

Oregon Department of Transportation

The logo features a stylized mountain range in blue and orange. The text "US 97" is prominently displayed in a large, bold, blue font. Below it, "Bend North Corridor Solutions" is written in a smaller, blue, serif font. The entire logo is set against a white background with a blue border.

US 97
**Bend North Corridor
Solutions**

"Improving Safety, Mobility, Traffic Flow"

Final Archaeological Resources Impact Assessment Methodology Memorandum

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Region 4

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1. Introduction

This technical memorandum fulfills a requirement of the Federal Highway Administration (FHWA) 2005 legislation titled Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 U.S. Code §139). Section 6002 of the legislation, titled Efficient Environmental Reviews for Project Decisionmaking, requires regulatory agencies to collaborate in establishing the research methodologies used to evaluate transportation project alternatives.

The purpose of this Archaeological Resources Impact Assessment Methodology memorandum is to describe the methods that will be used to collect data and evaluate the project's impacts to archaeological resources. This memorandum, for the US 97 Bend North Corridor Project, will also document consultation with the Oregon Department of Transportation (ODOT) and the participating agencies on the approach taken to research each environmental discipline before conducting the research.

1.1 Project Description

US 97 is a strategic north-south state facility that runs through the central portion of the state and is a complement to the I-5 corridor. It is classified as a statewide facility and freight route along its entire length, and as an expressway through the study area. US 97 is a critical link in moving goods and people through Central Oregon. US 20 is similarly designated as a statewide freight route and expressway through the study area.

Through the study area, US 97 also serves as a way for people to get to and from home and work, and it is a connection to area shopping and dining. In addition, the tremendous population growth in Bend and Central Oregon has placed many demands on US 97: an increase in congestion, disruptions in traffic flow, an increase in traffic delays and an increase in the number of crashes. The purpose of the US 97 Bend North Corridor Project (the project) is to reduce traffic congestion, improve traffic flow and improve public safety on the segment of US 97 between the Deschutes Market Road / Tumalo Junction interchange and the Bend Parkway / Empire Avenue interchange.

By Summer 2009, four Build Alternatives were identified for detailed environmental study: three distinct east corridor alternatives (East 1, East 2, and East 3) and one west corridor alternative (West 1). These alternatives are described below. As of Fall 2009, the project team is investigating down-scaled versions of these alternatives to determine if lower cost solutions address the project purpose and need. If any down-scaled versions are forwarded for detailed environmental study, subsequent project documentation will be provided. All methodology included in this memorandum is expected to apply to any transportation alternative developed for the US 97 Bend North Corridor project.

1.1.1 East Corridor Alternatives

With the east corridor alternatives US 97 would be realigned east of the existing highway adjacent to the Burlington Northern Santa Fe Railroad. The following is a summary of the key features of all of the east corridor alternatives:

- Slip ramp provided to access Robal Road from northbound US 97.

- Existing US 97 becomes a local route, 3rd Street.
- US 97 and US 20 are connected just north of Empire Avenue. Direct connections from northbound US 97 to westbound US 20 and eastbound US 20 to southbound US 97.
- US 97 / Empire Avenue interchange uses a single point interchange to handle traffic more efficiently.

The east corridor alternatives differ in the location of the project's northern interchange and the type of interchange.

- **East 1:** Partial northern US 97 interchange located just north of Fort Thompson Lane. Exit for southbound US 97 traffic to 3rd Street and an entrance for traffic on northbound 3rd Street on US 97.
- **East 2:** Partial northern US 97 interchange located near Bowery Lane. Exit for southbound US 97 traffic to 3rd Street and an entrance for traffic on northbound 3rd Street on US 97.
- **East 3:** Partial northern US 97 interchange located in the Clausen / Grandview area. Exit for southbound US 97 traffic to 3rd Street and an entrance for traffic on northbound 3rd Street on US 97.

