ENVIRONMENTAL ASSESSMENT

McHenry Shooting Facility Sporting Clay Trail Construction

STONE COUNTY, MISSISSIPPI

Prepared by

Mississippi Department of Wildlife, Fisheries, and Parks

Jackson, Mississippi

In cooperation with

United States Fish and Wildlife Service – Wildlife and Sport Fish Restoration Program Region 4

Atlanta, Georgia

In accordance with

50 CFR 80.137 for Administrative Requirements of the Pittman – Robertson Wildlife Restoration and Dingell – Johnson Sport Fish Restoration Acts

PURPOSE AND NEED FOR ACTION:

In Mississippi, access to public sporting clay ranges has not kept pace with the demand for safe, quality shooting opportunities for enthusiasts to pursue the sport. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) operates and maintains only three public shooting facilities in the entire state. The McIvor Shooting Facility (North MS), Turcotte Shooting Facility (Central MS), and McHenry Shooting Facility (South MS). Of the three, McIvor and Turcotte Facilities have sporting clay trail ranges. McHenry Shooting Facility in Stone County in extreme southeastern Mississippi is located to provide access to residents in the large population center of the three coastal counties (~ 370,000 population). The closest agency sporting clay range, Turcotte, lies over 150 miles away from most residents in this area. There is a need to make shooting opportunities (sporting clay) more accessible for them.

Therefore, it our purpose to:

- Provide a safe, quality, clean, and family friendly sporting clay trail at McHenry Shooting Facility.
- Provide more educational and shooting range facilities to support classroom training and live fire opportunities for Hunter Education classes.
- Support the expansion of programs that will encourage participation in shooting sports and hunting.

PROPOSED ACTION

The MDWFP proposes to construct a sporting clay trail at the existing McHenry Shooting Facility located on a property hereafter referred to as the "McHenry Tract." The trail will mirror sporting clay trails located at MDWFP (Turcotte and McIvor Shooting Facilities). The trail will encompass the southern end of the McHenry Shooting Facility.

The trail will be approximately 1 mile long. Trail work will include grubbing, stumpage, and additional dirt work. Dirt work will encompass grading, crowning, and ditching to create a 8-foot wide trail with a one-to-two foot crown. Onsite material from ditching will be used for shaping trail. Additional fill material will come from an onsite borrow area. Trail surface will include approximately 4" of aggregate. Trail aggregate will have a 3" overlay of asphalt.

In addition to the trail a levee will be constructed to provide an approximate 3-acre pond in an area already impounded by beaver dams. The levee will include drainage pipe and emergency spillway. Onsite material will be used to construct levee. All graded and scarred areas will be seeded and mulched to minimize erosion.

Along the path of the trail 12 predetermined locations will be identified for shooting stations. Each shooting station will include shooting platforms and safety fencing. Sporting clay machines will be purchased to propel sporting clay targets at each station. Signage will be purchased to identify trail route and shooting stations.

We estimate a total of 5,474 cubic yards of fill will be excavated from the onsite borrow pit. No fill will be excavated offsite.

The proposed Sporting Clay Trail would occur on the existing McHenry Shooting Facility located in Stone County, Mississippi. The existing Facility is located 1060 East McHenry Road McHenry, MS 39561. The proposed trail is located at section 13/T4S/R11 West in Stone County, Mississippi (see attached map showing the location of proposed sporting clay trail). See APPENDIX ONE for the site plan for the proposed action.

LEGAL DESCRIPTIONS OF TRACTS/EASEMENTS:

McHenry Tract

EXHIBIT "A"

INDEX AS FOLLOWS: SE ¼ of SE ¼, SW ¼ of SE ¼, SE ¼ of SW ¼, NE ¼ of SW ¼, NW ¼ of SE ¼, NE ¼ of SE ¼, SE ¼ of NW ¼ SW ¼ of NE ¼ of Section 13, Township 4 South, Range 11 West, Stone County, Mississippi.

Commence at the SE corner of Section 13, Township 4 South, Range 11 West, Stone County, Mississippi; thence run North 89 degrees 17 minutes 18 seconds West 1008.24 feet; thence North 00 degrees 12 minutes 41 seconds West 2249.59 feet to an iron pin in the center of a woods road at the POINT OF BEGINNING; thence along said woods road the following 30 calls: North 82 degrees 14 minutes 20 seconds West 667.38 feet; North 75 degrees 02 minutes 08 seconds West 176.04 feet; North 45 degrees 07 minutes 16 seconds West 211.20 feet; North 24 degrees 43 minutes 12 seconds West 43.72 feet; North 08 degrees 34 minutes 33 seconds West 56.52 feet; North 04 degrees 02 minutes 56 seconds East 88.78 feet; North 03 degrees 38 minutes 38 seconds East 130.75 feet; North 08 degrees 08 minutes 44 seconds West 138.03 feet; North 19 degrees 48 minutes 39 seconds West 72.75 feet; North 31 degrees 45 minutes 11 seconds West 78.20 feet; North 49 degrees 15 minutes 04 seconds West 104.81 feet; North 56 degrees 59 minutes 56 seconds West 29.86 feet; North 79 degrees 09 minutes 21 seconds West 46.01 feet; South 72 degrees 51 minutes 48 seconds West 35.78 feet; South 48 degrees 17 minutes 49 seconds West 39.80 feet; South 37 degrees 55 minutes 33 seconds West 147.40 feet; South 47 degrees 43 minutes 28 seconds West 56.96 feet; South 72 degrees 12 minutes 50 seconds West 45.16 feet; North 83 degrees 55 minutes 34 seconds West 115.62 feet; North 74 degrees 38 minutes 15 seconds West 208.08 feet; North 62 degrees 51 minutes 35 seconds West 60.24 feet; North 58 degrees 17 minutes 15 seconds West 44.42 feet; North 52 degrees 32 minutes 00 seconds West 36.23 feet; North 65 degrees 33 minutes 52 seconds West 300.87 feet; North 59 degrees 27 minutes 49 seconds West 46.74 feet; North 47 degrees 37 minutes 20 seconds West 109.52 feet; North 44 degrees 41 minutes 53 seconds West 69.12 feet; North 00 degrees 54 minutes 18 seconds West 50.25 feet; North 08 degrees 49 minutes 42 seconds West 118.44 feet; North 02 degrees 45 minutes 58 seconds West 129.21 feet to an iron pin in center of said woods road at the right-of-way of East McHenry Road, a public road; thence along said right-of-way the following three (3) calls: South 88 degrees 39 minutes 10 seconds East 64.08 feet; North 87 degrees 48 minutes 35 seconds East 2004.13 feet; North 86 degrees 30 minutes 44 seconds East 302.24 feet; thence leaving said right-of-way run South 00 degrees 08 minutes 54 seconds East 1559.93 feet to the POINT OF BEGINNING. Said parcel containing 51.64 acres, more or less.

LESS AND EXCEPT: Commence at the SE corner of Section 13, Township 4 South, Range 11 West, Stone County, Mississippi; thence run North 89 degrees 17 minutes 18 seconds West 1008.24 feet; thence North 00 degrees 12 minutes 41 seconds West 2249.59 feet to an iron pin in the center of a woods road; thence along said woods road the following 24 calls: North 82 degrees 14 minutes 20 seconds West 667.38 feet; North 75 degrees 02 minutes 08 seconds West 176.04 feet; North 45 degrees 07 minutes 16 seconds West 211.20 feet; North 24 degrees 43 minutes 12 seconds West 43.72 feet; North 08 degrees 34 minutes 33 seconds West 56.52 feet; North 04 degrees 02 minutes 56 seconds East 88.78 feet; North 03 degrees 38 minutes 38 seconds East 130.75 feet; North 08 degrees 08 minutes 44 seconds West 138.03 feet; North 19 degrees 48 minutes 39 seconds West 72.75 feet; North 31 degrees 45 minutes 11 seconds West 78.20 feet; North 49 degrees 15 minutes 04 seconds West 104.81 feet; North 56 degrees 59 minutes 56 seconds West 29.86 feet; North 79 degrees 09 minutes 21 seconds West 46.01 feet; South 72 degrees 51 minutes 48 seconds West 35.78 feet; South 48 degrees 17 minutes 49 seconds West 39.80 feet; South 37 degrees 55 minutes 33 seconds West 147.40 feet; South 47 degrees 43 minutes 28 seconds West 56.92 feet; South 72 degrees 12 minutes 50 seconds West 45.16 feet; North 83 degrees 55 minutes 34 seconds West 115.62.

feet; North 74 degrees 38 minutes 15 seconds West 208.08 feet; North 62 degrees 51 minutes 35 seconds West 60.24 feet; North 58 degrees 17 minutes 15 seconds West 44.42 feet; North 52 degrees 32 minutes 00 seconds West 36.23 feet; North 65 degrees 33 minutes 52 seconds West 82.78 feet to the POINT OF BEGINNING; thence continue along said centerline the following 7 calls: North 65 degrees 33 minutes 52 seconds West 218.08 feet; North 59 degrees 27 minutes 49 seconds West 46.74 feet; North 47 degrees 37 minutes 20 seconds West 109.52 feet; North 44 degrees 41 minutes 53 seconds West 69.12 feet; North 00 degrees 54 minutes 18 seconds West 50.25 feet; North 08 degrees 49 minutes 42 seconds West 118.44 feet; North 02 degrees 45 minutes 58 seconds West 129.21 feet to an iron pin in center of said woods road at the right-of-way of East McHenry Road, a public road; thence along said right-of-way the following 2 calls: South 88 degrees 39 minutes 10 seconds East 64.08 feet; North 87 degrees 48 minutes 35 seconds East 329.24 feet; thence leaving said right-of-way run South 00 degrees 00 minutes 00 seconds East 564.31 feet to the POINT OF BEGINNING. Said parcel containing 4.00 acres, more or less.

