

## **V. EXPLANATION OF WHY THE CRITERIA OF ADVERSE EFFECT WERE APPLICABLE OR INAPPLICABLE, INCLUDING ANY CONDITIONS OR FUTURE ACTIONS TO AVOID, MINIMIZE, OR MITIGATE ADVERSE EFFECTS**

The Criteria of Adverse Effect set forth in 36 CFR 800.5(a)(1) was applied and assessed to evaluate if the undertaking of the Preferred Alternative would affect the various NRHP eligible or listed resources as well as any archaeological sites that may be later determined eligible for the National Register.

As described in 36 CFR 800.5 (a)(1) and (2), the Criteria of Adverse Effect has been applied to the proposed undertaking. An undertaking is considered to have an adverse effect when it 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 integrity of the property's location, design, setting, materials, workmanship, feeling or association. Examples of Adverse Effects on historic properties under 36 CFR 800.5 (a)(1) and (2) include, but are not limited to:

- (i) Physical destruction or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 CFR part 800.5 [a][2]).

Each of these examples of adverse effect and their applicability to historic properties within the Preferred Alternative area of potential effect are discussed for each property below.

### **A. Resources Not Adversely Effected by the Little Heaven Grade Separated Intersection Project**

As a result of the application of the Criteria of Adverse Effect, the Preferred Alternative was found to have an effect on the Thomas James House and the Barratt's Chapel and Cemetery. However, the effect is considered not adverse.

#### **1. Barratt's Chapel and Cemetery (CRS # K-103)**

**Figure 11** shows the proposed undertaking at the Barratt's Chapel and Cemetery. The Criteria of Adverse Effect was applied to the Preferred Alternative to determine if any adverse effects resulted.

The following two examples from the Criteria of Adverse Effect were applied to the undertaking's effects on this resource to determine if they resulted in an adverse effect:

- 36 CFR 800.5 (a)(2)(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- 36 CFR 800.5 (a)(2)(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

The remaining examples from the Criteria of Adverse Effect under 36 CFR800.5 (1) and (2) are not applicable to this property.

To address both examples of effects, neither are considered adverse. As briefly discussed in *Section IV* the proposed undertaking of the Preferred Alternative would not result in any physical encroachment on the property as a direct result of the undertaking itself. There are several improvements in the existing right-of-way in front of the Barratt's Chapel property. A temporary construction easement will be utilized to perform entrance improvements. However, this was requested by and will be constructed on behalf of Barratt's Chapel.

Some trees that are within the right-of-way in front of the Barratt's Chapel property will be removed because of the need to widen the shoulder and existing historic/entrance markers, which are located within the existing right-of-way, will be moved from their existing location further onto the Barratt's Chapel property. However, in this case, the effect is still not considered adverse.

Generally, the Little Heaven grade separated intersection improvements involve resurfacing and stripping of the existing roadway and shoulder at this location. There are no right-of-way acquisitions to the Barratt's Chapel and Cemetery property. However, there are temporary easements for driveway and egress improvement to the facility. Per the request of the Barratt's Chapel personnel, access into the facility would be improved by shoulder adjustments.

This improvement would require approximately 2 feet of additional pavement widening along the existing shoulder and within the existing right-of-way. In addition, a commemorative bell (non-historic or non-contributing), a historic state marker and an entrance sign would have to be set back from their existing location. Because of their existing close proximity to the free flowing vehicular movement, clear zone safety requirements warrant their adjustment. The commemorative bell, entrance sign and marker conveying the historic significance of Barratt's Chapel will be adjusted and reset several feet east of their existing location, as shown in **Figure 11**. The final adjustments were discussed with the DE SHPO and the appropriate Barratt's Chapel personnel.

As a measure to ensure the effect is not considered adverse now or into the future, re-landscaping activities per consultation with the Barratt's Chapel officials are proposed. This would also mitigate the loss of few trees that currently front the property. As such, none of the setting elements of integrity will be adversely altered by the Preferred Alternative or by the rest of the undertaking. More importantly, the physical elements involved are not specifically contributing towards the property's significance.

