Environmental Assessment

DRAFT - Barry County Shooting Range

Rutland Charter Township, Barry County, Michigan

Prepared for:

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Project 2103523

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Reviewer

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1. Project Summary, Purpose, and Need

1.1 Project Summary

The proposed project involves the development of a State of Michigan (State-run) shooting range within the Barry County State Game Area in Rutland Charter Township, Barry County, Michigan (Figure 1). The subject parcel is approximately 11.6 acres in size and is currently owned by the Michigan Department of Natural Resources (MDNR).

1.2 Purpose

The purpose of this assessment is to identify potential environmental features that may be associated with the subject property which may impact or influence the proposed design and intended use of the property for a shooting range. The assessment is to also ascertain whether there have been any recent uses of the property unbeknownst to MDNR.

1.3 Need

In 2020, MDNR reported 540,174 hunters statewide, deer hunter numbers increased by five percent from 2019 (Frawley 2020). As hunter numbers increase, so increases MDNR commitment to providing safe/secure practice shooting ranges areas for public use. There are currently no safe/secure State-run shooting facilities within 30 miles of the subject property and proposed shooting range. The State of Michigan currently operates 12 shooting ranges throughout Michigan. One of which is within the Southwestern Lower Peninsula deer harvest area.

The subject parcel is currently open to the public and used as an informal shooting range. Development of the proposed parcel into a State-run operation would allow for a controlled, accessible, and safe location for the use of firearms.

1.4 Decisions that Need to be Made

This environmental assessment will be used to assist with the siting and initial design of the shooting range. This assessment and subsequent documents will be posted online for public comment. Public comments will be encouraged, and adjustments may be made to proposed range layouts and alternatives in response to those comments provided by citizens and other interested parties. The MDNR will consider public comments, cost, operational characteristics, environmental impacts and other relevant factors for range design and construction of the proposed shooting range at this site. Grant approval from the United States Fish and Wildlife Service will be required prior to commencement of design and construction of the proposed shooting range project.

2. Alternatives, Including the Proposed Action

2.1 Alternatives Carried Forward for Detailed Analysis

Two alternatives related to the development of the Rutland Charter Township DNR parcel are under consideration: "Proposed Action" and "No Build" (Table 1.).

2.1.1 Alternative A (Proposed Action)

Under this alternative, the MDNR property would be developed into a State-run shooting facility and would provide a safe and secure place for the public to learn and hone safe shooting practices.

2.1.2 Alternative B (No Build)

With this alternative, no new shooting range nor improvements to the MDNR property would be made. Barry County would continue to have no State-run (managed or monitored) shooting range for the public to use.

Table 1. Alternative Characteristics

Characteristic	Alternative A - DNR Parcel	Alternative B - No Build
Accessible to Public?	Yes	Yes
Site Development Required?	Yes	No
Addresses ADA Issues?	Presumed	No
Addresses Hunter Education Needs / Outdoor Skill Training Addresses Purpose and Need?	Yes	No
Provide a Safe Place for firearm use?	Yes	No

ADA = Americans with Disabilities Act

3. Affected Environment

A biologist from GEI Consultants, Inc. (GEI) experienced with identifying wetlands, mapping vegetative communities, and documenting biological resources (i.e., flora and fauna), conducted a field site assessment of the subject property on September 28, 2021. Additional physical and ecological features of the subject property were assessed utilizing aerial photography and agency resource database information received.

3.1 Physical Characteristics

The proposed development site is approximately 11.6 acres in size and is located within Rutland Charter Township, Barry County, Michigan (T3N R9W S18).

Physical features and attributes associated with this site are bulleted below:

- Bordered to the north by M-179 (Chief Noonday Road)
- Quaternary geological classification of the parcel is: End moraines of coarse-textured till (EGLE a; EGLE b).
- The subject property and surrounding properties are a portion of the Barry County State Game Area owned by MDNR.
- The parcel was logged/clear-cut prior to GEI field review.
- Many individuals currently use this area as an informal shooting range; debris from used targets and bullet casings were observed throughout the site.
- Dominant vegetation present (but not limited to): common ragweed (*Ambrosia artemisiifolia*), pokeweed (Phytolacca americana), grass-leaved goldenrod (*Euthamia graminifolia*), switchgrass (*Panicum virgatum*), ticklegrass (*Agrostis scabra*), and Pennsylvania sedge (*Carex pensylvanica*).
- There are no defined streams, pursuant to Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act (NREPA), P.A. 451 of 1994, as amended, on the subject property. However, Glass Creek is the nearest surface water feature flowing within 0.75 miles at its closest point (EGLE a).

3.2 Biological Environment (Habitat/Vegetation)

Flora

Most of subject property was recently logged and is now colonized by many species common in open habitats of Southwest Michigan. Common plants in the logged area include common ragweed, pokeweed, grass-leaved goldenrod, switchgrass, ticklegrass, and Pennsylvania sedge. Many weedy non-native species have also colonized this area including spotted knapweed (*Centaurea stoebe*), hoary alyssum

(*Berteroa incana*), smooth brome (*Bromus inermis*), and prickly sow-thistle (*Sonchus asper*), among others. Soils within the subject property are sandy and disturbed due to recent logging activities.

The perimeter of the logged area is surrounded by mature dry- or dry-mesic southern forest. The forest overstory is dominated by white oak (*Quercus alba*), red oak (*Quercus rubra*), and black oak (*Quercus velutina*), with black cherry (*Prunus serotina*) and sassafras (*Sassafras albidum*) common in the understory. Some weedy species from the logged area are beginning to colonize the forest edge. A listing of flora observed, and the floristic quality assessment metrics associated with the subject property, are provided in Appendix A.

Fauna

Several species of birds, mammals, and amphibians were directly observed, or signs of their presence noted within the subject property. This included game species such as eastern fox squirrel (*Sciurus niger*), eastern gray squirrel (*Sciurus carolinensis*), and white-tailed deer (*Odocoileus virginianus*). None of the species observed have a state or federal listing.

A listing of fauna observed and/or visual signs of their presence within or use of the subject property, are provided in Appendix A.

Natural Features of Special Concern

Michigan's Natural Features Inventory (MNFI) database review provided information as to the potential presence of known natural communities or natural features of special concern within the geographic area associated with the subject property (Table 2; Appendix B). GEI's field site assessment did not observe any geological or natural features of interest within the bounds of the property during field observations.

Table 2. Occurrences of Natural Features of Special Concern within 1.5 miles of the Subject Property

Community	State Heritage Status Rank	Last Observed
Dry-mesic Southern Forest	S3	2012
Bog	S4	2012
Intermittent Wetland	S3	2012
Southern Wet Meadow	S3	2012

State Heritage Status Rank: S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences); S4 = apparently secure in state, with many occurrences

Wetlands

The field assessment conducted on September 28, 2021, determined that no wetlands were within or near the subject area. The proposed activities will not impact regulated wetlands and therefore a permit from the Michigan Department of Environment, Great Lakes, and Energy (EGLE), pursuant to Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NEPA), as amended will not be required.

A permit from EGLE pursuant to Part 303, Wetland Protection, of NREPA is not required for the proposed shooting range on the subject property.

Water Quality

There are no visual signs of any surface water features on the subject property. Specifically, no open water ponds, waterbodies, or watercourses, as defined by Part 301 of NREPA.

Streams, Lakes and Drains

As noted above, there are no defined streams, ponds, nor lakes on the subject property. A permit from EGLE pursuant to Part 301 of NREPA is not required for the proposed shooting range on the subject property. The nearest waterbody is an unnamed pond approximately 1.2 miles to the northeast. The nearest watercourse is Glass Creek approximately 0.75 miles to the east, flowing from southeast to northwest (Figure 1).

Geological Features

Michigan's Natural Features Inventory (MNFI) database review did not identify the presence of any known threatened geological features within or proximal to the subject property (Appendix B).

GEI's field site assessment did not observe any geological feature of interest during field observations.

3.3 Listed Flora and Candidate Species

MNFI's response to GEI's information request provided information as to the potential presence of a federally- and state-listed plant species within the geographic area associated with the project. State and federally listed taxa and occurrences may be found in Table 4. Threatened and endangered species and their optimal habitats are described below. A comprehensive list of listed species with habitat descriptions, including species of special concern, can be found in Appendix B.

Table 3. Occurrences of Listed Flora Species within 1.5 miles of the Subject Property

Taxa	Common Name	Status		Last Observed
		Federal	State	
Platanthera leucophaea	Eastern prairie fringed orchid	T	E	2016
Eupatorium sessilifolium	Upland boneset	-	T	2012
Hydrastis canadensis	Goldenseal	-	T	2012
Panax quinquefolius	Ginseng	-	T	2012
Symphyotrichum drummondii	Drummond's aster	-	T	2002
Brickellia eupatorioides	False boneset	-	SC	2012

Protection Status Code: E = Endangered; T = Threatened; SC = Special Concern

A brief description of these species and their optimal habitats are provided below. Additional information about these species is provided in Appendix B:

Eastern prairie fringed orchid

The eastern prairie fringed orchid occurs in two distinct habitats in Michigan - wet prairies and bogs. This species frequently persists in degraded prairie remnants, ditches, railroad rights-of-ways, fallow agricultural fields, and similar habitats where artificial disturbance creates a moist mineral surface conducive to germination. Neither wet prairie, prairie remnants, bogs, railroad right-of-ways, nor fallow agricultural fields are present on the subject property.