PARCEL NO. 1: Commence at the SE corner of Section 13, Township 4 South, Range 11 West, Stone County, Mississippi; thence run North 89 degrees 17 minutes 18 seconds West 1008.24 feet to the POINT OF BEGINNING; thence run North 00 degrees 12 minutes 41 seconds West, 2249.59 feet to the center of a woods road; thence along said centerline, the following 27 calls: North 82 degrees 14 minutes 20 seconds West 667.38 feet; North 75 degrees 02 minutes 08 seconds West 176.04 feet; North 45 degrees 07 minutes 16 seconds West 211.20 feet; North 24 degrees 43 minutes 12 seconds West 43.72 feet; North 08 degrees 34 minutes 33 seconds West 56.52 feet; North 04 degrees 02 minutes 56 seconds East 88.78 feet; North 03 degrees 38 minutes 38 seconds East 130.75 feet; North 08 degrees 08 minutes 44 seconds West 138.03 feet; North 19 degrees 48 minutes 39 seconds West 72.75 feet; North 31 degrees 45 minutes 11 seconds West 78.20 feet; North 49 degrees 15 minutes 04 seconds West 104.81 feet; North 56 degrees 59 minutes 56 seconds West 29.86 feet; North 79 degrees 09 minutes 21 seconds West 46.01 feet; South 72 degrees 51 minutes 48 seconds West 35.78 feet; South 48 degrees 17 minutes 49 seconds West 39.80 feet; South 37 degrees 55 minutes 33 seconds West 147.40 feet; South 47 degrees 43 minutes 28 seconds West 56.96 feet; South 72 degrees 12 minutes 50 seconds West 45.16 feet; North 83 degrees 55 minutes 34 seconds West 115.62 feet; North 74 degrees 38 minutes 15 seconds West 208.08 feet; North 62 degrees 51 minutes 35 seconds West 60.24 feet; North 58 degrees 17 minutes 15 seconds West 44.42 feet; North 52 degrees 32 minutes 00 seconds West 36.23 feet; North 65 degrees 33 minutes 52 seconds West 300.87 feet; North 59 degrees 27 minutes 49 seconds West 46.74 feet; North 47 degrees 37 minutes 20 seconds West 109.52 feet; North 44 degrees 41 minutes 53 seconds West 69.12 feet to the intersection of said woods road with another woods road; thence along the center of the other woods road, the following 31 calls: South 12 degrees 52 minutes 51 seconds West 356.44 feet; South 05 degrees 05 minutes 56 seconds West 126.03 feet; South 03 degrees 33 minutes 10 seconds East 72.54 feet; South 14 degrees 14 minutes 40 seconds East 61.77 feet; South 34 degrees 36 minutes 55 seconds East 104.83 feet; South 23 degrees 48 minutes 02 seconds East 57.22 feet; South 11 degrees 05 minutes 07 seconds East 101.30 feet; South 11 degrees 39 minutes 34 seconds East 68.71 feet; South 13 degrees 55 minutes 34 seconds East 101.25 feet; South 05 degrees 38 minutes 14 seconds East 125.40 feet; South 04 degrees 03 minutes 13 seconds West 133.01 feet; South 10 degrees 10 minutes 01 seconds West 135.12 feet; South 01 degrees 49 minutes 17 seconds West 48.14 feet; South 08 degrees 13 minutes 51

seconds East 52.24 feet; South 15 degrees 54 minutes 26 seconds East 152.64 feet; South 27 degrees 33 minutes 50 seconds East 195.20 feet; South 27 degrees 28 minutes 53 seconds East 108.25 feet; South 34 degrees 56 minutes 47 seconds East 233.76 feet; South 38 degrees 13 minutes 13 seconds East 292.28 feet; South 26 degrees 42 minutes 16 seconds East 69.78 feet; South 19 degrees 23 minutes 07 seconds East 150.97 feet; South 24 degrees 24 minutes 55 seconds East 57.72 feet; South 35 degrees 30 minutes 09 seconds East 62.91 feet; South 51 degrees 41 minutes 47 seconds East 214.80 feet; South 31 degrees 20 minutes 11 seconds East 52.27 feet; South 12 degrees 52 minutes 43 seconds East 115.56 feet; South 00 degrees 22 minutes 18 seconds West 248.17 feet; South 00 degrees 40 minutes 55 seconds West 85.18 feet; South 14 degrees 14 minutes 36 seconds West 87.45 feet; South 20 degrees 37 minutes 04 seconds West 107.27 feet; South 19 degrees 09 minutes 20 seconds West 45.00 feet; thence leaving said centerline, run South 89 degrees 17 minutes 18 seconds East 1567.66 feet to the POINT OF BEGINNING. Said parcel containing 126.00 acres, more or less.

PARCEL NO. 2: Commence at the SE corner of Section 13, Township 4 South, Range 11 West, Stone County, Mississippi; thence run North 89 degrees 17 minutes 18 seconds West 1008.24 feet; thence North 00 degrees 12 minutes 41 seconds West 2249.59 feet to an iron pin in the center of a woods road; thence along said woods road the following 24 calls: North 82 degrees 14 minutes 20 seconds West 667.38 feet; North 75 degrees 02 minutes 08 seconds West 176.04 feet; North 45 degrees 07 minutes 16 seconds West 211.20 feet; North 24 degrees 43 minutes 12 seconds West 43.72 feet; North 08 degrees 34 minutes 33 seconds West 56.52 feet; North 04 degrees 02 minutes 56 seconds East 86.78 feet; North 03 degrees 38 minutes 38 seconds East 130.75 feet; North 08 degrees 08 minutes 44 seconds West 138.03 feet; North 19 degrees 48 minutes 39 seconds West 72.75 feet; North 31 degrees 45 minutes 11 seconds West 78.20 feet; North 49 degrees 15 minutes 04 seconds West 104.81 feet; North 56 degrees 59 minutes 56 seconds West 29.86 feet; North 79 degrees 09 minutes 21 seconds West 46.01 feet; South 72 degrees 51 minutes 48 seconds West 35.78 feet; South 48 degrees 17 minutes 49 seconds West 39.80 feet; South 37 degrees 55 minutes 33 seconds West 147.40 feet; South 47 degrees 43 minutes 28 seconds West 56.92 feet; South 72 degrees 12 minutes 50 seconds West 45.16 feet; North 83 degrees 55 minutes 34 seconds West 115.62 feet; North 74 degrees 38 minutes 15 seconds West 208.08 feet; North 62 degrees 51 minutes 35 seconds West 60.24 feet; North 58 degrees 17 minutes 15 seconds West 44.42 feet; North 52 degrees 32 minutes 00 seconds West 36.23 feet; North 65 degrees 33 minutes 52 seconds West 82.78 feet to the POINT OF BEGINNING; thence continue along said centerline the following 7 calls: North 65 degrees 33 minutes 52 seconds West 218.08 feet; North 59 degrees 27 minutes 49 seconds West 46.74 feet; North 47 degrees 37 minutes 20 seconds West 109.52 feet; North 44 degrees 41 minutes 53 seconds West 69.12 feet; North 00 degrees 54 minutes 18 seconds West 50.25 feet; North 08 degrees 49 minutes 42 seconds West 118.44 feet; North 02 degrees 45 minutes 58 seconds West 129.21 feet to an iron pin in center of said woods road at the right-of-way of East McHenry Road, a public road; thence along said right-of-way the following 2 calls: South 88 degrees 39 minutes 10 seconds East 64.08 feet; North 87 degrees 48 minutes 35 seconds East 329.24 feet; thence leaving said right-of-way run South 00 degrees 00 minutes 00 seconds East 564.31 feet to the POINT OF BEGINNING. Said parcel containing 4.00 acres, more or less.

PUBLIC INVOLVEMENT:

Public input for the proposed activity will be solicited through notices placed on MDWFP's website and in the state-wide newspaper, the Clarion Ledger, for a period of 30 days. Respondents will be given the option of submitting comments via email.

ALTERNATIVES:

Preferred Action

The preferred action proposed here consists of construction of a sporting clay trail on the existing McHenry Shooting Facility. The trail will mirror sporting clay trails located at MDWFP (Turcotte and McIvor Shooting Facilities). The trail will encompass the southern end of the McHenry Shooting Facility.

The trail will be approximately 1 mile long. Trail work will include grubbing, stumpage, and additional dirt work. Dirt work will encompass grading, crowning, and ditching to create a 8-foot wide trail with a one-to-two foot crown. Onsite material from ditching will be used for shaping trail. Additional fill material will come from an onsite borrow area. Trail surface will include approximately 4" of aggregate. Trail aggregate will have a 3" overlay of asphalt.