As far as audible or future noise impacts, this element is no effect and would be less than three decibels to even be considered. As shown on **Figure 11** and as documented in the Environmental Assessment for noise, the 66 dBA contour line is the same under the No Build conditions in year 2030 as it is under the Preferred Alternative or undertaking in place at this time. Thus, increased noise impacts cannot be accounted or detected.

## **2. Thomas James House (CRS # K-2686)**

**Figure 13** depicts the Preferred Alternative at the location of the Thomas James House, which is a NRHP-eligible resource under Criteria C for its architecture. The property is located on a 2.06 acre property along Clapham Road. The Criteria of Adverse Effect was applied to the Preferred Alternative to determine if any adverse effects would result from the undertaking.

The following three examples from the Criteria of Adverse Effect were applied to the undertaking's effects on this resource to determine if they resulted in an adverse effect:

- 36 CFR 800.5 (a)(2)(i) Physical destruction or damage to all or part of the property;
- 36 CFR 800.5 (a)(2)(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- 36 CFR, 800.5 (a)(2)(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

The remaining examples from the Criteria of Adverse Effect under 36 CFR800.5 (1) and (2) are not applicable to this property.

The physical take under 36 CFR, 800.5 (a)(2)(i) will occur and will result in changes to the front of the property. This would also result with strip vegetation and mature tree removal. As a result of implementing the Preferred Alternative the road will be widened along the frontage of the Thomas James House property and this widening will encroach on the historic boundary of this property. Despite this encroachment the dwelling historically contributing to and associated with the property is set back from the road and will not be adversely effected. As a mitigation measure to ensure the effect is not considered adverse, re-landscaping activities are planned for the Thomas James House property which would replace the loss of any trees that currently front the property. The impacts were also minimized to the furthest extent possible by utilizing a

closed drainage system, which ultimately reduces erosion along the frontage of the property. None of the elements of integrity will be adversely affected by the Preferred Alternative or by the rest of the undertaking.

In regard to 36 CFR, 800.5 (a)(2)(iv), the character defining features that contribute to the architectural features such as location, setting, and feeling of the property will be slightly affected by physical alteration and disturbance, however there aren't any disturbances to the Thomas James House itself. Setting and feeling elements, though questionable on an architectural resource, will not be lost or impacted to a point of severity, especially given the fact that the association of the dwelling with a farmstead complex has been lost by the removal of the agrarian structures that once stood on this property. Therefore, the minor changes of the physical features resulting from widening the roadway on a portion of the property' frontage will not be adverse because the location, setting, and feeling elements will continue to operate and function no differently than before the undertaking.

Under 36 CFR, 800.5 (a)(2)(v) any introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features that could potentially result from the widening of the roadway would already be mitigated by providing any re-landscaping and therefore the effects are not considered adverse. As such, none of the elements of integrity will be adversely altered by the Preferred Alternative or by the rest of the undertaking.

## **B. Resources Adversely Effected by the Little Heaven Grade Separated Intersection Project**

As a result of the application of the Criteria of Adverse Effect, the Preferred Alternative was found to have an "adverse effect" on the Jehu Reed House and Mt. Olive School/Mt. Olive Colored School.

### **1. Jehu Reed House (CRS # K-137)**

**Figure 12** depicts the Preferred Alternative at the location of the Jehu Reed House. As briefly discussed and illustrated in *Section IV*, the proposed undertaking of the Preferred Alternative would not result in any physical encroachment on the property. However, since a new elevated roadway would be constructed in front or adjacent to the property this action would clearly have visual and audible concerns in comparison to and beyond the current roadway conditions. The existing southbound roadway will be converted into a two lane service road for local access, while the main line of SR 1 would be elevated approximately 22 feet high to the top of the bridge deck and would be relocated to the east approximately 150 feet away from the property and approximately 200' from the front porch.

