davis Dam trailhead would have vault toilets. The restrooms at Davis Camp trailhead would have flush toilets. The flush toilets would be connected to Davis Camp by 6- to 8- inch diameter sewer lines.

2.2.8 Operation and Maintenance of the Trail

Bullhead City would operate, maintain, and patrol the proposed trail system. Maintenance would consist of sign maintenance and repair, trash collection, restroom cleaning, clearing gravel and weeds from the trail system, repair of trail surface and shoulders, repair and replacement of facilities at the two trailheads, repair and maintenance of trailhead parking lots, and maintenance of the fences, security gates, lights and associated facilities, and the water and sewer lines.

A Maintenance and Management Plan would be developed for the trail system and facilities (Phillips 2003). Volunteer and/or student groups may assist with trail cleanups and other maintenance activities as described in the plan.

2.2.9 Road closures and Associated Seeding and Native Vegetation Planting

Since portions of the trail are within the Davis Dam Security zone, measures to ensure security will be installed as needed. This would include gating of the service road near Davis Dam and the road near Davis Dam trailhead. Other secondary maintenance roads may be closed or gated. Permanently closed roads would be seeded or planted with native vegetation. Lighting and/or fencing would be installed if needed to secure areas.

A few small salt cedar trees along the Lake Mohave Spur Trail would be removed and the area revegetated with native vegetation supplied from the NPS or another source. The trees would be cut down and sprayed with the herbicide Triclopyr. Retreatment of the trees with herbicide may be required.

2.3 Alternative 2 Trail

The Alternative 2 Trail would be approximately 3.65 miles long and occupy approximately 44 acres. This alternative is proposed because the trail's location on an existing road and its shorter overall distance compared to Alternative 1 is anticipated to reduce costs of construction. It would differ from Alternative 1 in that it would not include the portion of the Desert Trail that traverses the uplands between the service road entry monument and the large east-west trending wash. It would include the Mohave and Davis Camp Spur Trails. Since the trail would not include the upland route, it would provide a different recreational experience than Alternative 1. The Desert Trail would start at the north side of Davis Dam and follow the same route as the Desert Trail before veering southeast to follow the route of the Adventure Trail to the Davis Camp Trailhead. At the Davis Camp Trailhead it would rejoin the Desert Trail route (Figure 3).

2.4 Design Features and Mitigation Measures

The following measures would be incorporated into the Action alternatives to reduce or eliminate impacts to resources:

Soils

As feasible, segregation of the soil horizons will be conducted where soils will be disturbed. At a minimum, the initial 3 inches of the surface horizon will be separated and stockpiled from lower horizons and used in site restoration following construction.

Best Management Practices (BMP) would be implemented to control erosion and sedimentation.

Surface and groundwater quality and quantity

Prior to construction, a Clean Water Act Section 404 permit (404 permit) and Section 402 National Pollution Discharge Elimination (NPDES) Permit would be required from the Corps, and the Arizona Department Environmental Quality (ADEQ), respectively, for all work occurring in Waters of the U.S. The contractor would adhere to all conditions, including the Arizona Department of Environmental Quality - Stormwater Construction General Permit (AZG2013) and Storm Water Pollution Prevention Plan and any special conditions, of all permits during construction activities, and no construction activities would occur when flow is present in the ephemeral washes that cross the project area.

Potable water would be obtained from a public water system that is in compliance with all applicable Federal, State, and County laws and standards.

Biological Resources

To prevent the spread of noxious and invasive weeds, equipment used for this project shall be thoroughly cleaned prior to entering and leaving the project site. The cleaning process will ensure that all dirt and debris that may harbor noxious or invasive weeds seeds are removed and disposed of at an appropriate facility. Reclamation's Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species: 2012 Edition should be referenced for inspection and cleaning activities. The manual can be found at:

<http://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2012.pdf>

Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (AGFD 2014) and Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat (AIDTT 2008) would be utilized and implemented as appropriate.

Areas with suitable migratory bird habitat shall be surveyed by a qualified biologist prior to construction. If breeding activities are occurring within the area, work shall stop until the young have fledged and left the nest. The migratory bird breeding season generally occurs between March 1st and August 31st.

Prior to ground disturbing activities areas of the project not infested with invasive species will be delineated and all equipment and vehicles will be cleaned prior to entering uninfested sites from known infested sites.

All seed and plant species used for revegetation shall be native and approved by Reclamation and NPS.

A biological monitor, approved by Reclamation, is required during all construction activities.

All potential pitfalls to wildlife including test pits will be covered or backfilled when not attended.

Reclamation is consulting with the U.S Fish and Wildlife Service (USFWS) on potential impacts to bonytail chub (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*). Conservation measures will be developed and implemented to mitigate potential impacts to these species.

Interpretative panels that include a description of bonytail chub and razorback sucker and how the public can help protect these species would be placed near the fishing nodes.

Construction of the kayak launch would take place outside of the spawning season for bonytail chub and razorback sucker (January to June).

Cultural Resources

In the event of an unanticipated discovery during construction, operations, and maintenance of the Heritage Trail System all activities in the area of the discovery shall cease, except those needed to protect and secure the site. A Reclamation archaeologist shall be immediately contacted. Reclamation shall ensure that the stipulations of 36 CFR Part 800.11 are satisfied before activities in the vicinity of the previously unidentified property resume. A “Discovery” means the encounter of any previously unidentified or incorrectly identified cultural resource including, but not limited to, archaeological deposits, human remains, or places reported to be associated with Native American religious beliefs and practices.

Reclamation is currently conducting a consultation with the Arizona State Historic Preservation Officer (SHPO) and several Tribes under Section 106 of the National Historic Preservation Act (NHPA). Additional consultations would be conducted as needed if modifications are made to the project design. Reclamation plans to fence historic sites located along the trail and provide historic narrative signs as part of the Heritage Trail System project.

Noise

All Federal, State, county and city noise ordinances will be complied with during construction.

Accessibility

All facilities, unless otherwise noted in the description of the proposed action, shall be designed and constructed to ensure accessibility as required by law for individuals with disabilities in accordance with the Architectural Barriers Act of 1968 (82 Stat. 718), as amended (42 U.S.C. 4151 et seq.) and the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), including but not limited to Sections 504 and 508.

2.5 Alternatives Considered but Not Evaluated in Detail

A third trail route that paralleled Davis Dam Road and State Highway 68 was initially considered. This alternative was dismissed because the trail was too long (6,502 feet), too close to Davis Dam Road, and would be subject to frequent flooding and erosion due to its proposed location within an ephemeral drainage.