In addition to the trail a levee will be constructed to provide an approximate 3-acre pond in an area already inundated by beaver dams. The levee will include drainage pipe and emergency spillway. Onsite material will be used to construct levee. All graded and scarred areas will be seeded and mulched to minimize erosion.

Along the path of the trail 12 predetermined locations will be identified for shooting stations. Each shooting station will include shooting platforms and safety fencing. Sporting clay machines will be purchased to propel sporting clay targets at each station. Signage will be purchased to identify trail route and shooting stations.

We estimate a total of 5,474 cubic yards of fill will be excavated from the onsite borrow pit. No fill will be excavated offsite.

No Action Alternative

The "No Action Alternative" identified here would consist of maintaining the McHenry Shooting Facility as is. In this scenario, no federal or state dollars would be expended and there would be no further construction disturbance to existing habitats. However, the potential for additional public outdoor recreational opportunities and additional opportunities for target practice and marksmanship training at public target ranges would not be realized.

AFFECTED ENVIRONMENT

The McHenry Tract upon which the proposed construction would occur is located within Stone County, Mississippi, approximately 12 miles from the City of Wiggins, the County's main population center. The tract is located within Mississippi's East Gulf Coastal Plain Ecoregion (Mississppi State Wildlife Action Plan).

Soils and Topography

There are two hydric soil types found within the McHenry Tract: Smithton fine sandy loam, which is located along a stream or hollow that runs through the southern portion of the tract, and Atmore loam, which is located within a patch near the southwestern corner of the tract. Additional soil types found within the tract include Malbis fine sandy loam, McLaurin fine sandy loam and Saucier fine sandy loam.

Stone County, Mississippi (MS131)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Atmore loam	5.5	3.1%
19	Malbis fine sandy loam, undulating	10.7	6.1%
23	McLaurin fine sandy loam,undulating	17.8	10.1%
29	Saucier fine sandy loam, 2 to 5 percent slopes	7.3	4.1%
31	Saucier fine sandy loam, undulating	120.7	68.8%
35	Smithton fine sandy loam, frequently flooded	13.5	7.7%
Totals for Area of Interest		**175.4**	**100.0%**

Air Quality

Stone County, Mississippi is classified as "Attainment/Unclassifiable" for all categories measured under 40 CFR § 81.325 with the exception of Categories "TSP" and "Sulfur Dioxide NAAQS" for which it is classified as "Better than National Standards."

Geological Resources

The State of Mississippi is within the Gulf Coastal Plain Physiographic Province and is further divided into twelve physiographic districts. Copiah County is located within the Piney Woods Physiographic District, which itself is divided into upland areas, intermediate or rolling hill areas and lowland areas (Mississippi Geological, Economic, and Topographical Survey).

Stone County lies within the portion of Mississippi where a transition occurs between the non-marine deposits of the Hattiesburg Formation and the estuarine to marine deposits of the Pascagoula Formation. The precise relations between these units are not yet clearly defined. They are difficult to discriminate either in the field or in subsurface studies, largely because they are mostly composed of silty to clayey sediments of similar character and contain few fossils. Some fossil wood has been found in both units, and some shell accumulations of Miocene age have been found in the Pascagoula Formation in Jackson County. In Stone County, these deposits vary from light bluish gray to medium olive. They contain some lenses and beds of fine

sand and some beds of swelling clays that range from 6 inches to 5 feet. These deposits are mostly impermeable and therefore subject to extensive sheet wash during storms. Soils on slopes underlain by the Hattiesburg and Pascagoula Formations commonly have profiles that are less than 1 foot in thickness. The contact between these deposits and those of the "Citronelle Formation," which typically is the unit deposited on top of them, varies widely in elevation. In parts of Stone County, these clayey units underlie the highest hills at an average of 400 ft.

Water Resources

Two small, man-made impoundments exist on the McHenry Tract. With the construction proposed here, a stretch of a tributary to the stream system, Boggy Branch currently impounded by beaver dams would additionally be impounded through construction of a levee at its southern-most end. The levee will allow for the trail to cross the present impounded area. A spillway or culvert will be constructed to maintain flow to Boggy Branch and the associated small stream swamp forest located immediately downstream.

Floodplains and Wetlands

Two are. The entirety of the McHenry Tract is designated as a floodplain, specifically, as a Category X Floodplain characterized by the Federal Emergency Management Agency has having moderate to minimal risk of flooding.

Archeological, Historical, and Cultural Resources

Pursuant to Section 106 of the National Historic Preservation Act, a review of the McHenry Tract and proposed activities was requested from Mississippi's State Historic Preservation Office (SHPO), the Mississippi Department of Archives and History. Results of a cultural resources survey conducted on the McHenry Tract are found in APPENDIX TWO.

Recreation

The McHenry Tract is operated at MDWFP's McHenry Shooting Facility and recreation that occurs on the property is entirely associated with shooting sports. Current options available to the public include a pistol range, rifle ranges, shotgun patterning range, trap range, five-stand sporting clay field, and a 3-D archery range.

EXPECTED ENVIRONMENTAL EFFECTS

Soils and Topography

No significant impacts are expected from the proposed action.

Air Quality

No significant impacts are expected from the proposed action.

Geological Resources

No significant impacts are expected from the proposed action.

Water Resources

No effects are expected for the two small, man-made impoundments exist on the McHenry Tract. With the construction proposed here, a stretch of a tributary to the stream system, Boggy Branch currently impounded by beaver dams would additionally be impounded through construction of a levee at its southern-most end. The levee will allow for the trail to cross the present impounded area. A spillway or culvert will be constructed to maintain flow to Boggy Branch and the associated small stream swamp forest located immediately downstream.

Floodplains and Wetlands

Project area has been surveyed for occurrence of the wetland plant Louisiana Quillwort (Listed Endangered) according to standard survey methodologies in anticipation of the proposed project. The species was not detected in the project area. Suitable habitat is not found in the construction zone; the area is impounded by beavers. Suitable Louisiana Quillwort habitat does exist downstream of the proposed pond in the form of shaded small stream swamp forest. Best management practices for preventing sedimentation from entering the watershed and affecting the downstream habitat will be employed during construction. Flow to the downstream habitat will be maintained. Furthermore, we will conduct a follow-up survey of this area during the winter when Louisiana Quillwort is more detectable. If the species is present, a burn plan for preventing shrub encroachment will be implemented. Mechanical techniques for preventing shrub encroachment would not be employed.

Archeological, Historical, and Cultural Resources

The SHPO review concluded that no cultural resources were likely to be affected by the proposed activities and there were no objections to the proposed activities. The SHPO response letter is attached as APPENDIX TWO.

Recreation

Recreational opportunities at MDWFP's McHenry Shooting Facility will be expanded with the addition of the sporting clay trail proposed for construction here.

SOCIO-ECONOMIC RESOURCES

Population

As of 1 July 2019, the United States Census Bureau estimates the population of Stone County to be 18,336. Stone is mostly rural with the main population center being Wiggins, Mississippi (pop. 4,552).

Employment

As of 1 July 2019, the United States Census Bureau estimates the civilian employed population of Stone County to be 10,195.

Income

Using data collected between 2014 and 2018 the United States Census Bureau estimates the median household income for Stone County to be $44,883 and per capita income to be $21,931.

BIOLOGICAL ENVIRONMENT

Vegetation

A floral survey of the McHenry Tract was conducted by MDWFP's botanist on 21 July 2020 for the purposes of this environmental assessment. A qualitative ground survey was conducted in the area of the proposed pond/lake, with the entirety of the tributary on the property examined.

A purpose of this survey was to determine if Louisiana quillwort (*Isoestes louisianensis*) might be present in the area of a proposed pond/lake as part of the proposed sporting clay trail. Isoetes louisianensis is listed as Endangered in the United States Endangered Species Act. It has a state rank of S2 and a global rank of G2G3. A qualitative ground survey was conducted in the area of the proposed pond/lake, with the entirety of the tributary on the property examined. The timing of the survey was during the time of senescence of the species, which is typically present in the late fall through the winter months. Therefore, the habitat was evaluated to determine suitability for the species.

The western branch of the tributary has two beaver impoundments (labeled A and B in Figure 2). The upper beaver impoundment has remnants of an old pitcher plant bog near the existing dam of a small lake. Yellow pitcherplant (*Sarracenia alata*), whitehead bogbutton (*Lachnocaulon anceps*), Sphagnum sp., tenangle pipewort (*Eriocaulon decangulare*) were all observed. This is a depauperate bog due to the shading of swamp black gum (*Nyssa biflora*) and sweetbay magnolia (*Magnolia virginiana*), swamp titi (*Cyrilla racemiflora*), and buckwheat tree (*Cliftonia monophylla*). This area, which represents the area of proposed construction is unlikely to have *Isoetes louisianensis* as the habitat is not suitable.

Suitable habitat for Isoetes Louisianensis is present on the McHenry Tract downstream of the proposed construction area. Although no plants were found, further surveys will be carried out during the plant's growing season to document presence or absence and the habitat in this area will be maintained.

