



# **Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation**

**Section 3.7, Archaeological, Historical, Architectural, Cultural Resources**

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## 1 3.7 Archaeological, Historical, Architectural, Cultural Resources

2 The resources addressed in this section are commonly referred to as cultural or heritage  
3 resources. The analysis considered three categories of cultural resources: (1) prehistoric and  
4 historic archaeological sites and historic structures, (2) historic districts and buildings, and  
5 (3) traditional cultural properties that can include a variety of resources and places significant to  
6 Tribes. The information presented in this section is more fully documented in Class I cultural  
7 resource overview reports prepared to support this Draft Tier 1 Environmental Impact Statement  
8 and Preliminary Section 4(f) Evaluation (Draft Tier 1 EIS) (Mitchell et al. 2018; Ryden et al.  
9 2018).

### 10 3.7.1 Regulatory Setting

11 Tier 1 cultural resource studies addressed the National Environmental Policy Act (NEPA)  
12 (42 United States Code [USC] §§ 4321-4370h) and initiated compliance with the National Historic  
13 Preservation Act (NHPA) (54 USC § 300101 et seq.). NEPA established a policy for the federal  
14 government to use practicable means to preserve important historic and cultural aspects of our  
15 national heritage. Pursuant to NEPA, federal agencies assess how their actions “may adversely  
16 affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National  
17 Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific,  
18 cultural, or historical resources” (40 Code of Federal Regulations [CFR] § 1508.27[b][8]).

19 Pursuant to NHPA Section 106, federal agencies consider, in consultation with the Advisory  
20 Council on Historic Preservation (ACHP), State Historic Preservation Offices (SHPO), Tribal  
21 Historic Preservation Offices, and other interested parties, the effects of agency undertakings on  
22 historic properties, and avoid, minimize, or mitigate any adverse effects. Historic properties are  
23 defined as prehistoric or historic districts, sites, buildings, structures, and objects listed in or  
24 eligible for listing in the NRHP. ACHP regulations that implement NHPA Section 106 (*Protection*  
25 *of Historic Properties*, 36 CFR § 800) define a process for federal agencies to consider how  
26 undertakings may affect historic properties. Federal Highway Administration (FHWA) and  
27 Arizona Department of Transportation (ADOT) pursued compliance with NHPA Section 106  
28 concurrently with NEPA studies, as recommended by a Council on Environmental Quality and  
29 ACHP (2013) handbook.

30 To be eligible for the NRHP, properties must be 50 years old (unless they have special historic  
31 significance) and have national, state, or local significance in American history, architecture,  
32 archaeology, engineering, or culture (36 CFR § 60). Properties also must possess integrity of  
33 location, design, setting, materials, workmanship, feeling, and association to convey their  
34 historic values, and meet at least one of four criteria:

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

1 In accordance with the guidance of National Register Bulletin 38, *Guidelines for Evaluating and*  
2 *Documenting Traditional Cultural Properties*, FHWA and ADOT consulted and continue to  
3 consult with Tribes to consider potential impacts on traditional cultural properties. Traditional  
4 cultural properties have associations with cultural practices or beliefs of a living community that  
5 (a) are rooted in that community's history, and (b) are important in maintaining the continuing  
6 cultural identity of the community. FHWA and ADOT Tribal consultations also are addressing  
7 policy established by the American Indian Religious Freedom Act of 1978 (42 USC § 1996) to  
8 protect and preserve for American Indians their inherent right of freedom to believe, express,  
9 and exercise their traditional religions, including but not limited to access to sites, use and  
10 possession of sacred objects, and freedom to worship through ceremonials and traditional rites.

11 The Tier 1 cultural resource studies support ADOT compliance with the State Historic  
12 Preservation Act of 1982 (Arizona Revised Statutes 41-861 through 41-864), which requires  
13 state agencies to consult SHPO about activities that could alter or demolish properties listed in  
14 or eligible for the Arizona Register of Historic Places. Because criteria for the Arizona Register  
15 of Historic Places and NRHP are identical, NHPA and State Historic Preservation Act  
16 requirements are addressed simultaneously.

17 The Arizona Antiquities Act (Arizona Revised Statutes 41-841 through 41-847) directs persons  
18 in charge of activities on lands owned or controlled by state agencies and institutions, counties,  
19 and municipal corporations to report the discovery of archaeological, historical, or paleontological  
20 sites or objects and human remains at least 50 years old, to the Arizona State Museum. Studies  
21 of such resources must be authorized by Arizona Antiquities Act permits issued by the Museum.  
22 ADOT will continue to address the Arizona Antiquities Act during planning of Tier 2 projects.

### 23 **3.7.2 Methodology**

24 Because the planning of Interstate 11 (I-11) is phased, FHWA and ADOT adopted a phased  
25 approach to inventory, evaluate, and assess effects of I-11 on cultural resources between  
26 Nogales and Wickenburg. Studies to support the Tier 1 level of conceptual planning involved  
27 FHWA and ADOT consultation with agencies, Tribes, and other interested parties, as well as  
28 collection and analysis of data compiled by prior archaeological and historical studies. Surveys  
29 to identify and inventory cultural resources, evaluate their NRHP eligibility, and assess and  
30 address effects will be undertaken during NEPA studies for individual Tier 2 projects.

#### 31 **3.7.2.1 Area of Potential Effects and Project Area**

32 NHPA Section 106 regulations define the area of potential effects (APE) as the area where a  
33 federal undertaking could directly or indirectly alter the character or use of NRHP-listed or  
34 eligible properties. The APE is influenced by the scale and nature of an undertaking and may be  
35 different for different types of effects caused by an undertaking. The APE for direct impacts of  
36 highway projects may include the right-of-way (ROW) and temporary construction easements  
37 that could be disturbed by construction. Indirect effects are caused by an action and are later in  
38 time or farther removed in distance, but are still reasonably foreseeable (40 CFR § 1508.8).  
39 Delineating APEs for indirect effects of highway projects often involves consideration of visual  
40 changes, increased noise, and enhanced vehicular access that could increase inadvertent  
41 damage or vandalism. New highways also can induce development that could indirectly affect  
42 cultural resources beyond ROWs. See Section 3.2, Indirect and Cumulative Effects, for  
43 discussion of indirect effects of induced development and cumulative effects.



1 The three 2,000-foot-wide Build Corridor Alternatives were considered to be the I-11 Corridor  
2 Study Area (Study Area) and APE for the Tier 1 analysis that was conducted to provide a basis  
3 for generally characterizing and comparing potential direct and indirect impacts on cultural  
4 resources (see **Figures 2-8, 2-9, and 2-10**). Conceptual engineering determined that the typical  
5 cross section for new highways that would be developed for I-11 would be approximately  
6 400 feet wide, but specific footprints for new highways will not be identified until subsequent Tier 2  
7 projects are planned and designed. A specific APE would be defined and a determination of  
8 effect would be made in conjunction with NEPA studies for each Tier 2 project.

### 9 **3.7.2.2 Consultation**

10 Pursuant to NHPA Section 106, federal agencies seek comments from Consulting Parties  
11 based on their special knowledge of, concern for, or mandated regulatory role relative to historic  
12 properties (36 CFR § 800). In addition to federal agencies with NHPA Section 106  
13 responsibilities, the parties entitled to participate as Section 106 Consulting Parties include:

- 14 • ACHP
- 15 • SHPOs
- 16 • Federally recognized Tribes/Tribal Historic Preservation Officers
- 17 • Local governments
- 18 • Applicants for federal assistance, permits, licenses, and other approvals

19 Other individuals and organizations with a demonstrated interest in a project also may  
20 participate in the Section 106 process as Consulting Parties due to the nature of their legal or  
21 economic relationship to the undertaking or affected properties, or their concern with the  
22 undertaking's effects on historic properties. Their participation is subject to approval by FHWA,  
23 as the responsible federal agency.

24 On March 21, 2016, prior to issuing a Notice of Intent to prepare an EIS, FHWA and ADOT  
25 provided early notifications of I-11 to Tribes with reservations in the vicinity of the Corridor  
26 Options and offered to meet with them. Six early outreach meetings or telephone calls were  
27 held with five Tribes. On July 5, 2016, during scoping of the Draft Tier 1 EIS, FHWA initiated  
28 Section 106 consultations with the SHPO and invited agencies and Tribes to participate.  
29 Subsequently, FHWA identified other parties as having an interest in I-11 and invited them to  
30 participate in the consultations. FHWA invited 91 agencies, Tribes, and organizations to  
31 participate as Section 106 Consulting Parties (**Table 3.7-1**, Section 106 Consulting Parties).

32 Twelve parties declined the invitation to participate and per their request will not be included in  
33 future NHPA Section 106 consultations. Fifty-one parties accepted the invitation and were  
34 designated Consulting Parties. FHWA and ADOT will continue to consult the 28 parties that did  
35 not respond to the invitation unless they specifically indicate they do not want to participate.  
36 During preparation of the EIS, FHWA and ADOT consulted Tribes in a government-to-  
37 government framework and coordinated with other interested parties (see **Appendix E7**,  
38 Section 106 Consultation Summary and Draft Programmatic Agreement, for information about  
39 the consultations).



Table 3.7-1 Section 106 Consulting Parties

Agency	Response to Invitation
<b>Federal Agencies</b>	
ACHP	Asked to be invited after extent of impacts is more defined and development of a programmatic agreement is initiated.
Bureau of Indian Affairs, Western Region	Accepted
Bureau of Indian Affairs, San Carlos Irrigation Project	Accepted
Bureau of Land Management (BLM), State Office	Accepted
BLM, Hassayampa Field Office	Accepted
BLM, Lower Sonoran Field Office	Accepted
BLM, Tucson Field Office	Accepted
Bureau of Reclamation (Reclamation)	Accepted
Department of Homeland Security, Customs and Border Protection	Followed up on 10/14/16 (phone); No Response
Federal Aviation Administration (FAA), Regional Airports Division	Followed up on 10/25/16 (phone); No Response
Federal Railroad Administration (FRA)	Declined
National Park Service (NPS), Saguaro National Park (SNP)	Followed up on 10/25/16 (phone) and (email); No Response
US Air Force (USAF), Davis-Monthan Air Force Base	Followed up on 10/14/16 (phone) and 10/25/16 (email); No Response
USAF, Luke Air Force Base	Followed up on 10/14/16 and 10/25/16 (email); No Response
US Army Corps of Engineers (USACE)	Accepted
US Fish and Wildlife Service (USFWS)	Declined
US Forest Service (USFS), Coronado National Forest	Followed up on 10/11/16 (phone); No Response
Western Area Power Administration	Accepted
<b>Federally Recognized Tribes</b>	
Ak-Chin Indian Community	Accepted
Chemehuevi Indian Tribe	Accepted
Cocopah Indian Tribe	Declined
Colorado River Indian Tribes	Accepted
Fort McDowell Yavapai Nation	Followed up on 10/27/16 (email) and 11/22/16 (phone); No Response
Fort Mojave Indian Tribe	Accepted
Fort Yuma Quechan Tribe	Followed up on 10/27/16 (email) and 11/23/16 (phone); No Response
Gila River Indian Community	Accepted
Havasupai Tribe	Followed up on 10/27/16 (email) and 11/23/16 (phone and email); No Response
Hopi Tribe	Accepted
Hualapai Tribe	Accepted