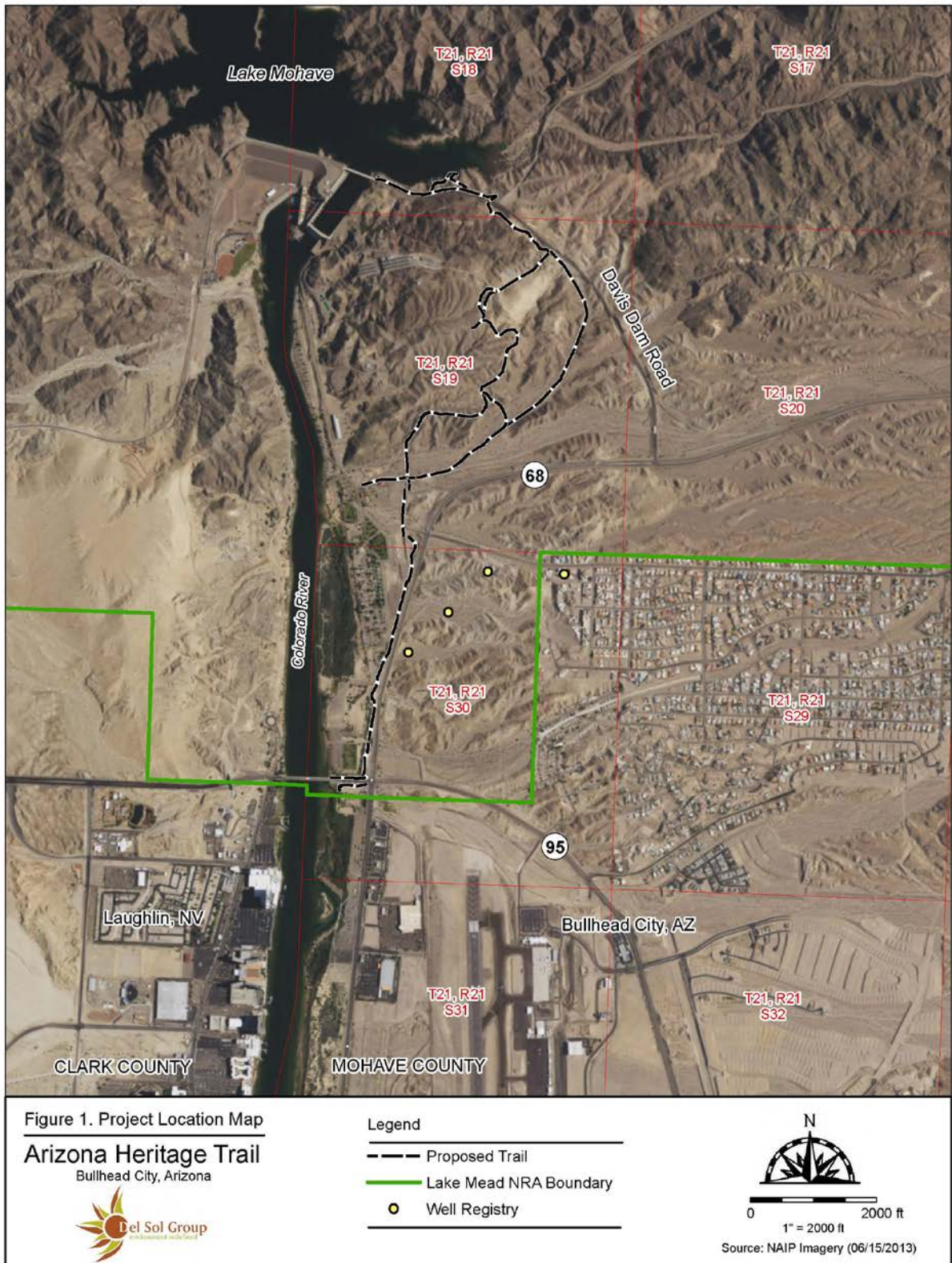


Figure 1- Project Location Map



Figure 2- Proposed Trail Alternative 1



Figure 3- Proposed Trail Alternative 2



Figure 4- Mohave Spur Section

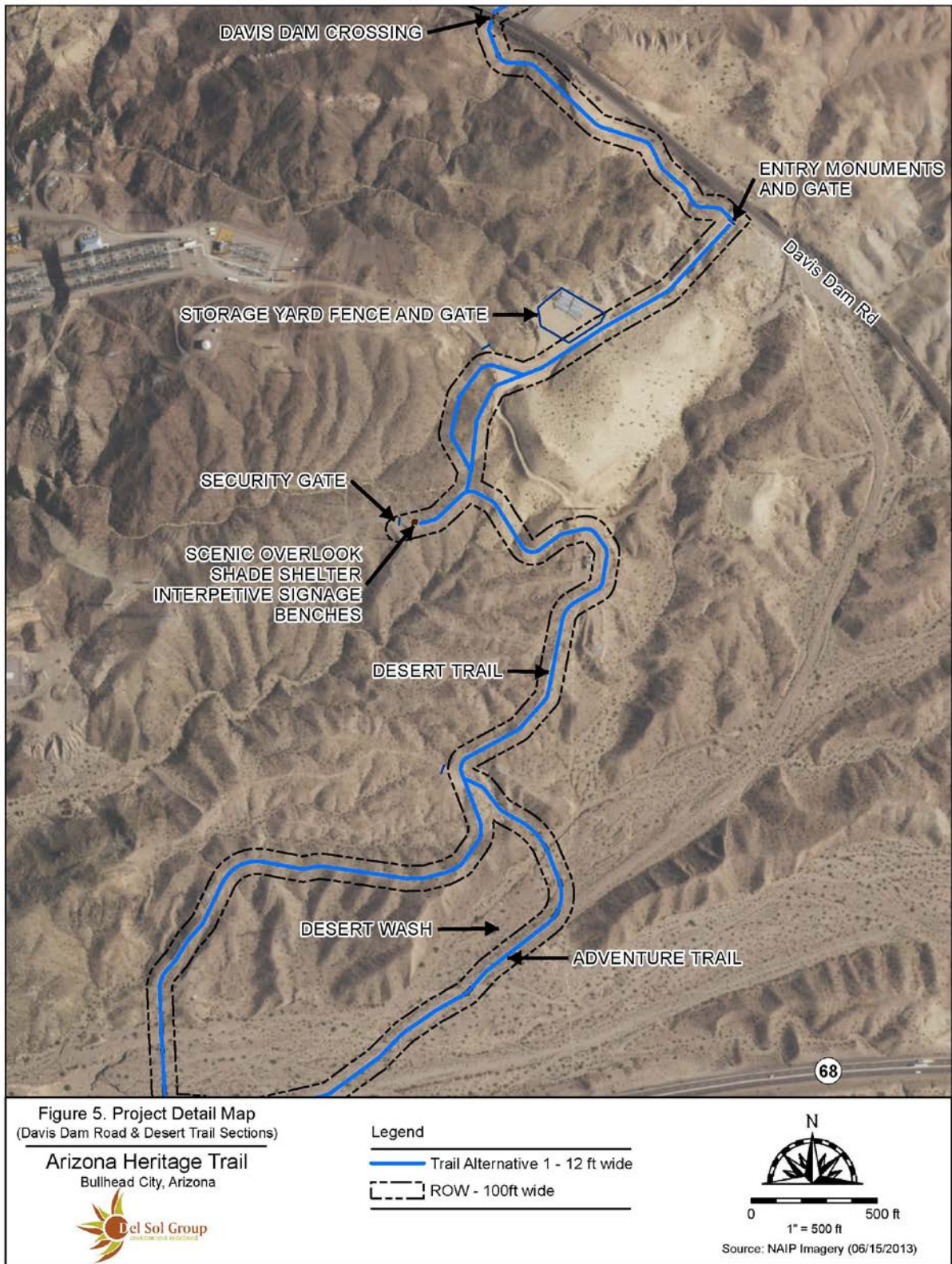


Figure 5- Davis Dam Road and Desert Trail Sections



Figure 6- Davis Camp Section

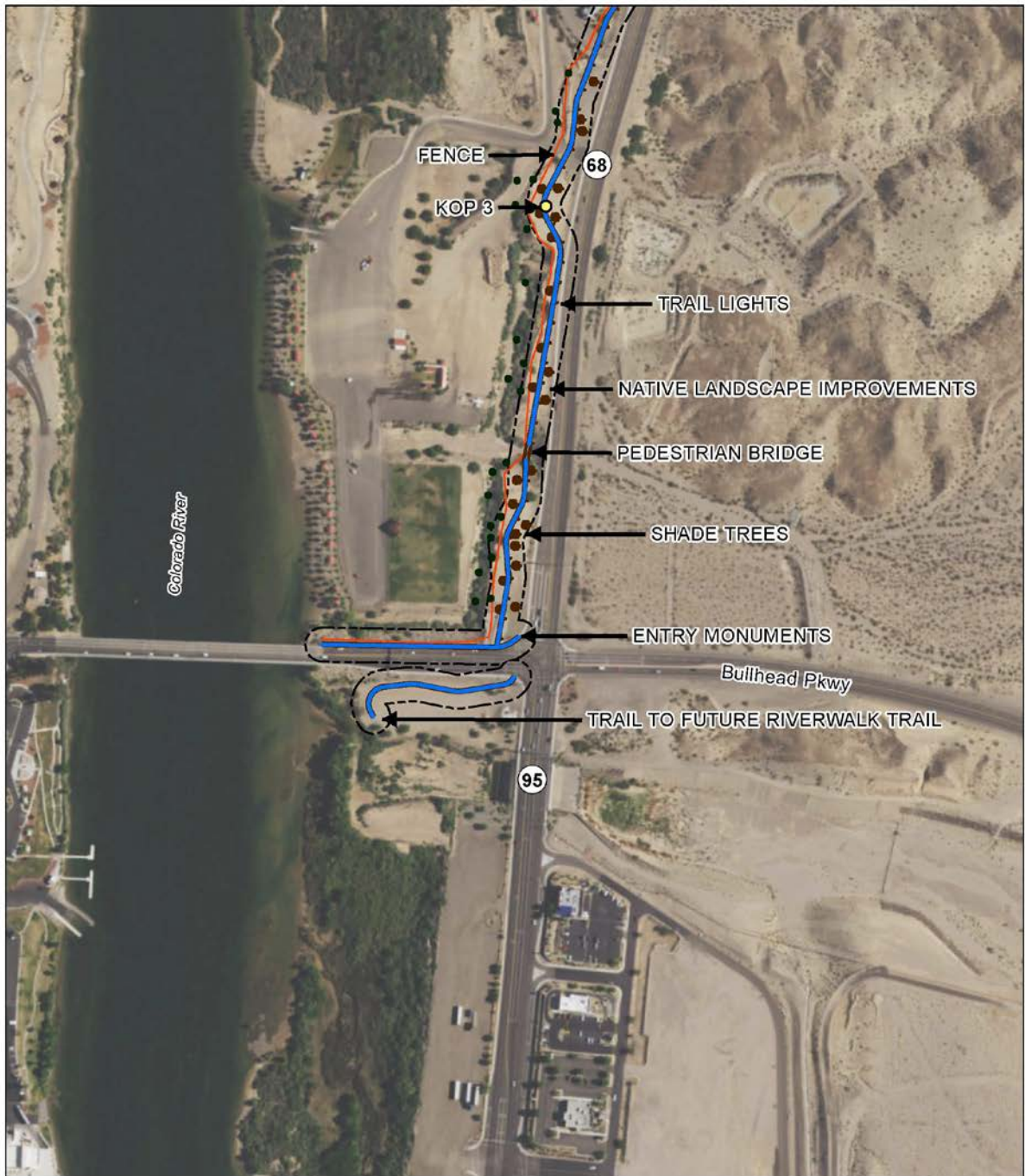


Figure 7. Project Detail Map
(Laughlin-Bullhead City Bridge Section)

Arizona Heritage Trail
Bullhead City, Arizona

Legend

- Trail Alternative 1 - 12 ft wide
- ROW - 100ft wide
- Key Observation Point

Figure 7- Laughlin Bullhead City Bridge Section

3.0 Affected Environment and Environmental Consequences

This section includes information for each resource potentially affected by the Proposed Action and a discussion of environmental consequences of the Proposed Action (Alternative 1), No Action, and Alternative 2.

The analysis will include direct, indirect, and cumulative effects. The Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508) define direct effects as those which are caused by the action and occur at the same time and place and indirect effects as those which are caused by the action and occur later in time or farther removed in distance.

Cumulative impacts are defined as impacts to the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes the action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

The cumulative effects analysis will address the cumulative impacts of the Proposed Action in combination with other projects or management activities. Section 3.1 identifies past, present, and reasonably foreseeable activities that are either located in the vicinity of the proposed Project or have been identified as having the potential for cumulative impacts when considered in addition to the impacts of the Proposed Action. These actions will be addressed as appropriate in Section 3.3.

The analysis area for all impacts is the proposed trail system and the immediate vicinity.

3.1 Past, Present, and Reasonably Foreseeable Future Projects

The following list includes past, present, and expected future management actions that may contribute to cumulative effects. This list is not a cumulative effects analysis. This list is used by resource specialists to determine what actions may create effects in addition to the direct or indirect effects from the Heritage Trail System Project.

3.1.1 Past Projects

Past actions identified in the area of cumulative impact analysis include:

- A network of historic Davis Dam construction roads in the immediate project area. Approximately 85- to 90-percent of the proposed trail north of the Camp Davis Trailhead will be constructed on these existing dirt roads, while 100-percent of the trail south of the Davis Dam Trailhead will be constructed in the SR 68 ROW.
- Construction, operation and maintenance of the Colorado River Heritage Greenway Park and Trails, and

- Rebuild of a 26.6-mile portion of the existing Davis-Kingman Tap 69 kV transmission line starting on the west side of Davis Dam Road southeast of the switchyard (DOE 2011).

3.1.2 Present Actions

Present actions include ongoing park operations and maintenance, and park visitation. In addition, the NPS recently completed a rehabilitation of the Katherine Landing access road (Boyles 2016).

3.1.3 Reasonably Foreseeable Future Projects

Present and future actions include:

- Davis Camp fee area use and maintenance
- Davis Dam Road and State Route 68 road maintenance and repair
- Continued Bullhead City visitation and commercial development
- Widening of the Laughlin-Bullhead City Bridge by the Nevada Department of Transportation (NVDOT) and Arizona Department of Transportation (ADOT). The project would add an enhanced pedestrian lane to the bridge, and a roundabout on each side of the bridge. The construction of the project is planned for 2018 or 2019 (Steinberger 2016; Young 2016).
- Construction of the Laughlin Bullhead City Project Bridge (the Parkway Alternative) across the Colorado River approximately 12.2 miles downstream of the existing Laughlin-Bullhead City Bridge. The project would require constructing approximately 18,652 feet of roadway in Nevada, an approximately 1,286-foot-long bridge, and approximately 3,186 feet of roadway in Arizona (FHWA 2010). Clark County, NV awarded the project design contract in May 2016 (Martin 2016b).
- Designation of Mohave Water Trail.

3.2 Resources Considered but not Discussed Further

The following resources were considered and are not addressed further in this EA either because there would be no impacts from the Proposed Action.

Land Use

The proposed trail would be constructed on existing construction and powerline roadways on land managed by Reclamation and the NPS. The construction, operation, maintenance, and patrol of the proposed trail project would be an overall beneficial use of land by decreasing dust and erosion as well as unauthorized off-road activities, and addresses the Reclamation and NPS recreation management objectives as summarized in Section 1.2. These beneficial uses are consistent with the NPS purpose statement for Lake Mead National Recreational Area (NPS 1986 and 2002).

Wetlands

Executive Order 11990, "Protection of Wetlands" states that it is federal policy to avoid to the extent possible the long and short-term adverse impacts associated with the destruction or

modifications of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. One identified drainage, a large, unnamed ephemeral wash, crosses the project area east and northeast of Davis Camp. The drainage connects to the Colorado River just north of Davis Camp. A review of the National Wetland Inventory map (USFWS 2016) for the project area indicates that the drainage has associated Freshwater Forested/Shrub Wetlands associated with it. However, bridging structure would be used to span the wash, and would be designed to prevent disturbance in the wash. A narrow band of sparse riparian habitat occurs along the shore of Lake Mohave adjacent to the Proposed Lake Mohave Spur Trail. The habitat consists primarily of several small tamarisk, a fast-growing, prolific invasive species. The potential removal of the few tamarisk for trail facilities would have a net beneficial impact since any tamarisks removed would be replaced by native vegetation.