Wildlife and Fisheries

Recreational hunting and fishing do not occur on the McHenry Tract, operated as MDWFP's McHenry Shooting Facility. Therefore, our data and survey efforts pertain species designated by the United States Fish and Wildlife Service (USFWS) as "Endangered" or "Threatened."

See "APPENDIX THREE" for our Section 7 Consultation with the USFWS regarding Endangered and Threatened Species.

ENVIRONMENTAL QUALITY

Sound

A noise study was conducted in 2012 prior to construction of the McHenry Shooting Facility to assess the potential for noise disturbance to the area resulting from operation of the McHenry Tract as a shooting facility. The report resulting from that study is attached as APPENDIX FOUR.

Introduction of Toxic Substances: Lead Management

The MDWFP uses best management practices for lead at outdoor shooting ranges established by the United States Environmental Protection Agency for managing lead introduced to the environment (https://www.epa.gov/sites/production/files/documents/epa_bmp.pdf) at its McHenry Shooting Facility. These would be extended to the design and operation of the proposed sporting clay trail. Mitigating measures taken at the facility include:

1. Erosion control and storm water management techniques will be utilized throughout construction and the expected life of the range.

2. Soil and runoff pH will be tracked through semi-annual monitoring and adjust the amount of lime applied to different areas of the range to maintain a pH level that will prevent lead from dissolving (i.e., a pH of 6.5 - 8.5).

3. Vegetation and sparse grass area on the trap/skeet field will prevent runoff of lead pellets.

4. Lead will be reclaimed/recovered/recycled from the shot field area/berm at such time when it becomes economically feasible.

5. The soil on the range is predominantly silt/clay and will be both in and strategically placed in the shot fall/berm area. Lead tends to cling tightly to clay soil particulates reducing the potential to affect other organisms.

6. Trap field/shooting range will be oriented to avoid lead shot entering wetlands.

Public Health or Safety

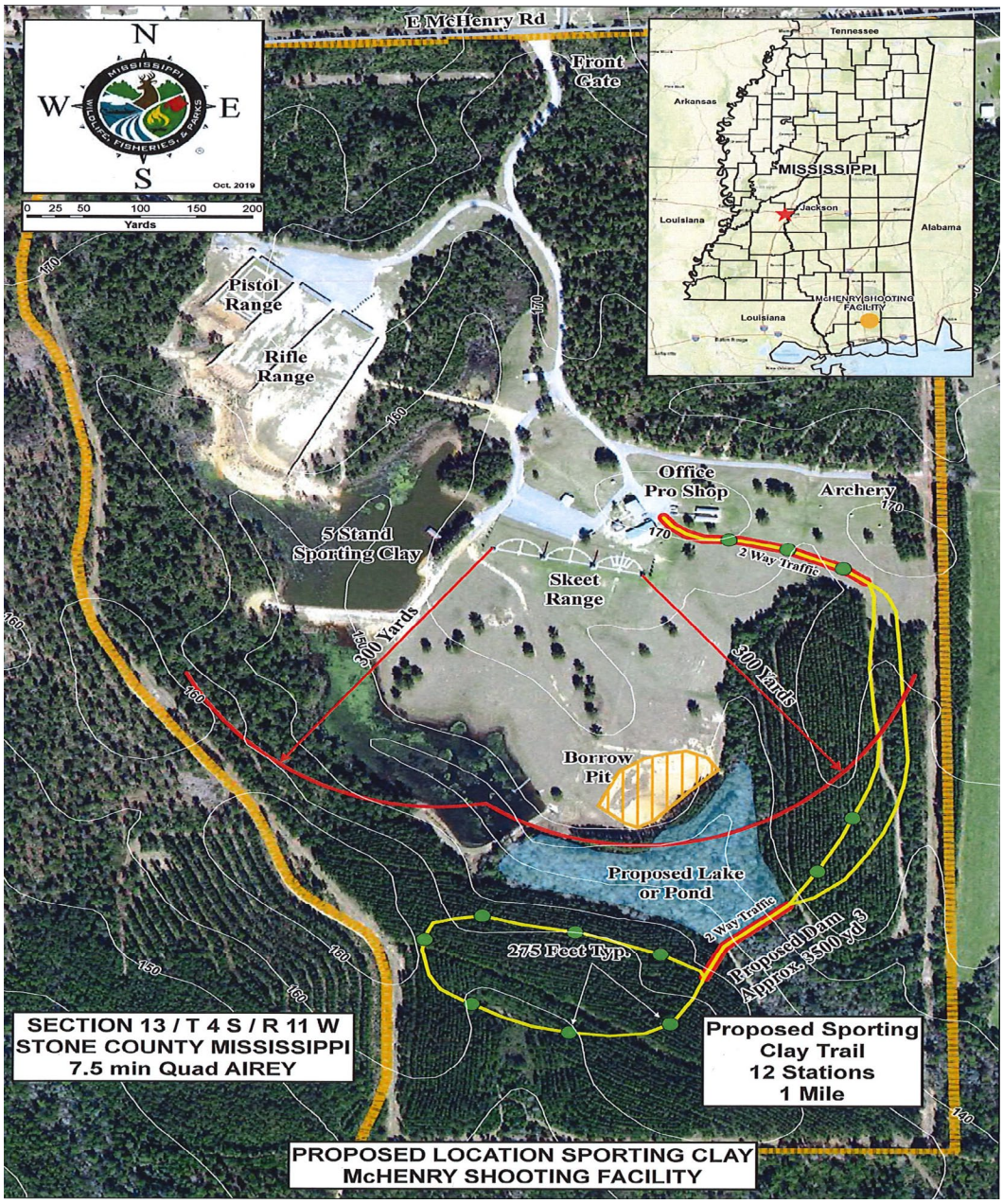
Range design was developed by MDWFP engineering staff (Attachment 2). All berms and other safety considerations will be constructed in accordance with design standards set forth in the NRA Sourcebook, the 3rd and 4th National Shooting Sports Symposiums and the National Association of Shooting Ranges. All use areas will be compliant with ADA requirements. Skeet/Trap will be oriented toward the North. Skeet/Trap/Sporting Clay ranges will be oriented so that all shot fall goes to a center location. All rifle/pistol ranges will be constructed as a “no blue sky” range and will be fitted with baffles that will block any projectile from leaving the site. The perimeter will be fenced and posted with signs indicating that the area is a firing range. The nearest resident to the east is over 6 tenths of a mile.

The Proposed Action provides a benefit to public safety by providing a safe place for residents in northern Mississippi to practice shooting their firearms. The facility is designed in order to provide a safe environment where MDWFP administered safety classes will be conducted. Safety Features, such as berms, baffles, and backstops, will be incorporated into the design of the shooting ranges to ensure the safety of the community utilizing the facility. All use areas will be compliant with ADA requirements.

CONCLUSIONS

The MDWFP believes that the construction and operation of the proposed sporting clay trail at our existing McHenry Shooting Facility will not have a significant effect on the environment and will result in a positive overall impact. Based on the proposed actions and site topology, minimal land disturbance will be required for the project. Additionally, the implementation of the new range will promote community awareness, stewardship, shooting safety, and environmental awareness.

APPENDIX ONE: Site Plan for Proposed Activities



McHenry Sporting Clay Trail (Aerial)

APPENDIX TWO: Cultural Resources

A Phase I Cultural Resources Assessment of the Proposed Mchenry Shooting Range, Stone County, Mississippi (Project Log # 04-022-11)

Introduction

This report describes a cultural resources assessment (archaeological and historical survey) of a proposed shooting range near the McHenry community, Stone County, Mississippi. The project will be located in Section 13, Township 4 South, Range 11 West, (U.S.G.S. Airey 7.5' quadrangle- Figure1). The Principal Investigator for this project is Read Stowe, RPA. The project elevation is approximately 160 feet above mean sea level and will include approximately 140 acres.

The requirements for this project were to identify any cultural resources that would be impacted by the proposed development. One archaeological site, 22St904, was found. The site is considered not eligible for the National Register of Historic Places and no further testing is recommended for this site.