The Criteria of Adverse Effect was applied to the Preferred Alternative to determine if any adverse effects would result from the undertaking. The following examples from the Criteria of Adverse Effect were applied to the undertaking's effects on this resource to determine if they resulted in an adverse effect:

- 36 CFR 800.5 (a)(2)(i) Physical destruction or damage to all or part of the property;
- 36 CFR, 800.5 (a)(2)(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- 36 CFR, 800.5 (a)(2)(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

The remaining examples from the Criteria of Adverse Effect under 36 CFR800.5 (1) and (2) are not applicable to this property.

Under 36 CFR 800.5 (a)(2)(i), a physical destruction or damage to all or part of the property could potentially occur by the construction that occurs near the dwelling. Vibration impacts could occur with construction of a bridge overpass near the aged brick dwelling and with the roadway modifications along SR 1. Pile driving (i.e. a known source of vibration) is not needed or proposed for the bridge overpass's method of construction. However, the infrastructure modifications near the property will involve placement or removal of heavy material sources, operations, and equipment. This effect is deemed not adverse because damage to the defining characteristics of the Jehu Reed dwelling (the architecture) is not likely to happen.

Under the Criteria of Adverse Effect one could also suggest that under 36 CFR, 800.5 (a)(2)(iv) that a change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance would occur under the transportation improvements adjacent to the property.

However, this adverse effect example is really inapplicable and is also not considered adverse. In its current state of condition and based on the National Register documentation, there are no identified physical features within the surrounding property's setting that may or would contribute to its historic significance. Perhaps decades ago (and before the nomination), the property had a relevant context setting, feeling, and association with the surrounding area. Today, the property and surrounding area cannot adequately convey or suggest a historic setting, feeling, or association. More importantly, based on the undertaking there is nothing within the surrounding area that is identified as physical feature that actually contributes or is associated to this property's significance. Thus, transportation changes within the surrounding area would not be considered adverse. In addition, during and after the undertaking, there will not be a change of character of the property's use of the property. The dwelling can remain partially occupied as residential and accessed along the remaining roadside. Foreseeable land use changes are not expected that can be directly correlated to the undertaking.

Regarding visual effects under 36 CFR, 800.5 (a)(2)(v), this is considered adverse by introducing a new elevated highway that is not deemed compatible in viewing the property from the road or the roadway area from the property. Views seen to or from the property would be negatively altered by the construction of an overpass nearly 200' away.



However, it is important to note that the property has already suffered physical deterioration over the last several years (at least two decades) due to neglect and lack of any upkeep. This neglect is independent of the undertaking. The Jehu Reed House is seriously deteriorated on both the exterior and interior by weathering and water damage. All of the outbuildings associated with the property, except for the garage and smaller concrete block outbuilding (as a ruin), have either deteriorated or were recently removed. The front porch and main roof have slumped and has partially collapsed inward. Wood rot is evident throughout and the main roof has partially collapsed. Beyond the documented photographs (which have actually depicted the best visual elements from over a year ago) the majority of

the house is so overgrown by existing vegetation during summer months that it cannot be seen. Therefore, vegetation partially screens and already conceals whatever architectural elements that suggest its minimal level of integrity of design. Currently, the dwelling is occupied within the circa 1868 rear additions. The remaining dwelling (with character defining features of both period I and II) is in extremely poor condition and not habitable by today's health and safety standards.

Although not identified nor documented, the remaining aspects of integrity most important to the NRHP listing under Criteria A or C that are effected by introduction of new visual elements that are disproportional with respect to the property's integrity of location and design. Views seen to and from the property along with the new transportation improvements present new and incompatible masses, heights, and elements that are out of scale and proportion with what exists in the vicinity and near the property. As such, an overpass near the front of this property may introduce an aesthetic effect that is visually negative towards the property's location and architectural design. Moreover, the existing visual features at the project location will alter the few remaining views of the property seen from the mainline or from any residents located east and off Bowers Beach Road.