Upland boneset

Upland boneset are often found on dry ridge slopes of open woods. Common associates include oak (*Quercus sp.*) and pignut hickory (*Carya glabra).* Upland boneset blooms in late July and August, and fruits in September (Appendix B). Natural wood openings nor pignut hickory were present within the subject property.

Goldenseal

Goldenseal typically inhabits shady, rich, mesic forests, usually under a canopy of beech-sugar maple or oak-sugar maple. It also occurs in moist microhabitats near vernal pools, along streams, or on floodplains, often in moist sandy loam, clay loam, or even organic (muck) soils. Associated plants include basswood (*Tilia americana*), ginseng (*Panax quinquefolius*), trillium (*Trillium sp.*), sweet cicely (*Myrrhis odorata*), wild ginger (*Asarum canadense* L.), plantain-leaved sedge (*Carex plantaginea*), sugar maple (*Acer saccharum*), beech (*Fagus grandifolia*), blue-beech (*Carpinus caroliniana*), leatherwood (*Dirca palustris*), and spicebush (*Lindera benzoin*). Goldenseal requires maintenance of the overstory and moist, loamy soils and is susceptible to excessive canopy removal (Appendix B). The existing habitats and associated species are limited to absent within the subject property.

Ginseng

Ginseng inhabits rich hardwood stands, often on slopes or ravines, ranging even into swampy portions. It also occurs in wooded dune hollows and leeward slopes along the Lake Michigan shoreline. Common associates include sugar maple, hickory,

basswood, red maple (*Acer rubrum*) and white ash (*Fraxinus americana*), although not all are required to be present.

It is likely that this plant requires the moist, cool microhabitat that a closed forest canopy provides (The existing habitats and associated species are limited to absent within the subject property.

GEI's assessment of the above-described species' habitats indicate the potential presence of these species on the subject property are highly unlikely. None of the species identified by MNFI were observed during the field assessment nor are opined by GEI biologists to be present within the subject property nor the surrounding properties. While the presence of these species on site is unlikely, additional surveys may be warranted by MDNR and/or EGLE prior to development.

3.4 Threatened/Endangered Fauna and Candidate Species

MNFI's response to GEI's information request provided additional information as to the potential presence of federally- and state-listed fauna species within the geographic area associated with the subject property. State and federally listed taxa and occurrences may be found in Table 4. Threatened and endangered species and their optimal habitats are described below. A comprehensive list of listed species with habitat descriptions, including species of special concern, can be found in Appendix B.

Table 4. Occurrences of Listed Fauna Species within 1.5 miles of the Subject Property

Taxa	Common Name	Status		Last Observed
		Federal	State	
Myotis sodalis	Indiana bat	E	E	2006
Lycaeides melissa samuelis	Karner blue butterfly	E	T	-
Neonympha mitchellii mitchellii	Mitchell's satyr butterfly	E	E	2012
Myotis septentrionalis	Northern long-eared bat	T	SC	-
Sistrurus catenatus	Eastern massasauga rattlesnake	T	SC	2019
Danaus plexipuss	Monarch Butterfly	C	-	-
Clemmys guttata	Spotted turtle	-	T	2018
Setophaga cerulea	Cerulean warbler	-	T	2013
Alasmidonta viridis	Slippershell	-	T	2013
Terrapene carolina	Eastern box turtle	-	SC	2014
Emydoidea blandingii	Blanding's turtle	-	SC	2013
Pygarctia spraguei	Sprague's pygarctia	-	SC	1977
Oecanthus laricis	Tamarack tree cricket	-	SC	2002
Setophaga citrina	Hooded warbler	-	SC	2013
Venustaconcha	Ellipse	-	SC	2013
Melanerpes erythrocephalus	Red-headed woodpecker	-	SC	2010
Lithobates palustris	Pickerel frog	-	SC	2014

Protection Status Code: E = Endangered; T = Threatened; SC = Special Concern; C = Candidate

GEI's assessment of the species' habitats relative to the subject area and the likelihood of these species' presence/use of the subject property are highly unlikely. None of the species identified by MNFI were observed during the field assessment nor are opined by GEI biologists to be present within the subject property nor the surrounding properties. While the presence of these species on site is unlikely, additional surveys may be warranted by MDNR and/or EGLE prior to development.

Indiana bat

Indiana bats form colonies and forages in riparian and mature floodplain habitats. Nursery roost sites are usually located under loose bark or in hollows of trees near riparian habitat. Indiana bats typically avoid houses or other artificial structures and typically roost underneath loose bark of dead elm (*Ulmus sp.*), maple (*Acer sp.*), ash (*Fraxinus sp.*), oak (*Quercus sp.*), hickory (*Carya sp.*), and cottonwood (*Populus deltoides.*). Trees within the subject property were devoid of hickory trees and trees having exfoliating or peeling bark that would provide refugia for this bat species.

Karner blue butterfly

Karner blue butterfly was historically found in open-canopied barrens communities, including oak and oak-pine savanna or barrens. As their historical habitat has suffered from fire suppression efforts, the butterfly often occurs in openings, old fields, and rights-of-way. Karner blue larvae feed exclusively on wild lupine (*Lupinus perennis*),

an early successional species that can become abundant after appropriate disturbances. Wild lupine and other preferred habitats for this species were not present on the subject property.

Mitchell's satyr butterfly

Mitchell's satyr butterfly is restricted to calcareous wetlands known as prairie fens. In Michigan, this habitat is characterized by scattered tamaracks (*Larix laricina*), poison sumac (*Toxicodendron vernix*), and dogwood (*Cornus sp.*) with a ground cover of sedges, shrubby cinquefoil (*Dasiphora fruticose*), and a variety of herbaceous species with prairie affinities. No wetlands, and specifically no fens with the above-described plant communities nor habitats are present on the subject property.

Northern long-eared bat

During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees), caves and mines. This bat has also been found rarely roosting in structures, like barns and sheds. Winter hibernacula are areas in various sized caves or mines with constant temperatures, high humidity, and no air currents (USFWS 2018). Trees within the subject property were devoid of hickory trees and trees having exfoliating or peeling bark that would provide refugia for this bat species.

Eastern massasauga rattlesnake

The eastern massasauga rattlesnake is Michigan's only venomous snake and is found in a variety of wetland habitats including bogs, fens, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. Eastern massasaugas occur throughout the Lower Peninsula. Populations are typically associated with prairie fens and cedar swamps (Appendix B). No wetlands or habitats described above for this state and federally listed snake species are present on the subject property.

Spotted turtle

Spotted turtles require clean, shallow bodies of standing or slow-flowing water with muddy or mucky bottoms and aquatic or emergent vegetation. Although spotted turtles are considered aquatic, they are frequently found on land in open habitats, especially during mating and nesting seasons. No wetlands or habitats described above for this state and federally listed reptile species are present on the subject property.

Cerulean warbler

Cerulean warblers are uncommon summer residents in Michigan and most typically encountered high in mature deciduous floodplain forests of the southern Lower Peninsula. The Cerulean warbler is thought to be area sensitive, requiring extensive tracts of mature deciduous forests. The canopy can be closed to partly open, and the amount of underbrush varies. Nests are high in the canopy on horizontal branches. GEI's biologist conducting the field site assessments is also an ornithologist familiar with the calls/songs of this species. None were heard during the field site assessment.

The subject property, although forested, lakes proximity to a larger floodplain area.

Slippershell

The slippershell mussel is typically found in creeks and headwaters of rivers but has also been reported in larger rivers and in lakes. It usually occurs in sand or gravel substrate but is occasionally found in mud. Suitable habitat for fish host species must be present for slippershell mussel reproduction to be successful. The subject property lacks the presence of any defined watercourses that could support aquatic biota.

3.5 Cultural/Paleontological Resources

A Part 106 request was submitted to the Michigan State Historic Preservation Office (MSHPO) in September 2021.

The records on file at the MSHPO list zero archaeological resources and zero historic structure within one mile of the project (Appendix C).

Historic atlas maps show one historic structure in the project area (HS1). Recent aerial photos do not show a structure in this location and show the project area as otherwise largely wooded and undeveloped (Figure 2). This project is unlikely to affect significant historic structures.

Direct effects such as ground disturbance in intact soils may affect any archaeological resources in the project area. These may include sites associated with Native populations in the area. However, the limited available information suggests people in the area were primarily located in other parts of the county outside the project. If people in the past used this area it was likely limited and ephemeral.

Resources may also be related to Euroamerican settlement and occupation of the area, in particular the structure shown on the historic atlas maps (HS1). The area most likely to contain significant, intact, archaeological resource is near the road, where the residence/main buildings associated with HS1 would have stood.

We recommend avoiding ground disturbance within 250 feet of the road (Archaeological Sensitivity Area, Figure 2). If the project will disturb the ground in this area, we recommend a Phase I archaeological survey to determine the presence/absence of archaeological resources prior to beginning the project.

3.6 Contamination

The development and use of the site as a shooting range will inherently result in the deposition of lead from hunters' bullets (unless a steel shot is only range). Dissolved lead can migrate through soils to groundwater. Factors which may cause lead contamination issues and mitigation techniques are outlined in Best Management Practices for Lead at Outdoor Shooting Range (EPA).