1.1.2 West Corridor Alternative

With the west corridor alternative US 97 would be realigned to the west of the existing highway. The following is a summary of the key features of West 1:

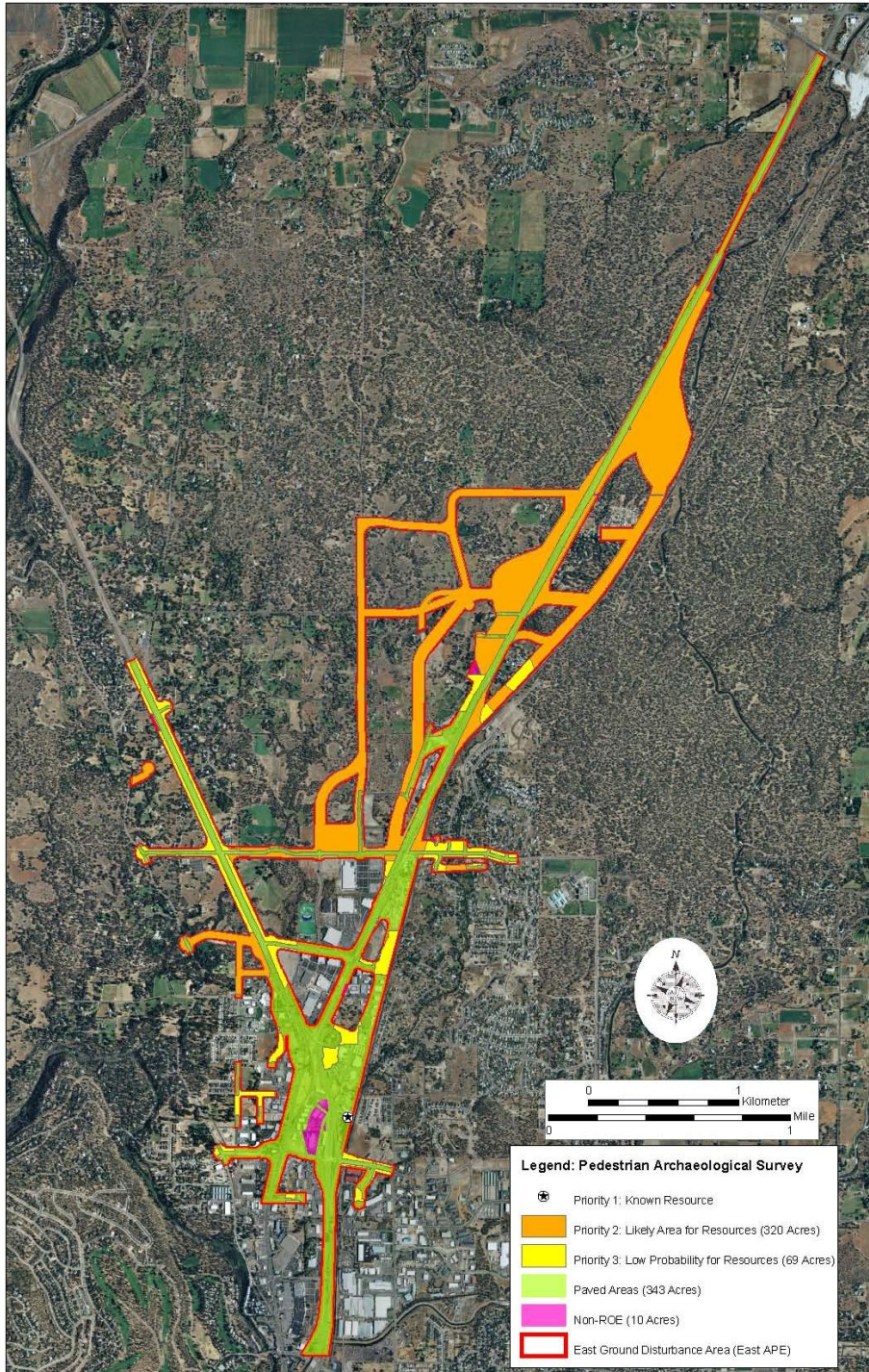
- US 97 and US 20 traffic are combined into a common roadway corridor between Empire Avenue and Cooley Road.
- US 97 and US 20 interchange is located near Cooley Road.
- Collector / distributor roads provide access at Robal Road, 3rd Street and Empire Avenue from the highways.
- Partial northern US 97 interchange is located near Bowery Lane. Exit for southbound US 97 traffic to 3rd Street and entrance for traffic on northbound 3rd Street on US 97.
- Existing US 97 becomes a local route, 3rd Street.
- Empire Avenue interchange is reconfigured in a split diamond interchange design, which will function as collector / distributor roads from 3rd Street / US 20 and which will include signals on the ramps at Empire Avenue and 3rd Street.

1.2 Area of Potential Effect

The Area of Potential Effect (APE) as defined by 36 CFR 800.16(d) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of significant sites identified during the archaeological survey. Archaeological surveys are generally limited to the APE. The APE for the project's east corridor alternatives contains the combined ground disturbance area for East 1, East 2, and East 3 (Exhibit 1). The APE for the project's west corridor alternative contains the ground disturbance area for West 1 (Exhibit 2).