Table 3.7-1 Section 106 Consulting Parties (Continued)

Agency	Response to Invitation
Kaibab Band of Paiute Indians	Declined
Moapa Band of Paiute Indians	Followed up on 10/27/16 (email) and 11/23/16 (phone); No Response
Navajo Nation	Declined
Pascua Yaqui Tribe	Followed up on 10/27/16 (email) and 11/23/16 (phone); No Response
Pueblo of Zuni	Accepted
Salt River Pima-Maricopa Indian Community	Accepted
San Carlos Apache Tribe	Declined
San Juan Southern Paiute Tribe	Followed up on 10/27/16 (email) and 11/23/16 (phone); No Response
Tohono O'odham Nation	Accepted
Tonto Apache Tribe	Followed up on 10/27/16 (email) and 11/23/16 (phone); No Response
White Mountain Apache Tribe	Declined
Yavapai-Apache Nation	Accepted
Yavapai-Prescott Indian Tribe	Accepted
<b>State Agencies</b>	
Arizona Air National Guard	Followed up on 10/14/16 (phone); No Response
Arizona Department of Corrections	Declined
Arizona Game and Fish Department (AGFD)	Accepted
Arizona State Land Department (ASLD)	Accepted
Arizona State Museum	Accepted
Arizona State Parks and Trails	Accepted
SHPO	Accepted
<b>County Agencies</b>	
Maricopa County Department of Transportation	Followed up on 11/14/16 (phone); No Response
Maricopa County Flood Control District	Followed up on 11/15/16 (phone); No Response
Pima County	Accepted
Pima County Flood Control District	Declined
Pinal County	Accepted
Pinal County Flood Control District	Accepted
Santa Cruz County	Accepted
Santa Cruz County Flood Control District	Followed up on 10/17/16 (phone) and (email); No Response
Yavapai County	Followed up on 11/21/16 (phone) and 11/22/16 (email); No Response
Yavapai County Flood Control District	Declined



Table 3.7-1 Section 106 Consulting Parties (Continued)

Agency	Response to Invitation
<b>Local</b>	
City of Buckeye	Accepted
City of Casa Grande	Accepted
City of Eloy	Accepted
City of Goodyear	Accepted
City of Maricopa	Accepted
City of Nogales	Accepted
City of South Tucson	Accepted
City of Surprise	Returned consultation form; did not indicate if they wanted to be a consulting party.
City of Tucson	Accepted
Town of Gila Bend	Accepted
Town of Marana	Accepted
Town of Oro Valley	Declined
Town of Sahuarita	Accepted
Town of Wickenburg	Accepted
<b>Other Organizations</b>	
Archaeology Southwest	Accepted
Arizona Public Service	Followed up on 10/17/16 (phone); No Response
BNSF Railway	Followed up on 11/15/16 (phone); No Response
Buckeye Water Conservation and Drainage District	Followed up on 10/17/16 (phone); No Response
Central Arizona Irrigation and Drainage District	Accepted
Central Arizona Project (CAP)	Followed up on 10/17/16 (phone); No Response
Cortaro-Marana Irrigation District	Accepted
Green Reservoir Flood Control District	Accepted
Maricopa Flood Control District	No Response
Maricopa-Stanfield Irrigation and Drainage District	Accepted
Roosevelt Irrigation District	Accepted
Roosevelt Water Conservation District	Declined
Salt River Project	Followed up on 11/15/16 (phone); No Response
Silverbell Irrigation and Drainage District	Accepted
Trico Electric Cooperative	Accepted
Tucson Electric Power, a UNS Energy Corporation/	Accepted
Tucson Historic Preservation Foundation	No Response
Union Pacific Railroad	Followed up on 11/15/16 (phone); No Response

ACHP = Advisory Council on Historic Preservation, BLM = Bureau of Land Management, SHPO = State Historic Preservation Office, US = United States



1 Because the Tier 1 studies indicate I-11 has the potential to adversely affect historic properties,  
2 FHWA and ADOT are developing, in coordination with the Consulting Parties, a programmatic  
3 agreement (PA) and will execute the PA at the end of the Tier 1 EIS process. The PA will define  
4 procedures for inventory and evaluation of cultural resources, assessment of effects, and  
5 avoidance and minimization of impacts or mitigation of any unavoidable adverse effects (see  
6 **Appendix E7**, Section 106 Consultation Summary and Draft Programmatic Agreement). The PA  
7 procedures would be implemented in conjunction with NEPA studies conducted for each  
8 individual Tier 2 project.

9 **3.7.2.3 Methods for Considering Archaeological Sites and Historic Structures**

10 The Project Team used geographic information system (GIS) shapefiles to identify prior cultural  
11 resource studies and archaeological sites and historic structures recorded in the Build Corridor  
12 Alternatives. Review of the NRHP identified a few listed archaeological sites and historic  
13 structures but the AZSITE Cultural Resource Inventory was the primary source of information.  
14 AZSITE is a GIS database that includes records of the AZSITE Consortium members (Arizona  
15 State Museum, Arizona State University, Museum of Northern Arizona, and SHPO), and  
16 participating agencies such as the BLM. The Project Team also obtained information from the  
17 ADOT Historic Preservation Team Portal, a database that includes cultural resource information  
18 for ADOT ROWs, local public agency projects funded through ADOT, and materials sources.  
19 The Project Team contacted other agencies, particularly BLM Tucson, Lower Sonoran, and  
20 Hassayampa field offices, to acquire data not in the AZSITE database. Additional information  
21 provided by Archaeology Southwest, a non-profit organization that works to preserve  
22 archaeological resources, was considered as well.

23 The Project Team used the compiled information, other regional cultural resource studies, and  
24 hydrology, landform, and geological information to estimate the potential for unrecorded  
25 archaeological sites and historic structures in parts of the Build Corridor Alternatives that have  
26 not been surveyed for cultural resources. The information was used to estimate low, moderate,  
27 and high potential levels of impact on archaeological sites and historic structures.

28 **3.7.2.4 Methods for Considering Historic Districts and Buildings**

29 Because the inventory of historic built environment resources within the Study Area is less  
30 complete than the inventory of archaeological resources, the Tier 1 analysis focused on  
31 identification of unrecorded historic-period properties that might be eligible for the NRHP. The  
32 historic period was defined as pre-1971 because properties constructed in 1970 or before will  
33 meet the 50-year threshold for NRHP consideration when the Tier 1 EIS is completed. The  
34 Project Team used GIS shapefiles to identify NRHP-listed historic districts and buildings in the  
35 Build Corridor Alternatives. Because there are no databases, such as AZSITE, that document  
36 inventories and NRHP evaluations of historic built environment districts and buildings, the  
37 Project Team contacted SHPO to obtain information about surveys sponsored by SHPO or the  
38 four local governments certified by the SHPO (Certified Local Governments) that overlap the  
39 Study Area (Nogales, Pima County, Tucson, and Casa Grande). The City of Tucson Historic  
40 Preservation Office provided information from a GIS database of historic built environment  
41 resources in the part of Option B of the Orange Alternative within the Tucson city limits.

42 The Project Team used county assessor GIS files to identify parcels with buildings constructed  
43 before 1971 in the Build Corridor Alternatives. Based primarily on Google imagery, the Project  
44 Team preliminarily evaluated NRHP eligibility of unrecorded historic-period parcels by assessing  
45 historic integrity and architectural significance. The analysis focused on clusters of buildings

1 (potential districts), and preliminarily classified them as not NRHP eligible, possibly eligible, or  
 2 likely eligible.

3 A historic-period district or individual building was classified as likely eligible when Google  
 4 imagery indicated it had a significant architectural design or pattern of development that  
 5 appeared to retain historic integrity. Properties classified as possibly eligible included some with  
 6 potentially significant architectural characteristics and apparent historic integrity, but many were  
 7 classified as possibly eligible simply because the Google imagery did not provide a clear view.  
 8 Properties were classified as not eligible when Google imagery indicated they possessed no  
 9 historic architectural significance or had lost the historic integrity needed to convey their  
 10 significance. The preliminary evaluations were used to rate segments of the Build Corridor  
 11 Alternatives as having low, moderate, or high levels of potential impact on historic districts and  
 12 buildings.

13 **3.7.2.5 Methods for Considering Traditional Cultural Properties**

14 FHWA and ADOT conducted government-to-government consultations with 22 Tribes to solicit  
 15 information and identify concerns about potential I-11 impacts on traditional cultural properties.  
 16 Tribes often do not share information about traditional cultural properties with non-Tribal  
 17 members, and provided limited information regarding their concerns. Tribes are opposed to  
 18 disturbance of human burials and formal animal burials associated with some archaeological  
 19 sites. The assessment of potential impacts considered the information the Tribes provided about  
 20 the location of traditional cultural properties in relation to the Build Corridor Alternatives.

21 **3.7.3 Affected Environment**

22 **3.7.3.1 Archaeological Sites and Historic Structures**

23 **Prior Cultural Resource Surveys and Recorded Archaeological Sites and Historic Structures**

24 Prior cultural resource surveys covered 25 percent of the Green Alternative, 27 percent of the  
 25 Purple Alternative, and 49 percent of the Orange Alternative. Those surveys recorded more  
 26 than 200 archaeological sites and historic structures in the Purple and Green Alternatives, and  
 27 more than 500 in the Orange (**Table 3.7-2**, Extent of Cultural Resource Survey and Recorded  
 28 Archaeological Sites and Historic Structures). The average site density in surveyed areas of  
 29 each Build Corridor Alternative is three to four archaeological sites and historic structures per  
 30 corridor mile. Based on the average densities, it is estimated there could be approximately  
 31 800 to 1,000 archaeological sites and historic structures in each 2,000-foot-wide Build Corridor  
 32 Alternative.

33 The highest density of recorded archaeological sites cluster in five areas in Options A, B, G, K,  
 34 and Q1. The historic structures are densest in two areas in Options B, K, and Q1. Two areas of  
 35 high archaeological site density are along the Purple Alternative, two are along the Green  
 36 Alternative, and five, plus the two areas of high historic structure density, are along the Orange  
 37 Alternative.



