

Appendix 5.4.5-B

Determination of Effect

ALL ABOARD FLORIDA – ORLANDO TO MIAMI, FLORIDA INTERCITY PASSENGER RAIL PROJECT – PHASE 2

FRA DRAFT DETERMINATION OF EFFECTS

1. Introduction

The National Historic Preservation Act of 1966 (NHPA), as amended, defines historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for listing in, the National Register [of Historic Places (NRHP)], including artifacts, records, and material remains relating to the district, site, building, structure, or object” (NHPA 54 U.S.C. § 300308).

Section 106 of the NHPA (Section 106) (54 U.S.C. § 306108) requires all federal agencies to take into account, prior to authorizing an undertaking, the effect of that undertaking on historic properties listed in or eligible for listing in the NRHP. Under Section 106,

“An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. Consideration shall also be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property’s eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative” (36 CFR § 800.5(a)(1)).

An undertaking, as defined by Section 106

“means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency” (36 CFR § 800.16(y)).

This document constitutes the Federal Railroad Administration’s (FRA) Findings of Effect under Section 106 for All Aboard Florida – Operations, LLC’s (AAF) proposed Orlando to Miami, Florida Intercity Passenger Rail Project (Project). It builds on information and analysis included in the FRA’s Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation for the Project published by the FRA in September 2014. As proposed, the Project would involve the institution of intercity passenger rail service between Orlando and Miami, Florida with station stops in Orlando, West Palm Beach, Fort Lauderdale, and Miami. AAF proposes to implement the Project through a phased approach; Phase I would provide rail service on the West Palm Beach to Miami section while Phase II would extend service to Orlando. The Project includes four discrete geographic segments: a terminal

segment at the Orlando International Airport (MCO) (MCO Segment), an East-West Corridor between MCO and Cocoa Beach (E-W Corridor), a North-South Corridor between Cocoa Beach and West Palm Beach (N-S Corridor) and the corridor between West Palm Beach and Miami (the WPB-M Corridor). The Project also includes construction of a new Vehicle Maintenance Facility (VMF) on property owned by the Greater Orlando Airport Authority (GOAA).

FRA and AAF conducted an environmental review of Phase I in 2012/2013, including preparing and issuing both an Environmental Assessment (EA) (*Environmental Assessment and Section 4(f) Evaluation for the All Aboard Florida Passenger Rail Project West Palm Beach to Miami, Florida*) and a Finding of No Significant Impact (FONSI). Phase I of the Project, as described in the 2012 EA, includes constructing three new stations (West Palm Beach, Fort Lauderdale and Miami), purchasing five train sets, adding a second track along most of the 66.5-mile corridor and adding 16 new round-trip intercity passenger train trips (32 one-way trips) on the West Palm Beach to Miami section of the Florida East Coast Railway (FECR).

On November 6, 2012, SHPO concurred with FRA's finding that Phase I would have no adverse effect on historic properties. This Effects Determination considers Phase II (between West Palm Beach and Orlando) and also the effects of reconstructing or replacing several bridges within the Phase I segment (Miami to West Palm Beach).

2. Methodology

All cultural resource investigations were conducted in accordance with Section 106 and its implementing regulations for Protection of Historic Properties (36 CFR Part 800). FRA and AAF conducted initial consultation with the Florida Division of Historical Resources, which is the State Historic Preservation Office (SHPO) on July 13, 2012, prior to the initiation of the cultural resources survey, to establish a methodology and Area of Potential Effect (APE) for the Phase 1 Miami to West Palm Beach Project. A follow up meeting was held on March 28, 2013 to confirm use of the same methodology in the N-S corridor, and use of existing data and previous studies for the archaeology/historic building survey for the E-W corridor. The investigations occurred in three steps: identification of the APE, identification of NRHP-listed or eligible properties within the APE, and an assessment of effects of the Project to those properties.

2.1 Area of Potential Effect

An APE was established for each segment of the project, taking into account the potential extent of direct and indirect effects to above-ground historic properties and below-ground archaeological resources. The APE includes the geographic area or areas in which the Project may directly or indirectly cause changes in the character or use of archaeological and historic properties, if such properties exist. The APE was influenced by the scale and nature of the undertaking as well as its geographical setting. Normally, archaeological and other below-ground resources will be affected by ground disturbing activities. Structural resources and other above ground sites, however, are often impacted by those activities, as well as alterations to setting, access and appearance. Indirect impacts, such as noise, vibration, and visual impacts, may also affect historic resources. Direct effects, such as physical destruction or alteration, to above-ground and below-ground properties would occur only within the

construction footprint of each segment. Indirect effects could occur within a defined distance from the limit of the proposed or existing right-of-way. The portion of the APE in which physical disturbance would occur is termed the direct effects APE; the portion of the APE in which changes in noise, vibration, or visual setting could occur is termed the indirect effects APE. For the AAF project, the APE is defined as follows:

- MCO Segment: the APE for direct effects was defined as the construction footprint and the APE for indirect effects extended 150 feet from either edge of the proposed rail easement.
- VMF: the APE for direct and indirect effects was defined as the entire 47-acre site.
- E-W Corridor: the APE for direct effects was defined as the construction footprint of all of the alternatives and the APE for indirect effects extended 150 feet north and south of the proposed right-of-way, except for areas where the limits of disturbance were limited to the north or south side of the existing State Road 528. In those areas, the APE did not extend across the existing roadway.
- N-S Corridor: the APE for direct effects is the FECR right-of-way and the APE for indirect effects was defined as 150 feet on either side of the right-of-way for the consideration of indirect impacts.

After consultation with the SHPO, FRA determined that the MCO Segment and the VMF had been adequately addressed by the Greater Orlando Aviation Authority in two previous environmental assessments, because the APE for the MCO Segment and the VMF is included within the boundaries of the previous studies and an updated desktop survey did not identify additional historic resources within this portion of the APE. The methodology for the N-S Corridor was consistent with that used in Section 3.3.7 of the 2012 EA.

The APE for all segments was confirmed by the SHPO, in a meeting on July 8, 2013, as documented in Appendix 4.4.5-A2 of the DEIS.

2.2 Determination of Eligibility

AAF, as a non-federal party, is assisting FRA in meeting its obligations under Section 106, and has conducted studies to determine if any historic properties exist in the Project's Area of Potential Effect (APE) that are listed in, or eligible for listing in, the NRHP. FRA submitted this report, the *Cultural Resources Assessment Report (CRAR)* on October 23, 2013, with a request for concurrence. SHPO concurred with FRA's Determination of Eligibility on November 20, 2013. On May 21, 2015 SHPO concurred with the findings of the *Addendum to the Cultural Resources Assessment Report*.