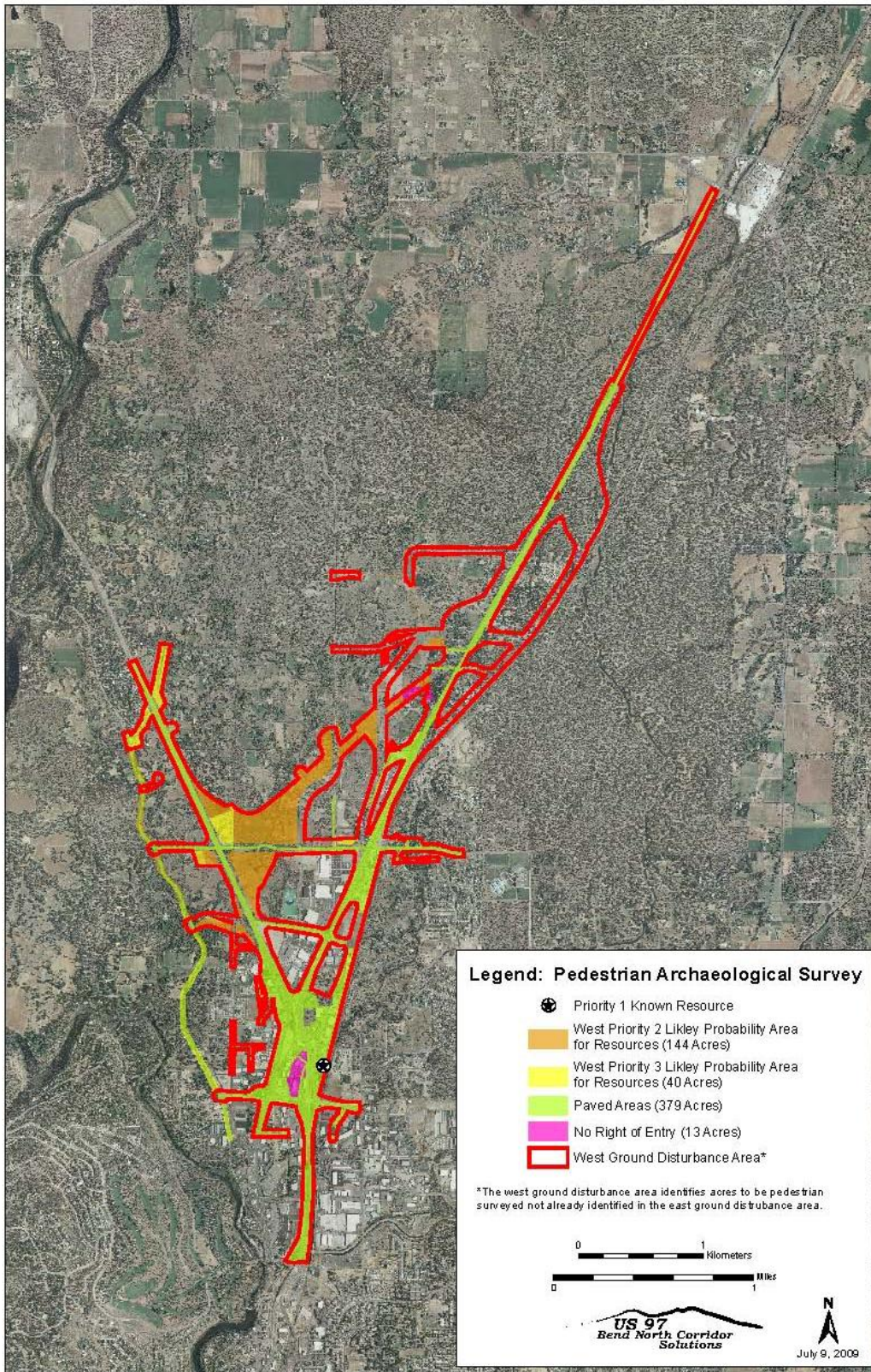
Additional APEs may be defined for the project as contingency tasks. The APE will include areas where the ground has not been previously disturbed, including but not limited to: the right of way for the proposed road alignment, pedestrian walkways and recreation trails; cut-and-fill locations; construction staging and stockpile areas; and storm drainage facilities.