**Table 3.7-2 Extent of Cultural Resource Survey and Recorded Archaeological Sites and Historic Structures <sup>(1)</sup>**

Option	Length (miles)	Percent Previously Surveyed	Sites	Structures	Total	Average Density of Recorded Resources/Mile <sup>(2)</sup>	Estimated Total Resources <sup>(3)</sup>
A	28.7	39.9	66	5	71	6.2	178
C <sup>(4)</sup>	58.3 (59.5)	13.5 (9.6)	29 (26)	3 (3)	32 (29)	4.1 (5.1)	239 (243)
G	45.1	41.3	63	21	84	4.5	203
I1	7.3	46.0	2	5	7	2.1	15
I2	18.6	20.3	7	5	12	3.2	59
L	15.1	37.4	8	3	11	2.0	29
N	25.6	17.4	5	1	6	1.3	34
R	17.5	20.3	2	4	6	1.7	30
X	54.8	25.7	9	5	14	1.0	54
<b>Totals</b>	<b>271.0</b>	<b>26.9</b>	<b>191</b>	<b>52</b>	<b>243</b>	<b>3.3</b>	<b>841</b>
<b>Totals <sup>(4)</sup></b>	<b>(272.2)</b>	<b>(26.0)</b>	<b>(188)</b>	<b>(52)</b>	<b>(240)</b>	<b>(3.4)</b>	<b>(845)</b>
A	28.7	39.9	66	5	71	6.2	178
D <sup>(4)</sup>	64.2 (65.0)	21.0 (19.1)	58 (55)	4 (4)	62 (59)	4.6 (4.5)	295 (293)
F	50.9	18.8	25	18	43	4.5	228
I2	18.6	20.3	7	5	12	3.2	59
L	15.1	37.4	8	3	11	2.0	29
M	18.5	15.7	3	1	4	1.4	25
Q2	4.5	97.6	7	3	10	2.3	10
R	17.5	20.3	2	4	6	1.7	30
U	49.8	23.6	7	5	12	1.0	51
<b>Totals</b>	<b>267.8</b>	<b>24.9</b>	<b>183</b>	<b>48</b>	<b>231</b>	<b>3.5</b>	<b>905</b>
<b>Totals <sup>(4)</sup></b>	<b>(268.6)</b>	<b>(24.4)</b>	<b>(180)</b>	<b>(48)</b>	<b>(228)</b>	<b>(3.5)</b>	<b>(903)</b>
A	28.7	39.9	66	5	71	6.2	178
B	58.6	64.7	196	23	219	5.8	338
G	45.1	41.3	63	21	84	4.5	203
H	18.1	37.4	11	1	12	1.8	32
K	41.5	52.0	44	4	48	2.2	92
Q1	15.9	89.8	33	2	35	2.4	39

**Table 3.7-2 Extent of Cultural Resource Survey and Recorded Archaeological Sites and Historic Structures <sup>(1)</sup> (Continued)**

Option	Length (miles)	Percent Previously Surveyed	Sites	Structures	Total	Average Density of Recorded Resources/Mile <sup>(2)</sup>	Estimated Total Resources <sup>(3)</sup>
Q2	4.5	97.6	7	3	10	2.3	10
Q3	17.3	66.5	19	7	26	2.3	39
S	50.5	22.5	13	5	18	1.6	80
<b>Totals</b>	<b>280.2</b>	<b>49.2</b>	<b>452</b>	<b>71</b>	<b>523</b>	<b>3.8</b>	<b>1,011</b>

- (1) Includes all recorded sites and historic structures identified by the data collection regardless of NRHP eligibility (determined or recommended eligible, determined or recommended ineligible, and unevaluated). Because a few archaeological sites and historic structures are in more than one option they were counted more than once, which inflates the totals for the Build Corridor Alternatives by approximately 2 percent. The total number of archaeological sites and historic structures recorded along the Purple Alternative is 237. There are 226 along the Green Alternative and 513 along the Orange Alternative.
- (2) Average number of recorded archaeological sites and historic structures per linear mile of 2,000-foot-wide corridor, based on results of areas previously surveyed for cultural resources within each option.
- (3) Estimate is based on average densities of archaeological sites and historic structures recorded in areas of the option surveyed for cultural resources. The accuracy of the estimates hinges on how representative the sample of prior surveys are, which is unknown but the extent of prior survey suggests they should not be unduly biased.
- (4) CAP Design Option data shown in parentheses.

SOURCE: Mitchell et al. 2018.

1 The types and percentages of archaeological sites recorded in each Build Corridor Alternative  
 2 are generally similar. Approximately 61 percent of the sites along the Purple Alternative,  
 3 76 percent along the Green Alternative, and 57 percent along the Orange Alternative are  
 4 prehistoric. Approximately 30 percent of the sites along the Purple Alternative, 12 percent along  
 5 the Green Alternative, and 25 percent along the Orange Alternative are historic sites.  
 6 Approximately 4 percent of the sites along the Purple Alternative, 8 percent along the Green  
 7 Alternative, and 11 percent along the Orange Alternative have both prehistoric and historic  
 8 components. The ages of 4 percent of the sites along the Purple Alternative, 5 percent along the  
 9 Green Alternative, and 8 percent along the Orange Alternative are undetermined. Artifact  
 10 scatters, with or without features, are the most common type of prehistoric site (89 percent along  
 11 the Purple Alternative, 82 percent along the Green Alternative, and 77 percent along the Orange  
 12 Alternative). Approximately 9 percent of the prehistoric sites along the Purple Alternative,  
 13 15 percent along the Green Alternative, and 12 percent along the Orange Alternative are  
 14 classified as village or habitation sites. Other uncommon site types that make up 4 percent or  
 15 less of the prehistoric site inventory along each alternative include those classified as rock  
 16 features, trails, petroglyphs, rock shelters, and cleared areas.

17 Artifact scatters or trash dumps, with or without archaeological features, are the most common  
 18 type of historic archaeological sites (45 percent along the Purple Alternative, 48 percent along  
 19 the Green Alternative, and 40 percent along the Orange Alternative). Approximately 45 percent  
 20 of the historic sites along the Purple Alternative, 29 percent along the Green Alternative, and  
 21 38 percent along the Orange Alternative are classified as homesteads, habitations, or structures  
 22 (which are mostly foundations of demolished buildings). Other site types make up 10 percent or  
 23 less of the historic archaeological site inventory along each alternative and are classified as  
 24 ranching, military, agricultural, mining, water control, city block, trail, and rock features.

25 Roads are the most common type of historic structures (63 percent along the Purple Alternative,  
 26 73 percent along the Green Alternative, and 52 percent along the Orange Alternative). The next

1 most frequent types of historic structures are railroads (13 percent along the Purple Alternative,  
2 9 percent along the Green Alternative, and 17 percent along the Orange Alternative) and  
3 irrigation canals (10 percent along the Purple Alternative, 9 percent along the Green Alternative,  
4 and 17 percent along the Orange Alternative). Less common types include utilities and  
5 cemeteries.

#### 6 **Potential for Archaeological Sites and Historic Structures in Unsurveyed Areas**

7 To address the largest gaps in the coverage of prior cultural resource surveys, the Project Team  
8 assessed the potential for unrecorded prehistoric and historic archaeological sites in parts of the  
9 Build Corridor Alternatives that have not been surveyed for cultural resources. The assessment  
10 focused on areas with less than 30 percent survey coverage because they represent the largest  
11 data gaps and encompass areas deemed most likely to have high densities of unrecorded sites.  
12 The assessment considered the results of nearby prior surveys, indications of land use on  
13 historic maps and aerial photos, and GIS-mapped environmental factors that influenced  
14 prehistoric and historic settlement and land use, including hydrology, landforms, and surface  
15 geology. The analysis identified six areas as having high potential for unrecorded archaeological  
16 sites and historic structures, including 33 miles of unsurveyed areas of the Purple Alternative,  
17 38 miles of the Green Alternative, and only 2 miles of the Orange Alternative.

#### 18 **NRHP-Listed Archaeological Districts and Sites**

19 Only three NRHP-listed archaeological properties overlap edges of the Build Corridor  
20 Alternatives (Valencia Site in the Orange Alternative, Los Robles District in the Green  
21 Alternative, and Picacho Pass Skirmish Site—Overland Mail Co. Stage Station at Picacho Pass  
22 in the Purple and Orange Alternatives). Three other listed archaeological districts are nearby  
23 (Gunsight Mountain near the Purple and Green Alternatives, Tumamoc Hill near the Orange  
24 Alternative, and McClelland Wash near Purple and Orange Alternatives).

#### 25 **NRHP-Eligible Historic Structures**

26 Twelve historic structures in the Build Corridor Alternatives are not listed in the NRHP but have  
27 been determined to be eligible under Criteria A, B, or C, in addition to or in lieu of their potential  
28 to yield important information (Criterion D), indicating they may warrant preservation in place  
29 (**Table 3.7-3**, Historic Structures Eligible for the NRHP under Criteria A, B, or C). Nine are along  
30 the Purple Alternative, eight are along the Green Alternative, and 13 are along the Orange  
31 Alternative.

#### 32 **NRHP Eligibility of Other Archaeological Sites and Historic Structures**

33 The AZSITE database has information about NRHP eligibility determinations or  
34 recommendations for 61 to 74 percent of the archaeological sites and historic structures  
35 recorded in the Build Corridor Alternatives (**Table 3.7-4**, NRHP Eligibility of Archaeological Sites  
36 and Historic Structures). Approximately 60 to 70 percent of the evaluated properties were  
37 determined or recommended eligible. Tier 2 studies will need to determine NRHP eligibility, but  
38 the prior surveys suggest no more than approximately three-fourths of all archaeological sites  
39 and historic structures that could be affected are likely to be NRHP eligible.

**Table 3.7-3 Historic Structures Eligible for the NRHP under Criteria A, B, or C**

Option	Historic Structure	Criteria	Option Description
A	Otero Cemetery	A, B	Co-located with I-19
A	New Mexico & Arizona Railroad: Nogales Branch	C <sup>(1)</sup>	
G	Arizona Southern Railroad	A, D	Co-located with I-10
G	SPRR	A	
G	Casa Grande Canal	A	
L	SPRR	A	New corridor
L	Butterfield Overland Mail Stage Route	A	
R	Buckeye Canal	A	New corridor
R	SPRR: Phoenix Mainline	A	
A	Otero Cemetery	A, B	Co-located with I-19
A	New Mexico & Arizona Railroad: Nogales Branch	C <sup>(1)</sup>	
F	Arizona Southern Railroad	A, D	New corridor
F	Casa Grande Canal	A	
L	SPRR	A	New corridor
L	Butterfield Overland Mail Stage Route	A	
R	Buckeye Canal	A	New corridor
R	SPRR: Phoenix Mainline	A	
A	Otero Cemetery	A, B	Co-located with I-19
A	New Mexico & Arizona Railroad: Nogales Branch	C <sup>(1)</sup>	
B	Augustin del Tucson Mission site (also Clearwater archaeological site)	A, D	Co-located with I-10
B	Cortaro Farms Canal	A	
B, G	SPRR	A	Co-located with I-10
G	Arizona Southern Railroad	A, D	Co-located with I-10
G	Casa Grande Canal	A	
K	SPRR	A	Co-located with I-8 and SR 85, except for realigned junction of those highways
K	Butterfield Overland Mail Stage Route	A	
K	Gila Bend Canal	A	
Q3	Buckeye Canal	A	Co-located with SR 85 and I-10
Q3	SPRR: Phoenix Mainline	A	
Q3	Roosevelt Canal	A	

(1) Likely eligible under Criterion A as well.