3.7 Local Socio-Economic Conditions

The proposed project site is located on MDNR property within Rutland Charter Township, Barry County, Barry. Local socio-economic data is provided in provided in Table 5 (MTA; USCB, USDOJ). It is not anticipated that the proposed project would cause any adverse impacts to any local demographic group.

Table 5. Census Data

Metric	State of Michigan	Barry County	Rutland Charter Township
Total Population	9,986,857	60,540	4,023
% Minority	25.3	7.8	6
% Below Poverty	13	16.7	11.4
%LEP	3.24	<1	<1

LEP refers to the portion of the population with Limited English Proficiency

3.8 Economic Issues

The subject property is currently owned by MDNR as a portion of the Barry County State Game Area with no historical sales record (FetchGIS 2021). The parcel is surrounded by State-owned property and bordered to the north by M-179 (Chief Noonday Road). The parcel is currently open to the public. The development of this site would change the current land use and could possibly add positive economic influences. The establishment of the range may increase firearm related sales such as firearms, ammunition, targets, safety equipment and increase consumer traffic for proximal businesses.

3.9 Noise

The residence nearest the subject property is approximately 0.75 miles to the northeast. It is GEI's understanding that a sound study has been completed by Siebein Associates. Recommendations from that study are being incorporated into design where feasible.

4. Environmental Consequences

4.1 Impact Specific to Alternatives Considered

4.1.1 Alternative A (Proposed Action)

This alternative would result in the development of the site into a State-run shooting range. Development of the range on the MDNR property will result in impacts to natural resources; however, impacts would be restricted to a relatively low-diversity and recently clear-cut area. Although MFNI listed several species were reported within 1.5 miles of the site, there likelihood of being present at this site and being impacted by the proposed activities within the already impacted areas are minimal/unlikely.

There will be no impacts to surface water or wetland resources within the boundaries of the Subject property.

Impacts to culturally significant resources are unlikely. It is recommended that ground disturbances are setback 250 feet from Chief Noonday Road, and a Phase I archaeological survey be conducted in the event disturbance cannot be avoided.

4.1.2 Alternative B (No Build)

With the No Build alternative, development of the subject property would not occur and there would be no further impacts to the flora or fauna of the subject property.

5. List of Preparer(s)

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6. Consultation and Coordination with the Public and Others

To GEI's knowledge no public consultation or meetings are scheduled at this time. It is advised, a draft of this assessment along with site development plans be provided to the public prior to plan commencement.

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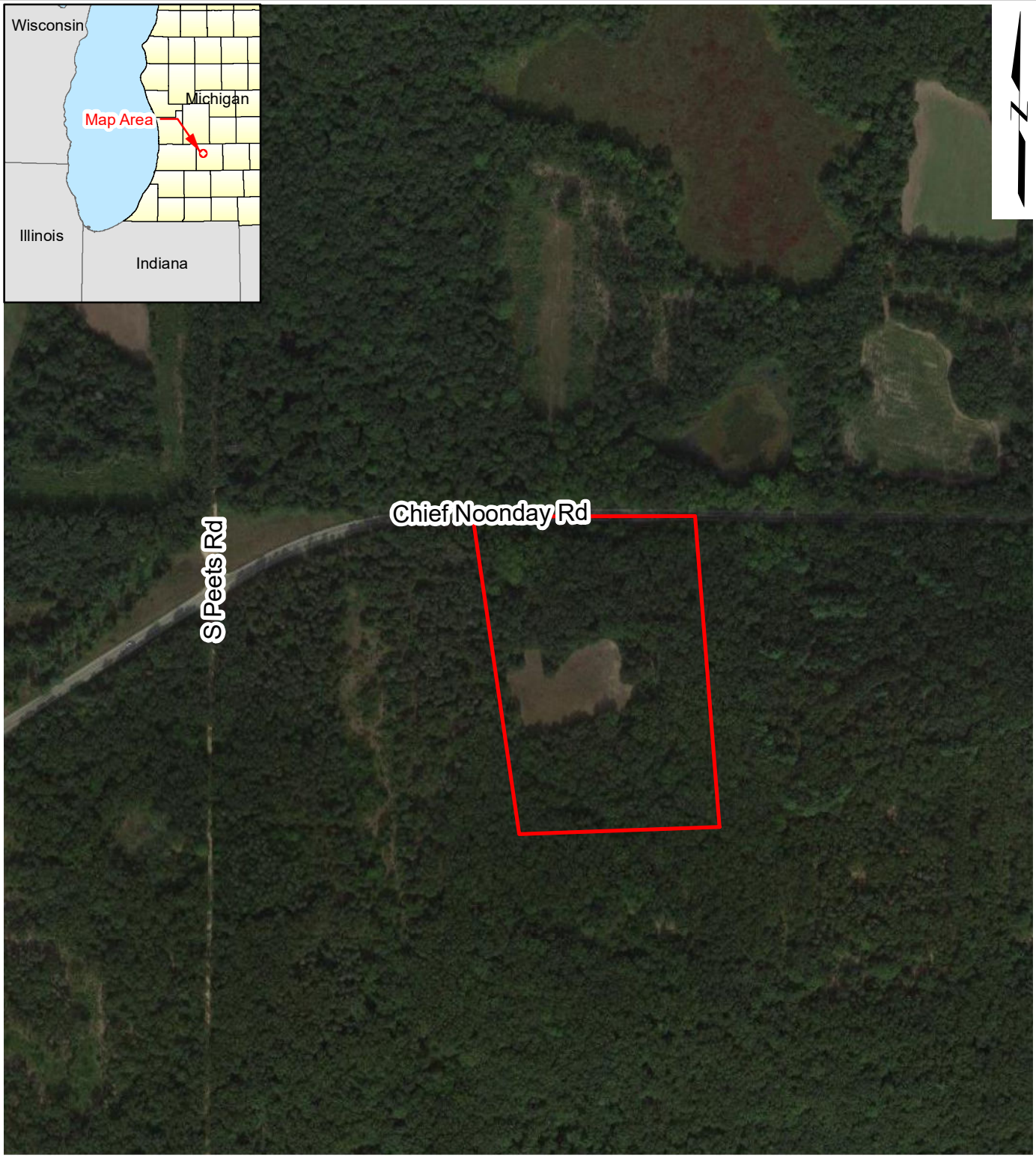
Figures



Approximate Property Boundary

0 200 400
Feet

MDNR Barry County Shooting Range EA
Barry County, Michigan

Nowak & Fraus Engineers
Pontiac, Michigan

GEI Consultants

Project 2103523

LOCATION OF PROPOSED MDNR SHOOTING RANGE

October 2021 Fig. 1

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Aerial Photo Source: Google Earth Pro

orbis

Barry County State Game Area Shooting Range
GEI Consultants, Inc.
Rutland Charter Township, Barry County, MI

Figure # 5
Recommendation
#2109008

Appendix A Flora and Fauna List and FQA Form

Shooting Range FQA
9/28/2021
Barry DNR Range
Barry County
Michigan

Practitioner: Zack Pitman
Community Type Notes: Dry northern forest

Conservation-Based Metrics:	Uplands
Total Mean C:	1.6
Native Mean C:	2.9
Total FQI:	12.8
Native FQI:	17.4

Species Richness:	Uplands
Total Species:	64
Native Species:	36
Non-native Species:	28

Upland Vegetation Inventory

Species	Common Name	Native or Non-Native	Coefficient of Conservatism	Coefficient of Wetness	Physiognomy
Acer rubrum	red maple	native	1	0	tree
Achillea millefolium	yarrow	native	1	3	forb
Agrostis scabra	ticklegrass	native	4	0	grass
Amaranthus retroflexus	rough amaranth	non-native	0	3	forb
Ambrosia artemisiifolia	common ragweed	native	0	3	forb
Asclepias syriaca	common milkweed	native	1	5	forb
Berteroa incana	hoary alyssum	non-native	0	5	forb
Bromus inermis	smooth brome	non-native	0	5	grass
Carex blanda	sedge	native	1	0	sedge
Carex pensylvanica	sedge	native	4	5	sedge
Centaurea stoebe	spotted knapweed	non-native	0	5	forb
Chimaphila maculata	spotted wintergreen	native	8	5	shrub
Cirsium arvense	canada thistle	non-native	0	3	forb
Conyza canadensis	horseweed	native	0	3	forb
Dactylis glomerata	orchard grass	non-native	0	3	grass
Daucus carota	Queen-Anne's-lace	non-native	0	5	forb
Desmodium canadense	showy tick-trefoil	native	3	0	forb
Dichanthelium depauperatum	panic grass	native	4	5	grass
Digitaria sanguinalis	hairy crab grass	non-native	0	3	grass
Echinochloa crusgalli	barnyard grass	non-native	0	0	grass
Elaeagnus umbellata	autumn-olive	non-native	0	3	shrub