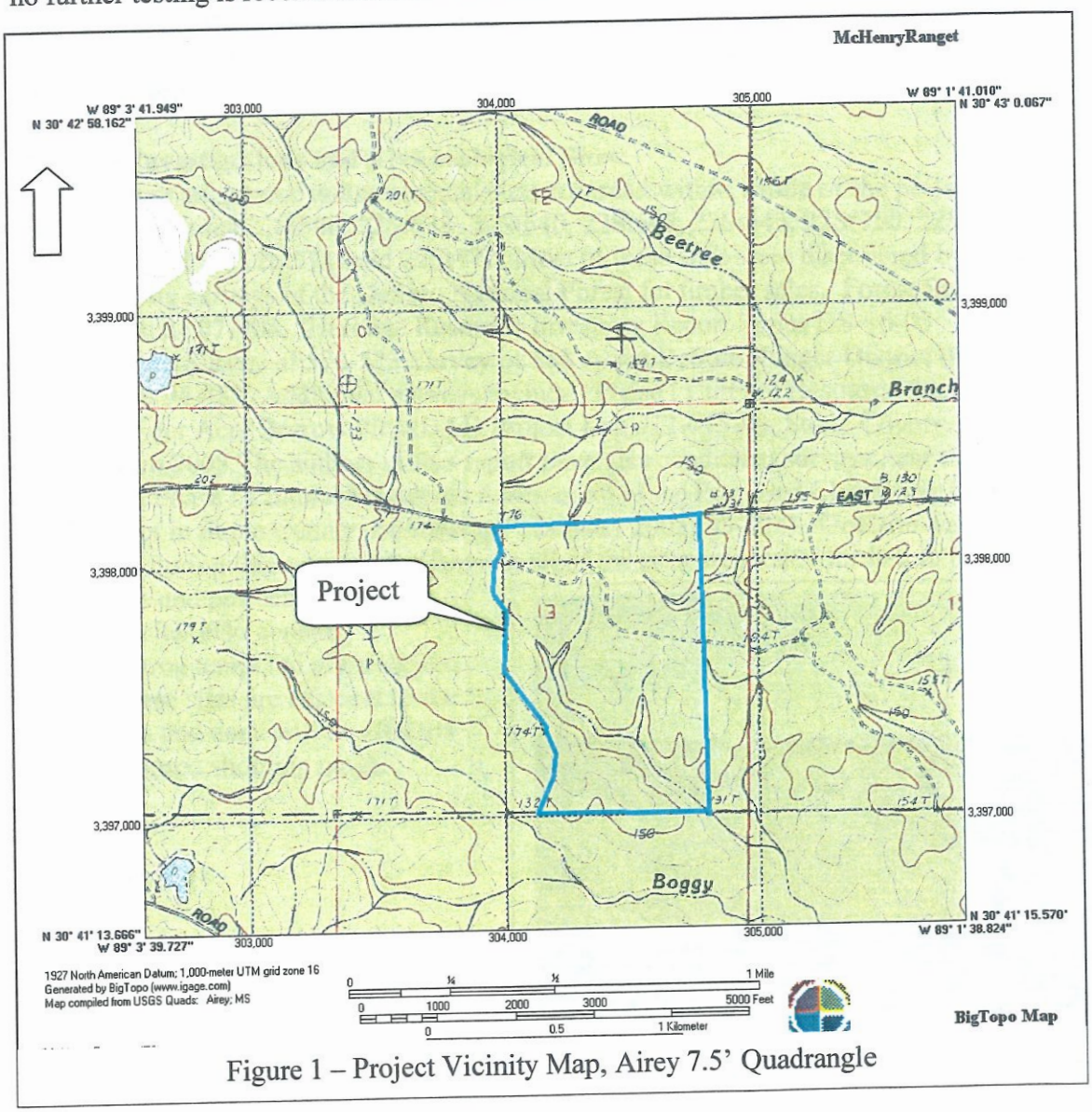


Figure 1 – Project Vicinity Map, Airey 7.5' Quadrangle

Methodology for Assessment

The assessment conforms to the guidelines established by the State Historic Preservation Officer, Mississippi Department of Archives and History, Jackson Mississippi. The assessment included a state site file search, historic literature search and an on-site survey with both incremental and judgmental subsurface testing. We were not provided with lead federal agency information. If needed, please contact the client for this information.

Archaeological and Historical Literature Search

Numerous cultural resources assessments have been conducted in the vicinity of the proposed development, all by DeSoto National Forest archaeologists. A site file and literature search was conducted by the authors at the M.D.A.H.

Prior to the cultural resources assessment, the National Register of Historic Places was reviewed. There are no historic structures on or eligible for the National Register of Historic Places within or adjacent to the proposed project. There are no historic structures on the property.

Previous Investigations and Archaeological Sites:

There are several archaeological sites recorded within 1 mile of the project area. These include sites 22St586, 22St638, 22St640, 22St642, 22St643, 22St750, 22St762, 22St769, 22St770, 22St771, and 22St772. Most of these sites were discovered by Robert Reams during surveys of the DeSoto National Forest for timber sales. Forest Service reports include 07-008, "Heritage Resource Inventory Report Series DS-96-05 Compartment Survey of 570-573 Survey of 588 Acres DeSoto Ranger District (95-349), 95-267, and 94-480. Additional surveys include "Phase I Cultural Resource Survey of Proposed Four Acre Borrow Pit MDAH Project Log #12-015-08, Stone County, MS" James Lauro 2008.The authors of this report have also conducted surveys near the project; "A Phase I Cultural Resources Assessment of the Proposed Clearwater Lake, LLC Project in Stone County, Mississippi", January 2005 (05-334). One site was discovered during this survey. Artifacts on all of the sites are mostly limited to pebble chert flakes and projectile points. A few of the sites also contain clay/sand/grog tempered plain sherds. None of these sites are adjacent to the project area and none will be affected by the proposed shooting range.

Figure 2 – Lake on property, View to northeast

Environment

The project will entail the development of different types of shooting ranges and accompanying

Figure 3 – Shovel testing on project

infrastructure. The project is bounded on the north by East McHenry Road, on the south by National Forest boundary, on the east by a large pasture and on the west by a woods road. Some of the headwater tributaries of Boggy Branch are located in the southern part of the property.

Part of the project was originally a horse farm with numerous metal barns, sheds, a house and large pastures. The headwaters of Boggy Branch have been dammed up to form a lake. The remainder of the property is a pine forest, which has been previously thinned and burned. Access to the property was considered excellent with numerous roads, trails and bush hogged areas. Surface visibility along the roads was 100% and in the wooded areas decreased to zero. Much of the property has been previously disturbed and modified through repeated timber activities, road and dam construction and utilities. An unknown portion of the project is wetlands. Soils on the project are classified as Atmore loam; Malbis fine sandy loam (5-8%); Malbis fine sandy loam, undulating; McLaurin fine sandy loam, undulating; Saucier fine sandy loam (2-5%); Saucier find sandy loam, undulating; and Smithton fine sandy loam, frequently flooded.

Figure 4 – Surface visibility on project

On Site Survey and Field Methods

During June and July of 2011, Read Stowe, Becky Stowe, Gerry Ollhoft, and Ryan Johnson conducted an on-site pedestrian survey of the entire project. We were shown the boundaries and access to the property by MDWFP on-site manager Scooter Gaines. Shovel tests were excavated at judgmental and incremental intervals. A total of 310 tests were dug in areas deemed to have high probability for sites, and seemed to be the least disturbed. No tests were dug in obviously modified or deflated areas or in low-lying, wetland areas or places with excellent surface visibility. The tests measured approximately 30 centimeters in diameter and were excavated to sterile subsoil. All soil was screened through ¼" hardware cloth. All shovel test profiles were flagged, plotted on a map, recorded in the field and backfilled. A typical test revealed a typical profile of: surface to 5 cmbs brown sand, 5-40 cmbs mottled yellow and orange sand (subsoil). A survey of aerial photos

over the last 20 years revealed that the project area was in pine plantation and had not changed much until the 2003 photo, then much of the area was cleared and by the 2004 photo the current buildings were in place.

Figure 5 – railroad berm turned into pond dam, view to the east

Archaeological Site 22St904

Site 22St904 was first discovered by on-site manager Scooter Gaines. This is a narrow gauge logging "dummy line" railroad. The site consists of berms, a causeway across a low area and a cut up a slope. Much of the railroad has been heavily disturbed, part of it has been turned into a road, other parts have been obliterated by forestry operations and yet another part has been turned into a pond dam. The railroad is clearly visible on the lidar topographic map of the project. A single 6" narrow gauge railroad spike was collected and is at the MDWFP office on the property. The railroad likely dates from late 19th –early 20th Century during the height of the longleaf pine harvest in south Mississippi. The site measures approximately 3 meters wide by about 1,000 meters long.

Figure 6 – Railroad cut, view to the west

Research done by Gil Hoffman (www.msrailroads.com) shows that the property was once owned by the Native Lumber Co. The company's mill was in Howison, a few miles to the southwest along Highway 49. Logging railroad lines in the region likely also belonged to the Native Lumber Co. According to Mr. Hoffman, The Native Lumber Company was incorporated at Howison, Harrison County, on May 16, 1899, by L. N. Dantzler, J. L. Dantzler, L. N. Dantzler, Jr., G. H. Howze, Joseph Bozeman, Henry Colmer, George Bowen, Alexander McInnis and John Alberts with authorized capital stock of $75,000. L. N. Dantzler, Jr. was president. On June 10, 1899 the company purchased the sawmill plant and timber holdings of the former J. F. Welch Lumber Company, at Howison, from L. N. Dantzler, Jr., for $75,000. The sawmill had a capacity of about 70,000 feet daily and

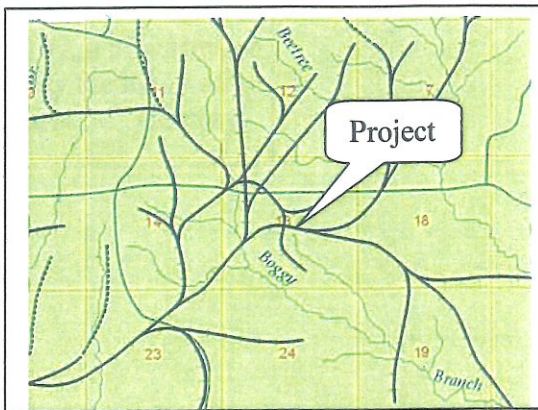


Figure 7 – Railroad lines in the area (Tony Howe)

cut principally for export, most of the product being marketed by the L. N. Dantzler Lumber Company. A planing mill was added in 1901. The mill cut out in January 1928 and the company was officially dissolved in December 1931. In 1910 the company owned 2 locomotives and 30 cars. The 1927 inventory lists 1 Heisler, 3 rod locos, 4 flat cars, 37 skeleton cars, 4 wrecked skeleton cars, 1 grocery car, 1 steam log loader, 7 eight-wheel log wagons, 2 feed cars, 7 stationary camp cars, and 13 camp cars on wheels.