I-19 = Interstate 19, I-10 = Interstate 10, I-8 = Interstate 8, SPRR = Southern Pacific Railroad, SR = State Route

SOURCE: Mitchell et al. 2018.

**Table 3.7-4 NRHP Eligibility of Archaeological Sites and Historic Structures**

NRHP Eligibility of Recorded Sites and Historic Structures	Purple Alternative	Green Alternative	Orange Alternative
Eligible under Criterion D	56	64	187
Eligible under Criteria A, B, and/or C and/or in lieu of D	12	12	22
Eligible, no criterion listed	20	18	48
<b>Total Eligible <sup>(1)</sup></b>	<b>88</b>	<b>94</b>	<b>257</b>
Not Eligible <sup>(2)</sup>	64	43	125
<b>Total Evaluated</b>	<b>152</b>	<b>137</b>	<b>382</b>
<b>Percent Evaluated as Eligible</b>	<b>58%</b>	<b>69%</b>	<b>67%</b>
Not Evaluated <sup>(3)</sup>	85	89	131
<b>Total</b>	<b>237</b>	<b>226</b>	<b>513</b>
<b>Percent Evaluated</b>	<b>64%</b>	<b>61%</b>	<b>74%</b>

(1) Includes resources that have been determined to be NRHP eligible or recommended eligible.

(2) Includes resources that have been determined to not be NRHP eligible or recommended not eligible.

(3) Excludes two historic natural gas pipelines that are not subject to Section 106 review pursuant to an ACHP exemption issued in accordance with 36 CFR 800.14(c) and effective as of April 5, 2002.

SOURCE: Mitchell et al. 2018.

1 All archaeological sites determined to be NRHP eligible were evaluated as eligible under  
 2 Criterion D for their potential to yield information, except for three that also were determined to  
 3 be eligible under Criterion A and/or C and might warrant preservation in place. Two of those  
 4 exceptions are sites with prehistoric trails and the other has a prehistoric canal that was  
 5 refurbished and reused during the historic period.

6 **3.7.3.2 Historic Districts and Buildings**

7 Most properties listed in the NRHP in the Study Area are historic districts and buildings. Unlike  
 8 archaeological sites, most are listed for historic values other than their potential to yield  
 9 important information.

10 **NRHP-Listed and Previously Determined Eligible Properties**

11 Almost 200 NRHP-listed historic districts and buildings were identified in the large Study Area of  
 12 the prior Alternatives Selection Report analysis. All but 10 listed historic districts and buildings  
 13 and one previously determined eligible historic district were avoided by the three 2,000-foot-  
 14 wide Build Corridor Alternatives assessed by this Draft Tier 1 EIS. One listed property is in all  
 15 three Build Corridor Alternatives, another is in the Green and Orange Alternatives, and the other  
 16 eight listed properties and the one previously determined eligible property are in the Orange  
 17 Alternative (**Table 3.7-5, NRHP-listed and Determined Eligible Historic Districts and Buildings**).



Table 3.7-5 NRHP-listed and Determined Eligible Historic Districts and Buildings <sup>(1)</sup>

Option	NRHP-Listed or Eligible Property	Option Description
A	Tumacácori National Monument and Museum	Co-located with I-19.
A	Tumacácori National Monument and Museum	Co-located with I-19.
D	Canoa Ranch Rural Historic District	Partly co-located with I-19 but mostly new corridor.
A	Tumacácori National Monument and Museum	Co-located with I-19.
B	Canoa Ranch Rural Historic District	Co-located with I-19 and I-10.
B	El Paso & Southwestern Railroad District	
B	Barrio El Hoyo Historic District	
B	Barrio El Membrillo Historic District	
B	El Presidio Historic District	
B	Manning, Levi H. House (in El Presidio District)	
B	Barrio Anita Historic District	
B	Menlo Park Historic District	
B	Ronstadt-Sims Warehouse (non-contiguous contributor to John Spring Neighborhood District)	
B	US Department of Agriculture Plant Materials Center	

(1) All properties are listed in the NRHP except for the El Paso & Southwestern Railroad District, which has been determined to be eligible and a nomination is pending.

1-19 = Interstate 19, I-10 = Interstate 10

SOURCE: Ryden et al. 2018.

1 **Preliminary NRHP Evaluation of Unrecorded Historic-Period Properties**

2 The study identified 2,670 unrecorded historic-period (pre-1971) parcels in the 2,000-foot-wide  
3 Build Corridor Alternatives, with more than 87 percent (2,328) in the 59-mile-long Option B of  
4 the Orange Alternative that is co-located with I-19 and I-10 in the Tucson area. Because of the  
5 large number of historic-period parcels in Option B, only the parcels adjacent to the existing I-10  
6 and I-19 ROWs were preliminarily assessed. (The assessed adjacent parcels covered the area  
7 where conceptual engineering indicated additional ROW might be needed between the I-19/I-10  
8 interchange and the I-10/Prince Road interchange under some design scenarios that would be  
9 further evaluated for Tier 2 projects.)

10 Most parcels were evaluated in clusters as potential historic districts. In total, 16 potential  
11 districts and 274 individual historic-period buildings were preliminarily evaluated. Thirteen  
12 percent of the evaluated properties (4 potential districts and 34 individual properties) were  
13 preliminarily evaluated as likely eligible, 23 percent (2 districts and 63 individual properties) as  
14 possibly eligible and 64 percent (10 potential districts and 177 individual properties) as not



1 eligible. The analysis identified 16 to 21 likely eligible and 33 possibly eligible properties along  
 2 each of the Build Corridor Alternatives (Table 3.7-6, Preliminary NRHP Eligibility Evaluations of  
 3 Unrecorded Historic-Period Properties).

**Table 3.7-6 Preliminary NRHP Eligibility Evaluations of Unrecorded Historic-Period Properties**

Option	Districts			Individual Properties			Option Description
	Likely Eligible	Possibly Eligible	Not Eligible	Likely Eligible	Possibly Eligible	Not Eligible	
A	1	1	0	9	14	20	Co-located with I-19
C	0	0	0	2	2 <sup>(1)</sup>	6 <sup>(2)</sup>	New corridor
G	0	0	0	3	2	32	Co-located with I-10
I1	0	0	0	3	0	1	New corridor
I2	0	0	0	1	2	3	New corridor
L	0	0	0	0	0	2	New corridor
N	0	1	0	1	5	21	New corridor
R	0	0	0	2	4	10	New corridor
X	0	0	0	0	4	2	New corridor
Totals	1	2	0	21	33	97	
A	1	1	0	9	14	20	Co-located with I-19
D	3	1	1	4	11 <sup>(3)</sup>	15 <sup>(2)</sup>	Part co-located with I-19 but mostly new corridor
F	0	0	0	0	2	5	New corridor
I2	0	0	0	1	2	3	New corridor
L	0	0	0	0	0	2	New corridor
M	0	0	0	0	0	0	New corridor
Q2	0	0	0	0	0	2	Co-located with SR 85
R	0	0	0	2	4	10	New corridor
U	0	0	0	0	0	0	New corridor
Totals	4	2	1	16	33	57	
A	1	1	0	9	14	20	Co-located with I-19
B	0	0	8	6 <sup>(4)</sup>	6	54	Co-located with I-10
G	0	0	0	3	2	32	Co-located with I-10
H	0	0	0	2	1	3	Co-located with I-8
K	0	0	0	0	2	3	Co-located with I-8 and SR 85, except for realigned junction of those highways

**Table 3.7-6 Preliminary NRHP Eligibility Evaluations of Unrecorded Historic-Period Properties (Continued)**

Option	Districts			Individual Properties			Option Description
	Likely Eligible	Possibly Eligible	Not Eligible	Likely Eligible	Possibly Eligible	Not Eligible	
Q1	0	0	0	0	3	1	Co-located with SR 85
Q2	0	0	0	0	0	2	Co-located with SR 85
Q3	0	0	0	0	5	1	Co-located with SR 85 and I-10
S	0	0	0	0	0	0	New corridor
Totals	1	1	8	20	33	116	

- (1) Two additional possibly eligible properties if the CAP Design Option is used.
  - (2) Five additional not eligible properties if the CAP Design Option is used.
  - (3) One additional possibly eligible property if the CAP Design Option is used.
  - (4) Two separate but related parcels are considered part of one historic-period property.
- CAP = Central Arizona Project, I-8 = Interstate 8, I-10 = Interstate 10, I-19 = Interstate 19, SR = State Route  
 SOURCE: Ryden et al. 2018.

**1 3.7.3.3 Traditional Cultural Properties**

2 FHWA and ADOT corresponded and met with Tribal representatives to discuss cultural  
 3 resources throughout the Draft Tier 1 EIS process (see **Appendix E7**, Section 106 Consultation  
 4 Summary and Draft Programmatic Agreement). Tribes identified five traditional cultural  
 5 properties (**Table 3.7-7**, Traditional Cultural Properties). Tribes also oppose disturbance of  
 6 human burials and formal animal burials.

**Table 3.7-7 Traditional Cultural Properties**

Option	Location	Option Description
C	Site associated with a traditional Tribal story <sup>(1)</sup>	New corridor
I2	Archaeological site <sup>(2)</sup>	New corridor
D	Site associated with a traditional Tribal story <sup>(1)</sup>	Part co-located with I-19 but mostly new corridor
F	San Lucy Farms <sup>(3)</sup>	New corridor
I2	Archaeological site <sup>(2)</sup>	New corridor
B	Area of high archaeological site density	Co-located with I-19
Q1	A petroglyph site, AZ T:14:115 (ASM) <sup>(4)</sup>	Co-located with SR 85

- (1) Site reported to be in the vicinity of Options C and D but exact location not determined.
- (2) Site reported to be in the vicinity of Option I2 but exact location not determined.
- (3) The tribal farm is west of Option F. At its closest, the Option F corridor is approximately 900 feet east of the farmland.
- (4) This site was avoided during construction of prior improvements of SR 85 and FHWA and ADOT have made a commitment to avoid the site during construction of any future improvements.

I-19 = Interstate 19, SR = State Route  
 SOURCE: FHWA and ADOT consultations 2016-2018.

1 **3.7.4 Environmental Consequences**

2 Because the Tier 1 stage of planning is conceptual, FHWA and ADOT will apply the criteria of  
 3 effect, pursuant to NHPA Section 106, in phases as each Tier 2 project is planned. The more  
 4 general Tier 1 characterization of potential levels of impact presented in the following sections  
 5 are not intended to equate with a Section 106 determination of effect. Areas rated as having  
 6 potential moderate or even low levels of impact could still result in a Section 106 finding of an  
 7 adverse effect.