Regarding audible effects caused by the undertaking, results are better discussed and illustrated in the Environmental Assessment. Based on the standard FHWA recognized criteria threshold of 66 dBA levels with the undertaking, audible impacts are not considered an effect. The results are moreover illustrated on **Figure 12** with the use of contour lines.

Under current conditions, as indicated on the blue contour delineation on **Figure 12**, the 66 dBA threshold includes most of the dwelling (although not habitable) facing towards the existing roadway. Under the No-Build conditions by 2030 (green line), this contour captures the entire Jehu Reed dwelling plus a portion of the rear yard because of projected increases in traffic volumes.

By implementing the Preferred Alternative for the SR 1, Little Heaven Grade Separated Intersection Project the roadway shifts away from the dwelling and would minimize noise levels on the dwelling and with the remaining parcel (purple line). This is due in part that the main line is elevated from ground surface levels this would shield and/or disperse transportation frequency noise and sound waves. Existing southbound SR 1 directly in front of the property would become a service road with reduced speeds and traffic.

In sum, regarding visual effects, the historic property has suffered much physical deterioration over the last several years due to neglect and lack of any upkeep. However, a new overpass near and closely in front the property can only negatively effect (visually) the surrounding area, and thus for the integrity location and design for the Jehu Reed House in the project area. Regarding audible effects caused by the undertaking, results are better discussed and illustrated in the Environmental Assessment. Based on the standard FHWA recognized criteria threshold of 66 dBA levels with the undertaking, audible impacts are not considered an effect.

As a means for mitigation, the property was already documented by the Center for Historic Architecture and Design of the University of Delaware (2000). Documentation was taken to Level II, which included annotated field notes, measured drawings, color slides, large-format (4.0 inches by 5.0 inches) black-and white photographs, and an architectural data narrative. As such, this effort allows a proper recordation of the property beyond any visual intrusion that the undertaking may cause.

As a means to ensure the effect may not be considered or result as adverse later in time by potential vibration damage, provisions to monitor the building have been proposed to ensure that

construction methods would not effectively cause damage or physical destruction to the dwelling. Should severe vibration occur which could effectively result in damage to adjacent properties (i.e. not limited to Jehu Reed), construction approaches would be effectively modified. If damage or physical destruction does actually occur to the Jehu Reed House, provisions can also be added to address re-consultation with the DE SHPO, FHWA, and the property owner on any building repair needs and/or new construction approaches. With provisions in place, the potential physical effects under CFR 800.5 (a)(2)(i) that may be caused by construction vibration are not adverse.

Furthermore, knowing the dwelling's state of deterioration is nearly irreversible and that full rehabilitation would be cost prohibitive, adverse visual impacts are recognized as unmitigated. Measures to avoid or minimize adverse effects will not be discussed in part C of this section. The DE SHPO is welcomed to review and comment on the type of bridge overpass near the Jehu Reed House. Their input may potentially make the improvements less intrusive. However, the visual qualities and impacts of the undertaking are essentially unmitigated. Alternative mitigation is proposed such as working with the Division of Historic and Cultural Affairs and property owner to determine the viable need of a historic marker/sign on the property. This would visually and verbally convey the remaining historic significance the property at its location for roadside travelers.

## 2. *Mt. Olive Colored School/Mt. Olive Colored School (CRS # K-2685)*

**Figure 14** depicts the Preferred Alternative at the location of the Mt. Olive School property. The existing 2.07 tax parcel, which fronts Clapham Road to the west, fronts existing SR 1 to the east and fronts Mulberrie Point Road to the south serves as the NRHP boundary because it sufficiently encompasses the historic acreage of the school, the sidewalk, and the lot on which the building stands to maintain its location, setting, and feeling of a former Colonial Revival du Pont School.

As shown and noted on **Figure 14**, the grounds and surrounding area will be impacted, used, altered, and partially restored as a result of the proposed undertaking. As such, the physical take under 36 CFR 800.5 (a)(2)(i) will occur. Changes to the front and sides of the property will occur with the location of new access roads and egress areas. The roadway footprints will get slightly wider throughout this location. Right-of-way impacts, drainage, and permanent easements will occur. A sidewalk which can be associated with the school building's pedestrian access during its period or significance will be removed from its current location to make room for Clapham Road upgrades. A small number of trees along Clapham Road would be removed as well.