Indian Trust Assets (ITA)

ITAs are defined as “legal interests in property held in trust by the United States for Indian tribes or individuals” (Reclamation 1993). ITAs are those properties, interests, or assets of a Federally-recognized Indian tribe or individual Indian over which the Federal government also has an interest, either through administration or direct control. Examples of ITAs include lands, minerals, timber, hunting rights, fishing rights, water rights, in-stream flows, and other treaty rights. All Federal bureaus and agencies are responsible for protecting ITAs from adverse impacts resulting from their programs and activities. The Fort Mojave Indian Reservation is downstream from but not directly adjacent to the Project area. There would be no impact to this ITA as it is not located in the Project area or affected by the Project.

3.3 Resources Discussed Further

The following resources are discussed further in this EA:

- Air Quality/Greenhouse Gases
- Visual Resources
- Biological Resources
- Cultural Resources/Traditional Cultural Properties/Sacred Sites
- Floodplains
- Hydrology and Water Quality
- Soil
- Socioeconomics and Environmental Justice
- Recreation

3.3.1 Air Quality/Greenhouse Gases

National Ambient Air Quality Standards

The 1990 Clean Air Act Amendments (CAAA) (40 CFR 50-97) require that air quality impacts be addressed in the preparation of environmental documents. As required by CAAA, the EPA set National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants and identified nonattainment areas (areas that exceed the NAAQS) for those pollutants. Arizona uses the NAAQS and does not have state-specific ambient air quality standards.

Greenhouse Gases

A solid body of scientific evidence supports the theory that rising global Greenhouse Gas (GHG) emissions are significantly affecting the Earth's climate (IPCC 2015). Climate change is attributed to the sum of all human activities and natural processes. The primary GHGs are carbon dioxide, methane, nitrogen dioxide, and fluorinated gases.

3.3.1.1 Affected Environment

National Ambient Air Quality Standards

The proposed project lies within the Bullhead City Particulate Matter (PM₁₀) Maintenance Area, which encompasses the greater Bullhead City area in Arizona (upper Colorado River Planning Area/Lake Mohave Basin airshed) (ADEQ 2012a). A maintenance area is a former nonattainment area that has been redesignated to attainment after several years of monitoring data indicates the area is meeting the NAAQS (ADEQ 2012a). The area has a maintenance plan demonstrating that the area will continue to meet the NAAQS for PM₁₀ (ADEQ 2012a).

The Arizona Department of Environmental Quality (ADEQ) maintains a network of air monitoring sites throughout Arizona. The closest air monitoring site to the proposed project area is located U.S. Post Office building at the northeast corner of State Route 68 and 7th Street in Bullhead City (ADEQ 2016). The monitoring site collects data on PM₁₀ concentrations every sixth day. PM₁₀ concentrations monitored by ADEQ at the Bullhead City site are below the NAAQS (ADEQ 2016).

There are no significant permitted sources of air pollution in Bullhead City, and the area generally experiences a healthy air climate; however, fugitive dust from cleared land areas and travel on unpaved roads have contributed to air quality issues in the past (ADEQ 2012).

Greenhouse Gases

The primary source of GHG emissions in the project area is from vehicles.

3.3.1.2 Environmental Consequences

No Action Alternative

Air quality in the project area is currently affected by fugitive dust generated by off-road traffic traveling on unpaved roads and cross-country through all portions of the project area. These impacts are expected to continue to be localized, long-term, and minor.

Alternative 1 (Proposed Action) and Alternative 2

Construction of the Proposed Action is estimated to take nine months. During construction, there would be a short-term, minor impact to air quality construction-related excavation and grading activities, primarily associated with fugitive dust emissions. Construction activities that can produce dust (PM₁₀) emissions include rock blasting and handling, vehicle and truck travel over unpaved roads, blowing wind over disturbed areas, and tailpipe exhaust emitted from vehicles and equipment. A site specific Grading Plan and Fugitive Dust Control Plan would be required as part of the Proposed Action permit from Bullhead City (Agrawal 2016). The plan would outline the specific steps that would be taken to minimize fugitive dust generation such as watering down construction areas to minimize fugitive dust emissions.

Green House Gas Emissions

Carbon dioxide (CO₂) was used as a surrogate in GHG emissions for this project. Using standard industry data for heavy equipment fuel use and CO₂ emissions, it was calculated that approximately 1,863 pounds, or less than one ton, of CO₂ emissions would result from the construction phase of the project (Table 1).

Table 1: Estimated Equipment List, Fuel Use, and CO₂ Emissions

Equipment Type*	Number Used	Hours in Operation**	Total Hours	Fuel Type	Gal/Hour	Total Gallons	Total CO ₂ /lbs***
Caterpillar bulldozer (D-6, D-8)	2	1440	2880	Diesel	7.47	21513.6	165.834
Caterpillar scraper (621, 623)	4	1440	5760	Diesel	5.76	33177.6	127.872
Caterpillar grader	1	1440	1440	Diesel	6.65	9576	147.63
Caterpillar excavator (330)	2	1440	2880	Diesel	6.65	19152	147.63
Backhoe loader	2	1440	2880	Diesel	2.08	5990.4	46.176
Dump truck (10 wheel)	2	1440	2880	Diesel	5.34	15379.2	118.548
Crane (30 ton)	1	600	600	Diesel	4	2400	88.8
Water truck (30k)	1	720	720	Diesel	9.98	7185.6	221.556
Sheepsfoot compactor	1	720	720	Diesel	10	7200	222
Vibratory roller	2	720	1440	Diesel	3.75	5400	83.25
Asphalt paving machine	1	400	400	Diesel	5.34	2136	118.548
Concrete delivery trucks	50	3	150	Diesel	9.98	1497	221.556
Asphalt / aggregate delivery trucks	75	3	225	Diesel	5.34	1201.5	118.548
4x4 pickup trucks	4	1440	5760	Gas	1.8	10368	34.92
Total CO₂							1862.868

- Notes:
- * Source: Herrick 2016.
 - ** Hours based on a nine-month construction phase.
 - *** Each gallon of diesel produces 22.2 pounds of CO₂, while each gallon of gas produces 19.4 pounds of CO₂.

The NPS Technical Guidance on Assessing Impacts to Air Quality in NEPA and Planning Documents (NPS 2011) was used as a guide to assess the impacts of the less than one ton of CO₂ emitted during the construction phase of this project. The proposed project would emit far less than the NPS's Guidance *de minimis* level of 50 tons per year of emissions. Construction activities associated with implementation of the Proposed Action would contribute to increased GHG emissions, but such emissions would be short-term, ending with cessation of construction activities.

Impacts to air quality for Alternative 2 would be similar to those described for Alternative 1. Since the total trail distance for Alternative 2 would be shorter, construction time may be shorter, resulting in slightly less CO₂ emissions.

Cumulative Impacts

Alternatives 1 and 2, in combination with past, present, and reasonably foreseeable future actions would have a negligible effect to minor short-term adverse impact to air quality in the immediate project area due to construction-related activities. The other cumulative projects are also subject to ADEQ permit requirements and would include measures designed to control dust and particulate emissions. In combination, the proposed action and cumulative projects would be expected to have a long-term, negligible to minor, beneficial impact to air quality in the immediate project area as a result of conversion of vacant, disturbed land to a vegetated or hard surface.

3.3.2 Visual Resources

3.3.2.1 Affected Environment

The proposed project would occur within a typical basin and range landscape (Figure 1), which consists of a broad open valley surrounded by three mountain ranges that extend in a north-south direction: Newberry Mountains (west), Black Mountains (east), and Dead Mountains (northwest). The other defining feature is the Colorado River. The River bisects the valley floor forming a natural boundary between Nevada and Arizona and the communities of Laughlin and Bullhead City.

The visual landscape is scenic but also highly modified. The landscape varies between views of low mountains, washes, Colorado River, Davis Dam, Davis Camp, roads including primitive roads and the highway, and communities of Laughlin and Bullhead City, and powerlines. The visual resources study area for the proposed project was defined as the area wherein effects from construction and operation of the proposed Heritage Trail System may be observed by the public. As part of the evaluation, three Key Observation Points (KOPs) were established. The KOPs are points from which visual evaluations are performed and represent meaningful viewing locations (Figure 2 and 3).

3.3.2.2 Environmental Consequences

No Action Alternative

Under the No-Action Alternative, no change to the existing visual resources would occur due to the proposed project.

Alternative 1 (Proposed Action) and Alternative 2

The visual appearance of the Proposed Action would vary across topography, but would be designed to blend with the background. Native vegetation would be planted, and the trail surface would be made to match the existing ground color.

The three KOPs selected, as described in the Affected Environment section, represent viewpoints most often observed by the public.

KOP 1: This KOP is located near the intersection of Davis Dam Road and the Katherine Landing access road (Appendix B, Photograph 1). Viewers at this location would have brief views of the proposed trail road crossing and trail as the trail parallels the west side of Davis

Dam Road, and the entry monument at the trail/service road intersection. Viewers can also see Lake Mohave and the Newberry Mountains in the background.

KOP 2: This KOP is located at west of the intersection of State Route 68 and McCormick Boulevard near the entrance to Davis Camp (Appendix B, Photograph 2). Viewers at this location will have views of the proposed trail, native landscape improvements, and the Davis Camp trailhead and facilities. Viewers can also see the Laughlin skyline and Davis Camp overflow parking lot.

KOP 3: This KOP is located on the proposed trail route as the trail parallels State Route 68 approximately 0.2 miles north of the Laughlin-Bullhead City Bridge (Appendix B, Photograph 3). Viewers at this location would have views of the highway, proposed trail and facilities and native landscape improvements. Viewers can also see the Laughlin skyline, the southern end of Davis Camp, the Colorado River, and the Laughlin-Bullhead City Bridge.

The visual character of the project area would be improved from existing conditions due to the additional natural vegetation and other visual elements to the landscape that would be designed to be compatible with landscape, and will not conflict with the varied visual resources that exist now. This would be a long-term, negligible, beneficial impact.

Impacts to visual resources for Alternative 2 would be similar to those described for Alternative 1, except that the portion of the trail that traverses the uplands between the service road entry monument and Davis Camp Trailhead would not be visible.

Cumulative Impacts

The Proposed Action, when considered with other past, present and reasonably foreseeable future actions affecting the project area would result in the conversion of approximately 48 acres of primarily undeveloped, existing primitive roads and disturbed land to support recreational activities, as well as an increase in natural vegetation. This represents a long-term, negligible, beneficial impact with regard to visual resources throughout the project area.

Other past, present and reasonably foreseeable future actions listed in Section 3.1 would not have a cumulative negative impact to the Proposed Action due to either their distance from the Proposed Action area (the proposed Laughlin Bullhead City Bridge), the character of action (Davis Camp fee area and use), or a combination of both.

3.3.3 Biological Resources

3.3.3.1 Affected Environment

Vegetation

The project lies within the in the Mohave Desert Scrub Ecosystem (Brown 1994). Scrublands include Mohave mixed scrub and creosote bush/bursage plant communities; a minor catclaw community is interspersed within the two larger communities (Brown 1994).