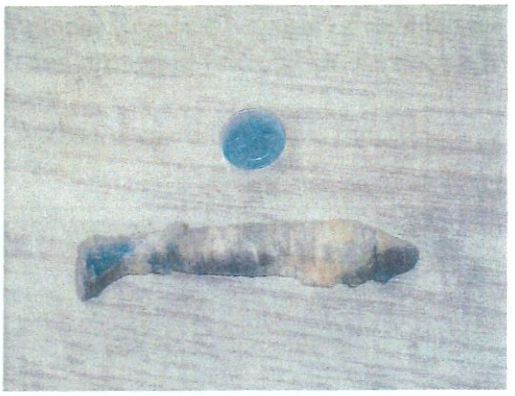


Figure 8 – Railroad spike

An interesting aside is that P. N. "Posey" Howell was Dantzler's head logging superintendent and considered to be the father of forestry in Mississippi for his efforts to reforest cutover land instead of clear-cutting that was common with almost all other mills in the state at the time.

According to the map of the area at www.ms.railroads.com, there were additional logging railroads on the property. It appears that all of these have all been converted to roads.

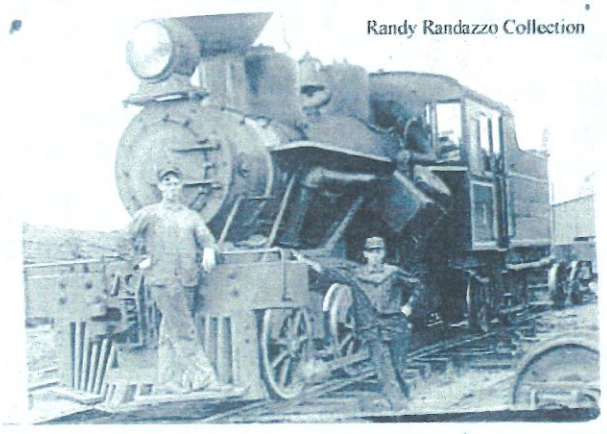


Figure 9 - Native Lumber Co. #1, a new Heisler locomotive at Howison, possibly the locomotive used on the property in the early 20th Century.

This site is considered not eligible for the National Register because of extensive disturbance and because numerous better preserved and protected railroad sites exist both in the region and nearby in the DeSoto National Forest.

A copy of this report will be kept on file at Archaeological Services, Inc., Lucedale, Mississippi.

Figure 10 – topographic map of property showing the railroad line

Summary and Recommendations

This report describes a cultural resources assessment of the proposed MDWFP McHenry Shooting Range in Stone County, Mississippi. This assessment included a review of the state site files at the M.D.A.H. in Jackson. A review of previous cultural resource assessments within a one mile radius of the project was done. A walk-over assessment was made of the entire project. Shovel tests were made at both judgmental and incremental locations. A single site, 22St904 was recorded. This site is considered not eligible for the National Register and no further testing is needed.

Finally, this project will not result in the impact of any significant cultural properties. If there are any questions, please contact the project archaeologist at 601-947-4050.

Noel R. Stowe, RPA

Rebecca N. Stowe

MISSISSIPPI DEPARTMENT of ARCHIVES AND HISTORY

MDAH

HISTORIC PRESERVATION DIVISION
P. O. BOX 571
Jackson, MS 39205-0571
Phone 601-576-6940 Fax 601-576-6955
Website: mdah.ms.gov

January 22, 2020

Mr. Matt Roberts
Mississippi Department of Wildlife,
Fisheries, and Parks
1505 Eastover Drive
Jackson, Mississippi 39211

RE: Proposed construction of sporting clay trail at the existing McHenry Shooting Facility, S13, T4S, R11W, (FWS) MDAH Project Log #01-040-20, Stone County

Dear Mr. Roberts:

We have reviewed your request for a cultural resources assessment, received on January 15, 2020, for the above referenced project in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. After reviewing the information provided, it is our determination that no cultural resources are likely to be affected. Therefore, we have no objection with the proposed undertaking.

Should there be additional work in connection with the project, or any changes in the scope of work, please let us know in order that we may provide you with appropriate comments in compliance with the above referenced regulations.

If you have any questions, please do not hesitate to contact us at (601) 576-6940.

Sincerely,

Hayley E. Smith
Review and Compliance Assistant

FOR: Katie Blount
State Historic Preservation Officer

APPENDIX THREE: ESA Section 7 Consultation

REGION 4
INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Matt E. Roberts

Telephone Number: 601-559-7415 **E-Mail:** matt.roberts@wfp.ms.gov

Date: 13 July 2020

PROJECT NAME (Grant Title/Number): McHenry Shooting Facility Sporting Clay Trail

I. Service Program: Federal Aid

- ___ **Clean Vessel Act**
- ___ **Coastal Wetlands**
- ___ **Endangered Species Section 6**
- ___ **Partnerships for Wildlife**
- ___ **Sport Fish Restoration**
- _X_ **Wildlife Restoration**
- ___ **Farm Bill Section 390**

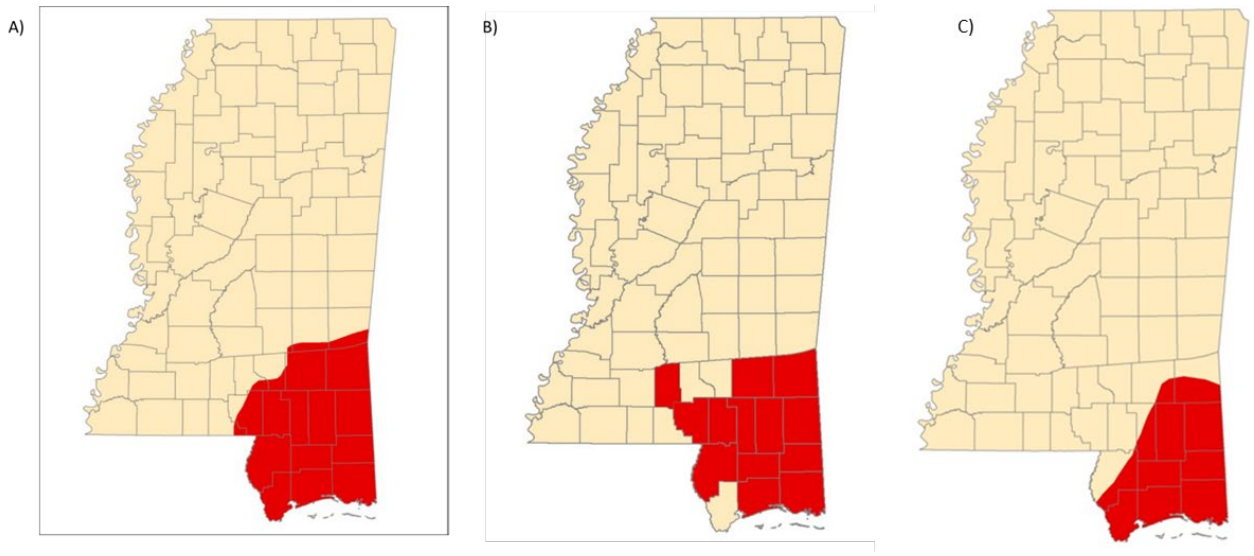
II. State/Agency: Mississippi Department of Wildlife, Fisheries, and Parks

III. Station Name: Law Enforcement Bureau

IV. Description of Proposed Action (attach additional pages as needed): Please see attached project narrative.

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map: Gopher Tortoise (A), Black Pinesnake (B), and Louisiana Quillwort (C).



B. Complete the following table:

SPECIES/CRITICAL HABITAT	STATUS[1]
Gopher Tortoise	T
Black Pine Snake	T
Louisiana Quillwort	E

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

VI. Location (attach map): Please see attached project narrative with maps.

A. Ecoregion Number and Name:

B. County and State: Stone County, Mississippi

C. Section, township, and range (or latitude and longitude):

D. Distance (miles) and direction to nearest town:

E. Species/habitat occurrence: Records for Gopher Tortoise, Black Pinesnake, and Louisiana Quillwort occur within two miles of the project area. No records of these species occur from the property itself.

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V. B (attach additional pages as needed):

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Gopher Tortoise	Reported to occur within two miles of the project area. If Gopher Tortoises occur within the project area and no measures are taken to minimize impact, individuals could be harmed or killed during construction.
Black Pinesnake	Reported to occur within two miles of the project area. If Black Pinesnakes occur within the project area and no measures are taken to minimize impact, individuals could be harmed or killed during construction.
Louisiana Quillwort	Reported to occur within two miles of the project area. If this species occurs within the project area and no measures are taken to minimize impact, it could be harmed or killed during construction.

B. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Gopher Tortoise	Project area has been surveyed for occurrence of Gopher Tortoises according to standard survey methodologies in anticipation of the proposed project. No Gopher Tortoises were detected in the project area. If Gopher Tortoises are detected later during construction, they will be relocated out of harm's way in collaboration with USFWS.
Black Pinesnake	Project area has been surveyed for occurrence of Black Pinesnakes according to standard survey methodologies in anticipation of the proposed project. No Black Pinesnakes were detected in the project area. If Black Pinesnakes are detected later during construction, they will be relocated out of harm's way in collaboration with USFWS.
Louisiana Quillwort	Project area has been surveyed for occurrence of Louisiana Quillwort according to standard survey methodologies in anticipation of the proposed project. The species was not detected in the project area. Suitable habitat is not found in the construction zone; the area is impounded by beavers. Suitable Louisiana Quillwort habitat does exist downstream of the proposed pond in the form of shaded small stream swamp forest. Best management practices for preventing sedimentation from entering the watershed and affecting the downstream habitat will be employed during construction. Flow to the downstream habitat will be maintained. Furthermore, we will conduct a follow-up survey of this area during the winter when Louisiana Quillwort is more detectable. If the species is present, a burn plan for preventing shrub encroachment will be implemented. Mechanical techniques for preventing shrub encroachment would not be employed.

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE1 REQUESTED
	NE	NA	AA	
Gopher Tortoise		X		Concurrence
Black Pinesnake		X		Concurrence
Louisiana Quillwort		X		Concurrence

[1]DETERMINATION/RESPONSE REQUESTED:

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a "Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response Requested for proposed or candidate species is "Conference".

Matthew E. Roberts — 7/13/2020

signature (State Representative) **date**

Director of Grants Management

title

IX. Reviewing Division of Federal Aid Staff Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. ESA Section 7 Coordinator Consulted __

C. Remarks (attach additional pages as needed):

signature **date**

title **office**

X. Reviewing Ecological Services Office Evaluation:

A. Concurrence X Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

Cary Norquist | 07/14/2020

signature | **date**

Assistant Field Supervisor | Mississippi ES FO

title | **office**

XI. Chief -- Division of Federal Aid:

A. Concurrence _____ Nonconcurrence _____

signature | **date**

APPENDIX FOUR: Noise Study

Attachment 21

Noise Study

Proposed McHenry Shooting Range
McHenry, Mississippi

March 15, 2012

Terracon Project: EB127013

Prepared for:
Mississippi Department of Wildlife Fisheries and Parks
Jackson, Mississippi

Prepared by:
Terracon Consultants, Inc.
Ridgeland, Mississippi

Terracon

March 15, 2012

Mississippi Department of Wildlife, Fisheries, and Parks
1505 Eastover Drive
Jackson, Mississippi 39211-6374

Attn: Col. Stephen Adcock
P: 601-432-2173
E: steve@mdwfp.state.ms.us

Re: Noise Study
Proposed McHenry Shooting Range
McHenry, Mississippi
Terracon Project EB1270013

Dear Col. Adcock:

Terracon Consultants, Inc. (Terracon) is pleased to present the results of the noise study conducted on February 14, 2012 for in the Mississippi Department of Wildlife Fisheries and Parks proposed shooting range in McHenry, Mississippi. This study was conducted in general conformance with our proposal PEB120030 dated January 24, 2012.

Terracon appreciates the opportunity to provide these services to the Mississippi Department of Wildlife Fisheries and Parks. If we can provide any additional environmental, occupational health, or safety-related services, please contact us at (225) 344-6052.

Sincerely,
Terracon Consultants, Inc.

Maxwell T. Anderson, PE, CIH
Regional Industrial Hygiene Manager

Richard M. Simon
Senior Principal / Regional Manager

TABLE OF CONTENTS

		Page
1.0	**INTRODUCTION**	**1**
	1.1 Scope of Services	1
	1.2 Hazard Review – Noise	1
2.0	**NOISE STUDY**	**2**
	2.1 Field Activities	2
	2.2 Results	2
3.0	**CONCLUSIONS AND RECOMMENDATIONS**	**4**
4.0	**GENERAL COMMENTS**	**5**

APPENDICES

APPENDIX A: Exhibit 1: Site Figure / Noise Measurements

NOISE STUDY
Proposed McHenry Shooting Range
McHenry, Mississippi
Terracon Project: EB127013
March 15, 2012

1.0 INTRODUCTION

1.1 Scope of Services

Terracon Consultants, Inc. (Terracon) conducted a noise study for the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) proposed shooting range in McHenry, Mississippi. The noise study was conducted on February 14, 2012 at the proposed shooting range location, in general accordance with our proposal PEB120030 dated January 24, 2012. The scope of this project included collecting sound level measurements at six locations around the perimeter of the property, while firearms were being fired at the proposed shooting range firing stations.

1.2 Hazard Review – Noise

Excessive exposure to noise is known to cause hearing loss. Noise-induced hearing loss is one of the most common occupational diseases and the second most self-reported occupational illness or injury. Occupational noise exposure is regulated by OSHA under 29 CFR 1910.95 (general industry), which would be applicable to any MDWFP agents working at the shooting range. The noise standard establishes an action level of 85 dBA as an 8-hour time-weighted average (TWA). The permissible exposure level (PEL) for noise is 90 decibels-A-weighted scale (dBA) as an 8-hour TWA. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level. Current OSHA policy requires only the action level to be reduced for exposures to noise during extended work shifts; the PEL is not required to be adjusted.

Based on the sound levels that the firearms are capable of producing, it is imperative that any MDWFP agents working the shooting range be equipped with and wear appropriate hearing protections devices.

OSHA's Occupational Noise Exposure standard (29 CFR 1910.95 requires a hearing conservation program (HCP) whenever employee noise exposures equal or exceed the OSHA 8-hour TWA 85 dBA "action level." A hearing conservation program requires employees to participate in annual audiometric testing. This noise study was not conducted for the purpose of comparison to OSHA standards.

2.0 NOISE STUDY

2.1 Field Activities

On February 14, 2012, Terracon conducted sound level measurements at six locations around the perimeter of the proposed shooting range property. The six monitoring locations were selected based on site topography, proximity to adjacent developed property or property with the likelihood to become developed, and locations of the proposed firing stations. Sound level measurements were recorded for three firearm types: pistol, rifle, and shotgun; and four firing stations. Based on the proposed shooting range layout, two shotgun firing stations were monitored. Each weapon was fired a minimum of three times at its respective firing station, while Terracon recorded sound level measurements at the six perimeter measurement locations. The firearms and ammunition utilized during this noise study were supplied by MDWFP, and MDWFP agents fired each weapon, from their respective firing stations. Each firing station and measurement location is illustrated on Exhibit 1 provided in Appendix A of this report.

The pistol utilized during this noise study was a 0.45 caliber Automatic Colt Pistol (ACP) with a 230 grain full metal jacket ammunition. The rifle utilized during this noise study was a 0.308 caliber Winchester with a 168 grain hollow point ammunition. The shotgun utilized was a 12 gauge (manufacturer not recorded) with a 2 ¾ inch shell with 7 ½ shot, rated at 1350 feet per second.

Sound level measurements were also recorded at locations lateral to the respective firing locations, for the pistol range, rifle range, and two shotgun stations. The measurement locations lateral distance away from the firing location was adjusted for each weapon type, to accurately record the sound levels within the range of the sound level meter.

Sound level measurements were recorded with a Quest® Sound Level Meter DL-2-10. The serial number of the instrument utilized is BGI020007 and the instrument was last factory calibrated on January 16, 2012. Per manufacturer's recommendations, the sound level meter was set to monitor the firearm sound levels using a C-weighting scale and the impulse response time. The peak measurement reached during weapon firing was recorded.

2.2 Results

The results of the noise study are presented in Table 1 below. The peak levels recorded for each firearm type at each of the six perimeter monitoring locations are presented. The results are also illustrated on Exhibit 1 in Appendix A.

TABLE 1
MDWFP Noise Study Results

	Pistol	Rifle	Shotgun 1	Shotgun 2
Location 1	79.7 dB	86.3 dB	74.5 dB	73.2 dB
Location 2	70.9 dB	79.1 dB	71.6 dB	71.9 dB
Location 3	83.9 dB	92.7 dB	78.6 dB	79.7 dB
Location 4	85.7 dB	100.4 dB	107.7 dB	101.2 dB
Location 5	77.5 dB	75.5 dB	84.7 dB	72.8 dB
Location 6	76.0 dB	85.7 dB	90.3 dB	91.7 dB
Pistol Firing Station	140.8 – 141.7 measured at 25 feet lateral to firing position			
Rifle Firing Station	130.3 – 132.8 measured at 60 feet lateral to firing position			
Shotgun Firing Station 1	132.0 – 140.9 measured at 40 feet lateral to firing position			
Shotgun Firing Station 2	132.0 – 140.9 measured at 40 feet lateral to firing position			

Note: All measurements listed are LCIpk values. LCIpk is defined as C-weighted peak sound level measurement, recorded using an impulse response time.

Measurement locations 1 and 2 were on the north perimeter of the shooting range along East McHenry Road. The peak levels recorded during firing at these locations were equal to or only slightly above the ambient peak sound levels.