The proposed undertaking of the Preferred Alternative would require the following right-of-way acquisitions to the property: a 50' wide strip of right-of-way along the length of the property fronting Clapham Rd (0.21 acres); an area adjacent to SR 1 (0.28 acres) and an area as a Permanent Easement (0.78 acres) for a total of approximately 1.27 acres of the property (see **Figure 14**). This take or conversion of use on the property amounts to approximately 60% of the current parcel. The majority of the permanent easements are a result of re-grading and drainage measures that currently exist, but need to be shifted, extended, and/or reconstructed.

Also under 36 CFR 800.5 (a)(2)(i), vibration damage associated with all the construction activities around this property could result in physical damage or destruction of the main schoolhouse building. However, this is only a potential and not likely not to happen. It has to be deemed not adverse or conditioned as not adverse with the provisions to monitor the construction activities and the building.

In addition, under the Criteria of Adverse Effect of 36 CFR, 800.5 (a)(2)(iv) a change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance would occur.

This Criteria of Adverse Effect example is considered adverse in nature since approximately 60% of the entire property will be acquired and needed for other primary and secondary transportation and land use/utility functions. Although questionable to start, the character defining features (remaining) that still attribute to the historic and architectural features such as location, setting, and feeling of a former school house property will be dramatically minimized by the known physical alteration, disturbance, and conversion of land use. The remaining plot of land (0.80 acres) will have noticeable changes throughout its location, setting, and feeling which could be deemed as cumulative in nature for any future or potential adaptive use of the property. However, because access and other infrastructure is better controlled and managed, one could also argue that the changes in setting or use of the property, makes it more ideal for potential adaptive re-use of the building and remaining grounds. This decision will be up to the property owner which is the Department of Education. Currently vacant, the Department of Education oversees the property. They currently have no plans for the former school house at this time.

The Criteria of Adverse Effect under 36 CFR, 800.5(a)(2)(v) will also occur for both audible and visual. With all the localized upgrades, local access changes, ramps, and main line improvements along SR 1 and Clapham Road, visual intrusions will occur. In addition, the schoolhouse dwelling is not set specifically back from the road. Improvements will be slightly closer and increase in magnitude than existing conditions.

Regarding audible effects caused by the undertaking, results are better discussed and illustrated in the Environmental Assessment. Based on the standard FHWA recognized criteria threshold of 66 dBA levels with the undertaking, audible impacts are considered adverse in nature and are cumulative.

Based on **Figure 14**, the current 2004 conditions indicate that a 66 dBA threshold criteria of noise impact to already exist. Noise impacts surpassing the FHWA noise criteria surround the entire parcel and schoolhouse building. Under the no build conditions by 2030 (green line), this threshold contour captures even a greater area outside the Mount Olive School property. Therefore, existing noise levels which already surpass the 66 dBA at this location will increase greater within the building footprint area under the "No Build" conditions.

In addition and in order to confirm an adverse effect at this location, under the SR 1, Little Heaven Grade Separated Intersection project, the Preferred Alternative by year 2030 will actually move the 66 dBA contour line directly further off the dwelling and beyond the "No-Build" scenario. This is especially true with improvements of Ramp A and B towards the north. In essence, the Mount Olive School is located the middle of all surrounding transportation noises and upgrades and will continue to do so in the future.

In sum, under current conditions, No-Build, or with the Preferred Alternative, the noise impact levels are already beyond existing thresholds and would increase dramatically in the future under the build option(s). The Mt. Olive School is situated within a high speed access way and transportation corridor that results in adverse effect noise impacts.