Vegetation in the project limits is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Shrubs include brittle bush (*Encelia farinosa*), snakeweed (*Gutierrezia sarothrae*), cheeseweed (*Hymenoclea salsola*), ratany (*Krameria* sp.), rush

milkweed (*Asclepiis subulata*), and sweetbush (*Bebbia juncea*). The only tree species noted in the project area is catclaw acacia (*Acacia greggii*). Annual wildflowers and herbs include the little desert trumpet (*Eriogonum trichopes*), desert globemallow (*Sphaeralcea ambigua*), desert lupine (*Lupinus sp.*), and indian paint brush (*Castilleja sp.*). The predominant grasses in the project area include desert threeawn (*Aristida purpurea*), desert fluff grass (*Dasyochlea pulchella*) and the invasive Red Brome grass (*Bromus rubens*). Cacti species include beavertail cactus (*Opuntia basilaris*), pencil cholla (*Cylindropuntia ramosissima*), and buckhorn cholla.

Since approximately 85 percent of Proposed Action corridor has been disturbed by historic dirt roads, impacts to the vegetation would be minimal. Most of the species listed above exist along the outside edges of the project ROW.

Invasive Species

Three invasive species were observed during the 2016 biological survey. Salt cedar (*Tamarix spp.*), Sahara mustard (*Brassica tournefortii*) and red brome grass (*Bromus rubens*). A few small salt cedar trees exist along the Proposed Lake Mohave Sur Trail. Sahara mustard was commonly observed in washes and drainages throughout the project area. Red brome was observed in disturbed areas and along roadways in the project area.

Threatened and Endangered Species

Two federally endangered fish species occur in the project area: bonytail chub and razorback sucker.

Bonytail chub are found in slower water habitats in the mainstream such as eddies, pools, side channels, and coves. They are found in streams below 1,219 m (4,000 ft) elevation. Bonytail chub are the rarest of the Colorado River fishes and close to extinction. The last natural population is found in Lake Mohave. Hatchery-produced and cove-reared bonytail chub have been stocked into Lakes Havasu and Mohave (La Paz and Mohave Counties, Arizona) (USFWS 2009a).

Razorback sucker use a variety of habitat types from mainstream channels to slow backwaters of medium and large streams and rivers, sometimes around cover. In impoundments they prefer depths of a meter or more over sand, mud or gravel substrates. Razorback sucker currently occur in the Colorado River, Gila River, Salt River, Verde River, and San Pedro River. Presently natural adult populations exist only in Lake Mohave, Lake Mead, and Lake Havasu (AGFD 2002a).

Sonoran Desert Tortoise (*Gopherus morafkai*)

The Sonoran desert tortoise was previously a candidate for federal listing under the ESA, this status was removed October 5, 2015 (USFWS 2015). Tortoises are not afforded formal protection under the ESA; however, they are still protected under State law. The species is identified as a “Species of Greatest Conservation Need” by the Arizona Game and Fish Department (AZGFD). Habitat for tortoises consists of primarily rocky (often steep) hillsides and bajadas of Mohave and Sonoran desert scrub, but they may encroach into desert grasslands, juniper woodlands, interior chaparral habitats, and even pine communities at elevations below 7,800 feet. Washes and valley bottoms may be used in dispersal. The Sonoran population is found within Sonoran and Mohave Desert scrub, including a variety of biotic communities

within or extending from the Sonoran Desert but most often in paloverde-mixed cacti associations (AZGFD 2015).

Suitable Sonoran desert tortoise habitat is present in the project area and tortoises have been detected within two miles of the project area (Ritter 2016). While no tortoises or signs of tortoises were detected during a March 14, 2016 biological survey, tortoises are a cryptic species and might be present anywhere in the desert uplands and along wash corridors.

Migratory Birds

Migratory birds are protected under the federal Migratory Bird Treaty Act of 1916 (MBTA), as amended, which prohibits injury or death to migratory birds and their active nests, eggs, and young.

Several MBTA species were observed during a March 14, 2016 biological survey: Black-throated sparrow (*Amphispiza bilineata*); Brewer's blackbirds (*Euphagus cyanocephalus*); mourning dove (*Zenaida macroura*); red-tailed hawk (*Buteo jamaicensis*); song sparrows (*Melospiza melodia*), turkey vulture (*Cathartes aura*) and verdin (*Auriparus flaviceps*).

3.3.3.2 Environmental Consequences

No Action Alternative

Invasive species would remain at current levels and continue to spread at current rates. There would be no impacts to Vegetation, Threatened and Endangered Species, Sonoran Desert Tortoise or Migratory Birds.

Alternative 1 (Proposed Action)

Vegetation

No federally listed plant species occur in the project area. Since approximately 90 percent of the Proposed Action corridor has been disturbed by historic dirt roads, impacts to the vegetation would be minimal. Most of the species listed above exist along the outside edges of the project ROW. Common vegetation such as weeds that have become established in the disturbed areas may be impacted by trail construction. The final design of the project will, to the extent practicable, avoid native cacti species or salvage them for use in the project area.

Invasive Species

Three invasive species were observed during the 2016 biological survey: salt cedar (*Tamarix spp.*), Sahara mustard (*Brassica tournefortii*) and red brome grass (*Bromus rubens*). A few small salt cedar trees along the Lake Mohave Sur Trail would be removed and the area revegetated with native vegetation supplied from the NPS or another source. The trees would be cut down and sprayed with the herbicide Triclopyr. Retreatment of the trees with herbicide may be required. The timing of treatment will avoid any impacts to migratory birds. The treatment will be a targeted application of herbicide and therefore will not affect other resources.

To the extent practicable red brome and Sahara mustard will be avoided to prevent dispersal during construction. Sahara mustard infestation levels should remain at current levels in the project area. Red brome was observed along roads and disturbed areas. Red brome infestation levels may increase in newly disturbed areas.

Prior to ground disturbing activities areas of the project not infested with invasive species will be delineated and all equipment and vehicles will be cleaned prior to entering uninfested sites from known infested sites.

To prevent the spread of noxious and invasive weeds, equipment used for this project shall be thoroughly cleaned prior to entering and leaving the project site. The cleaning process will ensure that all dirt and debris that may harbor noxious or invasive weeds seeds are removed and disposed of at an appropriate facility. It is anticipated that no new invasive plant species will be introduced to the project area.

Threatened and Endangered Species

An informal consultation will be conducted with the U.S. Fish and Wildlife Service (USFWS) for bonytail chub and razorback sucker. Construction and placement of the fishing nodes and kayak launch along the shore of Lake Mojave have the potential to affect both species of fish. Reclamation has determined that the project may affect, is not likely to adversely affect bonytail chub and razorback sucker. Conservation measures will be developed and implemented to mitigate potential impacts to listed species. The following measures, as well as other design features and mitigation measures that will be implemented will also mitigate potential impacts.

Interpretative panels that include a description of bonytail chub and razorback sucker and how the public can help protect these species would be placed near the fishing nodes. Construction of the kayak launch would take place outside of the spawning season for bonytail chub and razorback sucker (January to June).

Wildlife

No Sonoran desert tortoise mortalities are anticipated under Alternatives 1 and 2. There is a possibility that some Sonoran desert tortoises may be moved out of harm's way during construction of the project. Reclamation is a signatory to the Candidate Conservation Agreement for the Sonoran Desert Tortoise in Arizona and is committed to the conservation of the species. *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (AGFD 2014) and *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat* (AIDTT 2008) would be utilized and implemented as appropriate.

Migratory Birds

No impacts to migratory birds are expected because areas with suitable migratory bird habitat shall be surveyed by a qualified biologist prior to construction. If breeding activities are occurring within the area, work shall stop until the young have fledged and left the nest. The migratory bird breeding season generally occurs between March 1st and August 31st.

Alternative 2

The risk of the spread of invasive species under Alternative 2 would be slightly lower than Alternative 1 as the trail system would occupy fewer acres. Aside from this difference impacts to biological resources for Alternative 2 would be the same as those described for Alternative 1.

Cumulative Impacts

Cumulative impacts for all biological resources would be undetectable at the scale of the Proposed Action.

3.3.4 Cultural Resources/Traditional Cultural Properties/Sacred Sites

The NHPA Section 106 (36 CFR §800) requires that Federal agencies consider and evaluate the effect that Federal projects may have on historic properties under their jurisdiction. A Traditional Cultural Property (TCP) is a property or place that is eligible for the National Register of Historic Places (NRHP) because of its association with the cultural practices or beliefs of a living community that are: 1) rooted in that communities history and 2) important in maintaining the continuing cultural identity of the community.

Executive Order (EO) #13007 “Indian Sacred Sites” requires that Federal agencies with legal or administrative responsibility for management of Federal lands, “to the extent practicable permitted by law, and not clearly inconsistent with essential agency functions, to: (1) accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; and (2) avoid adversely affecting the physical integrity of such sacred sites”.

3.3.4.1 Affected Environment

In 2016, a file and records search (Class I cultural resources survey) was conducted for the project area (SRI 2016). This Class I survey resulted in the identification of 23 previously recorded archaeological sites within a one mile of the project area. Of these, two are within the proposed project area of potential effect (APE). The first archaeological site is known as Inscription Rock (AZ F:14:12). The site is located on a rocky promontory northwest of the Davis Camp Trailhead (Figure 2 and 3) outside of the trail corridor. The site consists of petroglyphs and other cultural features indicating reoccurring and long-term use of the area. Inscription Rock is considered eligible but has not been listed on the NRHP. The second previously recorded site (AZ F:14:216) consists of a trail segment and a quartzite hammer stone. The site has not been evaluated for the NRHP (SRI 2016).

In March 2016, SRI conducted a Class III pedestrian survey of the APE and recorded one prehistoric site and two historic sites (Table 2). The prehistoric site consists of two cultural features. The two historic sites consist of a wooden platform that may have been used to stage power poles (SRI 2016). The second historic site consists of a single piece of lumber similar to the lumber used to construct the wooden platform. The piece of lumber is attached to a metal cable and may have been used as a hoist (SRI 2016).

Table 2: Cultural Sites Recorded in the Project Area

Site No.	Cultural Affiliation	Site Type	NRHP Eligibility	Recommendation
AZ F:14:12 (ASM) (Inscription Rock)	Native American	Petroglyphs/rock rings/bedrock mortar cupules/sherds	Considered eligible	Avoid
Site 1 (Field Designation)	Euroamerican (early- to mid-twentieth century)	Historic wooden platform	Not eligible	Avoid
Isolated Occurrence	Euroamerican (early- to mid-twentieth century)	Historic wooden hoist	Not eligible	Avoid

For previous projects in the area, Reclamation has consulted with Indian Tribes on the cultural significance and preservation of cultural features at Inscription Rock. Some Tribes have identified Inscription Rock as a sacred site and TCP.

3.3.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there would be no change to cultural or historic resources.

Alternative 1 (Proposed Action) and Alternative 2

During the Class III cultural resources survey one prehistoric site and two historic sites were identified. The prehistoric site is considered eligible (SRI 2016). The historic sites are recommended as ineligible for listing on the NRHP.

Reclamation is currently conducting a consultation with the Arizona State Historic Preservation Officer (SHPO) under Section 106 of the NHPA. It is anticipated that the SHPO would concur with Reclamation on a finding that effects to historic properties would not be adverse. The trail will avoid the prehistoric site identified during the Class III survey. Because of the undulation of the adjacent topography the site is not visible from the trail. Reclamation plans to fence the historic sites that are along the trail and provide historic narrative signs as part of the Heritage Trail System project.