Species	Common Name	Native or Non-Native	Coefficient of Conservatism	Coefficient of Wetness	Physiognomy
Elymus repens	quack grass	non-native	0	3	grass
Eragrostis spectabilis	purple love grass	native	3	5	grass
Euthamia graminifolia	grass-leaved goldenrod	native	3	0	forb
Galium circaezans	white wild licorice	native	4	3	forb
Hemerocallis fulva	orange day-lily	non-native	0	5	forb
Hypericum perforatum	common St. John's-wort	non-native	0	5	forb
Lespedeza cuneata	sericea lespedeza	non-native	0	5	forb
Lonicera morrowii	morrow honeysuckle	non-native	0	3	shrub
Monarda fistulosa	wild bergamot	native	2	3	forb
Monarda punctata	horse mint	native	4	5	forb
Oxalis stricta	yellow wood-sorrel	native	0	3	forb
Panicum virgatum	switch grass	native	4	0	grass
Parthenocissus quinquefolia	Virginia creeper	native	5	3	vine
Phalaris arundinacea	reed canary grass	native	0	-3	grass
Phytolacca americana	pokeweed	native	2	3	forb
Pinus resinosa	red pine	native	6	3	tree
Plantago lanceolata	English plantain	non-native	0	3	forb
Plantago major	common plantain	non-native	0	3	forb
Poa pratensis	Kentucky bluegrass	non-native	0	3	grass
Potentilla simplex	old-field cinquefoil	native	2	3	forb
Prunus serotina	wild black cherry	native	2	3	tree
Pseudognaphalium macounii	clammy cudweed	native	2	5	forb
Pteridium aquilinum	bracken fern	native	0	3	fern
Quercus alba	white oak	native	5	3	tree
Quercus rubra	red oak	native	5	3	tree
Quercus velutina	black oak	native	6	5	tree
Rhus typhina	staghorn sumac	native	2	3	shrub
Rosa multiflora	multiflora rose	non-native	0	3	shrub
Rubus allegheniensis	common blackberry	native	1	3	shrub
Rumex acetosella	sheep sorrel	non-native	0	3	forb
Sassafras albidum	sassafras	native	5	3	tree
Setaria pumila	yellow foxtail	non-native	0	0	grass
Solanum carolinense	horse-nettle	non-native	0	3	forb
Solidago caesia	bluestem goldenrod	native	6	3	forb
Sonchus asper	prickly sow-thistle	non-native	0	3	forb
Symphyotrichum ericoides	heath aster	native	3	3	forb
Taraxacum officinale	common dandelion	non-native	0	3	forb
Tridens flavus	purpletop	native	3	5	grass
Trifolium arvense	rabbitfoot clover	non-native	0	5	forb

Species	Common Name	Native or Non-Native	Coefficient of Conservatism	Coefficient of Wetness	Physiognomy
Trifolium repens	white clover	non-native	0	3	forb
Ulmus americana	American elm	native	1	-3	tree
Verbascum thapsus	common mullein	non-native	0	5	forb
Vinca minor	periwinkle	non-native	0	5	shrub

Fauna Observed

Species	Common Name
Baeolophus bicolor	Tufted Titmouse
Colaptes auratus	Northern Flicker
Cyanocitta cristata	Blue Jay
Dryobates pubescens	Downy Woodpecker
Dryobates villosus	Hairy Woodpecker
Lithobates sylvaticus	Wood Frog
Melospiza melodia	Song Sparrow
Odocoileus virginianus	White-tailed Deer
Poecile atricapillus	Black-capped Chickadee
Sciurus carolinensis	Eastern Gray Squirrel
Sciurus niger	Eastern Fox Squirrel
Sitta carolinensis	White-breasted Nuthatch
Spizella passerina	Chipping Sparrow
Turdus migratorius	American Robin

Appendix B MNFI Report

MICHIGAN STATE UNIVERSITY | Extension

Mr. Daniel G. Kowalski
GEI Consultants
230 N. Washington Square
Suite 201
Lansing, MI 48933

October 12, 2021

Re: Rare Species Review #2999 – Property Review, Rutland Charter Township, Barry County, MI (T3N R9W Section 18).

Mr. Kowalski:

The location for the proposed project was checked against known localities for rare species and unique natural features, which are recorded in the Michigan Natural Features Inventory (MNFI) natural heritage database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features. The absence of records in the database for a site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, …fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Michigan Department of Natural Resources (MDNR), Wildlife Division. Responsibility to protect endangered and threatened species is not limited to the lists below. Other species may be present that have not been recorded in the database.

Several at-risk species have been documented within 1.5 miles of the site and **it is possible that negative impacts will occur.** This response reflects a desktop review of the database and MNFI cannot fully evaluate this project without visiting the area. MNFI offers several levels of Rare Species Reviews, including field surveys which I would be happy to discuss with you.

Sincerely,

Michael A. Sanders

Michael A. Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

MSU EXTENSION

Michigan Natural Features Inventory

PO Box 13036
Lansing MI 48901

(517) 284-6200
Fax (517) 373-9566

mnfi.anr.msu.edu

Comments for Rare Species Review #2999:

It is the applicant's responsibility to comply with both state and federal threatened and endangered species legislation. Therefore, if a state listed species occurs at a project site, and you think you need an endangered species permit please contact: Casey Reitz, DNR-Wildlife Division, 517-284-6210, or ReitzC@michigan.gov. If a federally listed species is involved and, you think a permit is needed, please contact Chris Mensing, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, East Lansing office, 517-351-8316, or Chris_Mensing@fws.gov.

NOTE: special concern species and natural communities are not protected under endangered species legislation, but efforts should be taken to minimize any or all impacts.

Please consult MNFI's Rare Species Explorer for additional information on Michigan's rare plants and animals.

Table 1: Occurrences of threated and endangered species within 1.5 miles of RSR #2999

ELCAT	SNAME	SCOMNAME	USESA	SPROT	G_RANK	S_RANK	FIRSTOBS	LASTOBS
Animal	*Clemmys guttata*	Spotted turtle		T	G5	S2	2004-06-11	2005-05-21
Animal	*Setophaga cerulea*	Cerulean warbler		T	G4	S3	2006	2013-06-20
Animal	*Clemmys guttata*	Spotted turtle		T	G5	S2	2002-06-05	2018
Animal	*Alasmidonta viridis*	Slippershell		T	G4G5	S2S3	2013-09-23	2013-09-27
Plant	*Eupatorium sessilifolium*	Upland boneset		T	G5	S1	2006-09-21	2012-09-06
Plant	*Hydrastis canadensis*	Goldenseal		T	G3G4	S2	2008-07-22	2012-07-31
Plant	*Panax quinquefolius*	Ginseng		T	G3G4	S2S3	2008-07-22	2012-07-31
Plant	*Symphyotrichum drummondii*	Drummond's aster		T	G5	S2	2002-09-20	2002-09-20

Comments for Table 1:

Spotted turtle - the state threatened spotted turtle *(Clemmys guttata)* has been known to occur in the area. This small turtle (3.5-5.5 inches) is easily identified by the small, round yellow spots on the shell, although spots often fade with age and some individuals lack spots. Spotted turtles require clean, shallow bodies of standing or slow-flowing water with muddy or mucky bottoms and aquatic or emergent vegetation. Although spotted turtles are considered aquatic, they are frequently found on land in open habitats, especially during mating and nesting seasons.

Spotted turtles are active from late March to last week of October. The breeding season is from late March – late May. Home ranges can be as large as 8 acres and have been reported to travel as much as 0.30 miles overland between wetland sites. Increased urbanization and associated road density and traffic have resulted in higher road mortality of spotted turtles. In early spring, spotted turtles spend a great deal of time basking on logs, muskrat houses and grass or sedge hummocks. At night and during hot weather, they burrow under vegetation or into the soil or muddy bottoms of the wetland or crawl into mammal burrows. They overwinter in shallow water in the mud or in mammal burrows or lodges from mid-October to late March.

Spotted turtles are omnivorous, but with a decided preference for animal food. June is the primary month females leave their drying pools to nest. They will seek a sunny, open spot with sandy or loamy soil that is moist but well drained to lay eggs. If such places are scarce, they may nest in grassy sites or in the tops of grass or sedge hummocks. Most spotted turtle hatchlings emerge from the nest in August or September. These hatchlings will reach maturity in 8-10 years.

Management and Conservation - protection of upland nesting habitat adjacent to identified and active core wetland habitats is required for the continued survival of this species. Wetland fill activity should avoid the hibernation period since the turtles would be unable to actively avoid the activity. Spotted turtles are characterized by late sexual maturity and low reproductive potential, suggesting that high annual survivorship of adults and juveniles is critical for maintaining a stable population.

Cerulean warbler - the state threatened cerulean warbler (*Setophaga cerulean*) has been known to occur in the area. Cerulean warblers are uncommon summer residents in Michigan and most typically encountered high in mature deciduous floodplain forests of the southern Lower Peninsula. The Cerulean warbler is thought to be area sensitive, requiring extensive tracts of mature deciduous forests. The canopy can be closed to partly open and the amount of underbrush varies. Nests are high in the canopy on horizontal branches. Reports from the southern LP suggest arrival from spring migration during the first of second week of May with peak arrival about the middle of the month. Once singing ceases, birds are hard to find and fall migration is poorly documented. Apparently, departure begins in late July and continues through August with some birds remaining into early September.

Management and Conservation: primary threats on the breeding grounds include loss of mature deciduous forest, especially along stream valleys; forest fragmentation, loss of key trees species such as oaks and elms; and nest parasitism by brown-headed cowbirds. Protecting old growth floodplain habitat required by this species will also benefit many other Neotropical migratory birds whose populations are declining. Logging should be avoided during the breeding season from May to August.