As detailed in Section 4.4.5 of the DEIS, the methodology used to identify NRHP-listed and eligible properties was developed in conjunction with SHPO and is similar to previous SHPO-approved methodologies that have been applied to other large-scale transit projects. This proven methodology provides key information such as identifying existing historic and archaeological resources, and the potential for additional unrecorded cultural resources. Archival research was conducted to determine the types, chronological placement, and location patterning of known cultural resources within the APE. The research began with a Florida Master Site File (FMSF) search of data and mapping from FMSF forms and survey reports. This included a search of federal, state, county, and local site inventories, published

and unpublished Cultural Resource Management (CRM) reports, county Property Appraiser records, historic maps, and other relevant historical research materials. Field surveys, including subsurface testing, were conducted to identify other archaeological and historic resources eligible for listing on the NRHP. A Cultural Resources Assessment Survey Report previously prepared for the SR 528 corridor between SR 520 and Cape Canaveral that identifies NRHP listed and eligible resources was also evaluated as part of the archival research (Janus Research, Inc. 2005).

Determinations of eligibility were made in accordance with specific criteria for eligibility to the NRHP: “The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history” (36 CFR § 60.4). All historic property investigations and consultations were conducted in accordance with Section 106 and its implementing regulations for Protection of Historic Properties in 36 CFR Part 800. The investigations and consultations also complied with the field methods, data analysis, and reporting standards embodied in the Florida Division of Historical Resources (FDHR) *Cultural Resource Management (CRM) Standards and Operational Manual* (Florida Department of State 2002), and Chapter 1A-46 (*Archaeological and Historical Report Standards and Guidelines*), Florida Administrative Code (FAC). All work conformed to professional guidelines set forth in the Secretary of Interior’s Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716, as amended).

As discussed in the DEIS Section 4.4.5, no NRHP-listed or eligible properties were identified within the MCO Segment and VMF APEs. For the E-W Corridor, the NRHP-eligible FECR Historic District was the only historic property identified; it is located within the APE for direct effects. The NRHP-eligible FECR was also identified as a historic resource within the N-S Corridor APE for direct effects, and includes 12 contributing historic bridges, four of which have also been determined individually eligible, as described in Section 4.4.5 of the DEIS. Additional NRHP-eligible resources that are potentially affected by the Project are also addressed in the below text.

On November 20, 2013 the SHPO concurred with FRA’s Determinations of Eligibility for Phase II, as documented in the September 2013 *Cultural Resources Assessment Report for the All Aboard Florida Passenger Rail Project from Orlando to West Palm Beach* prepared by Janus Research (2013 CRAR). On May 21, 2015 SHPO concurred with the findings of the *Addendum to the Cultural Resources Assessment Report*.

2.3 Assessment of Effect

Effects were evaluated at each historic property identified within the APE for direct impacts to determine if there would be any physical alteration or modification of the property as a result of the Project, or if the Project would change the setting of the property. Potential indirect effects were evaluated for all historic properties within the defined indirect impacts APE to determine if the Project would change their setting, if vibration would result in damage to a structure, or if changes in noise

levels would have the potential to alter its character-defining features. None of the historic properties include a quiet setting as a character-defining feature that could be impacted by indirect noise effects. However, this document presents noise information in the interest of disclosure. Effects of proposed noise mitigation measures (pole-mounted horns and noise walls/sound barriers) were also evaluated.

The noise analysis conducted for the project and documented in the EIS shows that, with the use of pole-mounted horns and improved rail infrastructure, the project will reduce noise levels along the N-S Corridor in comparison to existing conditions, and that noise levels 50 feet from the right-of-way would not result in noise impacts. While the proposed passenger trains are lighter and faster than the existing freight train traffic, overall there will be more train traffic/operations occurring each day. Secondary and cumulative noise effects are anticipated to be minimal to moderate. Tables 3 and 4 show the noise effects on historic properties and identifies the land use category associated with each property. These land use categories reflect current uses of the property and are used to assess effects to the human users or inhabitants, rather than effects to the characteristics of historic significance. As discussed in Section 5.2.2 of the DEIS, the analysis used FTA impact criteria because of the mix of freight and passenger trains, and the average train speeds of 90 mph or less. As shown, noise mitigation (wayside horns in lieu of using individual locomotive mounted horns) would eliminate all severe impacts. No additional noise mitigation measures (soundproofing or noise barriers) would be required. There are no historic properties within the APE that have a quiet setting as a character-defining feature, and therefore noise would not affect any historic properties or their settings. At historic properties where there is public use and that are characterized as a Category 1 land use, (the McKee Jungle Gardens, Riverhill, the Sunrise Theater and the Lyric Theater), there will be no severe noise impacts as a result of train operations or train horns associated with grade crossings. The required wayside horns will mitigate noise impacts at all grade crossings where normal train horn use would result in a severe noise impact.

The analysis of vibration showed that vibration levels would not increase, although the frequency of vibration events would increase. Table 4 shows the vibration effects on historic properties and identifies the land use category associated with each property. These land use categories reflect current uses of the property and are used to assess effects to the human users or inhabitants, rather than effects to the characteristics of historic significance. As shown, and documented in Section 5.2.2 of the DEIS, vibration from operation of the passenger rail system would not result in vibration that exceeded damage thresholds (100 VdB at 70 feet), although some properties would experience vibration at “annoyance” levels (perceptible vibration). Therefore, FRA anticipates that there will be no indirect adverse effects due to changes in noise or vibration to either the integrity of setting or physical structure of any historic property. Noise and the low level of vibration from trains have no effect on subsurface archaeological sites. Construction vibration also was evaluated. The analysis showed that pile-driving at bridges could exceed this damage threshold at distances up to 135 feet, however there are no historic properties within 135 feet of these bridges.

3. Direct Effects

This section identifies the potential beneficial and adverse effects to historic properties from the Project. Under Section 106, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the property’s integrity. Adverse effects may include reasonably

foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. As described in section 3.3 of the DEIS, FRA has conducted a detailed analysis of the environmental impacts of a No-Action Alternative and three Action Alternatives (Alternative A, Alternative C, and Alternative E). Each of the three Action Alternatives incorporates the same proposed action for these components: the MCO Segment and VMF, the E-W Corridor parallel to SR 528, and the N-S Corridor within the FECR Corridor. The three alternatives differ with respect to the alignment within the 17.4-mile segment of the E-W Corridor between the MCO Segment and SR 520 (within the Central Florida Expressway Authority (CFX) -controlled portion of SR 528 between SR 417 and SR 520).