As part of the Section 106 of the NHPA consultation, Reclamation is also consulting with the Fort Mojave Indian Tribe, the Hualapai Tribe, the Colorado River Indian Tribe, the Chemehuevi Indian Tribe, and the Quechan Tribe.

Cumulative Impacts

The Proposed Action would not have an adverse cumulative impact on cultural resources because the proposed action would not have an adverse impact.

3.3.5 Floodplains

Protecting the functions of floodplains is addressed by Floodplain Management (EO #11988, originally signed in 1977). In 2015, EO #11988 was amended by EO #13690, which provides proposed guidelines to delineate a floodplain by considering climate change effects, adding height to the established 100-year floodplain elevation and/or reliance on the 500-year floodplain in project planning (FEMA 2015).

A Draft Floodplain Statement of Findings (VTN 2017, Appendix A) was prepared for the proposed Heritage Trail System to present the rationale for the location of development of the proposed trail in the floodplains, and to describe the level of risk associated with the Heritage Trail System and describe associated mitigation actions.

3.3.5.1 Affected Environment

Designated floodplains were identified in the project area through the Federal Emergency Management Agency (FEMA) Floodplain Insurance Rate Map (FIRM) panel numbers 04015C4460G and 04015C4466G (effective 11/18/2009), and 3200C4005E (effective 02/27/2002). The project area contains a Zone AE Floodplain along the Colorado River as well as a large, ephemeral wash that drains into the Colorado River north of Davis Camp. Zone AE specifies there is a 1% annual chance of flood hazard (FEMA 2016). Floodplains are shown on Figure 8.

Features of the Heritage Trail System which would occur within the probable maximum floodplain are portions of the trail, culverts, and bridge abutments. Portions of the proposed hardened surface trails within the floodplain will have the outer edges thickened to a minimum of 12 inches to reduce potential effects of erosion. Where the proposed trail crosses small to medium natural washes and arroyos, pipe and box culverts will be installed as part of construction. In the major wash of the floodplain, a prefabricated lightweight steel truss bridge with concrete abutments will be constructed. The steel truss bridge will have a free span of 70 feet. The specific sizes and locations of the proposed culverts and bridge will be determined as part of the final design in accordance with City of Bullhead City and Mohave County design standards and Corps permitting terms and conditions.

3.3.5.2 Environmental Consequences

Alternative 1 (Proposed Action) and Alternative 2

The alternatives would minimize potential hazards to human life and property within the probable maximum floodplains through a combination of structural and nonstructural measures. Steel Truss pedestrian bridges, reinforced concrete box culverts and drainage pipes would be constructed to convey 100-year flows below the proposed trail alignments. Additionally, the developed parking areas and restroom structures at Davis Camp and Davis Dam will be located outside and above the 100 year floodplain and would be designed in accordance with the Federal Flood Risk Management Standard established in EO 13690.

There would be no impacts to natural floodplain values. The developments within the floodplain would be minimal. The area has been evaluated for potential impacts to natural resources such

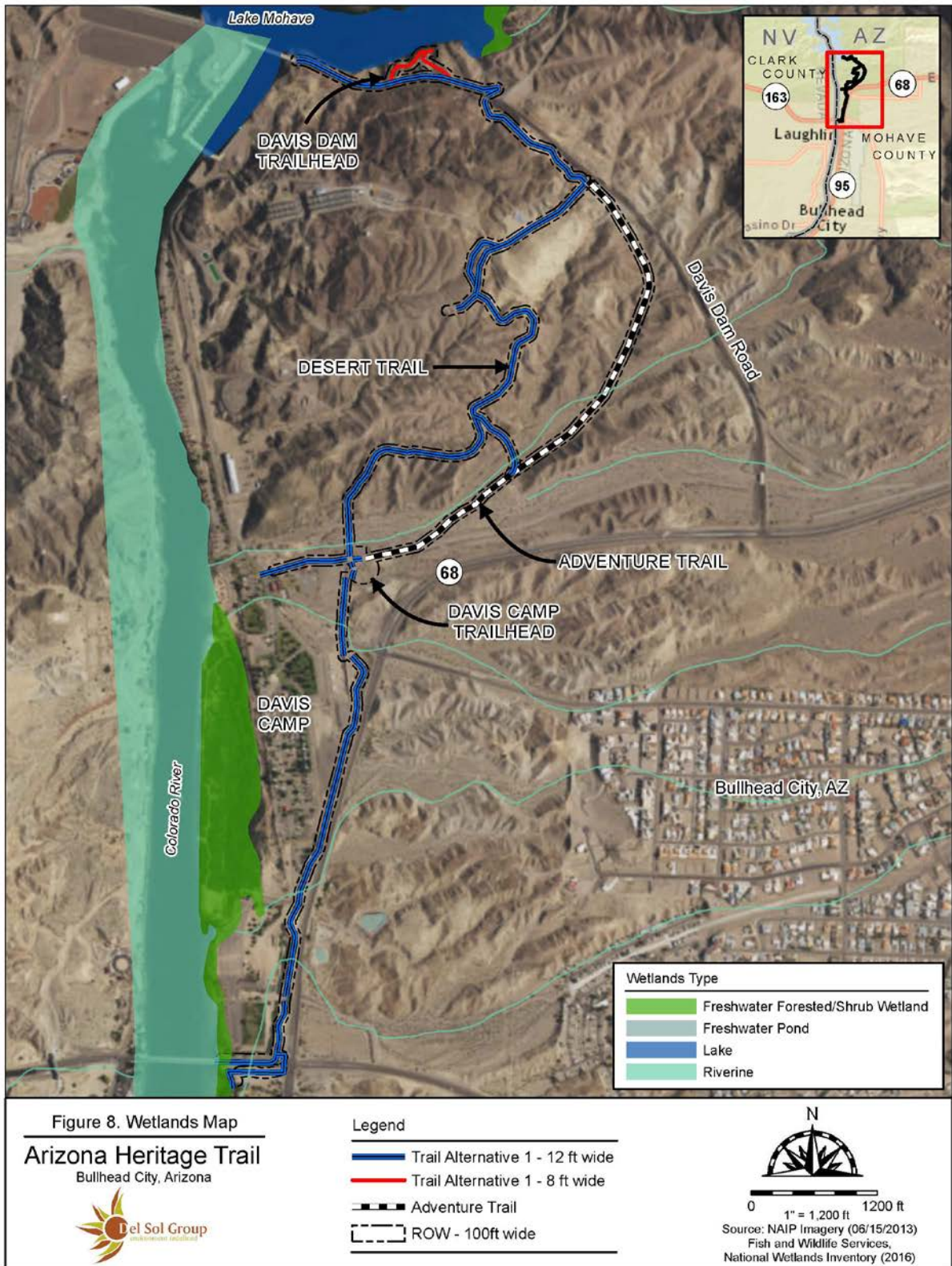


Figure 8- Wetlands

as cultural and biological resources and no adverse impacts from crossing the floodplain have been identified. Although these recreational trail facilities are within areas subject to flooding, proposed flood mitigation measures would reduce the risk to life or property. Structural flood protection would be designed to convey floods in excess of the 100-year floodplain. Flood warning signs and evacuation plans would also be implemented.

Impacts to floodplains for Alternative 2 would be the same as those described for Alternative 1.

Cumulative Impacts

Based on the conclusions documented in the Floodplain Statement of Findings, the Proposed Action, when considered with other past, present and reasonably foreseeable future actions affecting the project area would not result in measurable cumulative impacts to floodplains.

3.3.6 Hydrology and Water Quality

Clean Water Act

The Clean Water Act (CWA) (33 USC §1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality on federal lands. The objective of the CWA is to “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

Important sections of the CWA are as follows:

- Section 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 (Water Quality Certification) requires an applicant for any federal permit that proposes an activity, which may result in a discharge to water of the U.S. to obtain certification from the stat that the discharge will comply with other provisions of the Act.
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into water of the U.S.
- Section 404 establishes a permit program for the discharge of dredged or fill material into water of the U.S. This permit is jointly administered by the U.S. Corps and the U.S. Environmental Protection Agency (EPA).

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) (42 U.S.C. §300f et seq.) was established in 1974 to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards.

3.3.6.1 Affected Environment

Surface Water

The proposed project is located in the 14,459-square-mile Lower Colorado-Lower Gila Watershed (Hydrologic Unit Code [HUC] 15030101), which is defined from Hoover Dam at Lake Mead to the Mexico. Perennial water is limited to the Colorado mainstream and its

reservoirs (ADEQ 2012b). The flows of the Colorado River are regulated by releases from Hoover and Davis Dams. In calendar year 2014, approximately 9,645,000 acre-feet of water was released from Davis Dam to the reach of the river in the project area (Reclamation 2015).

Lake Mohave, which lies behind Davis Dam, has 27,800 acres of surface water and over 257 miles of shoreline (NPS 1999). The lake was formed by Davis Dam which was completed in 1951. The dam is operated by Reclamation to regulate releases from Hoover Dam and to generate hydroelectric power. Lake Mohave is part of the Lake Mead NRA managed by the NPS (Amesbury et al 2010).

Other than the Colorado River, there is no perennial surface water flow in the project area. Several ephemeral washes flow from the Black Mountains westward across the project area and drain into the Colorado River.

The reach of the Colorado River below Hoover Dam to Lake Mohave is impaired or not attaining due to water quality exceedances for selenium. In 2008, selenium concentrations in this reach were detected at 2.8 micrograms per liter ($\mu\text{g/L}$), which exceeded the ADEQ Water Quality Standard of 2 $\mu\text{g/L}$ (ADEQ 2012b, Amesbury 2012).

Groundwater

The very northern portion of the proposed trail system located between Davis Dam Road and Lake Mohave is located in the Lake Mohave Groundwater Basin, while the portion of the trail system south of Davis Dam Road is located in the Lake Havasu Groundwater Basin (ADEQ 2009).

The Lake Mohave Basin is a narrow basin adjacent to the Colorado River. The principal water-bearing formations are alluvial sand, silt and gravel deposits adjacent to the lake and the river. Groundwater flow direction is from north to south. A granite ridge extends across the Colorado River near Davis Dam, restricting recharge from the lake to the south (ADEQ 2009). There are no wells recorded in the Lake Mohave Basin in the project area (ADEQ 2016).

The Lake Havasu Basin is a relatively small basin with its western boundary defined by the Colorado River. Extensive areas of the basin are covered by bedrock. Basin fill, consisting of sand, silt and gravel overlie the bedrock. Most wells in the basin penetrate the upper 100- to 200- feet of the basin fill. There is a direct hydraulic connection between the basin fill and the Colorado River, with groundwater occurrence and movement near the river controlled by the elevation of Lake Havasu. The lake elevation is relatively constant with a maximum fluctuation of approximately five feet during the period 1990 to 2008. Groundwater flow in this basin is north to south. Water withdrawals from wells are primarily pursuant to Colorado River entitlements. Median well yields are relatively high at 1,500 GPM (ADEQ 2009).

There are four wells located in the southern portion of the proposed trail system in Section 30 (Figure 1). A summary of the well details is provided in Table 3.