Upland boneset - the state-threatened upland boneset *(Eupatorium sessilifolium)* has been known to occur in the area. Michigan collections of upland boneset have come from open woods, often on dry ridge slopes. Common associates include oak (red, white, and black) and pignut hickory. Upland boneset blooms in late July and August, and fruits in September.

Management and Conservation: this woodland species is undoubtedly sensitive to removal of the forest canopy. However some of its decline may be attributable to fire suppression, which has resulted in greater canopy closure of southern Michigan's dry forests.

Goldenseal - the state threatened goldenseal plant *(Hydrastis canadensis)* has been known to occur in the area. Goldenseal typically inhabits shady, rich, mesic forests, usually under a canopy of beech-sugar maple or oak-sugar maple. It also occurs in moist microhabitats near vernal pools, along streams, or on floodplains, often in moist sandy loam, clay loam, or even organic (muck) soils. Associated plants include basswood, ginseng, trillium, sweet cicely, wild ginger, plantain-leaved sedge, sugar maple, beech, blue-beech, leatherwood, and spicebush. This species flowers in early May and produces fruits through September in Michigan.

Management and Conservation: likely requires maintenance of the overstory and moist, loamy soils and is susceptible to excessive canopy removal. Maintain healthy intact, mature forests and minimize forest fragmentation due to development. When possible, leave large tracts of unharvested forests and allow natural processes to operate unhindered. Although *H. canadensis* populations have been severely diminished through over-harvesting and habitat destruction, it is also a species that can be easily overlooked when obscured by the typical lush vegetation of its forest habitat. Several other state threatened plants often occur in the same habitat as goldenseal.

Ginseng – the state threatened ginseng (*Panax quinquefolius*) has been known to occur near the project site. Ginseng inhabits rich hardwood stands, often on slopes or ravines, ranging even into swampy portions. It also occurs in wooded dune hollows and leeward slopes along the Lake Michigan shoreline. Common associates include sugar maple, hickory, basswood, red maple and white ash, although not all are required to be present. Ginseng is a long-lived plant. Flowering may occur during the fourth year; however, often it is not until the fifth year or later that mature fruit is produced. Flowering occurs during June and July, with flowers developing small green fruits in late July and early August. In late August and September, the fruits ripen, becoming bright

crimson (red) in color. Survey guidelines: random meander search covers areas that appear likely to have rare taxa, based on habitat and the judgment of the investigator.

Management and Conservation: the primary cause of decline for this species is that of exploitation by collectors in response to consumer demand, particularly in the Orient and now in America. Ginseng is vulnerable when the overstory is removed. It is likely that this plant requires the moist, cool microhabitat that a closed forest canopy provides. Preserve intact forests, avoid clear cutting, and reduce or eliminate poaching. Minimize development and fragmentation. When possible, leave large tracts of unharvested forests and allow natural processes to operate unhindered.

Table 2: Occurrences of special concern species & natural features within 1.5 miles of RSR #2999

ELCAT	SNAME	SCOMNAME	USESA	SPROT	G_RANK	S_RANK	FIRSTOBS	LASTOBS
Animal	*Terrapene carolina carolina*	Eastern box turtle		SC	G5T5	S2S3	1951	2014-05-22
Animal	*Terrapene carolina carolina*	Eastern box turtle		SC	G5T5	S2S3	1996	1996-05-21
Animal	*Emydoidea blandingii*	Blanding's turtle		SC	G4	S2S3	1996	2013-06-12
Animal	*Terrapene carolina carolina*	Eastern box turtle		SC	G5T5	S2S3	1989	1989-05-06
Animal	*Pygarctia spraguei*	Sprague's pygarctia		SC	G5	S2S3	1977	1977
Animal	*Oecanthus laricis*	Tamarack tree cricket		SC	G3?	S3	2002-08-29	2002-08-29
Animal	*Setophaga citrina*	Hooded warbler		SC	G5	S3	2010-05-25	2013-06-20
Animal	*Venustaconcha ellipsiformis*	Ellipse		SC	G4	S3	2013-09-27	2013-09-27
Animal	*Melanerpes erythrocephalus*	Red-headed woodpecker		SC	G5	S3	2010-06-21	2010-06-21
Animal	*Lithobates palustris*	Pickerel frog		SC	G5	S3S4	2002-05-24	2014-05-28
Community	Dry-mesic Southern Forest				G4	S3	2006-09-21	2012-09-06
Community	Dry-mesic Southern Forest				G4	S3	2006-09-21	2012-07-31
Community	Dry-mesic Southern Forest				G4	S3	2012-07-24	2012-07-25
Community	Dry-mesic Southern Forest				G4	S3	2012-08-14	2012-08-14
Community	Bog				G3G5	S4	2012-08-15	2012-08-15
Community	Intermittent Wetland	Infertile Pond/marsh, Great Lakes Type			G2	S3	2012-09-14	2012-09-14
Community	Southern Wet Meadow	Wet Meadow, Central Midwest Type			G4?	S3	2012-08-12	2012-08-12
Plant	*Brickellia eupatorioides*	False boneset		SC	G5	S2	2012-08-20	2012-08-20

Comments for Table 2:

Eastern box turtle – the state special concern eastern box turtle *(Terrapene carolina carolina)* has been known to occur in the area. The eastern box turtle is Michigan's only truly terrestrial turtle. This species typically prefers deciduous or mixed woodlands, especially those with sandy soils. They also utilize adjacent thickets, old fields,

pastures, vegetated dunes, marshes, and bog edges. Access to water (e.g. small ponds, seepages, springs, bogs, or slow streams) is important, as is the availability of unshaded nesting sites.

As a species of special concern, the eastern box turtle is not protected under state or federal endangered species legislation, but it is becoming rare throughout its range and it is protected under the authority of the **Department of Natural Resources Director's Order, Regulations on the Take of Reptiles and Amphibians, dated October 12, 2001 (section 324 of PA 451).**

Eastern box turtles are active from late April to late October and breeding typically occurs from late May to mid-October. Home ranges can be as large as 40 acres. Many box turtles are killed on roads and collected as pets each year. These turtles are diurnal and most active in spring and fall. During the summer they may have brief activity in the morning or falling rain, but otherwise spend much time buried in leaf litter, shallow burrows, under brush piles or rotting logs. Hibernation occurs most frequently in burrows or under leaf litter, less often submerged in a pond or stream.

Box turtles consume a wide variety of plant and animal foods with a taste for raspberries or blackberries. Most box turtles remain in a rather small home range (often less than 5 acres) for most of their lives. Nesting takes place in June and early July, with eggs being buried in an open, often elevated location. Hatchlings emerge in September and October.

Management and Conservation: loss of wooded habitat to various human uses is the most serious threat to the species. Conservation efforts should concentrate on protecting large tracts of habitat especially on public land to provide the box turtle additional protection from the effects of development. Wetland hydrology and quality should be maintained by preventing improper off-road vehicle use, implementing minimum development set-back distances, leaving buffer zones during timber harvest, grazing and agricultural operations, minimizing use of herbicides and pesticides in or near wetlands, and/or controlling invasive plants. Upland nesting areas should be identified, protected and in some cases created. Construction of new roads should be minimized or routed to avoid separating foraging and/or overwintering habitat from nesting areas. Finally, the public should be educated about the laws protecting reptiles and amphibians and encouraged to leave wild turtles in their natural habitats rather than collecting them for pets.

Blanding's turtle - the state special concern Blanding's turtle *(Emydoidea blandingii)* has been known to occur in the area. Blanding's turtles inhabit shallow bodies of water with some aquatic plant growth and a muddy bottom, such as marshes, ponds, swamps, lake inlets and coves, and river backwaters. Blanding's turtles are active from early April to late October. They are most often seen wandering overland in spring and fall. Females seeking nest sites may travel considerable distances and are commonly seen on or near roads. Most feeding occurs underwater and includes crayfish, insects, worms, leeches, snails, small fish, tadpoles, frogs, and some plants. Nesting occurs in June where eggs are buried in a sandy, sunny location. Hatchlings emerge in August or September. Blanding's turtles hibernate underwater (more rarely under debris close to water) from late October or early November until early April.

As a species of special concern, the eastern box turtle is not protected under state or federal endangered species legislation, but it is becoming rare throughout its range and it is protected under the authority of the **Department of Natural Resources Director's Order, Regulations on the Take of Reptiles and Amphibians, dated October 12, 2001 (section 324 of PA 451).**

Management and Conservation: primary threats to the Blanding's turtles include loss or altering of wetland habitats and destruction on roads. The most critical conservation need for this species is protection and management of suitable wetland and adjacent upland habitats. Maintaining good water quality, restricting herbicide and pesticide use in or near wetlands, implementing minimum development set-back distances, leaving buffer zones during timber harvest, grazing and agricultural operations, and minimizing the construction

of roads in or near suitable wetlands would be beneficial to this species. Timber harvesting can benefit this species by creating or maintaining open habitat conditions for thermoregulation and nesting. Minimizing adult mortality or removal is crucial for population viability given this species' life history. Thus, habitat management activities should be conducted in such a manner so as to minimize the potential for causing take of adults (e.g., timber harvesting during the inactive season). Minimizing road mortality and illegal collection also would beneficial to this species. In some cases, on-site protection of nest sites and predator control may be necessary to facilitate or increase successful reproduction or population recruitment.