3.1 No-Action Alternative

The No-Action Alternative is not anticipated to have any effect on historic properties.

3.2 Action Alternatives A, C, and E

The effects of Alternatives A, C, and E would be identical with respect to historic properties. This section provides a summary of impacts to historic properties and FRA's recommendations of effects.

3.2.1 MCO Segment and VMF

No NRHP-listed or eligible historic properties were identified within the MCO Segment and VMF APE. FRA has therefore determined that constructing and operating the MCO Segment and VMF would have no effect on historic properties.

3.2.2 East-West Corridor

Large portions of the East-West (E-W) Corridor APE were surveyed in 1990 and 2005 (Piper Archaeology 1990; Janus Research, Inc. 2005). The remaining portions, with the exception of one area where access was not allowed, were surveyed in 2013, as part of the 2013 CRAR. One NRHP-eligible resource has been identified in the direct effects APE for the E-W Corridor—the FECR Historic District, which is located at the east end of the E-W Corridor in Cocoa at the intersection with the N-S Corridor. FRA determined that constructing the E-W Corridor would have no adverse effect on the FECR Historic District.

New communications towers are proposed along the E-W Corridor to support the Positive Train Control system and other communications systems. Although the locations of these towers have not yet been identified, AAF would site new towers in locations that have been determined not to affect above- or below-ground historic properties.

One property along the E-W corridor has not been evaluated for the presence of historic properties or archaeological resources, because evaluators have not been able to access the property. AAF has committed to conducting field investigations once access is granted.

3.2.3 North-South Corridor

The North-South (N-S) Corridor APE contains several historic properties with the potential for both direct and indirect effects. The APE for direct effects includes the FECR Historic District; four of the bridges in the APE for the N-S Corridor have also been determined individually eligible, and an additional 8 bridges are eligible as contributing elements. The APE for indirect effects includes 63 historic properties, including districts, buildings, structures, and sites that are already listed in the NRHP or have been found eligible. There are also four archaeological sites within the indirect effects APE, outside of the FECR ROW, that SHPO has not evaluated for eligibility. These sites were not evaluated for eligibility as part of the AAF Project because there would be no construction within the indirect effects APE and therefore no effects on subsurface sites. All proposed work in the N-S Corridor will occur within the existing FECR ROW.

3.2.3.1 FECR Historic District

The N-S Corridor was originally built as a double-track railroad, but today it is mostly a single-track railroad with several long sidings. The railbed for the second track still exists and would be used for the additional track improvements. The Project would return the N-S Corridor to a dual-track system, with a few three-track segments to improve operations. Infrastructure improvements, such as bridge replacements and curve improvements, are planned to be completed within the existing right-of-way (no additional right-of-way acquisition is anticipated). The addition of the second track will return the corridor to its historic configuration and historic use as a passenger rail line.

The NRHP-eligible FECR Historic District, which is the central resource of the N-S Corridor, would not be adversely affected by the Project. Previous studies and coordination with SHPO have identified the rail infrastructure within the FECR Corridor as eligible for listing on the NRHP as a linear district. The FECR Corridor retains historical importance due to its associations with development and transportation of the east coast of Florida. Built primarily in the last quarter of the 19th century and the first decade of the 20th century, the FECR Corridor was a project of Henry Morrison Flagler. Flagler, who originally worked with John D. Rockefeller in building the Standard Oil Trust, became known for developing resorts, industries, and communities along Florida's eastern coast. The FECR Corridor is considered eligible for listing in the NRHP as a linear historic district under Criterion A in the categories of Transportation, and Community Planning and Development.

FRA determined that the use of this historic rail line and restoration of passenger rail on the line as part of Phase I (The AAF Passenger Rail Project – West Palm Beach to Miami) would not have an adverse effect on the NRHP-eligible FECR Railway Historic District in that segment of the corridor. In a letter dated November 6, 2012, and appended to the 2013 FONSI (see Appendix 1.1-A2 of the DEIS), the SHPO concurred with this determination. The Project would include similar improvements for the N-S Corridor in Phase II and would have the same potential to affect the FECR Historic District.

FRA has made a recommendation of no adverse effect for direct impacts to the FECR Historic District in the N-S Corridor because the use of the historic rail line and restoration of passenger rail service would not adversely affect the setting or alter the character-defining features.

3.2.3.2 NRHP-Eligible Bridges and Contributing Element Bridges

Within the N-S Corridor, four bridges (Eau Gallie River, St. Sebastian River, St. Lucie River, and Loxahatchee River) have been identified as individually eligible for listing on the NRHP under Criterion A¹ and Criterion C.² These four bridges are also contributing elements to the FECR Historic District. Eight additional bridges (see Table 1) are not considered individually eligible for listing on the NRHP, but are contributing elements to the FECR Historic District.

As described in Section 3.3 of the DEIS, *Alternatives Studied in Detail in the EIS*, AAF proposes to demolish the Eau Gallie River and St. Sebastian River bridges and construct two new single-track bridges within the same footprint at each location. Demolishing these two bridges is an adverse effect. When an adverse effect to a historic property is identified during the Section 106 process, attempts should be made to avoid, minimize, or mitigate these effects. FRA concluded that the effects could not be avoided or minimized, as AAF cannot operate passenger trains over the existing Eau Gallie River and St. Sebastian River Bridges. The rate of speed of passenger trains is 110 mph, which is much higher and requires a higher bridge loading factor than the 28 mph operation of the current freight trains along the corridor. Even if the existing substructure and superstructure of each bridge were upgraded as part of a rehabilitation effort, the present bridges would not meet the required loading rating for the rate of speed of the passenger trains. The higher rate of speed would cause increased vibration, resulting in fatigue to the steel members of the open-deck superstructure; adding a concrete deck to the superstructure that is less susceptible to vibration would result in a dead load that the existing substructure cannot support. Attempts to avoid or minimize the adverse effects to these individually-eligible bridges by retaining the current bridges for freight use while constructing additional adjacent bridges for use by passenger trains would introduce operational challenges that extend well beyond the immediate areas of the bridges and would adversely affect the on-time performance of both passenger and freight trains.

The SHPO and FRA have concurred that the proposed Project will have an adverse effect on Eau Gallie River and St. Sebastian River Bridges; therefore, a Memorandum of Agreement (MOA) among the FRA, the SHPO, AAF, and potentially the Advisory Council on Historic Preservation and other parties, will be developed for the Project. As part of the MOA, AAF will commit to mitigate the adverse effect to these two bridges through photographic and documentation of current bridge conditions.