Table 3: Summary of Well Data

Well ID	Owner	Date Installed	Well Use	Total Depth (feet)	Depth to Water (feet)
55-620581	EPCOR Water AZ (Bullhead City PWS)	1973	Irrigation/ Domestic	236	164
55-544186	Mohave County Parks (Davis Camp)	1994	Domestic	400	186
55-512128	Mohave County Parks (Davis Camp)	1986	Irrigation/ Restrooms	150	200
55-592258	Ridgeview Resorts	2002	Domestic	240	152

Source: ADWR 2016

Results of the 2015 Water Quality Report for Bullhead City (EPCOR 2015) indicate that no water quality parameters were detected above drinking water standards in any of the six wells that comprise the Public Water System (PWS) AZ0408032 that serves most of the Bullhead city area.

Potable water available at the proposed Davis Camp Trailhead would be provided by the existing Davis Camp PWS, which has a yield capacity of 1,000 gallons per day coupled with a 20,000-gallon above-ground storage tank (ADEQ 2016) that can readily supply the relatively small volumes of potable water to the trailhead.

3.3.6.2 Environmental Consequences

No Action Alternative

Under the No-Action Alternative, no change to hydrology and water quality would occur from the Project as it would not be constructed.

Alternative 1 (Proposed Action) and Alternative 2

Impacts to surface and groundwater are expected to be minimal to negligible for the Proposed Action. Surface water impacts would be minimal due to the implementation of SWPPP BMPs and adherence to protocols outline in the project's CWA permits during construction of the Proposed Action. Impacts to groundwater would be minimal. There would be no impacts to surface water or groundwater quality from the vault toilets since they will be designed with secure underground containment.

Impacts to hydrologic resources for Alternative 2 would be similar to those described for Alternative 1. Alternative 2 would follow a large wash, but is not expected to cause additional runoff or erosion as the trail would be natural with minimal structures within the wash.

Cumulative Impacts

The Proposed Action would not result in cumulative impacts to surface water or groundwater since the Proposed Action would not change existing hydrologic resources in any measureable way.

3.3.7 Soil

3.3.7.1 Affected Environment

The Huevi, very gravelly loam soils, comprise approximately 41.4 percent of the soils in the project area, while the Carrizo-Riverwash soils comprise approximately 37.5 percent. The Huevi soils consist of 65 percent gravel derived from alluvium on fan terraces with a 10- to 40-percent slope (USDA 2006 and 2016). Carrizo-Riverwash soils consist of 70 percent gravel derived from alluvium on flood plains with a 3- to 8-percent slope (USDA 2006 and 2016).

There are no Unique or Prime Farmland soils in the project area (USDA 2006 and 2016).

3.3.7.2 Environmental Consequences

No Action Alternative

Under the No-Action Alternative, no change to soil would occur as the project would not be constructed. Soil in the project area would continue to be affected by unauthorized off-road traffic in the project area. These impacts are expected to continue to be localized, long-term, minor, and adverse.

Alternative 1 (Proposed Action) and Alternative 2

Impacts to soil are expected to be minimal to negligible for the Proposed Action since the trail system would be constructed in areas already disturbed, and on soils that are 70 percent gravel. Soils in the proposed trail corridor will be compacted, and in some places, covered with asphalt. However, the Proposed Action would have a net benefit to soils by paving sections of the trail that are being eroded by wind and water, and also by decreasing unauthorized off-road travel in the project area due to security gates and other trail facilities (landscaping, etc.).

Impacts to soil for Alternative 2 would be the same as for those described for Alternative 1.

Cumulative Impacts

The Proposed Action, when considered with other past, present and reasonably foreseeable future actions affecting the project area would have minimal cumulative impacts to soil since the Proposed Action would be constructed in areas already disturbed and impacts would not be measureable.

3.3.8 Socioeconomics and Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority and low-income populations.

In accordance with CEQ guidance, minority populations should be identified if the minority population in the project area “exceeds 50 percent” or if the percentage of minority population in the project area is meaningfully greater than the “minority population percentage in the general population or other appropriate unit of analysis” (CEQ 1997). Communities should be

identified as “low income” based on the annual statistical poverty thresholds from the U.S. Census Bureau (CEQ 1997).

3.3.8.1 Affected Environment

Bullhead City is located directly across the Colorado River from Laughlin, Nevada, approximately 60 miles north of Lake Havasu City, and approximately 40 miles west of Kingman. The City’s central location attracts residents and visitors from Arizona, California, and Nevada.

Much of the new development that has occurred in Bullhead City has occurred since 2000 (HDR 2011). The City has an estimated resident population base of 40,088 and a winter population of 46,414. The City’s growth has been built upon retirement housing, commercial development, and tourism relationship with Laughlin. Laughlin’s active gaming and hospitality industry has been a catalyst for Bullhead City’s economic growth. At the same time, Bullhead City provides services and housing for Laughlin visitors. Physical and economic proximity requires Bullhead City and Laughlin to work closely to take full advantage of the benefits of cooperation. As a result, a mutually beneficial relationship has developed between the two jurisdictions (Bullhead City 2016).

Data on minority populations and poverty in the project area was reviewed to assure compliance with the EO 12898. Population characteristics for the various racial and ethnic categories for Mohave County, Bullhead City, and the two Census Tracts in the Project area are summarized in Table 4.

Table 4: Summary of Population and Poverty Percentages

Minority	Mohave County	Bullhead City	Census Tract 9514.01	Census Tract 9514.02
White	90.3	89.0	91.1	90.4
Hispanic or Latino	15.5	21.4	18.6	15.9
Black or African American	1.1	1.6	4.1	1.6
American Indian or Alaskan Native	1.9	1.0	1.1	0.9
Asian	1.9	1.5	0.7	1.7
Native Hawaiian or Other Pacific Islander	0.2	0	0	0
Some other Race	2.9	3.9	0.2	3.1
More than One Race	3.5	3.5	2.7	4.6
Individuals below Poverty Level	19.9	18.6	23.6	22.8

Source: U.S. Census Bureau, 2010

U.S. Department of the Census data on minority populations and poverty for the two Census Tracts was compared to the same data for Mohave County and Bullhead City (USCB 2016). Minority populations in the two Census Tracts did not exceed 50 percent, so did not meet the thresholds identified for Environmental Justice analysis. The percent of individuals below poverty levels in the Census Tracts were compared to those for Mohave County and Bullhead City. The poverty levels in the Census Tracts were higher than those for Mohave County and Bullhead City (USCB 2010).

The economy in Bullhead City is strongly based on tourism due to the City's proximity to the Colorado River, the Lakes Mead, Mohave, and Havasu; and legalized gambling in Nevada and on nearby tribal lands. Businesses include hotels/motels, restaurants, supermarkets, real estate sales, gas stations, and other retailers.

The arts, entertainment, recreation, accommodation, and food services industry accounts for 37.4 percent of Bullhead City's employed civilian population, while educational, health and social services account for 18.5 percent, and retail trade accounts for another 12.4 percent. Of Bullhead City's population aged 16 and older, 15,566 (38.8 percent) are currently in the labor force. The unemployment rate in Bullhead City is currently 8.8 percent compared to 5.2 percent for the state of Arizona (AZDA 2016).

3.3.8.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative no change to existing socioeconomic conditions would occur due to the project.

Alternative 1 (Proposed Action) and Alternative 2

The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority and low-income populations. A minority population meeting the threshold identified for Environmental Justice analysis was not identified in the Project area. The poverty levels in the Census Tracts evaluated were higher than those for Mohave County and Bullhead City. Disproportionate impacts to these individuals were not identified since there would be no high and adverse human health or environmental impacts from the Project. There would be a beneficial impact to low-income populations as the trail would provide free recreational opportunities and easy access to Lake Mohave, Laughlin, and Bullhead City.

The Proposed Action could benefit the Project area's socioeconomic conditions. Some beneficial short-term socioeconomic impacts would result from construction worker spending during the proposed 9-month construction period if construction workers would come from outside the immediate area. If workers came from outside the immediate area, the demand for short-term temporary housing to accommodate them would contribute to the local economy, but would not result in long-term growth inducement. Because the work force is expected to be small (about a maximum of 15), with no permanent migration to the area, negative effects are not expected for such public services as law enforcement or fire protection.

In sum, no negative impacts to socioeconomic resources would result from construction, operation, and maintenance of the Proposed Action. Positive impacts as a result of the Proposed Action would include increased recreational opportunities shared between Laughlin and Bullhead City, and increased access to Laughlin and Bullhead City businesses and amenities.

Impacts to socioeconomic conditions for Alternative 2 would be similar to those described for Alternative 1.

Cumulative Impacts

The Proposed Action, when considered with other past, present and reasonably foreseeable future actions affecting the project area would result in increased recreational opportunities

shared between Laughlin and Bullhead City, and increased access to Laughlin and Bullhead City businesses and amenities thereby increasing the economic benefits for both cities.

The construction of the proposed kayak launches on the proposed trail would tie into the proposed Mohave Water Trail from Lake Mohave. This proposed link to the water trail will provide additional beneficial recreational and economic benefits to both Laughlin and Bullhead City.

The proposed Arizona Heritage Trail System represents a long-term, beneficial impact with regard to socioeconomic conditions throughout the project area.

3.3.9 Recreation

3.3.9.1 Affected Environment

The Bullhead City area provides a range of recreational activities for sports and outdoor enthusiasts. The beautiful Colorado River and Lake Mohave, the Black and Newberry Mountains, the striking scenery and warm desert climate offer many opportunities for recreation year-round in the project area. There are numerous federal, state, county and city parks in the project vicinity; boating and fishing access to the river and lake; cultural sites; and several golf courses (TSP 2016).

The Colorado River Heritage Greenway Park and Trails in Laughlin was dedicated on July 27, 2012 and consists of nine miles of trails in the Laughlin area for bicyclists, pedestrians and equestrian riders. It includes expansion of the Laughlin Riverwalk, fully developed restrooms and trailheads, picnic sites, shade shelters, fishing piers, and a highway pedestrian bridge overpass and underpass providing access to the Colorado River. Visitors of all abilities can enjoy the trails and accessible fishing areas. Recreational activities include walking, hiking, cycling, horseback riding, fishing, picnicking, bird watching, children's play area, and splash pad among many other recreational opportunities.

3.3.9.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative no change to existing recreational resources would occur. The proposed Heritage Trail would not be constructed, and the urban trail experience linking Laughlin and Bullhead City would not be constructed.

Alternative 1 (Proposed Action) and Alternative 2

The Colorado River is the premier open space and visual amenity for the project area, and a number of recreational areas are located adjacent to it. The proposed Heritage Trail System would link a national recreation area, a County park, three City parks, a nature center (Bullhead City 2016). The proposed Heritage Trail System would connect to the existing Laughlin Regional Heritage Greenway Trail project, which extends from the west side of Davis Dam on the north to Laughlin Civic Drive on the south as well as a kayak launch to provide a portage opportunity at Davis Dam on Lake Mohave. The completed trail system would provide an urban greenway that would provide residents and visitors with an educational, recreational and scenic experience. The Proposed Action would have a long-term, beneficial impact to the project area.