Hooded warbler - the state special concern hooded warbler *(Setophaga citrina)* has been known to occur in the area. Hooded warblers occur in the understory of mesic and wet broad-leaved forests. They prefer or require woodlots of substantial size, but selective cutting of trees seems not to be harmful and may even increase populations by encouraging a dense understory. Small saplings of trees, such as beech, maple, and basswood, or shrubs such as spicebush, are the most frequent nest sites; however, brambles and herbaceous plants such as blue cohosh are also used. Hooded warblers migrate to Central America (mid-Mexico south to Panama) in the winter. They return to Michigan in late April and begin to nest in mid-May through June. The fall migration period is not well known for this species, but birds have been seen in September.

Management and Conservation - hooded warblers nest in a variety of forest types that all have a mature forest canopy and a dense understory of small trees and shrubs. Management should focus on preserving these characteristics in large contiguous blocks to reduce the threat of brood parasitism by Brown-headed cowbirds and nest predation by small mammals like raccoons. Occasionally overstory trees may be selectively logged to encourage shrub or sapling growth, where the birds nest, but this activity should be conducted in the fall or winter when the warblers are on their wintering grounds to avoid direct impacts to nesting birds.

Red-headed woodpecker – the state special concern red-headed woodpecker (*Melanerpes erythrocephalus*) has been known to occur in the area. They are cavity nesters that rely on old, dead standing snags to raise their young. They prefer forest edges, orchards and open pine woods. Diet is omnivorous eating a variety of insects, earthworms, nuts, seeds and berries.

They are relatively easy to survey due to their striking red head and their frequent "tchur-tchur" or "charr-charr" calls. They have chisel-like bills and black back with white wing patches. The belly is usually white and unstreaked. Best time to survey is May-early June.

Management/Conservation: red-headed woodpeckers heavily compete for suitable dead trees with Red-bellied woodpeckers and invasive European starlings. Dead limbs and snags should be maintained in suitable habitat areas where this species has occurred or is likely to occur. They have accepted and used nest boxes as well. Leaving clumps of a mix of live and dead standing trees in harvest sections is ideal.

False boneset - the state special concern false boneset *(Brickellia eupatorioides)* has been known to occur in the area. False boneset inhabits sandy fields, prairies, disturbed areas including roadsides and bluffs. Flowering occurs from late July to October.

Management and Conservation: prescribed burns are necessary to maintain prairie habitat for this species.

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Codes for Occurrence Tables:

State Protection Status Code Definitions (SPROT)
E: Endangered
T: Threatened
SC: Special concern

Federal Protection Status Code Definitions (USESA)
LE = listed endangered
LT = listed threatened
LELT = partly listed endangered and partly listed threatened
PDL = proposed delist
E(S/A) = endangered based on similarities/appearance
PS = partial status (federally listed in only part of its range)
C = species being considered for federal status

Global Heritage Status Rank Definitions (GRANK)
The priority assigned by NatureServe's national office for data collection and protection based upon the element's status throughout its entire world-wide range. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
G1 = critically imperiled globally because of extreme rarity (5 or fewer occurrences range-wide or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2 = imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3: Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.
G4: Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
Q: Taxonomy uncertain

State Heritage Status Rank Definitions (SRANK)
The priority assigned by the Michigan Natural Features Inventory for data collection and protection based upon the element's status within the state. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
S1: Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.
S2: Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.
S3: Rare or uncommon in state (on the order of 21 to 100 occurrences).
S4 = apparently secure in state, with many occurrences.
S5 = demonstrably secure in state and essentially ineradicable under present conditions.
SX = apparently extirpated from state.

Rare Species Review #2999
GEI Consultants
Property Review
Rutland Charter Township
Barry County, MI
October 12, 2021

For projects involving Federal funding or a Federal agency authorization

The following information is provided to assist you with Section 7 compliance of the Federal Endangered Species Act (ESA). The ESA directs all Federal agencies "to work to conserve endangered and threatened species. Section 7 of the ESA, called "Interagency Cooperation," is the means by which Federal agencies ensure their actions, including those they authorize or fund, do not jeopardize the existence of any listed species."

The project falls within the range of six (6) federally listed/proposed species which have been identified by the U.S. Fish and Wildlife Service (USFWS) to occur in Barry County, MI:

Federally Endangered

Indiana bat - there appears to be suitable habitat within the 1.5-mile search buffer. Indiana bats (*Myotis sodalis*) are found only in the eastern United States and are typically confined to the southern three tiers of counties in Michigan. Indiana bats that summer in Michigan winter in caves in Indiana and Kentucky. This species forms colonies and forages in riparian and mature floodplain habitats. Nursery roost sites are usually located under loose bark or in hollows of trees near riparian habitat. Indiana bats typically avoid houses or other artificial structures and typically roost underneath loose bark of dead elm, maple and ash trees. Other dead trees used include oak, hickory and cottonwood. Foraging typically occurs over slow-moving, wooded streams and rivers as well as in the canopy of mature trees. Movements may also extend into the outer edge of the floodplain and to nearby solitary trees. A summer colony's foraging area usually encompasses a stretch of stream over a half-mile in length. Upland areas isolated from floodplains and non-wooded streams are generally avoided.

Management and Conservation: the suggested seasonal tree cutting range for Indiana bat is between October 1 and March 31 (i.e., no cutting April 1-September 30). This applies throughout the Indiana bat range in Michigan.

Karner blue butterfly – there does not appear to be suitable habitat within the 1.5-mile search buffer. The federally endangered and state threatened Karner blue butterfly *(Lycaeides melissa samuelis)* was historically found in open-canopied barrens communities, including oak and oak-pine savanna or barrens found prior to European settlement. Since their historical habitat suffers from fire suppression efforts, the butterfly often occurs in openings, old fields, and rights-of-way. Karner blue larvae feed exclusively on wild lupine (*Lupinus perennis*), an early successional species that can become abundant after appropriate disturbances. Adults visit a wide variety of flowering plants for nectar.

The Karner blue has two generations per year, with the later, or summer, generation typically having three to four times the number of adults as the earlier, or spring, brood. Adults are active most of the day, decreasing activity during midday and during cool, rainy weather. Females can live up to two weeks in the field, but typically live an average of five days. Peak flight dates are mid-May through early June and mid-July through early August, with stragglers found between.

Management and Conservation: recommendations for management of Karner blue butterfly habitat will be pertinent only if the host plant, wild lupine (*Lupinus perennis*) is present. If lupine is present the following guidelines should be followed: (1) mower blades should be set no lower than 6 inches; (2) mowing should not

occur before August 15th (i.e. no spring mowing at all!); (3) no burning of habitat where lupine exists, and; (4) contact us if planting or logging will occur in lupine areas.

Mitchell's satyr butterfly – there does not appear to be suitable habitat within 1.5-miles of the project site. The federally endangered and state endangered Mitchell's satyr butterfly *(Neonympha mitchellii mitchellii)* is restricted to calcareous wetlands known as prairie fens. In Michigan, this habitat is characterized by scattered tamaracks, poison sumac, and dogwood with a ground cover of sedges, shrubby cinquefoil, and a variety of herbaceous species with prairie affinities. Adult Mitchell's satyr butterflies are active two to three weeks each summer, with males emerging before females. Adult flight dates are from mid-June to mid-July. Larvae hibernate near the bottom of a sedge. The larval food plant is thought to be several species of sedge. The caterpillar is green with white stripes.

Management and Conservation: the primary threat to the continued survival of this species is habitat loss and modification. Many of the wetland complexes occupied currently have been altered or drained for agriculture or development. Wetland alteration is responsible for extirpating the single known satyr population in Ohio. Wetland alteration also can lead to invasion by exotic plant species such as glossy buckthorn (*Rhamnus frangula*), purple loosestrife (*Lythrum salicaria*), common buckthorn (*Rhamnus cathartica*), and the common reed (*Phragmites australis*). In addition, landscape-scale processes that may be important for maintaining suitable satyr habitat and/or creating new habitat, such as wildfires, fluctuations in hydrologic regimes, and flooding from beaver (*Castor canadensis*) activity, have been virtually eliminated or altered throughout the species' range.

Federally Threatened

Northern long-eared bat – there appears to be suitable habitat within 1.5-mile of the search area. Numbers of the federally threatened Northern long-eared bat (*Myotis septentrionalis*) in the north eastern United States have declined up to 99 percent in recent years. Loss or degradation of summer habitat, wind turbines, disturbance to hibernacula, predation, and pesticides have contributed to this decline. However, no other threat has been as severe to the decline as White-nose Syndrome (WNS). WNS is a fungus that thrives in the cold, damp conditions in caves and mines where bats hibernate. The disease is believed to disrupt the hibernation cycle by causing bats to repeatedly awake thereby depleting vital energy reserves. This species was federally listed in May 2015 primarily due to the threat from WNS. This activity occurs within the US Fish and Wildlife Service's designated White-Nose Syndrome zone.