The St. Lucie River and Loxahatchee River bridges would be rehabilitated, as described in Section 3.3.3 of the DEIS, but would not be substantially altered. As shown in Table 1, seven bridges that are eligible as contributing elements would be demolished and replaced with new 2-track structures. One of the bridges that is eligible as a contributing element, but not eligible for listing individually (the fixed bridge over Taylor Creek), would be rehabilitated.

1 See 36 CFR 60.4(a) (Associated with events that have made a significant contribution to the broad patterns of our history.)

2 See 36 CFR 60.4(c) (Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.)

County	FMSF #	Site Name / Address	National Register Status	Project Effect
Brevard	8BR3058	Fixed Railway Bridge over the Eau Gallie River – Steel	Eligible as FECR Contributing Resource/ Individually Eligible	Demolish and replace with 2-track structure
Brevard	8BR3059	Fixed Railway Bridge over the Crane Creek and Melbourne Street – Steel	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Brevard	8BR3060	Fixed Railway Bridge over the Turkey Creek – Steel	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Brevard	8BR3061	Fixed Railway Bridge over the Goat Creek – Steel	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Brevard and Indian River	8BR3062/ 8IR1569	Fixed Railway Bridge over the Sebastian River – Steel	Eligible as FECR Contributing Resource/ Individually Eligible	Demolish and replace with 2-track structure
St. Lucie	8SL3191	Fixed Bridge over the Taylor Creek - Concrete with Steel Beam Span	Eligible as FECR Contributing Resource	Rehabilitate
Martin	8MT1623	Fixed Bridge over the Rio Waterway - Steel and Timber Piles	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Martin	8MT1382	Movable Bridge over the St. Lucie River – Steel	Eligible as FECR Contributing Resource/ Individually Eligible	Rehabilitate
Martin	8MT1624	Fixed Bridge over the Salerno Waterway - Steel and Timber Piles	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Martin	8MT1625	Fixed Bridge over the Tributary to Manatee Creek 1 - Steel and Timber Piles	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Martin	8MT1626	Fixed Bridge over the Tributary to Manatee Creek 2 - Steel and Timber Piles	Eligible as FECR Contributing Resource	Demolish and replace with 2-track structure
Palm Beach	8PB16041	Movable Bridge over the Loxahatchee River – Steel	Eligible as FECR Contributing Resource/ Individually Eligible	Rehabilitate

For Phase I, SHPO concurred with FRA’s determination of “no adverse effect” conditioned on the reconstruction or rehabilitation work to the bridges in the West Palm Beach – Miami Corridor being developed in consultation with SHPO to avoid and/or minimize effects. For Phase II, AAF will continue to consult with SHPO through the design process in order to ensure that all of the new or rehabilitated bridge structure designs for the contributing element bridges within the FECR Historic District, including those for the St. Lucie River, Loxahatchee River, and Taylor Creek bridges, are compatible with the historic character of the FECR Historic District. Based upon AAF’s commitment to continued consultation, FRA has concluded that rehabilitating the St. Lucie River, the Loxahatchee River and the Taylor Creek Bridges and replacing the seven bridges that are not individually eligible for listing on the NPHP but are eligible as contributing elements to the FECR Historic District would not have an adverse effect on the historic district. AAF in consultation with the SHPO will work to develop bridge designs that are in keeping with the Secretary of the Interior’s Standards for Rehabilitation. AAF’s commitment to ongoing consultation with SHPO regarding these bridges will be included in the MOA.

3.2.3.3 Archaeological Resources

The Project would return the existing FECR Corridor to a dual-track system. Infrastructure improvements are planned to be completed within the existing right-of-way (AAF anticipates no additional right-of-way acquisition). The Project has the potential to affect six archaeological sites within the APE for direct effects: Hobe Sound National Wildlife Refuge #3 Site (8MT1287); the Fort

Capron Site (8SL41); Vero Man/Vero Locality Site (8IRI/8IR9); Fort Pierce (8SL31); Railroad (8IR846); and Avenue A-Downtown Fort Pierce (8SL1772).

Hobe Sound National Wildlife Refuge #3: The Hobe Sound National Wildlife Refuge #3 Site (8MT1287) consists of a shell midden consisting of a thin scatter of shell and a few aboriginal ceramic potsherd fragments situated on a dune bluff in the Hobe Sound National Wildlife Refuge that was bisected during the construction of the railroad in the early part of the last century. The bluff is adjacent to the FECR right-of-way, located in an area where the rail line curves to the west. Preliminary engineering specified a curve modification at this location and this action would have caused disturbance of potentially intact portions of the archaeological site. As an avoidance and protection measure, this curve modification was eliminated from the Project and instead construction in this area will consist of installing rail tracks in their historic locations. Preliminary discussions with SHPO indicated that this design change would avoid the Hobe Sound National Wildlife Refuge #3 Site which is located outside of the right-of-way. However, because the limits of the site are within the APE, and because AAF's construction activities at this location include excavation and construction of a retaining wall, the excavation has the potential to adversely affect this archaeological site.

Fort_Capron: The Fort Capron Site consists of the archaeological remains of a 1850s military fort located east of the FECR right-of-way. The only visible remnants of Fort Capron are several ditches that extend to the east down towards the Indian River. Although the limits of the site are not well-defined, the FECR right-of-way appears to form the western boundary of the site. Because construction in this area will consist of installing rail tracks in their historic locations, no subsurface excavation will be required and no additional right-of-way will be needed, the Project will not disturb any subsurface resources remaining within the right-of-way. There would be no temporary or permanent effects to the archaeological site caused by the Project.

Vero Man/Vero Locality: the Vero Man Site consists of a deeply buried fossil bed in the vicinity of the Main Relief Canal in Vero Beach, west of the FECR right-of-way. The site is currently being investigated by researchers from Mercyhurst University. Based on a 2014 Change of Status Form, the Florida Division of Historical Resources, in 2014, found this site eligible for listing in the National Register. The limits of the site are not well-defined and may extend under the railroad right-of-way. Because construction in this area will consist of installing rail tracks in their historic location and adding a second single-track railroad bridge in its historic location, there will be no construction outside of the right-of-way. The proposed construction will not require subsurface excavation other than shallow excavation (approximately five feet deep) required for new bridge approach slabs. The bridge will not require abutments. The new bridge will have five pile bents, two on each bank of the canal and one in the water. These will consist of 24-inch square concrete pilings, driven to approximately 50-feet in depth. Geotechnical borings at this location show sand layers extending to below the 50-foot depth, with no firm or confining layers. Any potential archaeological resource associated with the site would be located too far beneath the surface to be affected by the shallow excavation association with the approach slabs. There would be no temporary or permanent effects to the archaeological site caused by the Project.