The ambient peak levels recorded at the measurement locations varied between 75 and 85 dB, and appeared to be due to wind movement through the trees and animal noises, such as birds chirping. It is important to note that the peak measurements recorded are the peak sound level reached during the recording interval and are not representative of the average sound levels. Measurement locations 3 and 4 were along the west perimeter of the shooting range, with location 3 north of the pistol range, and location 4 south of the rifle range. The peak sound level revealed during rifle firing at location 3, was slightly above ambient at 92.7 dB, while the pistol and shotgun firing did not peak above ambient levels. Measurement location 4 revealed rifle peak levels at 100.4 dB for the rifle, and 101.2 and 107.7 dB for the shotguns. This location revealed the highest measurements during the noise study, as expected, due to its location downrange between the rifle and shotgun firing stations.

Measurement locations 5 and 6 were along the east perimeter of the shooting range, with location 5 near a residence along East McHenry Road and location 6 east of the shotgun firing stations. Sound levels at location 5 were not revealed above ambient peak levels. The sound levels revealed during shotgun firing in location 6 were above ambient at 90.3 and 91.7 dB, while the rifle and pistol firing revealed sound levels at or below ambient levels.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the noise study revealed that the peak sound levels measured at locations along East McHenry Road, the north perimeter of the shooting range, were at or below ambient peak sound levels. Measurement locations 1 and 2 were immediately adjacent to the road, and location 5 was adjacent to the residential structure south of the road. While the sound of the gunshot could be detected by the human ear at these measurement locations, the sound level caused by the gunshots were not greater than the sound levels caused by the natural ambient environment. Additionally, we had the opportunity to measure the sound levels caused by vehicles passing the site on East McHenry Road during the noise study. The peak sound levels from a passing automobile were revealed at 95.7 dB while measured from location 1. The sound levels from the traffic along East McHenry Road revealed sound levels almost 10 dB greater than any peak levels recorded during pistol, rifle, or shotgun firing at the north perimeter measurement locations.

Measurements from the remaining locations primarily revealed what was anticipated. The locations along the west side of the property, locations 3 and 4, were closest to the pistol and rifle ranges. Location 3 is to the north and uprange from the firing locations, and Location 4 is to the south and downrange from the firing locations. The peak sound levels revealed from Location 3 were elevated for the pistol and rifle, because of the proximity to the firing stations. Location 4 revealed the highest peak levels for all firearm types, due to its location downrange from all firing locations. Measurement location 6, located on the east perimeter of the shooting range nearest the shotgun shooting stations, revealed elevated levels for each of the shotgun stations.

The sound levels or noise generated from the shooting range will likely be greatest on adjacent properties downrange from the firing locations, which is reportedly the least likely location to be developed in the future. The property to the south of the site is part of the Desoto National Forest. The property along East McHenry Road, north of the shooting range appears to be the area most likely to be developed in the future. The firearm sound levels measured along East McHenry Road were below levels caused by the passing of automobiles, and approximately equal to the peak levels from the natural ambient environment.

Based on the findings of this noise study, Terracon offers the following recommendation:

- Due to the peak sound levels recorded near the firearms, it is important that hearing protection be worn by individuals operating the firearms or individuals in the vicinity of the firing locations during operation of the shooting range.
- If MDWFP desires to construct any noise control or abatement structures, Terracon can assist with the design and/or placement of such structures.

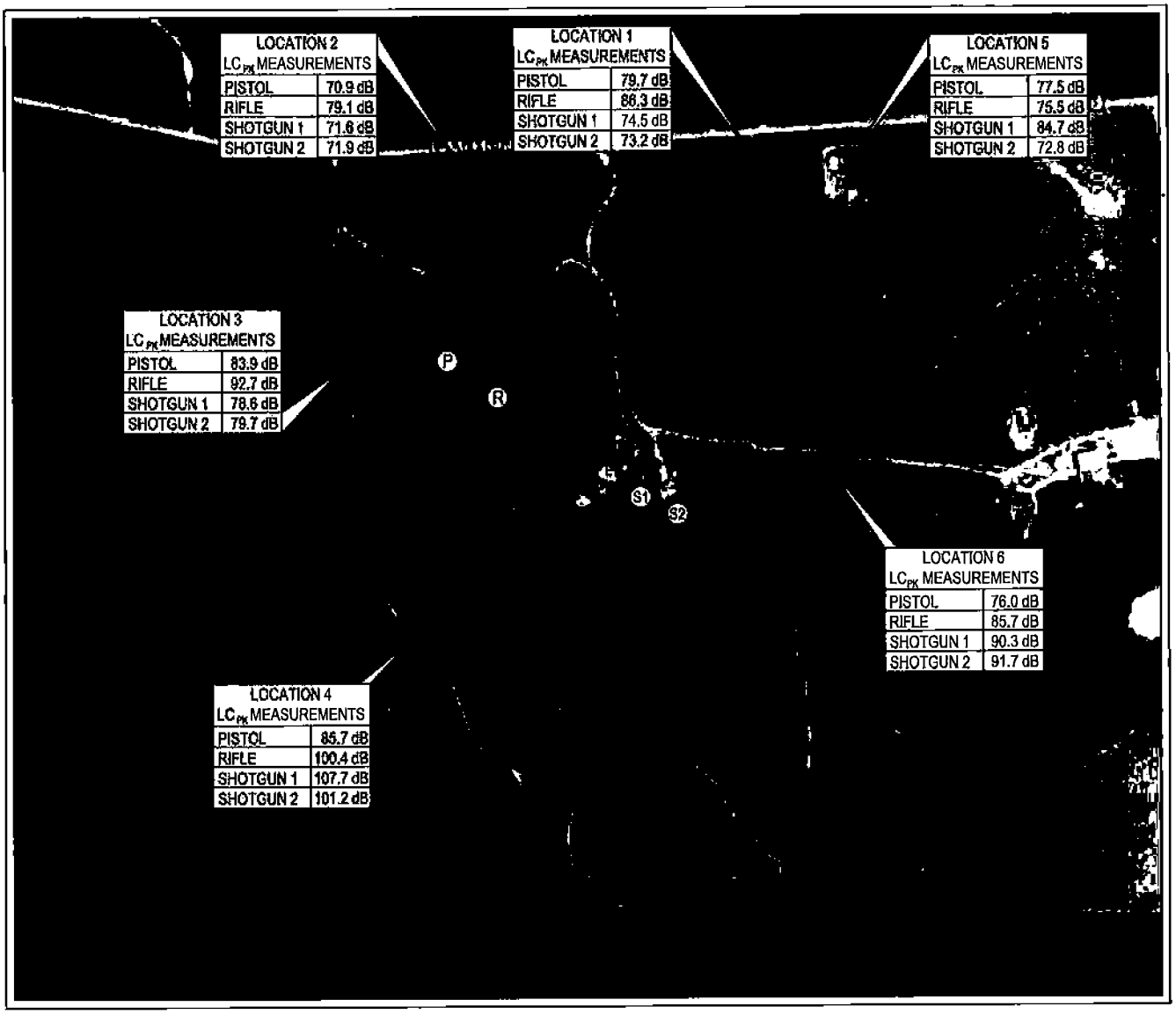
4.0 GENERAL COMMENTS

The level of effort and associated tasks completed for this assessment were limited to the scope of services outlined in Terracon's proposal PEB120030 dated January 24, 2012. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed on February 14, 2012. Many factors such as variations in firearm, ammunition, foliage, and weather conditions can affect sound levels. The information contained in this report should not be relied upon to represent conditions that existed previously or at a later date. Terracon does not warrant the services of regulatory agencies or other third parties supplying information, which may have been used in the preparation of this report. No warranty, express or implied is made.

This report is prepared for the exclusive use of our client for the specific application to the project discussed and has been prepared in accordance with generally accepted industrial hygiene practices. In the event any changes in nature or location of processes, materials, or other conditions as outlined in this report are observed, the conclusions contained in this report cannot be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the industrial hygienist.

APPENDIX A

Site Figure /
Noise Measurements



N

0 800

Approximate Scale (Feet)

Ⓟ PISTOL RANGE - LC_{PK} MEASUREMENTS
140.8-141.7 dB MEASURED AT 25' LATERAL TO FIRING POSITION

Ⓡ RIFLE RANGE
130.3-132.8 dB MEASURED AT 60' LATERAL TO FIRING POSITION

Ⓢ# SHOTGUN SHOOTING STATIONS 1 AND 2
132.0-141.9 dB MEASURED AT 40' LATERAL TO FIRING POSITION

THIS DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr: TA	Project No. EB127013	Terracon Consulting Engineers and Scientists	SITE LAYOUT AND NOISE MEASUREMENT DIAGRAM
Drawn By: DWD	Scale: AS SHOWN		NOISE STUDY
Checked By: TA/MRF	File No. NSEB127013-1		MDWFP MCHENRY SHOOTING RANGE NOISE STUDY
Approved By: MTA	Date: MARCH 2012	854 Poar Orchard Road (601) 956-4467 Ridgeland, MS 39157 (601) 956-9533	E. MCHENRY ROAD MCHENRY, MS

EXHIBIT 1