8 The Tier 1 assessment considered data compiled about the types and numbers of cultural  
 9 resources in the 2,000-foot-wide Build Corridor Alternatives and the extent of construction  
 10 disturbance in narrower ROW footprints where new lanes would be built for each Build Corridor  
 11 Alternative to develop I-11, as identified by the Tier 1 conceptual engineering (**Appendix E1**,  
 12 Conceptual Drawings). Conceptual engineering concluded the existing highways for co-located  
 13 Options A (I-19), G (I-10), H (I-8), most of K (I-8 and SR 85), Q1 (SR 85), and Q2 (SR 85) are  
 14 likely to have capacity to meet I-11 needs throughout the planning and implementation horizon  
 15 (2040). Because no new lanes are likely to be needed along those options the assessment  
 16 concluded cultural resources along those options were unlikely to be affected. The assessment  
 17 of impacts also considered the restricted extent of potential impacts along co-located Options B  
 18 (I-19 and I-10), part of Option D (I-19), and Option Q3 (SR 85 and I-10), where the Tier 1  
 19 conceptual engineering concluded additional lanes would probably be needed for I-11 but  
 20 construction impacts were likely to be confined to the existing ROWs, with one possible  
 21 exception. The exception is along approximately 6 miles of Option B between the I-19/I-10  
 22 interchange and the I-10/Prince Road interchange where four to six additional lanes and  
 23 additional ROW up to approximately 120 feet wide might be required under some scenarios that  
 24 would be further evaluated during Tier 2.

25 The assessment did not address the north ends of Options S, U, and X that are co-located with  
 26 US Highway 93 (US 93), which was previously designated as the I-11 corridor north of  
 27 Wickenburg. Any future upgrades of US 93 for I-11 would be assessed if and when they are  
 28 proposed.

29 **3.7.4.1 Archaeological Sites and Historic Structures**

30 The assessment of potential levels of impacts of construction activities on archaeological sites  
 31 and historic structures considered: (1) the compiled information about the types and densities of  
 32 recorded sites and structures in each Build Corridor Alternative (which reflects potential  
 33 mitigation efforts that might be required), (2) the evaluation of the potential for unrecorded  
 34 archaeological sites and historic structures in unsurveyed areas, and (3) the potential extent of  
 35 ground disturbance as indicated by the Tier 1 conceptual engineering. The following factors  
 36 were used to characterize the levels of potential impact.

37 **Potential High Impact**

38 Potential levels of impact were rated high for the parts of Options with:

- 39 • recorded prehistoric village or habitation sites and multicomponent sites with prehistoric  
 40 village or habitation components (as identified in the source data); and
- 41 • recorded archaeological sites and historic structures determined or recommended eligible  
 42 for the NRHP under Criteria A, B, or C, in addition to or in lieu of Criterion D (information  
 43 potential), indicating they could warrant efforts for preservation in place.



### 1 **Potential Moderate Impact**

2 Potential levels of impact were rated moderate for the parts of Options with:

- 3 • recorded archaeological sites or historic structures determined to be NRHP eligible or  
4 recommended eligible for their potential to yield important information (Criterion D);
- 5 • recorded archaeological sites or historic structures unevaluated for NRHP eligibility; and
- 6 • areas not previously surveyed for cultural resources but assessed as having high potential  
7 for unrecorded archaeological sites or historic structures.

### 8 **Potential Low Impact**

9 Potential levels of impact were rated low for the parts of Options with:

- 10 • no recorded archaeological sites or historic structures that have been determined to be  
11 eligible or recommended eligible for the NRHP or are unevaluated; and
- 12 • areas not surveyed for cultural resources but assessed as having moderate or low potential  
13 for unrecorded archaeological sites or historic structures.

### 14 **Unlikely Impact**

15 Ratings of unlikely impact were assigned to Options where:

- 16 • Tier 1 conceptual engineering indicated existing capacity of co-located highways would  
17 probably be adequate for I-11 and new lanes were unlikely to be needed during the planning  
18 and implementation horizon (2040) (Options A, G, H, most of K, Q1, and Q2).

19 The assessment of new corridors considered information compiled and analyzed for the full  
20 2,000-foot-wide options, and within 400 feet of co-located Options B, part of Option D, and  
21 Option Q3 where conceptual engineering indicated new travel lanes would be needed but could  
22 probably be added in existing ROWs, except for 6 miles of Option B where new ROW might be  
23 required.

### 24 **Assessed Potential Levels of Impact**

25 Application of the methodology to rate potential levels of high, moderate, low, and probably no  
26 impacts along each of the Build Corridor Alternatives indicated that 25 miles of the Orange  
27 Alternative are assessed as having potential levels of high impact compared to 8 miles along  
28 the Green Alternative and 4 miles along the Purple Alternative. Potential levels of impact are  
29 rated as moderate along 55 miles of the Green Alternative, 48 along the Purple Alternative, and  
30 20 along the Orange Alternative (**Table 3.7-8**, Potential for Impacts on Archaeological Sites and  
31 Historic Structures along the Build Corridor Alternatives).



**Table 3.7-8 Potential for Impacts on Archaeological Sites and Historic Structures along the Build Corridor Alternatives**

Option	Potential Levels of Impact				Total Miles	Potential Major Impacts
	High	Moderate	Low	Unlikely		
A	0	0	0	28.7	28.7	
C <sup>(1)</sup>	1.2 (0.9)	25.2 (22.1)	31.9 (36.3)	0 (0)	58.3 (59.3)	2 prehistoric village sites, Cortaro Farms canal <sup>(2)</sup>
G	0	0	0	45.1	45.1	
I1	0	0.2	7.1	0	7.3	
I2	0	7.0	11.6	0	18.6	
L	0.8	0.6	13.7	0	15.1	Butterfield Overland Stage Route, SPRR <sup>(2)</sup>
N	0	6.9	18.7	0	25.6	
R	1.4	6.5	9.6	0	17.5	Buckeye Canal, SPRR: Phoenix Main Line <sup>(2)</sup>
X	0.7	2.0	46.0	6.1	54.8	2 homestead sites <sup>(2)</sup>
Totals <sup>(1)</sup>	4.1 (3.8)	48.4 (45.3)	138.6 (143.0)	79.9 (79.9)	271.0 (272.0)	
A	0	0	0	28.7	28.7	
D <sup>(1)</sup>	0.8 (0.5)	17.3 (14.5)	32.5 (36.2)	13.6 (13.6)	64.2 (64.8)	2 prehistoric habitation site
F	4.7	21.1	25.1	0	50.9	4 prehistoric habitation sites, Casa Grande Canal, abandoned Arizona Southern Railroad <sup>(2)</sup>
I2	0	7.0	11.6	0	18.6	
L	0.8	0.6	13.7	0	15.1	Butterfield Overland Stage Route, SPRR <sup>(2)</sup>
M	0	0.2	18.3	0	18.5	
Q2	0	0	0	4.5	4.5	
R	1.4	6.5	9.6	0	17.5	Buckeye Canal, SPRR: Phoenix Main Line <sup>(2)</sup>
U	0	2.6	41.1	6.1	49.8	
Totals <sup>(1)</sup>	7.7 (7.4)	55.3 (52.5)	151.9 (155.6)	52.9 (52.9)	267.8 (268.4)	
A	0	0	0	28.7	28.7	
B	21.8	12.8	10.4	13.6	58.6	16 prehistoric habitation sites <sup>(3)</sup> , 1 homestead site, Cortaro Farms Canal <sup>(2)</sup>
G	0	0	0	45.1	45.1	
H	0	0	0	18.1	18.1	
K	1.9	1.2	0.5	37.8	41.4	Butterfield Overland Stage Route, SPRR, might cross Gila Bend Canal <sup>(2)</sup>

**Table 3.7-8 Potential for Impacts on Archaeological Sites and Historic Structures along the Build Corridor Alternatives (Continued)**

Option	Potential Levels of Impact				Total	Potential Major Impacts
	High	Moderate	Low	Unlikely	Miles	
Q1	0	0	0	15.9	15.9	
Q2	0	0	0	4.5	4.5	
Q3	0.9	1.9	14.5	0	17.3	SPRR: Phoenix Main Line, Buckeye Canal, Roosevelt Canal <sup>(2)</sup>
S	0	3.9	38.9	7.7	50.5	
Totals	24.6	19.8	64.3	171.5	280.2	
B		2.7	3.5	0	8.0	3 prehistoric habitation sites

(1) CAP Design Option data are shown in parentheses.  
 (2) The linear historic structures may not be major conflicts because their historic integrity varies greatly along their lengths. If Tier 2 studies determine an I-11 crossing would affect significant historic characteristics, they often can be bridged to avoid an adverse effect. Similarly, Tier 2 studies would need to determine if the archaeological sites of historic homesteads actually warrant preservation in place or if they are important primarily for their potential to yield important information.  
 (3) Archaeological excavations were conducted at many of these sites to mitigate impacts of prior improvements of I-10. Tier 2 studies would need to determine whether they would warrant additional data recovery investigations if they were affected.  
 CAP = Central Arizona Project, SPRR = Southern Pacific Railroad  
 SOURCE: Mitchell et al. 2018.

1 A second step of the assessment considered the typical cross-sections developed by the Tier 1  
 2 conceptual engineering. For Corridor Options co-located with an existing transportation facility,  
 3 the cross sections included capacity improvements on the existing facilities as needed to meet  
 4 an acceptable level of service. Potential ROW footprints for the assumed cross sections were  
 5 used to estimate the number of NRHP-eligible archaeological sites and structures that might be  
 6 affected by the Build Corridor Alternatives. The estimate for the Purple Alternative was based on  
 7 the estimated total of approximately 450 archaeological sites and historic structures in 192 miles  
 8 of the 2,000-foot-wide Corridor Options where new lanes would likely be built (see **Table 3.7-2**).  
 9 Because Tier 1 conceptual engineering indicated the I-11 ROW would be approximately  
 10 400 feet wide, which is 20 percent of the width of the 2,000-foot-wide Corridor Options, it was  
 11 assumed that approximately 20 percent of those 450 archaeological sites and historic structures  
 12 (approximately 90) could be subject to impacts and the other 80 percent would not be directly  
 13 disturbed or destroyed by construction of new lanes. Prior evaluations indicate about 75 percent  
 14 of those 90 archaeological sites and structures (approximately 70) are likely to be NRHP eligible  
 15 (see **Table 3.7-3**).

16 Using that logic, it was estimated that approximately 100 NRHP-eligible archaeological sites and  
 17 historic structures could be affected by the Green Alternative, where 216 new lane miles would  
 18 be constructed. Approximately 60 eligible archaeological sites and historic structures could be  
 19 affected along the 109 miles of new lanes for the Orange Alternative (**Table 3.7-9, Estimates of**  
 20 **Potentially Affected NRHP-Eligible Archaeological Sites and Historic Structures**). These  
 21 estimates are based on analysis of the results of prior cultural resource surveys that covered  
 22 parts of the Build Corridor Alternatives, but they must be considered to be only general  
 23 approximations because the documentation of the prior surveys is sometimes inaccurate or  
 24 ambiguous and the surveys might not be an unbiased sample of the archaeological sites and  
 25 historic structures in each Build Corridor Alternative. The numerical estimates might not be



- 1 particularly precise because they are based on assumptions subject to unknown margins of
- 2 error but they should provide a valid basis for a relative comparison of the Build Corridor
- 3 Alternatives.