### **3. Archaeological Sites**

Because their eligibility is still not determined or qualified as far as National Register status and relative impact, adverse effects could result upon Parcel 1-1, 1-2, 18, 2-10, 25, 17, 2-8, 2-9, 2-1, 16, 26, 2-3, 2-7, 5-3, 12, and 7. As such, assuming that any archaeological sites are later

determined eligible for the NRHP and impacted, adverse effects could occur under 36 CFR 800.5(a)(2)(i) such that physical destruction or damage to all or part of the property would result. Under 36 CFR 800.5(a)(2)(iii), there could also be removal of the property from its historic location.

The remaining examples in the Criteria of Adverse Effects did not apply.

### **C. Avoidance of Adverse Effect for Mount Olive School Including Minimization**

As shown on **Figure 14** and consulted with the SHPO, total avoidance to the property is not possible without abandoning the purpose and need of the project, particularly at this location. The No-Build condition would not meet the purpose and need and therefore is not recommended.

Clapham Road cannot be shifted any further to the west to help avoid takes and impact along the front of the property. If this measure were undertaken, this would require reconfiguring internal roads of the Highpoint subdivision and would further increase impacts to residential homes and properties along Clapham Road (north and south) to a point where additional relocations and added construction costs would be extraordinary.

As coordinated with the SHPO, FHWA, and reflected in the project, the SR 1 Southbound Ramp B to Clapham Road has been reduced in design speed from a 30 mile per hour curve to a 25 mile per hour curve. This originally reduced the impacts to the north of the Mt. Olive School and acquisition of this property by 0.26 acres. **Figure 14** illustrates the previous ramp configuration. Permanent easements are essentially needed to ensure drainage and re-grading and channel flow that currently exist. The supporting infrastructure that is also addressing non-point sources of runoff and piping of raw sewage will be publicly maintained by use of permanent easements.

### **D. Options to Minimize Harm, Prevent Harm and Mitigation**

As a measure to ensure the effect is not considered adverse, re-landscaping activities planned for the Thomas James House, Mount Olive School, and Barratt's Chapel and Cemetery would mitigate the loss of the few trees that already front the properties. As such, none of the elements of integrity will be adversely altered by the Preferred Alternative or by the rest of the undertaking. Historic sign markers will be relocated or potentially added as a means to publicly convey the importance of each historic property. Vibration studies and other protective measures will be implemented to best ensure that damage and repairs (should it be warranted) may not result to either the Jehu Reed House or the Mount Olive School. Should severe vibration occur, construction approaches would be effectively modified. If damage or physical destruction does actually occur to the Jehu Reed House or the Mount Olive School, provisions can also be added to address re-consultation with the DE SHPO, FHWA, and the property owner on any building repair needs and/or new construction approaches.

Regarding archaeological sites, at this time the full identification, description, development of a supporting historic context, or a NRHP determination has not been undertaken for any of the early identified archaeological sites. Locations for future Phase II studies and field testing have been identified as parcels Parcel 1-1, 1-2, 18, 2-10, 25, 17, 2-8, 2-9, 2-1, 16, 26, 2-3, 2-7, 5-3, 12, and 7. Should future studies and data recovery be warranted within the undertaking or as a result of the undertaking, then appropriate steps would be addressed to first avoid or minimize impacts to the site, if possible. Data recovery methods would also be addressed for both historic and pre-historic archaeological sites when confirmed. This element is better described in the Memorandum of Agreement (MOA) for this undertaking.

As the project undertaking involves a fair amount of property acquisition that may or may not involve impacts to known or unknown archaeological sites, provisions will be undertaken that if

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*Determination of Effect*

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existing or future lands are subdivided and declared as excess right of way (to be leased, transferred, or sold), preservation covenants will be added to any future deed or agreement to ensure long term preservation of any known archaeological sites. In addition, the language may indicate that future or uncompleted archaeological efforts might be undertaken and completed prior to issuing or selling of land. This will adequately address any transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions to ensure long-term preservation of the property's historic significance (36 CFR part 800.5(a)(2)(vii).

Various conditional and/or mitigation measures were suggested, planned, and coordinated. Measures are more formalized in the attached Memorandum of Agreement.