Alternative 2 would not provide as diverse a recreation experience as Alternative 1 since it would follow a wash for much of the first half of its route. In contrast, Alternative 1 would offer either a ridgeline or wash route

Cumulative Impacts

The Proposed Action, when considered with other past, present and reasonably foreseeable future actions affecting the project area would result in a net beneficial cumulative impact to recreational resources. In the project vicinity, the Black Canyon Water Trail, which starts at the base of Hoover Dam and extends to Eldorado Canyon and is designated a National Water Trail. A future project includes the proposed Mohave Water Trail, which would begin at the end of the Black Water Trail would extend approximately 37 miles along both the Arizona and the Nevada shorelines of Lake Mohave to Davis Dam, and along two miles of the Colorado River below Davis Dam for a total length of 76 miles. The Trail would provide access to 190 miles of shoreline and coves; beautiful sandy beaches; camp grounds; resorts; and areas of high scenic quality and geological interest.

4.0 Coordination and Consultation

4.1 Agencies Consulted

Federal

Bureau of Land Management
National Park Service, Lake Mead National Recreation Area
US Army Corps of Engineers
US Fish and Wildlife Service, Arizona Ecological Services Office
Western Area Power Administration, Desert Southwest Region

State

Arizona Department of Transportation
Arizona Game and Fish Department
Arizona State Parks, State Historic Preservation Office
Nevada Department of Transportation

Tribal

Chemehuevi Indian Tribe
Colorado River Indian Tribes
Fort Mohave Indian Tribe
Hualapai Tribe
Quechan Tribe

County

Clark County
Clark County- Town of Laughlin
Clark County Parks and Recreation
Mohave County

City

Bullhead City

Organizations

Bullhead Area Chamber of Commerce
Laughlin Chamber of Commerce
Laughlin-Colorado River Heritage Greenway Trails Partnership
Laughlin Visitor's Bureau, Las Vegas Convention and Visitor's Authority
Unisource Energy Services
Heritage Trail System Users Group

4.2 National Historic Preservation Act Consultation

Reclamation is currently conducting a consultation with the Arizona State Historic Preservation Officer (SHPO) under Section 106 of the NHPA. As part of the Section 106 of the NHPA consultation, Reclamation is also consulting with the Fort Mojave Indian Tribe,

the Hualapai Tribe, the Colorado River Indian Tribe, the Chemehuevi Indian Tribe, and the Quechan Tribe.

4.3 Endangered Species Act Consultation

An informal consultation will be conducted with the U.S. Fish and Wildlife Service (USFWS) for bonytail chub and razorback sucker.

4.4 Scoping/Public Involvement

Reclamation distributed scoping letters to interested agencies, Tribes, organizations, and individuals about the Proposed Action. The primary purpose of the letters was to inform known stakeholders about the Project and to solicit their input regarding the Project alternatives and other issues to be addressed in the EA. These efforts were carried out pursuant to the “scoping process” as defined by CEQ’s regulations implementing NEPA.

Issues and concerns identified during the scoping process are listed below, and have been considered in this EA.

Arizona Department of Transportation

- If trail construction access is from ADOT ROW, an ADOT encroachment permit would be required.
- NVDOT plans to widen the Laughlin-Bullhead City Bridge. NVDOT and ADOT plan to build a roundabout on each side of the bridge in 2 to 3 years.

Bullhead City Chamber of Commerce

- The Chamber Board of Directors would like to convey their strong support for the project.
- The expansion of the trail system in Mohave County between the Colorado River and City of Bullhead would be great addition to the attractiveness of the area and would provide a much needed resource for people wishing to explore the river shores and exercise.
- The trail system would provide access to Lake Mohave and recreational sites on the Arizona side of river, and is highly encouraged by this organization.
- This extended trail system would connect and loop the existing trail on the Nevada side and would connect Bullhead City with our neighboring city of Laughlin. This is a very exciting project and representatives of the hundreds of Bullhead City, Fort Mohave, and Mohave Valley businesses look forward to the final, approved project.

Clark County

- The Project will be a benefit to outdoor recreation for the public in the southern Nevada area, and they think it is a great idea to connect to the Laughlin Colorado River Greenway Heritage Trail system to Bullhead City.
- The only impact this may cause is positive since it will connect more people to the trails on the Nevada side.

Mohave County

- The Mohave County Board of Supervisors, at their May 2, 2016 meeting, voted unanimously to accept Reclamation's invitation to act as a cooperating agency in the NEPA process for the Proposed Arizona Heritage Trail System.

National Park Service, Lake Mead National Recreation Area

- Accepts invitation by Reclamation to be a cooperating agency on the EA.

Nevada Department of Transportation

- NVDOT is in preliminary stages of developing improvements to the Laughlin-Bullhead City Bridge where the proposed project looks to tie on the Arizona side. The improvements would be in cooperation with the FHWA Nevada Division, the FHWA Arizona Division, and ADOT.
- They are about 18 months from initiating the EA for the bridge improvements.

UNS Electric, Inc.

- They would like to remove an old transmission line in the area of the proposed trail as part of the trail construction activities.

US Army Corps of Engineers

- Indicates that the Project may require a CWA permit.

5.0 References

- Agrawal, P. 2016. Grading and Fugitive Dust Plans for Projects within Bullhead City Limits. Personal Communication between Mr. Pawan Agrawal (Bullhead City Air Quality) and Krista Dearing (Del Sol Group NEPA Planner). October 17, 2016.
- America Factfinder. 2016. *Poverty Status in the Past 12 Months for Census Tracts 9514.01 and 9514.02*. <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed June 9, 2016.
- Amesbury, S.S., Burnett, J., Chen, H., Guertin, D.P., Johns, R., Krecek, T., Spouse, T., Suummerset, J., Uhlman, K., and Westfall, E. 2010. *NEMO Watershed-Based Plan Colorado-Lower Gila Watershed*. http://legacy.azdeq.gov/environ/water/watershed/download/nemo-colorado_lg-wp.pdf. Accessed June 16, 2016.
- Arizona Commerce Authority (AZCA). 2016. *Community Profile for Bullhead City, AZ*. <http://www.azcommerce.com/a/profiles/ViewProfile/37/Bullhead+City>. Accessed June 19, 2016.
- Arizona Department of Environmental Quality (ADEQ). 2012. *Bullhead City Moderate Area PM₁₀ Maintenance Plan and Request for Redesignation to Attainment*. February 2012.
- ADEQ. 2009. *Arizona Water Atlas Volume 4 Upper Colorado River Planning Area*. July 2009.
- ADEQ. 2012a. *2012 Update of the Limited Maintenance Plan for the Bullhead City*. May 2012.
- ADEQ. 2012b. *Colorado-Lower Gila Watershed Assessments*. Available at: <http://legacy.azdeq.gov/environ/water/assessment/download/lgw.pdf>. Accessed June 12, 2016.
- ADEQ. 2016. *Bullhead City Air Monitor Data*. Available at: <http://gisweb.azdeq.gov/arcgis/emaps/?topic=monitors>. Accessed June 6, 2016.
- Arizona Department of Water Resources (ADWR). 2016. *Well Registry Database*. Available at: <https://gisweb.azwater.gov/WellRegistry/SearchWellReg.aspx>. Accessed June 12, 2016.
- Arizona Game and Fish Department (AGFD). 2001. *Bonytail chub (Gila elegans)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 pp.
- AGFD. 2002a. *Razorback sucker (Gila elegans)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD. 2002b. *Roundtail chub (Gila robusta)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD. 2006. *Yuma clapper rail (Rallus longirostris yumanensis)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD. 2011. *Yellow-Billed Cuckoo (Coccyzus americanus)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.

- AGFD. 2012. *Northern Mexican garter snake (Thamnophis eques megalops)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department of Phoenix, AZ.
- AGFD. 2014. *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects*. Revised September 22, 2014.
- AGFD. 2015. *Sonoran desert tortoise (Gopherus morafkai)*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department of Phoenix, AZ.
- AGFD. 2016. *Arizona Online Environmental Review Tool*. Available at: <https://azhgis2.esri.com/> Accessed March 3, 2016.
- Arizona Interagency Desert Tortoise Team (AIDTT). 2008. *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat*. June 2008.
- Boyles, M. 2016. *AZ Trails Past, Present and Reasonably Foreseeable Future Projects*. Personal Communication between Mr. Michael Boyles (Lake Mead National Recreation Area Acting Chief, Resource Management and Visitor Services) and Krista Dearing (Del Sol Group NEPA Planner). May 2016.
- Bradford, D.F., J.R. Jaeger, and R.D. Jennings. 2004. *Population status and distribution of a decimated amphibian, the relict leopard frog (Rana onca)*. *Southwestern Naturalist* 49(2):218-228.
- Brown, David E. 1994. *Biotic Communities of the Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.
- Bullhead City. 2016. *Bullhead City General Plan*. May 2016.
- Bureau of Land Management (BLM). 1986. *Manual H-8410-1 Visual Resource Inventory*. January 17, 1986.
- BLM. 2006. *Lake Havasu Field Office Proposed Resource Management Plan and Final Environmental Impact Statement*. September 2006.
- Council on Environmental Quality (CEQ). 1997. *Environmental Justice Guidance Under the National Environmental Policy Act*. December 10, 1997.
- Del Sol Group (DSG). 2016. *Arizona Heritage Trail Biological Evaluation*. Prepared for Bureau of Reclamation and National Park Service. April 2016.
- Department of Energy (DOE). 2011. *Final Environmental Assessment Davis-Kingman Tap 69-kV Transmission Line Rebuild, Mohave County, AZ*. DOE/EA-1665. In cooperation with BLM Kingman Field Office, and Bureau of Reclamation Lower Colorado Regional Office.
- EPCOR Water (EPCOR). 2015. *Your 2015 Water Quality Report, Bullhead City*. Available at: <http://www.epcor.com/water/wq/wq-bullhead-city-2015.pdf>. Accessed June 18, 2016.
- Federal Emergency Management Agency (FEMA). 2015. *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*. October 2015.
- FEMA. 2016. *Flood Insurance Rate Maps, Panels 04015C4460G and 04015C4466G*. Effective November 18, 2009.

- Federal Highway Administration (FHWA). 2010. *Environmental Assessment: Laughlin-Bullhead City Bridge Project, Needles Highway Laughlin, Nevada to STATE ROUTE 95 in Bullhead City, Arizona, FHWA-NV-EA 10.02, DE-PLH-0003(108), EA: 73360*. In cooperation with Nevada Department of Transportation, Arizona Department of Transportation, Regional Transportation Commission of Southern Nevada, U.S. Coast Guard, and U.S. Army Corps of Engineers.
- HDR, Inc. 2011. *Bullhead City Transportation Plan, Task Assignment MPD 25-09*. May 2011.
- Herrick, J. 2016. *Arizona Heritage Trail Construction Equipment List*. Personal Communication between Mr. Jeff Herrick, P.E. (VTN) and Ms. Krista Dearing (Del Sol Group NEPA Planner). June 6.
- Intergovernmental Panel on Climate Change (IPCC). 2015. *Climate Change 2014: Synthesis Report*. Revised ed. of initial publication dated November 1, 2014.
- Martin B. D. 2016a. *ATV Use in the Proposed Trail Area*. Personal Communication between Mr. Bill Martin (BLM Regional Outdoor Recreation Planner) and Ms. Krista Dearing (Del Sol Group NEPA Planner). June 2016.
- Martin B. D. 2016b. *Laughlin-Bullhead City Bridge; RFQ information*. Personal Communication between Mr. Bill Martin (BLM Regional Outdoor Recreation Planner) and Ms. Krista Dearing (Del Sol Group NEPA Planner). May 2016.
- Martin B.D. 2016c. *Proposed Mohave Water Trail*. Personal Communication between Mr. Bill Martin (BLM Regional Outdoor Recreation Planner) and Ms. Krista Dearing (Del Sol Group NEPA Planner). October 2016.
- National Park Service (NPS). 1989. *Final Environmental Impact Statement, Volume 1: General Management Plan and Alternatives, Lake Mead National Recreation Area, Arizona-Nevada*. FES-86-27.
- NPS. 1999. *Resource Management Plan and State of the Park Report, Lake Mead National Recreation Area*. December 1999.
- NPS. 2002. *Lake Mead National Recreation Area, Lake Management Plan Final Environmental Impact Statement*. December 2002.
- NPS. 2007. *Finding of No Significant Impact (FONSI), Environmental Compliance for Heritage Greenway Trails*. July 2007.
- NPS. 2011. *Technical Guidance on Assessing Impacts to Air Quality in NEPA and Planning Documents*. January 2011.
- NPS. 2014. *Lake Mead National Recreation Area, Arizona/Nevada, Resource Stewardship Strategy 2014*. November 2014.
- NPS. 2015. *Foundation Document, Lake Mead National Recreation Area, Arizona and Nevada*. September 2015.
- NewFields International, LLC (NewFields). 2007. *Final Environmental Assessment, Laughlin Regional Park and Regional Heritage Greenway Trails-North Reach*. April 2007.
- Phillips Consulting, LLC. 2003. *Colorado River Heritage Greenway Master Plan*. Prepared for Bullhead City and Colorado River Heritage Greenway and Trail Association.