**Table 3.7-9 Estimates of Potentially Affected NRHP-Eligible Archaeological Sites and Historic Structures <sup>(1)</sup>**

Estimated Parameters	Purple Alternative	Green Alternative	Orange Alternative
Number of sites and structures in total width and length of 2,000-foot-wide corridor <sup>(2)</sup>			
South Section	620	700	720
Central Section	170	150	210
North Section	50	50	80
Total (rounded)	840	900	1,010
Miles where new lanes would be built			
South Section	59	103	45
Central Section	84	69	21
North Section	49	44	43
Total	192	216	109
Density of sites and structures per linear mile in options where new lanes would be built <sup>(2)</sup>			
South Section	4.1	4.5	5.8
Central Section	2.0	2.1	3.2
North Section	0.9	0.9	1.7
Total	2.3	3.0	3.7
Number of sites and structures in options where new lanes would be built <sup>(2)</sup>			
South Section	240	460	260
Central Section	170	150	70
North Section	40	40	70
Total (rounded)	450	650	400
Number of sites and structures within a 400-foot ROW (20 % of total corridor estimate)			
South Section	48	94	52
Central Section	34	28	14
North Section	8	8	14
Total (rounded)	90	130	80
Number of NRHP eligible and potentially affected sites and structures (75% of inventory) <sup>(3)</sup>			
South Section	36	71	39
Central Section	26	21	11
North Section	6	6	11
Total (rounded)	70	100	60

(1) These estimates must be considered to be only general approximations (see the text for a discussion of the methods on which they are based).

(2) The data are extracted from **Table 3.7-2**, Extent of Cultural Resource Survey and Recorded Archaeological Sites and Historic Structures using values for CAP Design Options for Options C and D, which completely avoid a prehistoric habitation site that could be disturbed along its edge by the original alignment along Sandario Road.

(3) Some of these sites and structures could be avoided by specific ROW alignments delineated during Tier 2 analysis.

SOURCE: Mitchell et al. 2018.



1 The estimates of archaeological and historical sites that might be subject to construction  
2 impacts are likely to be high because (1) FHWA and ADOT would work to locate the ROW  
3 within a selected 2,000-foot-wide Build Corridor Alternative to avoid or minimize disturbance of  
4 NRHP-eligible archaeological sites and historic structures whenever feasible and (2) not all sites  
5 and structures within a selected 400-foot ROW would necessarily be disturbed by construction  
6 of new lanes. The estimate for the Orange Alternative is especially likely to be high because  
7 more than half of the miles of new lanes would be along co-located highways and many of the  
8 archaeological sites and historic structures in those areas are likely to have been disturbed or  
9 destroyed by the original highway construction and any prior improvements of those highways.  
10 However, new lanes along co-located highways would inherently have little flexibility for  
11 avoiding any archaeological sites and historic structures that are adjacent to the existing lanes.

12 The situation is particularly uncertain along Option B of the Orange Alternative where densities  
13 of archaeological sites are higher and more sites are complex habitation sites than anywhere  
14 else along the three Build Corridor Alternatives. Many of the archaeological sites along Option B  
15 are deeply buried in the alluvium of the Santa Cruz River floodplain and there are no clues of  
16 their locations on the ground surface. Many deeply buried sites were only discovered due to  
17 prior construction projects along I-10, and archaeological excavations were conducted at many  
18 of those sites to recover and preserve information and artifacts to mitigate the impacts of the  
19 prior I-10 construction projects. Tier 2 studies would need to determine whether or not parts of  
20 those sites remain intact and would be adversely affected by construction of additional lanes for  
21 I-11. It also would need to be determined whether any of the sites along the 6 miles of Option B  
22 through downtown Tucson extend into new ROW areas or if additional archaeological sites are  
23 present in the new ROW and would warrant additional data recovery investigations. Although  
24 the number of sites along the Orange Alternative may be relatively fewer than along the Purple  
25 and Green Alternatives, they are likely to be more complex and could require relatively greater  
26 mitigation efforts.

27 The assessment indicated construction of new lanes in Options not co-located with existing  
28 highways would intersect previously recorded historic linear structures (irrigation canals,  
29 railroads, roads) including five along the Purple Alternative and six along each of the Green and  
30 Orange Alternatives. Those structures have been evaluated as NRHP eligible under criteria  
31 indicating they warrant preservation in place, but their historic integrity varies greatly along their  
32 lengths. Tier 2 NEPA studies would determine if significant segments of the linear structures  
33 would be adversely affected by development of I-11. If warranted, historic linear structures can  
34 often be bridged to avoid an adverse effect.

35 The No Build Alternative would avoid most impacts on archaeological sites and historic  
36 structures in the Build Corridor Alternatives, but not all because four improvement projects along  
37 parts of I-10 co-located with Options B, G, and Q3 are programmed for funding and would be  
38 constructed even if FHWA and ADOT decide not to pursue development of I-11. Twelve  
39 archaeological sites and three historic structures have been recorded at those project locations  
40 in Options B and G. Determinations of the effects of all those projects have not yet been made  
41 but potential levels of impact were rated high for 2 miles along Option B where at least three  
42 prehistoric habitation archaeological sites might be affected. If I-11 is not pursued, it is likely that  
43 other projects not yet programmed for funding would be developed in the future and affect  
44 additional archaeological sites and historic structures elsewhere in the I-11 Options.

1    **3.7.4.2    Historic Districts and Buildings**

2    The assessment of the potential level of impact on historic districts and buildings considered  
 3    (1) NRHP-listed and previously determined eligible properties, (2) unrecorded historic-period  
 4    properties preliminarily evaluated as likely eligible for the NRHP or possibly eligible, and (3) the  
 5    potential extent of ground disturbance as indicated by the Tier 1 conceptual engineering. The  
 6    evaluation of the unrecorded historic-period properties is preliminary, and will need to be  
 7    augmented by detailed evaluations and potential inventory of additional properties that meet the  
 8    NRHP 50-year age threshold during the planning and implementation horizon (2040) as each  
 9    Tier 2 project is designed. The following factors were used to characterize the potential levels of  
 10   impact.

11   **High Impact**

12   Potential levels of impact were rated high for the parts of Options with:

- 13   • NRHP-listed or determined eligible properties that could be altered in new ROW; and
- 14   • properties preliminarily evaluated as likely eligible or possibly eligible for the NRHP and  
 15     unavoidable by a 400-foot-wide footprint in a 2,000-foot-wide Build Corridor Alternative  
 16     where new lanes would be constructed in a new ROW.

17   **Moderate Impact**

18   Potential levels of impact were rated moderate for the parts of Options with:

- 19   • properties preliminarily evaluated as likely eligible or possibly NRHP eligible and  
 20     unavoidable by a 400-foot-wide footprint in a 2,000-foot-wide Build Corridor Alternative  
 21     where new lanes would be constructed in a new ROW but have sufficient open space that  
 22     they might be crossed without adversely affecting their character-defining buildings or features  
 23     (such as a large property with a cluster of historic farm buildings and open fields).

24   **Low Impact**

25   Potential levels of impact were rated low for the parts of Options with:

- 26   • Properties preliminarily evaluated as likely eligible or possibly eligible for listing in the NRHP  
 27     but of a size that they could be avoided by a 400-foot-wide footprint.

28   **Impact Unlikely**

29   Ratings of unlikely impact were assigned to Options where:

- 30   • There are no properties listed in the NRHP, determined eligible for the NRHP, or unrecorded  
 31     historic-period properties preliminarily evaluated as likely eligible or possibly eligible for the  
 32     NRHP;
- 33   • Conceptual engineering indicated new lanes would be required but probably could be built in  
 34     an existing ROW (part of Option D, Option B [except for approximately 6 miles between the  
 35     I-19/I-10 interchange and I-10/Prince Road interchange where new ROW might be  
 36     required], and Option Q3); or
- 37   • Tier 1 conceptual engineering indicated existing capacity of co-located highways would  
 38     probably be adequate for I-11 and new lanes were unlikely to be needed during the planning  
 39     and implementation horizon (2040) (Options A, G, H, most of K, Q1, and Q2).



1 **Potential Levels of Impact**

2 Two of the 10 NRHP-listed properties in the 2,000-foot-wide Build Corridor Alternatives are  
3 unlikely to be affected because they are outside the existing ROWs of co-located options that  
4 Tier 1 conceptual engineering indicated are unlikely to require new ROW for development of  
5 I-11 during the planning and implementation horizon (2040). One of those properties  
6 (Tumacácori National Monument) is in Option A, which is co-located with I-19 where conceptual  
7 engineering indicated no new travel lanes are likely to be needed during the planning and  
8 implementation horizon. Option A is part of all three Build Corridor Alternatives. One property  
9 (Canoa Ranch Historic District) is along Option B of the Orange Alternative and the overlapping  
10 part of Option D of the Green Alternative, where conceptual engineering also indicated the co-  
11 located I-19 is unlikely to need additional lanes during the planning and implementation horizon.

12 The other eight NRHP-listed properties and one previously determined eligible historic district  
13 are located along Option B of the Orange Alternative between the I-19/I-10 interchange and the  
14 I-10/Prince Road interchange where four to six additional travel lanes are likely to be needed for  
15 I-11. Tier 1 conceptual engineering concluded that under some design scenarios (which would  
16 be evaluated during planning of Tier 2 projects) as much as approximately 120 feet of additional  
17 ROW might be needed along this segment of I-10. Five of the NRHP-listed properties are far  
18 enough from I-10 that they would not be directly affected by the potential ROW expansion  
19 (Barrio El Hoyo, Barrio El Presidio, and Menlo Park Historic Districts; Ronstadt-Sims  
20 Warehouse; and the US Department of Agriculture Plant Materials Center).

21 The potential ROW expansion could extend into the NRHP-listed Levi H. Manning House, the  
22 Barrio Anita and Barrio El Membrillo Historic Districts, and the previously determined NRHP-  
23 eligible El Paso & Southwestern Railroad District that is pending nomination to the NRHP. That  
24 level of potential impact is rated high (**Table 3.7-10**, Potential Levels of Impacts on Historic  
25 Districts and Buildings). Any ROW expansion east of I-10 would take part of a parking lot  
26 associated with the Levi H. Manning House but the house is unlikely to be directly affected. The  
27 Barrio Anita Historic District NRHP nomination identified 66 buildings and Oury Park (now  
28 David G. Herrera and Ramon Quiroz Park) as contributing properties. ROW expansion would  
29 require land from the west edge of Oury Park where ball fields and soccer fields are located,  
30 and could require land from four parcels with contributing residences along the west side of  
31 Contzen Avenue but not all of those houses might be directly affected. The small Barrio El  
32 Membrillo Historic District may only have approximately 10 surviving contributing residences  
33 and if all the potential ROW expansion had to be added to the east side of I-10, four of those  
34 residences would need to be demolished and street access to the rest of the residences might  
35 be lost, making occupation of the District no longer viable. The expanded ROW also could result  
36 in at least partial demolition of the historic roundhouse that is a contributing property to the  
37 El Paso & Southwestern Railroad Historic District (now adaptively reused by a commercial  
38 business) and also require acquisition of edges of the vacant abandoned railroad corridor  
39 (which is the spine of the district) in as many as three other locations.