Fort Pierce: the Fort Pierce Site is east of the FECR right-of-way and is mapped outside of the APE. However, FMSF GIS data show several locations for this site, and mapped site boundaries for one location directly border on the APE. The disparity regarding the locations of this site on file with the

FMSF suggest there is a potential for the boundaries of this site to extend to the eastern edge of the FECR, and potentially within the APE. Because construction in this area will consist of installing rail tracks in their historic locations, no subsurface excavation will be required and no additional right-of-way will be needed, the Project will not disturb any subsurface resources remaining within the right-of-way. There would be no temporary or permanent effects to the archaeological site caused by the Project.

Railroad Site and Avenue A – Downtown Fort Pierce: Both the Railroad Site (8IR846), a Malabar shell midden and artifact scatter of variable density, and the Avenue A – Downtown Fort Pierce habitation site (8SL1772) have not been subject to a SHPO eligibility evaluation. Because construction in this area will consist of installing rail tracks in their historic locations, no subsurface excavation will be required and no additional right-of-way will be needed; therefore, the Project will not disturb any subsurface resources remaining within the right-of-way. There would be no temporary or permanent effects to these potentially-eligible archaeological sites caused by the Project.

Archaeological Monitoring Plan

AAF has prepared and will follow an Archaeological Monitoring Plan at each of these archaeological sites, which will be stipulated in the MOA. The implementation of the Archaeological Monitoring Plan, which includes oversight by an archaeologist, construction crew training and procedures in the unlikely event that archaeological features or artifacts are discovered during excavation, will avoid or minimize the potential adverse effect of excavation by identifying and protecting any unmarked human remains or significant archaeological resources that may be encountered during construction.

Based on the information available, FRA has determined that the Project would have no adverse effect on archaeological sites within the APE for direct impacts for the N-S Corridor. The no adverse effect finding is based on the condition that AAF will continue to consult with SHPO through the design process, as needed, and will adhere to the stipulations of the MOA to ensure appropriate sensitivity to the previously recorded archaeological sites located within the APE.

3.2.4 Phase I - West Palm Beach - Miami Corridor

As stated in the 2013 FONSI, FRA consulted with the SHPO pursuant to NHPA Section 106, and received concurrence on November 6, 2012 with FRA's finding that the Project would have no adverse effect on any historic resources within the WPB-M APE. The concurrence is conditional, and requires AAF to continue consultation with the SHPO and locally affected parties, including the Cities of West Palm Beach, Fort Lauderdale, and Miami, through the station design process. In a letter dated March 24, 2014, the SHPO also concurred with FRA's finding that the relocated Ft. Lauderdale Station would have no adverse effect on historic properties (DEIS Appendix 3.3-A). In a letter dated October 30, 2014 the SHPO also concurred with FRA's finding that the relocated West Palm Beach Vehicle Maintenance Facility would have no adverse effect on historic properties.

As part of Phase II of the Project, AAF proposes to rehabilitate one bridge and demolish and replace three other bridges within the WPB-M Corridor that have been determined to be eligible as contributing elements to the FECR Historic District (Table 2). As described above in section 3.2.3.2, AAF has evaluated alternatives with respect to these bridges as well and found that it is not feasible to preserve these bridges for the same reasons.

For Phase I, the SHPO concurred in FRA's no adverse effect determination conditioned on the reconstruction or rehabilitation work to the bridges being developed in consultation with SHPO to avoid and/or minimize effects. For Phase II, AAF will continue to consult with SHPO through the design process to ensure compatibility and appropriate sensitivity to the bridge resources and the FECR Historic District.

County	FMSF #	Site Name / Address	National Register Status	Project Effects
Palm Beach	8PB15951	Fixed Railway Bridge over the C-15 Canal	Eligible as FECR Contributing Resource	None
Broward	8BD4860	Fixed Railway Bridge over the Cypress Creek/ C-14 Canal	Eligible as FECR Contributing Resource	None
Broward	8BD4861	Fixed Railway Bridge over the North Fork of Middle River	Eligible as FECR Contributing Resource	Demolish and replace with 2 track structure
Broward	8BD4862	Fixed Railway Bridge over the South Fork of Middle River	Eligible as FECR Contributing Resource	Demolish and replace with 2 track structure
Broward	8BD4863	Fixed Railway Bridge over the Dania Cut-Off Canal	Eligible as FECR Contributing Resource	Rehabilitate
Miami-Dade	8DA12596	Fixed Railway Bridge over the Oleta River	Eligible as FECR Contributing Resource	Demolish and replace with 2 track structure
Miami-Dade	8DA12597	Fixed Railway Bridge over the Royal Glades/C-9 Canal	Eligible as FECR Contributing Resource	None
Miami-Dade	8DA12598	Fixed Railway Bridge over the Arch Creek	Eligible as FECR Contributing Resource	None

4. Indirect and Secondary Effects

Indirect and secondary effects can include visual changes, and increased noise and vibration as a result of Project development.

4.1 No-Action Alternative

There would be no indirect or secondary effects from the No-Action alternative.

4.2 Action Alternatives A, C, and E

According to the 2013 CRAR, there are no known historic properties within the indirect impacts APE for the MCO Corridor/VMF or the E-W Corridor. Therefore, there are no indirect effects to historic properties within these areas.

As improvements within the N-S Corridor would remain within the existing right-of-way, and would not require right-of-way acquisition from any adjacent historic properties, any potential effects to these properties would be indirect.

4.2.1 Noise

The noise analysis conducted for the project and documented in the EIS shows that, with the use of pole-mounted horns and improved rail infrastructure, the project will reduce noise levels along the N-S Corridor in comparison to existing conditions, and that noise levels 50 feet from the right-of-way would not result in noise impacts. While the proposed passenger trains are lighter and faster than the existing freight train traffic, overall there will be more train traffic/operations occurring each day. Secondary and cumulative noise effects are anticipated to be minimal to moderate. Tables 3 and 4 show the noise effects on historic properties and identifies the land use category associated with each property. As discussed in Section 5.2.2 of the DEIS, the analysis used FTA impact criteria because of the mix of freight and passenger trains, and the average train speeds of 90 mph or less. As shown, noise mitigation (wayside horns in lieu of using individual locomotive mounted horns) would eliminate all severe impacts. No additional noise mitigation measures (soundproofing or noise barriers) would be required. There are no historic properties where a quiet setting is a character-defining feature. However, certain properties are classified as Category 1 land use, including the McKee Jungle Gardens, Riverhill, the Sunrise Theater and the Lyric Theater, where quiet is an important feature of current use. Even at these properties, with the required wayside horns, there will be no noise impacts.