- Ritter, G. 2016. *Sonoran Desert Tortoise Locations*. Personal Communication between Ginger Ritter (AGFD Project Evaluation Program Specialist) and Natalie Robb (Del Sol Group Senior Biologist). May 1, 2016.
- Statistical Research, Inc. (SRI) 2016. *Archaeological Survey of 86 Acres near Bullhead City, Mohave County, Arizona, Technical Report 16-36*. May 2016.
- Steinberger, T. 2016. *AZ Heritage Trail Request for Comment*. Scoping Letter from ADOT to Reclamation. April 2106.
- Town Square Publications (TSP). 2016. *Bullhead City Recreation and Parks*. Available at: <http://local.townsquarepublications.com/arizona/bullhead/recreation-and-parks.html>. Accessed June 19, 2016.
- U.S. Bureau of Reclamation (Reclamation). 1993. *Indian Trust Policy*. As amended.
- Reclamation. 2007. *Finding of No Significant Impact (FONSI), LC-06-019FONSI, Laughlin Regional Heritage Greenway Trails North Reach*.
- Reclamation. 2009. *Reclamation Manual LND P04, Recreation Program Management*. Revised August 17, 2011.
- Reclamation. 2015. *Colorado River Accounting and Water Use Report: Arizona, California, and Nevada, Calendar Year 2014*. May 2015.
- U.S. Census Bureau (USCB). 2010. *Quickfacts: Bullhead City, Arizona*. Available at: <http://www.census.gov/quickfacts/table/PST045215/0408220>. Accessed June 18, 2016.
- U. S. Department of Agriculture (USDA). 2006. *Soil Survey of Mohave County, Arizona, Southern Part*.
- USDA. 2015. *Field Guide for Managing Sahara Mustard in the Southwest*. TP-R3-16-32. February 2015.
- USDA. 2016. *Natural Resources Conservation Service, Web Soil Survey*. Available at: <http://websoilsurvey.nrcs.usda.gov/>. Accessed June 18, 2016.
- U. S. Fish and Wildlife Service (USFWS). 2009a. *Bonytail (Gila Elegans) General Species Information*. Southwest Region, Arizona Ecological Services Field Office.
- USFWS. 2009b. *California Least Tern (Sterna antillarum browni) General Species Information*. Southwest Region, Arizona Ecological Field Office.
- USFWS. 2014. *Northern Mexican Gartersnake (Thamnophis eques megalops) General Species Information*. Southwest Region, Arizona Ecological Field Office.
- USFWS. 2015. *News Release. Sonoran Desert Tortoise Does Not Warrant Endangered Species Protection*. Southwest Region, Arizona Ecological Field Office. October 5, 2015.
- USFWS. 2016. *National Wetlands Inventory Mapper*. Available at: <http://www.fws.gov/wetlands/Data/Mapper.html>. Accessed June 8, 2016.
- Young, C. E. 2016. *AZ Heritage Trail Request for Comment*. Scoping Letter from NVDOT to Reclamation. April 2016.
- WLB Group. 2009. *Davis Camp Park Master Plan*. Prepared for Mohave County Parks. September 2009.

6.0 List of Preparers and Contributors

Bureau of Reclamation (Lower Colorado Region)

Bill Martin	Regional Outdoor Recreation Planner
Faye Streier	NEPA Coordinator
Andrew Trouette	Biologist
James Kangas	Archaeologist

National Park Service (Lake Mead National Recreation Area)

Mike Boyles	Lands, Planning, and Compliance Specialist
-------------	--

Bullhead City

Janice Paul	City Manager Department, Administrative Analyst
-------------	---

VTN

Jeff Herrick	Professional Engineer
--------------	-----------------------

MLA Landscape Architecture

Bryan Kye Mask	Landscape Architect
----------------	---------------------

Del Sol Group

Noelle Sanders	Environmental Director
Krista Dearing	Project Manager
Natalie Robb	Biologist
Stephanie Sherwood	GIS Specialist

Woods Canyon Archaeological Consultants, Inc.

Kelly Mc Andrews	President
------------------	-----------

Statistical Research, Inc.

Dr. Eric Klucas	Principle Investigator/Director
Tucker Robinson	Staff Archaeologist

APPENDIX A: DRAFT FLOODPLAIN STATEMENT OF FINDINGS

ARIZONA HERITAGE TRAIL
ENVIRONMENTAL ASSESSMENT
LAKE MEAD NATIONAL RECREATION AREA

Recommended: _____
Superintendent Date
Lake Mead National Recreation Area

Certified for Technical Adequacy and Servicewide Consistency

Chief Date
Water Resources Division

Concurred: _____
Safety Officer Date
Pacific West Region

Approved: _____
Regional Director Date
Pacific West Region

INTRODUCTION

Executive Order (EO) 11988, *Floodplain Management* and EO 13690, *establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, require the National Park Service (NPS) and other Federal agencies to evaluate the likely impacts of actions in floodplains. Federal agencies are directed to “avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” The orders require Federal agencies to provide leadership and take action to:

- Reduce the risk of flood loss;
- Minimize the impact of floods on human safety, health and welfare; and
- Restore and preserve the natural and beneficial values served by floodplains.

NPS Director’s Order 77-2: *Floodplain Management* and the Procedural Manual 77-2: *Floodplain Management* provide NPS policies and procedures for complying with EO’s 11988 and 13690. The purpose of this Floodplain Statement of Findings (FSOF) is to present the rationale for the location of development of the proposed Arizona Heritage Trail in the floodplains, describe the level of risk associated with the sites and describe associated flood mitigation actions.

PROPOSED ACTION

The NPS and the Bureau of Reclamation are proposing the construction and operation and maintenance of the Arizona Heritage Trail system (Trail system) which would begin on the Arizona side of Davis Dam and end at the Laughlin/Bullhead City Bridge. The Trail system would include the Desert Trail, Spur Trails, and Adventure Trail and would be approximately 3.85 miles long, 12-foot wide with 2-foot shoulders occupying approximately 48 acres.

Features of the Trail system which would occur within the probable maximum floodplain are portions of the trail, culverts, and bridge abutments. Portions of the proposed hardened surface trails within the floodplain will have the outer edges thickened to a minimum of 12 inches to reduce potential effects of erosion. Where the proposed trail crosses small to medium natural washes and arroyos, pipe and box culverts will be installed as part of construction. In the major wash of the floodplain, a prefabricated lightweight steel truss bridge with concrete abutments will be constructed. The steel truss bridge will have a free span of 70 feet. The specific sizes and locations of the proposed culverts and bridge will be determined as part of the final design in accordance with City of Bullhead City and Mohave County design standards and United States Army Corps of Engineers permitting terms and conditions.

SITE AND FLOOD HAZARD DESCRIPTION

The proposed recreational trail sites in the drainage arroyos are surrounded by the intervening ridges between the drainage arroyos. Accordingly, there is limited, non-flood prone,

developable land that provides access from Bullhead City to Lake Mohave or to the Laughlin Bridge. As a result, portions of the proposed recreational trails are within the 100 year floodplain as well as the probable maximum floodplain.

All hydrologic data from the Mohave County Flood Control District is available at the NPS emergency dispatch center in Boulder City, Nevada.

TABLE A-1. SUMMARY OF PEAK RUNOFF
ARIZONA HERITAGE TRAIL

Wash/Channel	100-year Peak (cfs)	PMF Peak (cfs)
Davis Camp Access Wash	6,105	25,613

Hydrologic Data derived from City of Bullhead City
Tract 4042-1 Drainage Study Approved January 5, 2005.

JUSTIFICATION FOR THE USE OF FLOODPLAIN

There are no adequate developable trail routes flood- free areas near the Colorado River and Lake Mohave shoreline because of the nature of the terrain that is comprised of drainage arroyos and intervening ridges. Additionally, there are cultural resource and high voltage transmission lines in the vicinity that are to be avoided. The preferred alternative for the Arizona Heritage Trail concept plans includes actions necessary for the preservation of public non-motorized recreational access to Lake Mohave, improvements to visitor use and experience, and to protect historic resources. Therefore, although the facilities must be located within the floodplains, the protection of people and property is a major objective for the plans. Improvements will be designed and constructed to the latest flood control adopted by the City of Bullhead City and Mohave County, Arizona and with consideration of the hydrologic data in Table A-1.

FLOOD MITIGATION MEASURES

The preferred alternative for each developed area would minimize potential hazards to human life and property within the probable maximum floodplains through a combination of structural and nonstructural measures. Steel Truss pedestrian bridges, reinforced concrete box culverts and drainage pipes would be constructed to convey 100-year flows below the proposed trail

alignments. Additionally, the developed parking areas and restroom structures at Davis Camp and Davis Dam will be located outside and above the 100 year floodplain and would be designed in accordance with the Federal Flood Risk Management Standard established in EO 13690. Flood warning signs would be posted at all parking areas, trailheads and at regular intervals along the proposed trail alignments.

SUMMARY

The National Park Service has determined that there is no practicable alternative to routing the Arizona Heritage Trail proposed alignments without crossing the floodplain. This determination was based on the decision to continue to provide primary visitors non-motorized trails routes near Lake Mohave that provide lake access from Davis Camp day-use facilities.

There would be no impacts to natural floodplain values. The developments within the floodplain would be minimal. The area has been evaluated for potential impacts to natural resources such as cultural and biological resources and no adverse impacts from crossing the floodplain have been identified.

Although these recreational trail facilities are within areas subject to flooding, the proposed flood mitigation measures would reduce the risk to life or property. Structural flood protection would be designed to convey floods in excess of the 100-year floodplain. Flood warning signs and evacuation plans would also be implemented.

Arizona Heritage Trail System Draft Environmental Assessment

Appendix B

Photographs



Photograph 1: KOP 1 looking north at intersection of Davis Dam Road and the Katherine Landing access road.



Photograph 2: KOP 2 looking south from near entrance of Davis Camp.



Photograph 3: KOP 3 looking south at Laughlin on west side of State Route 68.