Table 3.7-10 Potential Levels of Impacts on Historic Districts and Buildings

Listed/Eligible Properties		Preliminarily Evaluated Unrecorded Historic-Period Properties									Totals
		Likely Eligible				Possibly Eligible				Not Eligible	
High Impact	Unlikely Impact	High Impact	Moderate Impact	Low Impact	Unlikely Impact	High Impact	Moderate Impact	Low Impact	Unlikely Impact		Not Eligible
0	1	0	2 in Options C and N	7	13	1 in Option C	0	17	17	97	155
0	1		2 in Options C and N	7	13	1 in Option C	1 in Option C	18	17	103	163
0	2	0	0	3	17	0	3 in Option D	14	18	58	115
0	2	0	0	3	17	0	3 in Option D	15	18	64	121
4 in Option B	7	1 in Option B	0	0	20	4 in Option B	0	2	28	125	190

The options where potential high and moderate levels of impact could occur are indicated.

SOURCE: Ryden et al. 2018.

1 Analysis also indicated the potential widened ROW for Option B of the Orange Alternative could  
 2 have a high level of impact on one unrecorded historic-period property preliminarily evaluated  
 3 as likely eligible for listing in the NRHP (University of Arizona West Campus Agricultural  
 4 Center). The widened ROW might require demolition of some structures at the eastern edge of  
 5 that property. The widened ROW also could have a high impact on four unrecorded historic-  
 6 period properties preliminarily evaluated as possibly NRHP eligible, including three residences  
 7 and a hotel. The expanded ROW could result in demolition of the three residences. No buildings  
 8 at the hotel would likely need to be demolished but one might be left immediately adjacent to the  
 9 edge of the expanded ROW. The Orange Alternative also was assessed as having potential low  
 10 impacts on two unrecorded historic-period properties preliminarily evaluated as possibly eligible,  
 11 and probably no impacts on 20 properties evaluated as likely eligible and 28 as possibly eligible.  
 12 Tier 2 NEPA studies would need to make a detailed assessment of impacts on those properties  
 13 that might result from the various scenarios considered for Option B.

14 The assessment indicated the Purple Alternative could have potential high impacts on one  
 15 property preliminarily evaluated as possibly eligible for the NRHP and moderate impacts on two  
 16 preliminarily evaluated as likely eligible. Those impacts are in Options C and N. The Purple  
 17 Alternative also was assessed as having potentially low impacts on seven unrecorded historic-  
 18 period properties preliminarily evaluated as likely NRHP eligible and 17 preliminarily evaluated  
 19 as possibly eligible. The Purple Alternative with the CAP Design Option was rated as having a  
 20 potential moderate level of impact on one additional unrecorded historic-period property and low  
 21 level of impact on one additional property preliminarily evaluated as possibly NRHP eligible. The

1 Purple Alternative was rated as unlikely to have impacts on 13 unrecorded historic-period  
2 properties preliminarily evaluated as likely NRHP eligible and 17 as possibly eligible.

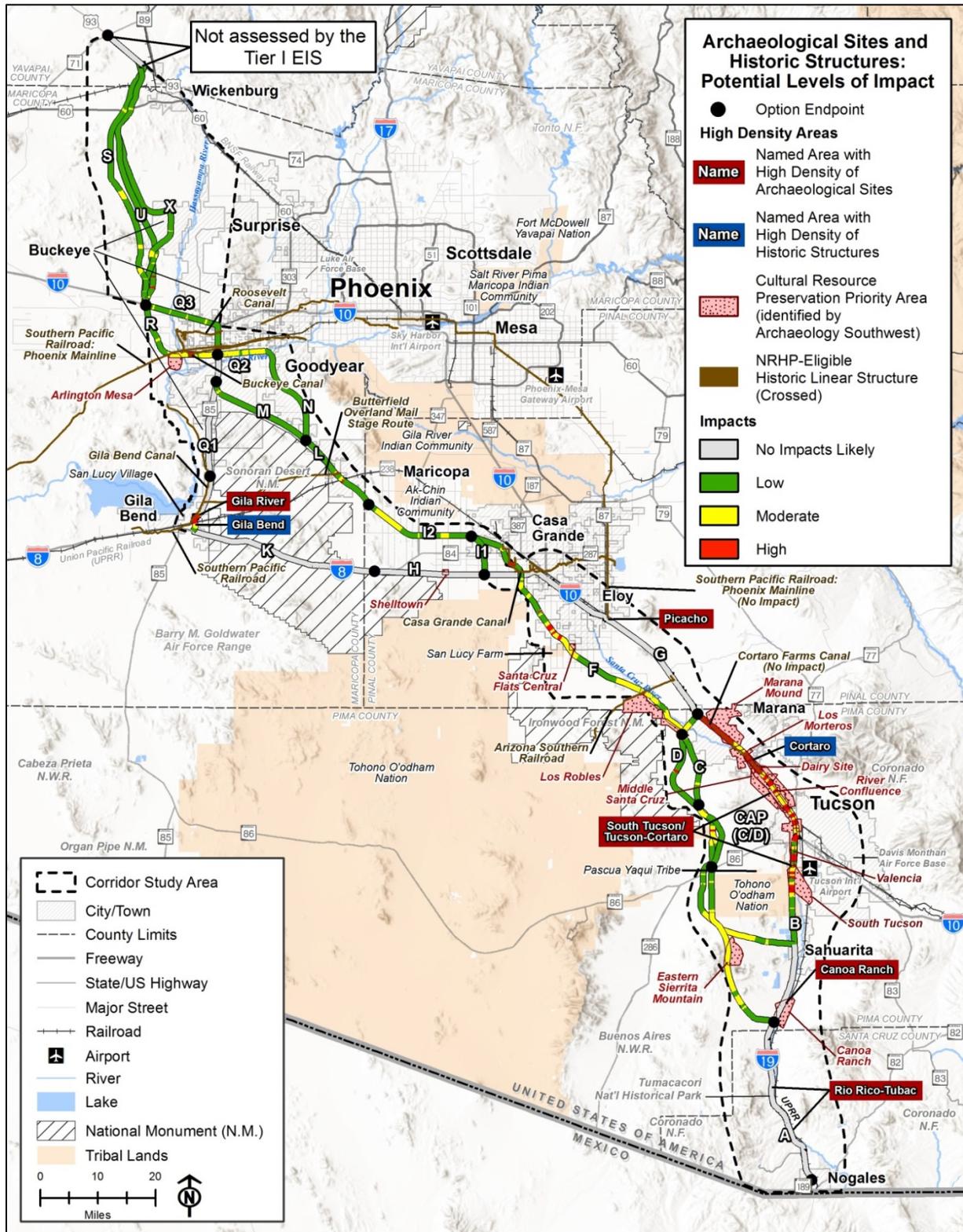
3 Analysis indicated the Green Alternative, with or without the CAP Design Option, would have no  
4 high levels of impact on unrecorded historic-period properties preliminarily evaluated as likely  
5 eligible or possibly eligible for the NRHP. The assessment concluded the Green Alternative  
6 could have potential moderate impacts on three properties in Option D that were preliminarily  
7 evaluated as possibly NRHP eligible, and potential low impacts on 3 unrecorded historic-period  
8 properties preliminarily evaluated as likely NRHP eligible and 14 as possibly eligible. The Green  
9 Alternative with the CAP Design Option could have a low level of impact on one additional  
10 unrecorded historic-period property preliminarily evaluated as possibly NRHP eligible. The  
11 Green Alternative was rated as unlikely to have impacts on 17 unrecorded historic-period  
12 properties preliminarily evaluated as likely NRHP eligible and 18 as possibly eligible.

### 13 3.7.4.3 Traditional Cultural Properties

14 Options C and I2 of the Purple Alternative and Options D and I2 of the Green Alternative could  
15 affect the same two traditional cultural properties (a site associated with a traditional Tribal story  
16 and an archaeological site), but that is uncertain because Tribes have not shared specific  
17 information about the locations of those properties in relation to the Build Corridor Alternatives.  
18 Also, Option F of the Green Alternative is near another traditional cultural property (San Lucy  
19 Farms), but at its closest the 2,000-foot-wide corridor is approximately 900 feet from the tribal  
20 farmland and the Green Alternative is not expected to impact San Lucy Farms. Two other  
21 traditional cultural properties were identified along the Orange Alternative. One is an area of  
22 high archaeological site density along the part of Option B co-located with I-19. Conceptual  
23 engineering indicated that no new ROW is likely to be required along I-19 during the planning  
24 and implementation horizon but construction of additional lanes within the existing ROW could  
25 disturb parts of any archaeological sites that might remain intact within the existing ROW. The  
26 other traditional cultural property along the Orange Alternative is a petroglyph site within  
27 Option Q1, which is co-located with SR 85. The petroglyph site was avoided by prior  
28 improvements of SR 85 and FHWA and ADOT have made a commitment that any future  
29 improvements would be designed to avoid the site. The FHWA and ADOT are continuing to  
30 consult and work with Tribes to avoid adverse impacts on traditional cultural properties and  
31 would continue to do so during the NEPA studies for each Tier 2 project in accordance with the  
32 Section 106 PA developed for I-11 (see **Appendix E7**, Section 106 Consultation Summary and  
33 Draft Programmatic Agreement).

### 34 3.7.5 Summary

35 **Table 3.7-11** (Summary of Potential Impacts on Cultural Resources) located at the end of this  
36 section, summarizes potential impacts on cultural resources. **Figure 3.7-1** (Potential Levels of  
37 Impacts on Archaeological Sites and Historic Structures) is a map highlighting levels of potential  
38 impact on archaeological sites and historic structures. **Figure 3.7-2** (Potential Levels of Impacts  
39 on Historic Districts and Buildings) is a map highlighting levels of potential impact on historic  
40 districts and buildings.



**Figure 3.7-1 Potential Levels of Impacts on Archaeological Sites and Historic Structures**





1 The inventory of cultural resources for each Build Corridor Alternative is incomplete. Cultural  
2 resource surveys would be conducted to complete the inventory during the NEPA study for each  
3 Tier 2 project in accordance with procedures defined by the I-11 PA (see **Appendix E7**,  
4 Section 106 Consultation Summary and Draft Programmatic Agreement). The Tier 1 analysis of  
5 available inventory data concluded that each Build Corridor Alternative could adversely affect  
6 recorded archaeological sites, historic structures, historic districts and buildings, and traditional  
7 cultural properties that (1) are listed in the NRHP, (2) have been determined eligible for the  
8 NRHP, (3) were recommended eligible for the NRHP, or (4) remain unevaluated and might be  
9 eligible for the NRHP.