Exhibit 1. Area of Potential Effects (APE) – East Alternatives Combined



Note: Survey areas will be adjusted to correspond to the project's footprint as it is developed.

Exhibit 2. Area of Potential Effects (APE) – West 1 Alternative



Note: Survey areas will be adjusted to correspond to the project's footprint as it is developed.

2. Relevant Laws and Regulations

All environmental analysis and reporting for the project will comply with the National Environmental Policy Act (NEPA) and the FHWA’s Technical Advisory T6640.8A (October 30, 1987). Relevant laws and regulations also include federal requirements, state plans and laws, and local adopted plans and policies. Exhibit 3 identifies the federal, state and local plans and regulations relevant to archaeological resources.

Exhibit 3. Relevant Laws and Regulations for Archaeological Resources

Regulatory Source	Title	Source	Statement of Requirement
Advisory Council on Historic Preservation (ACHP) and State Historic Preservation Office (SHPO)	National Historic Preservation Act (NHPA) of 1966, as amended	16 United States Code (U.S.C.) 470 et seq.	Authorized the Secretary of the Interior to expand and maintain a National Register, established and refined the responsibilities of the State and Tribal Historic Preservation Officers and the Advisory Council on Historic Preservation (ACHP), and pledged federal assistance to preservation efforts of state and local groups.
Federal Government	National Environmental Policy Act (NEPA) of 1969	42 USC 4321 et seq.	Requires federal agencies to prepare environmental impact statements for each federal action having an effect on the environment, while preserving the important historic, cultural, and natural aspects of the national heritage.
ACHP and SHPO	Section 106 of the NHPA	36 Code of Federal Regulations (CFR) 800	36 CFR 800 sets forth the procedures for federal agencies to meet their responsibilities under the NHPA by taking into account the effects of their undertakings on historic properties.
SHPO	Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)	25 U.S.C. 3001 et seq.	The federal law provides for the identification and protection of Native American graves and funerary objects.
SHPO	Archaeological Resources Protection Act (ARPA) of 1979, as amended	Public Law 96-95; 16 U.S.C. 470aa-470mm	ARPA established the permit process on public and tribal lands for the protection of archaeological resources.
SHPO and ODOT	Department of Transportation Act – Section 4(f)	49 USC 301	Section 4(f) states that transportation projects that may affect a park, recreation or wildlife area or historic site can be approved only if there is no prudent of feasible alternative and requires planning to minimize any effects that may occur as a result of the project.

Regulatory Source	Title	Source	Statement of Requirement
State of Oregon and SHPO	Oregon Revised Statutes (ORS) – Archaeological Objects and Sites	ORS 358.905 – 358.955	State law provides definition of archaeological sites as 75 years or older, and defines significance and cultural patrimony.
State of Oregon and SHPO	Oregon Revised Statutes (ORS) – Indian Graves and Protected Objects	ORS 97.740 – 97.760	Rights and Duties Relating to Cemeteries, Human Bodies and Anatomical Gifts, specifically that section that discusses regulations relating to historic cemeteries (the Oregon Commission on Historic Cemeteries), and the protection of Indian graves and protected objects
State of Oregon and SHPO	Conservation Easement	ORS 271.715 – 271.795	Permits agencies to help in protecting lands with special natural or cultural features and provides tax incentives to private land owners who agree to restrict their use of such lands.
Deschutes County	Historic and Cultural Ordinances	Chapter 23.108	To preserve and protect historic and cultural resources of Deschutes County. A joint Cities / County Historical Landmarks Commission to assure coordination in identifying historical and cultural resources, and protecting those resources.
City of Bend	Bend Code: Preservation of Historic Resources	Bend Code 10.100 to 10.188	The City [will] identify, foster, encourage and develop the preservation, management and enhancement of structures, sites and objects of cultural significance.

3. Coordination with ODOT, Tribes and Other Agencies

The project archaeology discipline lead will coordinate with ODOT’s archaeology specialist to address comments on the methodology presented in this memorandum and during the technical report analysis. Coordination will also occur with the Confederated Tribes of Warm Springs Reservation of Oregon, the Burns Paiute Tribe, the Klamath Tribes and Oregon’s State Historic Preservation Office (SHPO). ODOT archaeologists reviewed and provided input on the statement of work for the archaeological survey and contingency tasks.