Site ID	Site Name	Land Use Category	Operational Noise		Construction
			Pre-Mitigation	With Mitigation	
8BR215	Florida Power & Light Co. Ice Plant	0	No	No	No
8BR759	Whaley Citrus Packing House	2	Moderate ¹	No	Yes
8BR859	Union Cypress Saw Mill Historic District	Mixed	Moderate/Severe	No	Yes
8BR1163	Mattie Lamar House	2	Moderate	No	Night
8BR1710	Jorgensen's General Store	2	Moderate	No	Night
8BR1723	Cocoa Cemetery Storage Building	3	Moderate	No	No
8BR1724	Hilltop Cemetery	3	Moderate	No	No
8BR1739	Ashley's Café and Lounge	0	No	No	No
8BR1741	Rockledge Gardens Nursery	0	No	No	No
8BR1765	Bohn Equipment Company	0	No	No	No
8BR1777	Cocoa Cemetery	3	Moderate	No	No
8BR2779	Former FECR Station/ 317 Rosa Jones Drive	0	No	No	No
8IR68	Vero Railroad Station/ 2336 14 th	0	No	No	No

³ AMEC Environment & Infrastructure, Inc. Technical Memorandum No. 5, Noise and Vibration for the All Aboard Florida Passenger Rail Project from Orlando to Miami, Florida. July 2013. Report.

Table 3 Noise Effects on Historic Properties in Indirect Effects APE³ based on Land Use Criteria

Site ID	Site Name	Land Use Category	Operational Noise		Construction
			Pre-Mitigation	With Mitigation	
	Avenue				
8IR99	George Armstrong Braddock House	2	Severe	No	Yes
8IR100	Baughman House	2	Severe ¹	No	Yes
8IR388	5056 North Old Dixie Highway	2	Moderate	No	Night
8IR624	Old Vero Beach Community Building	3	Moderate	No	No
8IR858	Hall O' Giants, McKee Jungle Gardens	1	Severe	No	No
8IR859	McKee Jungle Gardens	1	Severe	No	No
8IR975	Vero Beach Diesel Power Plant	3	Moderate	No	No
8IR1464	Vero Beach Community Center	3	Moderate	No	No
8IR1475	1146 21 st Street	2	Moderate	No	No
8IR1516	FDOT Bridge 88001	0	No	No	No
8IR1519	Dixie Highway	0	No	No	No
8SL76	St. Lucie Village Historic District	2	Moderate	No	No
8SL78	Fairmont Manor	2	No	No	Yes
8SL220	9015 South Indian River Drive	2	No	No	Yes
8SL227	7901 South Indian River Drive	2	No	No	Yes
8SL229	6109 South Indian River Drive	2	No	No	Yes
8SL231	5703 South Indian River Drive	2	No	No	Yes
8SL234	5309 South Indian River Drive	2	Moderate ¹	No	Yes
8SL236	Riverhill	1	Moderate	No	Yes
8SL237	Britt House	2	No	No	Yes
8SK238	N.E. Card House	2	No	No	Yes
8SL247	Hoskins House	2	Severe ¹	No	Yes
8SL289	Old Fort Pierce City Hall	3	Severe	No	Yes
8SL799	Sunrise Theater	1	Severe	No	No
8SL825	601 South 2 nd St	2	Severe	No	No
8SL826	Frank Tyler House	2	Moderate ¹	No	Yes
8SL917	Banyon Belle Manor	2	No	No	Yes
8SL918	1009 South Indian River Drive	2	No	No	Yes
8SI920	1029 South Indian River Drive	2	No	No	Yes
8SL926	O.L. Peacock House	2	No	No	Yes
8SL930	Stephen Leshner House	2	No	No	Yes
8SL931	Carlton-Vest House	2	No	No	Yes
8SL932	Casa Del Rio	2	No	No	Yes
8SL933	Babe Phelps House	2	No	No	Yes
8SL1599	Shadetree Studio	3	Severe	No	No
8SL1922	East Coast Packers	0	No	No	No

Site ID	Site Name	Land Use Category	Operational Noise		Construction
			Pre-Mitigation	With Mitigation	
8SL2801	Edgar Town Historic District	2	Moderate/Severe	No	Yes
8MT46	George W. Parks Store	3	Moderate	No	No
8MT84	Fern Building	0	No	No	No
8MT86	Lyric Theater	1	Severe	No	No
8MT130	East Coast Lumber	0	No	No	No
8MT131	Hobe Sound Cabinetry	0	No	No	No
8MT307	Crary House	3	Moderate	No	No
8MT838	12200 Southeast Nassau St.	2	Severe ¹	No	Yes
8MT1066	250 North Flagler Rd	0	No	No	No
8MT1573	Witham Field Airport	0	No	No	No
8MT1621	Dixie Highway	0	No	No	No
8PB218	Evergreen Cemetery	3	Moderate/Severe	No	No
8PB6064	St John Baptist Church	3	Moderate	No	No
8PB13340	Kelsey City Layout	Mixed	Moderate	No	Night

1 Impact based on parcel boundary, not location of structure

Impact analysis is based on FRA Land Use Categories, which categorize structures based on existing use: 0 = not noise-sensitive, 1=highly sensitive, quiet is an essential element. 2 = residential, sensitive to night-time noise. 3 = institutional, sensitive to day-time noise. These categories were used to determine whether further mitigation, such as soundproofing or noise walls, were needed to reduce operational impacts to residents or users of the properties

4.2.2 Vibration

The analysis of vibration showed that vibration levels would not increase, although the frequency of vibration events would increase. The vibration analysis done for the DEIS evaluated vibration for the No-action Alternative (freight traffic only) and the proposed Project (passenger trains). The analysis found that freight trains have greater weight and axle loads, and that the duration of freight train passage was 120 seconds. These cause greater vibration than passenger trains, which are lighter and have a passing duration of 10 seconds. The analysis calculated the average ground vibration levels for freight and passenger trains along the FEC corridor, at a distance of 70 feet from the track. In all cases, freight (the no-action alternative) was the same or greater than the proposed action, with average vibration levels ranging from 83.2 Vdb to 84.9 Vdb. Passenger train-generated vibration levels ranged from 82.3 to 84.9 VdB. This is approximately the level of “residential annoyance” but does not reach the level of damage. Based on this analysis, the vibration levels from operations of the AAF passenger service would be less than the No-action Alternative, and would not result in vibration impacts to physical objects.