10 Potential levels of impact on archaeological sites and historic structures were rated as high  
11 along 4 miles of the Purple Alternative, 8 miles of the Green Alternative, and 25 miles of the  
12 Orange Alternative. Potential levels of impact on archaeological sites and historic structures  
13 were rated as moderate along 48 miles of the Purple Alternative, 55 miles of the Green  
14 Alternative, and 20 miles of the Orange Alternative.

15 The many miles of potential high levels of impact along the Orange Alternative are primarily in  
16 Option B in the Tucson area where archaeological sites are densely concentrated along the  
17 Santa Cruz River. The Orange Alternative is estimated to have the potential to affect  
18 approximately 60 archaeological sites and historic structures that could be eligible for the  
19 NRHP. About two-thirds of those archaeological sites are along Option B and excavations were  
20 conducted at many of those sites within the I-19 and I-10 ROWs to recover artifacts and  
21 information to mitigate impacts of prior highway improvements. Tier 2 studies would need to  
22 determine if improvements for I-11 in Option B would warrant additional data recovery studies. If  
23 any of those sites do warrant more archaeological excavation, it could be a complex effort  
24 because many are habitation sites deeply buried in the alluvium of the Santa Cruz River  
25 floodplain. The Purple Alternative is estimated to have the potential to affect approximately  
26 70 archaeological sites and historic structures that could be eligible for the NRHP, compared to  
27 approximately 100 for the Green Alternative. Construction of new lanes for all Build Corridor  
28 Alternatives would intersect five or six recorded historic linear historic structures but if  
29 necessary, bridging could probably avoid any adverse effects.

30 The Orange Alternative is likely to affect more historic districts and buildings than the Purple  
31 Alternative, which is likely to affect more than the Green Alternative. The potential need for  
32 additional ROW for the Orange Alternative along approximately 6 miles of I-10 in Tucson could  
33 result in adverse impacts on two NRHP-listed districts (Barrio Anita and Barrio El Membrillo) and  
34 one NRHP-eligible district (El Paso & Southwestern Railroad). If additional ROW is needed, the  
35 Orange Alternative also could result in high impacts on five unrecorded historic-period  
36 properties preliminarily evaluated as likely or possibly eligible for the NRHP.

37 The Purple and Green Alternatives would not affect any properties listed in or determined  
38 eligible for the NRHP. The assessment indicated the Purple Alternative could affect one  
39 unrecorded historic-period property preliminarily evaluated as possibly eligible, and if the  
40 property was determined eligible, the level of impact could be high because it is so large it  
41 probably could not be avoided within the 2,000-foot-wide corridor. The assessment rated the  
42 Green Alternative as having no potential for a high level of impact on any historic-period  
43 properties preliminarily evaluated as likely or possibly eligible for the NRHP.

44 The Orange Alternative has potential to affect one traditional cultural property that the consulted  
45 Tribes identified. The Purple and Green Alternatives each could affect two identified traditional



1 cultural properties although that is uncertain because the Tribes have not shared specific  
2 information about the location of those properties in relation to the Build Corridor Alternatives.

3 **3.7.6 Potential Mitigation Strategies**

4 In conjunction with Tier 2 NEPA studies, FHWA and ADOT would coordinate with the  
5 Section 106 Consulting Parties in accordance with the I-11 PA to develop and implement  
6 measures to minimize or mitigate any unavoidable adverse effects of Tier 2 projects.

7 **3.7.7 Future Tier 2 Environmental Reviews**

8 In conjunction with NEPA environmental reviews of Tier 2 projects, FHWA and ADOT would  
9 arrange for cultural resource surveys as needed to complete the inventory of cultural resources  
10 within the APE delineated for each Tier 2 project and assess potential effects. The FHWA and  
11 ADOT would work with the Consulting Parties to avoid or minimize adverse impacts, or mitigate  
12 unavoidable adverse effects in accordance with procedures stipulated by the I-11 PA (see  
13 **Appendix E7**, Section 106 Consultation Summary and Draft Programmatic Agreement).

**Table 3.7-11 Summary of Potential Impacts on Cultural Resources**

Topics	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
<p>Archaeological Sites and Historic Structures</p>	<p>2 miles of potential high impacts that may have been disturbed during previous I-10 construction. No I-11 impacts identified. Other projects in the Study Area will be subject to their own evaluation.</p>	<p>4 miles of potential high impacts and 48 miles of moderate impacts. Prior cultural resource surveys covered 27 percent of the 2,000-foot-wide corridor and found 243 archaeological sites and historic structures. Estimate approximately 70 NRHP-eligible archaeological sites and historic structures could be in ROW where new lanes would be built; some may be avoided by ROW adjustments and not all resources in ROW would necessarily be disturbed. Five recorded NRHP-eligible historic linear structures (canals, railroads, and roads) could be affected but such structures could be bridged if necessary to avoid adverse effects.</p>	<p>8 miles of potential high impacts and 55 miles of moderate impacts. Prior cultural resource surveys covered 25 percent of the 2,000-foot-wide corridor and found 231 archaeological sites and historic structures. Estimate approximately 100 NRHP-eligible archaeological sites and historic structures could be in ROW where new lanes would be built; some may be avoided by ROW adjustments and not all resources in ROW would necessarily be disturbed. Six recorded NRHP-eligible historic linear structures (canals, railroads, and roads) could be affected but such structures could be bridged if necessary to avoid adverse effects.</p>	<p>25 miles of potential high impacts and 20 miles of moderate impacts. Prior cultural resource surveys covered 49 percent of the 2,000-foot-wide corridor and found 523 archaeological sites and historic structures. Estimate approximately 60 NRHP-eligible archaeological sites and historic structures could be in ROW where new lanes would be built; some may be avoided by ROW adjustments and not all resources in ROW would necessarily be disturbed. Approximately two-thirds of the potentially affected sites are along I-10 in the Tucson area, which is the most dense and most complex concentration of sites in the Build Corridor Alternatives. Many of those sites were identified and previously studied in conjunction with prior improvements of I-10. Six recorded NRHP-eligible historic linear structures (canals and railroads) could be affected but such structures could be bridged if necessary to avoid adverse effects.</p>

**Table 3.7-11 Summary of Potential Impacts on Cultural Resources (Continued)**

Historic Districts and Buildings	No resources identified. Other projects in the Study Area will be subject to their own evaluation.	Potential high impacts on one historic-period property preliminarily evaluated as likely or possibly NRHP eligible, moderate impacts on two (and one additional for the CAP Design Option), and low impacts on 24 (and one additional for the CAP Design Option).	Potential moderate impacts on three historic-period properties preliminarily evaluated as possibly NRHP eligible and low impacts on 17 (and one additional for the CAP Design Option).	Potential high impacts on two NRHP-listed districts, one NRHP-listed house, one NRHP determined eligible district, and five unrecorded historic-period properties preliminarily evaluated as likely or possibly NRHP eligible, and low impacts on two others.
Traditional Cultural Properties	No resources identified. Other projects in the Study Area will be subject to their own evaluation.	Tribes identified two places in or near the 2,000-foot-wide corridors of Options C and I2 as having traditional cultural importance (same places as the Green Alternative).	Tribes identified two places in or near the 2,000-foot-wide corridors of Options D and I2 as having traditional cultural importance (same places the Purple Alternative).	Tribes identified two places in the 2,000-foot wide corridors of Options B and Q1 as having traditional cultural importance, but one was avoided by prior highway improvements and FHWA and ADOT are committed to avoiding it with any future improvements.

**Table 3.7-11 Summary of Potential Impacts on Cultural Resources (Continued)**

Indirect Effects	<p>Programmed transportation improvements plus projected population and employment growth could:</p> <ul style="list-style-type: none"> <li>• Increase pressure for potential land use conversion with an associated loss of cultural resources.</li> </ul> <ul style="list-style-type: none"> <li>• Confine the extent of potential indirect effects to a much smaller area than for Build Corridor Alternatives.</li> <li>• Generally avoid potential adverse effects if the project is subject to regulatory review.</li> </ul>	<p>Land development induced by the project could:</p> <ul style="list-style-type: none"> <li>• Increase loss of cultural resources due to land use conversions.</li> <li>• Increase access to previously remote cultural resources and lead to inadvertent damage and vandalism.</li> </ul> <ul style="list-style-type: none"> <li>• Result in potential indirect effects rated moderate because of the extent of co-located Corridor Options (122 miles).</li> <li>• Generally avoid potential adverse effects if the project is subject to regulatory review.</li> </ul>	<p>Similar to the Purple Alternative, except:</p> <ul style="list-style-type: none"> <li>• Greater potential for indirect effects because of shorter length of co-located Corridor Options (90 miles).</li> </ul>	<p>Similar to the Purple Alternative, except:</p> <ul style="list-style-type: none"> <li>• Longer length of co-located Corridor Options (263 miles) may reduce or slow induced growth in new areas.</li> <li>• Longer length of co-located Corridor Options is likely to reduce overall extent of indirect effects, but those effects could be severe on historic districts and buildings in Tucson due to visual and auditory effects on nearby historic neighborhoods.</li> <li>• Generally avoid potential adverse effects if the project is subject to regulatory review.</li> </ul>

**Table 3.7-11 Summary of Potential Impacts on Cultural Resources (Continued)**

Cumulative Effects	<p>Past, present, and reasonably foreseeable projects could:</p> <ul style="list-style-type: none"> <li>• Have and will continue to affect cultural resources.</li> <li>• Have minor incremental effects.</li> </ul>	<p>Past, present, and reasonably foreseeable projects could:</p> <ul style="list-style-type: none"> <li>• Have and will continue to affect cultural resources.</li> <li>• Have potential incremental effects, such as increased noise, public access, or visual effects on archaeological sites; effects are expected to be moderate in the South Section near Tucson and Eloy; in the Central Section near Casa Grande, Goodyear, and Buckeye; and in the North Section near Buckeye and Wickenburg.</li> <li>• Have minor incremental effects on historic districts and buildings.</li> </ul>	<p>Similar to Purple Alternative except:</p> <ul style="list-style-type: none"> <li>• Potential incremental effects on archaeological sites are expected to be greater because more archaeological sites are likely to be affected.</li> </ul>	<p>Similar to Purple Alternative except:</p> <ul style="list-style-type: none"> <li>• Potential incremental effects on historic districts and buildings are expected to be greater if new ROW is needed for Option B near historic Tucson neighborhoods.</li> </ul>

CAP = Central Arizona Project, 1-10 = Interstate 10, NRHP = National Register of Historic Places, ROW = right-of-way.