4. Data Sources

Before the archaeological field survey is conducted, a background review of the project area will be done, including researching the records at SHPO in Salem to determine if archaeological sites and surveys have previously been conducted in the project area. The objective will be to determine whether an archaeological resource is likely to be found within the project APE. In addition, the following data sources will be used:

- Historical topographic maps
- General Land Office maps

- Archaeological reports, books, journals
- Ethnographic information from sources on file in the Archaeological Investigations Northwest, Inc. (AINW) library

Where appropriate, data collection and use will be coordinated with other relevant disciplines.

5. Data Collection Methods

Information will be collected from the sources listed in Section 4, Data Sources, to describe the existing archaeological conditions. Evidence for both prehistoric and historic-period occupations as archaeological sites are expected to be present within the project area. Prehistoric sites are common in and around the broader area that are associated with the Deschutes River to the west and numerous lithic scatters and hunting camps have been recorded to the east of the project area. Historic-period trails, roadways, railroads, and canals are in the immediate area and they may have associated historical archaeological sites.

The archaeological field survey will be conducted on public right of way and on private property. A pedestrian survey of non-hardened (unpaved) areas, not previously disturbed, within the project's APE will be conducted. Coordination with ODOT's environmental project manager will occur to identify specific areas to be pedestrian surveyed. Other acreage may be subsequently surveyed in addition to these two sections, if needed. Surveys on private land will be conducted where right of entry permissions have been obtained for the project.

ODOT will identify the APE boundary, either by staking or geographic information system (GIS) shape file. The archaeological pedestrian survey will consist of transect intervals no more than 15 meters (50 feet) apart. During the survey, areas that appear to be likely for an archaeological site but are obscured by vegetation will be identified for subsequent shovel or auger testing. The results of the pedestrian survey and recommendations for shovel or auger testing will be conveyed to ODOT.

Once written notice to proceed is obtained for shovel or auger testing, and an archaeological excavation permit has been obtained from the SHPO, up to 100 shovel or auger tests will be done. The shovel tests will be 30 centimeters (cm) (12 inches [in]) in diameter and auger tests will be 15 cm (6 in) in diameter at the surface. Shovel tests will be excavated to a minimum depth of 50 cm (20 in) below the surface. An auger will be used to extend the depth of the test in areas where deeply buried resources are expected. If artifacts representing intact cultural deposits are found, then shovel or auger tests will be extended to the bottom of the deposits to at least two, 10-cm levels that are devoid of intact cultural deposits.

The soil within the shovel and auger tests will be screened through nested 3 millimeter (mm) (1/8-in) mesh hardware cloth and will be backfilled immediately upon completion. The locations of the shovel and auger tests will be mapped relative to features in the surrounding landscape.

No artifacts will be collected from private land, but they will be photographed and described. Artifacts will be collected from public land under the provisions of a SHPO excavation permit. Recovered artifacts will be processed in the AINW archaeological laboratory for analysis, and prepared for curation.

Up to four archaeological sites may be recorded on archaeological site forms. Additional evaluative testing will be done to determine eligibility for listing in the National Register of Historic Places (NRHP) for up to two sites identified during the survey and shovel / auger testing. As an authorized contingency task, up to 10 additional shovel tests will be done to delineate up to 2 archaeological sites. Following SHPO guidelines, no shovel tests will be excavated within the boundaries of known archaeological sites, but shovel tests will be done to determine and refine site boundaries. The shovel tests will be 30 cm (12 in) in diameter at the surface to define site boundaries. Excavation of up to 4 square, quarter test units (QTUs) that will be 50x50 cm (20x20 in) at the surface will be done to assess the depth, content, and integrity of the deposits at each site. Alternatively, one 1x1-meter (m) (3.3x3.3 feet [ft]) test unit will be done where appropriate to identify features. Augering will be done with a 15-cm bucket auger in the base of the units if cultural deposits extend below the depth of the shovel test.

All sediments will be screened through nested 3.2 and 6.4 mm (1/8 and 1/4 in) mesh hardware cloth. The shovel or auger tests and QTUs will be excavated to at least the depth of the cultural deposit and two 10-cm levels that are devoid of artifacts. The units will be excavated in 10-cm levels. The locations of the units will be mapped in the field using a GPS unit or by tape and compass. Evaluative testing will not be done for archaeological resources that are not likely to be recommended to be eligible for listing in the NRHP based on the survey-level work.