Table 4 shows the vibration effects on historic properties and identifies the land use category associated with each property. As shown, and documented in Section 5.2.2 of the DEIS, vibration from operation of the passenger rail system would not result in vibration that exceeded damage thresholds (100 VdB at 70 feet), although some properties would experience vibration at “annoyance” levels (perceptible

vibration). Therefore, FRA anticipates that there will be no indirect adverse effects due to changes in noise or vibration to either the integrity of setting or physical structure of any historic property.

Table 4 Construction and Operation Vibration Effects on Historic Properties in Indirect Effects APE⁴ Based on Land Use Criteria

Site ID	Site Name	Land Use Category	Operations (exceeds annoyance level) ¹	Construction (exceeds annoyance level)	Construction (exceeds damage level)
8BR215	Florida Power & Light Co. Ice Plant	0	No	No	No
8BR759	Whaley Citrus Packing House	2	Yes	Yes	No
8BR859	Union Cypress Saw Mill Historic District	Mixed	Yes	Yes	No
8BR1163	Mattie Lamar House	2	Yes	Yes	No
8BR1710	Jorgensen's General Store	2	Yes	Yes	No
8BR1723	Cocoa Cemetery Storage Building	3	Yes	No	No
8BR1724	Hilltop Cemetery	3	Yes	No	No
8BR1739	Ashley's Café and Lounge	0	No	No	No
8BR1741	Rockledge Gardens Nursery	0	No	No	No
8BR1765	Bohn Equipment Company	0	No	No	No
8BR1777	Cocoa Cemetery	3	Yes	No	No
8BR2779	Former FECR Station/ 317 Rosa Jones Drive	0	No	No	No
8IR68	Vero Railroad Station/ 2336 14 th Avenue	0	No	No	No
8IR99	George Armstrong Braddock House	2	Yes	Yes	No
8IR100	Baughman House	2	Yes	Yes	No
8IR388	5056 North Old Dixie Highway	2	Yes	No	No
8IR624	Old Vero Beach Community Building	3	Yes	Yes	No
8IR858	Hall O' Giants, McKee Jungle Gardens	1	Yes	Yes	No
8IR859	McKee Jungle Gardens	1	Yes	Yes	No
8IR975	Vero Beach Diesel Power Plant	3	Yes	Yes	No
8IR1464	Vero Beach Community Center	3	Yes	Yes	No

⁴ AMEC Environment & Infrastructure, Inc. Technical Memorandum No. 5, Noise and Vibration for the All Aboard Florida Passenger Rail Project from Orlando to Miami, Florida. July 2013. Report.

Table 4 Construction and Operation Vibration Effects on Historic Properties in Indirect Effects APE⁴ Based on Land Use Criteria

Site ID	Site Name	Land Use Category	Operations (exceeds annoyance level) ¹	Construction (exceeds annoyance level)	Construction (exceeds damage level)
8IR1475	1146 21 st Street	2	Yes	No	No
8IR1516	FDOT Bridge 88001	0	No	No	No
8IR1519	Dixie Highway	0	No	No	No
8SL76	St. Lucie Village Historic District	2	No	No	No
8SL78	Fairmont Manor	2	Yes ²	Yes	No
8SL220	9015 South Indian River Drive	2	Yes ²	Yes	No
8SL227	7901 South Indian River Drive	2	Yes	Yes	No
8SL229	6109 South Indian River Drive	2	Yes ²	Yes	No
8SL231	5703 South Indian River Drive	2	Yes	Yes	No
8SL234	5309 South Indian River Drive	2	Yes ²	Yes	No
8SL236	Riverhill	1	Yes ²	Yes	No
8SL237	Britt House	2	Yes	Yes	No
8SK238	N.E. Card House	2	Yes ²	Yes	No
8SL247	Hoskins House	2	Yes ²	Yes	No
8SL289	Old Fort Pierce City Hall	3	Yes	Yes	No
8SL799	Sunrise Theater	1	Yes	Yes	No
8SL825	601 South 2 nd St	2	Yes	Yes	No
8SL826	Frank Tyler House	2	Yes	Yes	No
8SL917	Banyon Belle Manor	2	Yes ²	Yes	No
8SL918	1009 South Indian River Drive	2	Yes ²	Yes	No
8SI920	1029 South Indian River Drive	2	Yes	Yes	No
8SL926	O.L. Peacock House	2	Yes ²	Yes	No
8SL930	Stephen Leshner House	2	Yes ²	Yes	No
8SL931	Carlton-Vest House	2	Yes ¹	Yes	No
8SL932	Casa Del Rio	2	Yes ¹	Yes	No
8SL933	Babe Phelps House	2	Yes ²	Yes	No
8SL1599	Shadetree Studio	3	Yes	Yes	No
8SL1922	East Coast Packers	0	No	No	No
8SL2801	Edgar Town Historic District	2	Yes	Yes	No
8MT46	George W. Parks Store	3	No	Yes	No
8MT84	Fern Building	0	No	No	No
8MT86	Lyric Theater	1	Yes	Yes	No
8MT130	East Coast Lumber	0	No	No	No
8MT131	Hobe Sound Cabinetry	0	No	No	No
8MT307	Crary House	3	No	No	No
8MT838	12200 Southeast Nassau St.	2	Yes	Yes	No
8MT1066	250 North Flagler Rd	0	No	No	No
8MT1573	Witham Field Airport	0	No	No	No

Table 4 Construction and Operation Vibration Effects on Historic Properties in Indirect Effects APE⁴ Based on Land Use Criteria

Site ID	Site Name	Land Use Category	Operations (exceeds annoyance level) ¹	Construction (exceeds annoyance level)	Construction (exceeds damage level)
8MT1621	Dixie Highway	0	No	No	No
8PB218	Evergreen Cemetery	3	Yes	Yes	No
8PB6064	St John Baptist Church	3	No	No	No
8PB13340	Kelsey City Layout	2	Yes	Yes	No

1 Vibration caused by operation of the passenger trains would be less than vibration caused by freight trains under the existing condition or No Action Alternative, as passenger trains are shorter and lighter than freight trains. There would no vibration caused by the operation of the Project that would exceed the damage threshold for fragile structures.