Also called northern bat or northern myotis, this bat is distinguished from other *Myotis* species by its long ears. In Michigan, northern long-eared bats hibernate in abandoned mines and caves in the Upper Peninsula; they also commonly hibernate in the Tippy Dam spillway in Manistee County. This species is a regional migrant with migratory distance largely determined by locations of suitable hibernacula sites.

Northern long-eared bats typically roost and forage in forested areas. During the summer, these bats roost singly or in colonies underneath bark, in cavities or in crevices of both living and dead trees. Roost trees are selected based on the suitability to retain bark or provide cavities or crevices. Common roost trees in southern Lower Michigan include species of ash, elm and maple. Foraging occurs primarily in areas along woodland edges, woodland clearings and over small woodland ponds. Moths, beetles and small flies are common food items. Like all temperate bats this species typically produces only 1-2 young per year.

Management and Conservation: when there are known roost trees or hibernacula in the project area, we encourage you to conduct tree-cutting activities and prescribed burns in forested areas during October 1 through March 31 when possible, but you are not required by the ESA to do so. When that is not possible, we encourage you to remove trees prior to June 1 or after July 31, as that will help to protect young bats that may be in forested

areas but are not yet able to fly. The USFWS has prepared a dichotomous key to help determine if this action may cause prohibited take of this bat. Please consult the USFWS Endangered Species Page for more information.

Eastern massasauga rattlesnake (EMR) - the project falls outside Tier 1 and Tier 2 EMR habitat as designated by the U.S. Fish & Wildlife Service (USFWS). For environmental screening purposes no coordination with the USFWS is not necessary. The federally threatened and state special concern eastern massasauga rattlesnake *(Sistrurus catenatus)* is Michigan's only venomous snake and is found in a variety of wetland habitats including bogs, fens, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. Eastern massasaugas occur throughout the Lower Peninsula but are not found in the Upper Peninsula. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are better known from lowland coniferous forests, such as cedar swamps. These snakes normally overwinter in crayfish or small mammal burrows often close to the groundwater level and emerge in spring as water levels rise. During late spring, these snakes move into adjacent uplands they spend the warmer months foraging in shrubby fields and grasslands in search of mice and voles, their favorite food.

Often described as "shy and sluggish", these snakes avoid human confrontation and are not prone to strike, preferring to leave the area when they are threatened. However, like any wild animal, they will protect themselves from anything they see as a potential predator. Their short fangs can easily puncture skin and they do possess potent venom. Like many snakes, the first human reaction may be to kill the snake, but it is important to remember that all snakes play vital roles in the ecosystem. Some may eat harmful insects. Others like the massasauga consider rodents a delicacy and help control their population. Snakes are also a part of a larger food web and can provide food to eagles, herons, and several mammals.

Management and Conservation: any sightings of these snakes should be reported to the Michigan Department of Natural Resources, Wildlife Division. If possible, a photo of the live snake is also recommended.

Eastern prairie fringed orchid – there appears to be suitable habitat within 1.5 miles of the property. The federally threatened and state endangered eastern prairie fringed orchid *(Platanthera leucophaea)* occurs in two distinct habitats in Michigan - wet prairies and bogs. It thrives best in the lakeplain wet or wet-mesic prairies that border Saginaw Bay and Lake Erie. This species frequently persists in degraded prairie remnants, ditches, railroad rights-of-ways, fallow agricultural fields, and similar habitats where artificial disturbance creates a moist mineral surface conducive to germination. Unlike many other *Platanthera* species, *P. leucophaea* is long-lived, with individuals documented to live more than 30 years. Flowering occurs during late June through early July. The white blossoms produce a heavy fragrance at dusk that attracts many moths, including the primary pollinators of *P. leucophaea*, hawkmoths (Lepidoptera: Sphingidae). Hawkmoths are likely co-adapted pollinators, since their tongues are long enough to reach the nectar that lies deep in the spur of the flower. Capsules mature in September, releasing hundreds of thousands of airborne seeds. Plants may not flower every year but frequently produce only a single leaf above ground, possibly even becoming dormant when conditions are unsuitable, such as the onset of drought.

Management and Conservation: this species requires the maintenance of natural hydrological cycles and open habitat. Activities such as shrub removal are likely to benefit the species, but other management such as prescribed fire is not well understood. Caution and proper monitoring should be employed if using prescribed fire in occupied habitat. Spring fires should be conducted prior to emergence (mid-April). Poaching is also a threat.

Candidate Species (under consideration for official listing for which there is sufficient information to support listing).

Monarch Butterfly (*Danaus plexipuss*) on December 15, 2020, the U.S. Fish and Wildlife Service announced that listing the monarch as endangered or threatened under the Endangered Species Act is warranted but precluded

by higher priority listing actions. The decision is the result of an extensive status review of the monarch that compiled and assessed the monarch's current and future status. The monarch is now a candidate under the Endangered Species Act; we will review its status annually until a listing decision is made.

Management and Conservation: neither section 7 of the Endangered Species Act nor the implementing regulations for section 7 contain requirements for federal agencies with respect to candidate species. Habitat loss and fragmentation has occurred throughout the monarch's range. Pesticide use can destroy the milkweed monarchs need to survive. A changing climate has intensified weather events which may impact monarch populations.

USFWS Section 7 Consultation Technical Assistance can be found at:

https://www.fws.gov/service/esa-section-7-consultation

The website offers step-by-step instructions to guide you through the Section 7 consultation process with prepared templates for documenting "no effect." as well as requesting concurrence on "may affect, but not likely to adversely affect" determinations.

Please let us know if you have questions.

Mike Sanders
Environmental Review Specialist/Zoologist
Sander75@msu.edu
Cell number: 517-980-5632

Appendix C SHPO Findings

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PO Box 10235 South Bend, IN 46680
574-635-1338

December 6, 2021

Stu Kogge
GEI Consultants, Inc
4472 Mount Hope Road, Suite A
Williamsburg, MI 49690

Re: Cultural resources desktop review, Barry State Game Area Project, Rutland Charter Township, Barry County, Michigan

Stu:

PROJECT DESCRIPTION

GEI Consultants, Inc (GEI) contracted Orbis Environmental Consulting (Orbis) to conduct a cultural resources desktop review of a proposed shooting range in Rutland Charter Township, Barry County, Michigan (Figure 1). The 11.5-acre project area is along the south side of Chief Noonday Road/M-179 and is wooded and undeveloped.

CULTURAL RESOURCES DESKTOP REVIEW

The records on file at the Michigan State Historic Preservation Office (MSHPO) show the following resources within one mile of the project components (study area):

Historic Structures

The records list zero historic resources in the study area.

Archaeological Sites

The records list zero archaeological sites in the study area.

Previous Cultural Resource Management Reports

The records on file at MSHPO list zero previous cultural resource management surveys in the study area. The project area has not been surveyed.

Historic Atlas Maps

Orbis reviewed three historic atlas maps of Barry County (Geo. A. Ogle & Co. 1895, 1913; Hastings City Bank 1945). The 1895 and 1913 maps show the major roads, railroads, natural features, landowners, and select structures.

These two maps show a structure (HS1) in the northern part of the project area, near the roadway (Figures 2 and 3). In 1895 the parcel landowner is G.W. Boorn and in 1913 the landowner is F.E. Pierce (Geo. A. Ogle & Co. 1895, 1913).

The 1945 map shows roads and landowners but does not show structures. At this time the project area was on land owned by N.J. Polites (The Hastings City Bank 1945).

Each of these maps show the road that forms the northern boundary of the parcel as traveling directly east-west and lacking the southwesterly turn beginning just west of the project.

In addition to the historic atlas maps, we also reviewed the archaeological map "Archaeological Atlas of Michigan" (Hinsdale 1931). Like other historic archaeological maps of its time, this map depicts archaeological resources at a county-wide scale. This scale provides an overview of sites across the county but limits the locational accuracy of these features.

The Hinsdale map shows nine Native villages, nine burying grounds and four mounds in Barry County, however none are shown near the project area. Hindsale describes residents reporting villages in Thornapple and Hastings Townships and numerous trails crossing the county (Hindsale 1931).

CONCLUSIONS AND RECOMMENDATIONS

The records on file at the MSHPO list zero archaeological resources and zero historic structure within one mile of the project.

Historic atlas maps show one historic structure in the project area (HS1). Recent aerial photos do not show a structure in this location and show the project area as otherwise largely wooded and undeveloped (Figure 4). This project is unlikely to affect significant historic structures.

Direct effects such as ground disturbance in intact soils may affect any archaeological resources in the project area. These may include sites associated with Native populations in the area. However, the limited available information suggests people in the area were primarily located in other parts of the county outside the project. If people in the past used this area it was likely limited and ephemeral.

Resources may also be related to Euroamerican settlement and occupation of the area, in particular the structure shown on the historic atlas maps (HS1). The area most likely to contain significant, intact, archaeological resource is near the road, where the residence/main buildings associated with HS1 would have stood.

We recommend avoiding ground disturbance within 250 feet of the road (Archaeological Sensitivity Area, Figure 5). If the project will disturb the ground in this area we recommend a Phase I archaeological survey to determine the presence/absence of archaeological resources prior to beginning the project.