The methods and results of the survey, site evaluation work, and excavations will be integrated into the draft Archaeological Resources Technical Report. The report will include site forms with recommendations for listing in the NRHP. Recommendations on the level of effect of the project on NRHP-eligible archaeological sites will be included. The technical report will be finalized based on review comments. A draft, a draft final, and a final Archaeological Resources Technical Report will be prepared.

6. Analysis Methods

Impacts to significant archaeological sites will be addressed in the archaeological resources report under Section 106 and 36 CFR Part 800.5-Assessment of Adverse Effects. NEPA compliance can be coordinated with Section 106 to meet their requirements. A Finding of Adverse Effect is made when an undertaking may alter, directly or indirectly, any of the characteristics of a significant archaeological site that qualify the site for inclusion in the NRHP. A Finding of No Adverse Effect will be made when the undertaking does not meet the criteria for adverse effect, or conditions are imposed to avoid adverse effects.

The following is a summary of the methods that will be used to assess the project's adverse and beneficial direct, indirect and cumulative impacts to archaeological resources. The general approach for mitigation is also documented.

6.1 Direct Impact Analysis Approach

Direct effects will be determined on archaeological sites within the APE that would be affected by the project that have been determined to be eligible for listing in the NRHP. Direct effects could include loss of archaeological data due to physical destruction or damage to all or part of a significant archaeological site.

6.2 Indirect Impact Analysis Approach

If a significant archaeological site has an above-ground component, such as a rock cairn or other feature, indirect effects could be caused by a change in the character of the use of the site or a change to the physical features within the setting of the site that contribute to its historic significance. The indirect impacts analysis will use a boundary no larger than the geographic boundary for cumulative impacts (below).

6.3 Cumulative Impact Analysis Approach

Coordination with ODOT will occur to determine if the project would have a cumulative impact on archaeological resources when combined with past, present and reasonably foreseeable future actions. If it is determined that cumulative impacts would occur the following approach would be followed.

First, a cumulative impacts geographic boundary will be identified for each resource. The determination of geographic boundary will consider the geographic extent of direct and indirect project impacts as well as corresponding natural boundaries of the resource. Justification for the geographic boundary will be provided for each resource.

Next, a temporal boundary will be identified for the resource. This temporal boundary defines the historic timeframe for the resource, and will be the beginning point for the historic context discussion. The historic context discussion will be a qualitative discussion of how the resource came to be in its current condition. A general discussion of past and present actions that have influenced the current condition of the resource will be included. Specific past and present projects will not be identified, but general actions (e.g. expansion of urban areas, development of national highway system, conversion of agricultural lands, etc) will be discussed.

Third, a list of reasonably foreseeable future projects (both public and private) will be developed for the cumulative impacts geographic boundary for all resources combined. This list will include projects currently identified in city, county and regional adopted plans, and therefore “reasonably foreseeable”, that could potentially combine with direct or indirect impacts of the US 97 Bend North Corridor project to produce cumulative impacts. An end date for the list of projects will be identified (e.g. extent of timeframe for adopted plans), and will not extend past the design horizon for the project. Private development projects will be identified through coordination with planners at the city and county (e.g. review of pre-application materials). Additionally, the Juniper Ridge development will be included in the list of projects. Rationale for projects included in the list will be provided.

Lastly, a methodology for identifying and analyzing cumulative impacts for each resource will be presented. The cumulative impacts analysis will be done qualitatively, but, when possible, quantitative information will supplement the discussion. Technical report authors will coordinate with ODOT on the proposed methodology.

6.4 Mitigation Approach

Consultations will be done with the SHPO, the Tribes, and other consulting parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects to NRHP-eligible archaeological sites. Generally, impacts to significant archaeological sites can be avoided, and / or minimized if the project alignments are changed and

defined. If adverse effects cannot be avoided, a plan to avoid, minimize, and mitigate effects will be put into effect. Phase II Archaeological Investigations will be recommended for significant archaeological sites that will be physically impacted by the project and cannot be avoided. A Memorandum of Agreement will be executed and implemented in compliance with Section 106 for site mitigation.

Appendix A Correspondence with ODOT Discipline Reviewer

Christopher Bell, ODOT historic resources specialist, and Tobin Bottman, ODOT Archaeologist, have reviewed this document and provided no changes to the methodology presented.

Appendix B Coordination with Participating Agencies

ODOT distributed the Draft Final Impact Assessment Methodology Memoranda to participating agencies for review on August 25, 2009. The 30-day review period ended on September 23, 2009. ODOT received no substantive comments that required changes to this memorandum from the participating agencies.