2 Impact based on parcel boundary, not location of structure

Impact analysis is based on FRA Land Use Categories, which categorize structures based on existing use: These categories were used to determine whether further mitigation, such as soundproofing or noise walls, were needed to reduce operational impacts to residents or users of the properties. Land Use Categories: 0 = not vibration-sensitive, 1=highly sensitive, vibration may interfere with operations within the building. 2 = residential, sensitive to night-time vibration. 3 = institutional, sensitive to day-time vibration that could interfere with activities.

Because FEC has operated passenger and freight rail along this corridor for more than 100 years, any vibration effects to subsurface stratigraphy or artifacts would likely have already occurred. For a prior project along portions of the FEC corridor, Ambrosino et al.⁵ reported that noise and vibration testing for the FEC Mainline found that “the analysis of predicted vibration levels showing the proposed project will increase the frequency of vibration levels; however, the predicted vibration levels associated with the passenger trains is less than the existing vibration levels associated with the freights.” They concluded that the APE for cultural resources should be restricted to the direct disturbance areas as “there are no noise or vibration effects to land uses adjacent” to the project area.

4.2.3 Visual

Returning the FECR Corridor to its historic configuration and historic use as a passenger rail line will not change the visual setting of any historic property within the indirect effects APE. The project will not introduce any new visual elements. AAF will consult with SHPO when designing and constructing the replacement and upgrade of the existing crossing gates at at-grade crossings within historic districts or in proximity to a historic property, so as not to adversely change the visual characteristics of the streetscape. This commitment will be included in the MOA.

In the WPB-M Corridor, three at-grade crossings are located adjacent to one NRHP-eligible historic district in Brevard County (Union Cypress Saw Mill Historic District [8BR2173]); four at-grade crossings are located within a National Register–eligible historic district in St. Lucie County (Edgar Town Historic District [8SL2801]); and two at-grade crossings are located within and adjacent to a National Register–

⁵ James N. Ambrosino, Amy Streehman, and Emily Ahouse. FEC Amtrak Passenger Rail Project Volume I: A Cultural Resource Assessment Survey of the FEC Mainline in Brevard, Duval, Flagler, Indian River, Martin, Palm Beach, St. Johns, St. Lucie, and Volusia County, Florida. Report prepared by Panamerican Consultants, Inc. and Janus Research, Inc. for Florida Department of Transportation, 2010 (July), pg 14 of the pdf.

eligible Kelsey City Layout (8PB13340) in Palm Beach County. As determined by FRA and confirmed by SHPO for Phase 1, the proposed Project will not have an indirect effect on these resources because grade crossing improvements will not change the setting of the district and will not introduce new modern elements.

5. Temporary Construction-Period Effects

Temporary construction period effects generally consist of noise, dust, vibration, and traffic related to construction. As shown in Tables 3 and 4, construction activity will temporarily increase noise and vibration levels at several historic properties. These construction effects are temporary and would occur during and immediately following construction.

5.1.1 Noise

Construction-period noise levels are not expected to adversely affect any historic properties, because, as noted above, none of the historic properties include a quiet setting as a character-defining feature. AAF has committed to using appropriate best management practices to reduce construction noise

5.1.2 Vibration

Construction-period vibration levels will not exceed structural damage thresholds at any historic property and so are not expected to have an adverse effect. The vibration analysis, summarized in the EIS, showed that pile-driving at bridges could exceed the damage threshold at distances up to 135 feet, however there are no historic properties within 135 feet of the bridges where pile-driving is expected to occur. There is one archaeological sites located within 135 feet of a bridge where pile-driving is expected to occur (Vero Site). However, there is insufficient evidence available to assess the potential impacts to subsurface archaeological sites from this type of vibration. There is, therefore, the potential for an adverse effect to subsurface stratigraphy or archaeological artifacts in close proximity to the bridge from pile-driving during construction. In order to avoid these potential effects, AAF will commit to using alternative construction methods such as vibratory or sonic pile driving that reduce the vibration impact from pile driving at this location.

5.1.3 Staging and Access Areas

Some specific construction effects cannot be estimated at this time because they depend on several factors yet to be determined, such as: final design, location of material staging, access to work areas, materials to be used, specific construction methodologies, and identification of borrow areas or excess material placement areas, if necessary. If any access, staging, borrow, or excess material placement areas are not located within the existing rights-of-way, which serve as the boundary for the direct impacts APE, AAF will conduct surveys before beginning work in these areas. This commitment will be included in the MOA.

For the E-W Corridor, access to work areas would be primarily from public areas or the highway right-of-way (SR 528) but some private access may be required. Material staging areas would be located within the proposed railroad right-of-way. Construction site access locations have not yet been

identified and therefore, potential construction effects that would result from access have not been assessed. AAF will conduct construction activities in a manner to avoid effects to known historic properties listed or eligible for listing on the NRHP, which will be stipulated in the MOA.

Within the N-S Corridor, access to work areas will be primarily from public access points and therefore, will not affect historic properties. If private property is proposed to be used for site access or for material staging, AAF will consult with the SHPO in order to assess the potential impacts of new activities on archaeological and historic resources and will locate such activities in such a manner to avoid effects to known historic properties listed or eligible for listing on the NRHP, which will be stipulated in the MOA. As noted above, AAF will survey any construction staging areas that are not currently within the right-of-way, and therefore not included in the initial study area, before beginning work in those areas.

As stated in Section 3.4 of the 2012 EA, the WPB-M Corridor will include construction primarily on existing exclusive right-of-way (which defines the APE for direct effects), and, therefore, would have no temporary effects on historic or archaeological resources.

Findings of Effect

As described in 5.4.5 of the DEIS and sections 3, 4, and 5 of this document, FRA has evaluated the proposed Project pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR 800) and finds that the proposed Project would have an adverse effect on two historic properties, the Eau Gallie River Bridge and the St. Sebastian River Bridge, both of which must be demolished and replaced with a new 2-track bridge structure. The proposed Project would have an effect, but not an adverse effect, on the FECR Historic District as a whole. Although the project includes reconstructing the double-track railroad system and demolishing and replacing bridges that are eligible as contributing elements to the FECR Historic District, these activities would be conditioned on AAF's commitment to continued consultation with SHPO, including adherence to the MOA for the construction of the Eau Gallie River and St. Sebastian River Bridges, to ensure that the new and rehabilitated structures are compatible with the historic character of the District. AAF will consult with the SHPO to develop bridge designs that are in keeping with the Secretary of the Interior's Standards for Rehabilitation.