Regards,

J Ryan Duddleson
Senior Archaeologist

James L. Ingermann Heimlich
Architectural Historian

cc: #2109008

Attachments
Figure 1 – Project Location
Figure 2 – 1895 Atlas Map
Figure 3 – 1913 Atlas Map
Figure 4 – Area of Potential Effects
Figure 5 – Recommendations – Archaeological Sensitivity Area
Topographic Survey Map

REFERENCES CITED

Geo. A. Ogle & Co.
1895 Standard Atlas of Barry County, Michigan. Geo. A. Ogle & Co., Chicago.

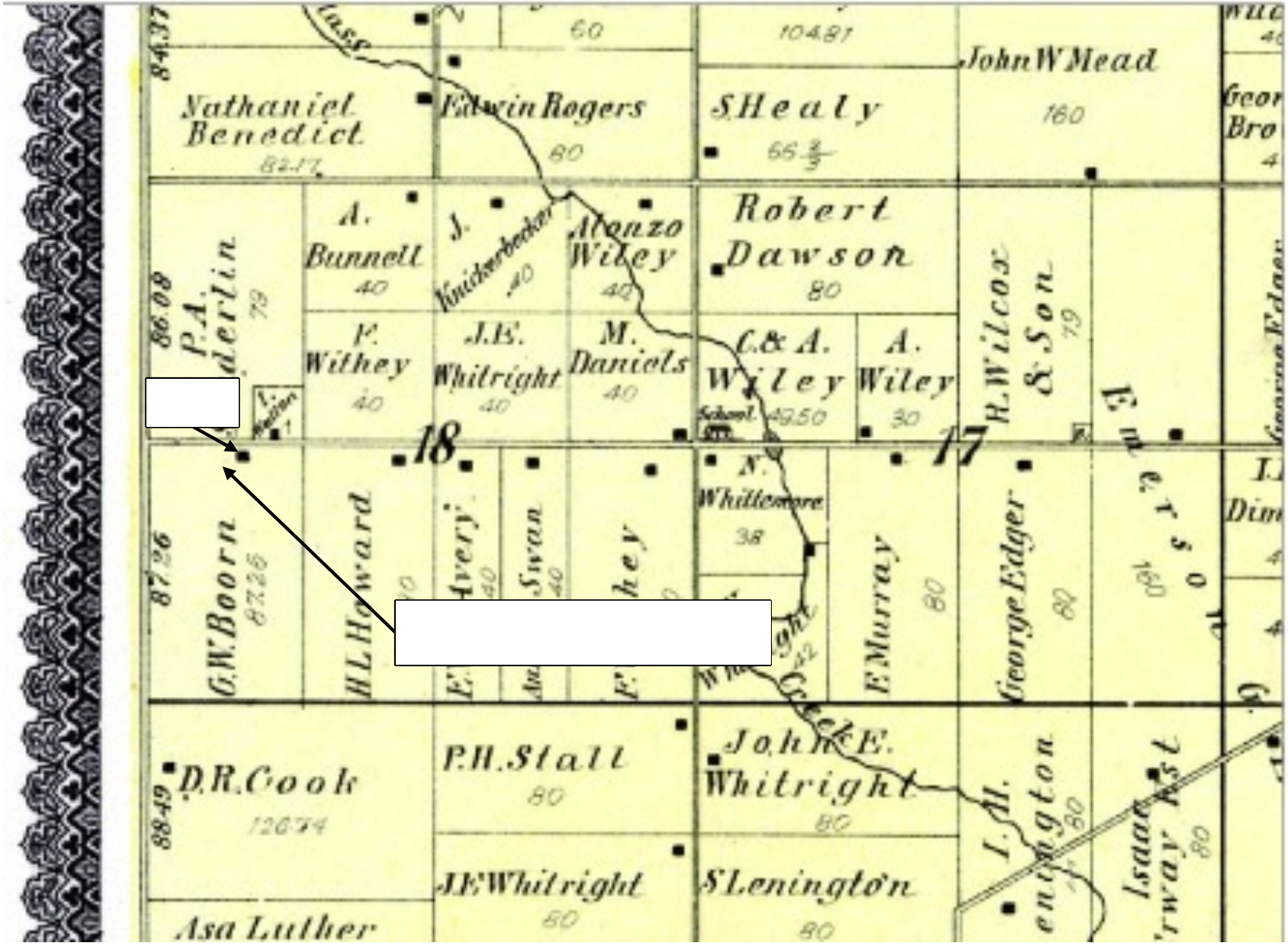
1913 Standard Atlas of Barry County, Michigan. Geo. A. Ogle & Co., Chicago.

The Hastings City Bank
1945 Atlas of Barry County Michigan. Second Ed. The Hastings City Bank, Hastings, MI.

orbis

Barry County State Game Area Shooting Range
GEI Consultants, Inc.
Rutland Charter Township, Barry County, MI

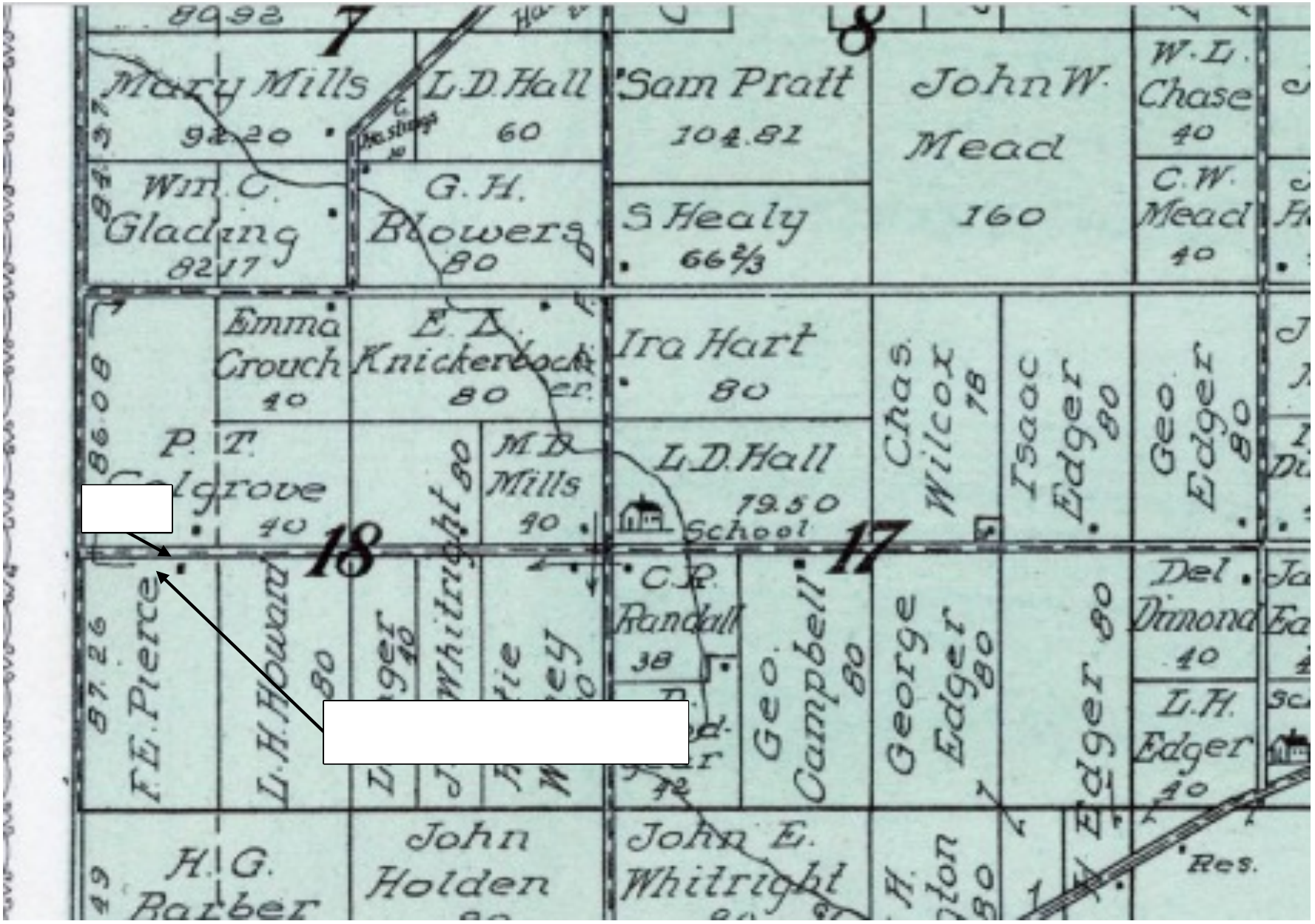
Figure # 1
Project Location
#2109008



orbis

Barry County State Game Area Shooting Range
GEI Consultants, Inc.
Rutland Charter Township, Barry County, MI

Figure # 2
1895 Rutland Township Atlas
#2109008



orbis	Barry County State Game Area Shooting Range GEI Consultants, Inc. Rutland Charter Township, Barry County, MI	Figure # 3 1895 Rutland Township Atlas #2109008

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Barry County State Game Area Shooting Range
GEI Consultants, Inc.
Rutland Charter Township, Barry County, MI

Figure # 4
Area of Potential Effects
#2109008

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Barry County State Game Area Shooting Range
GEI Consultants, Inc.
Rutland Charter Township, Barry County, MI

Figure # 5
Recommendation
#2109008

PROPOSED BARRY COUNTY SHOOTING RANGE

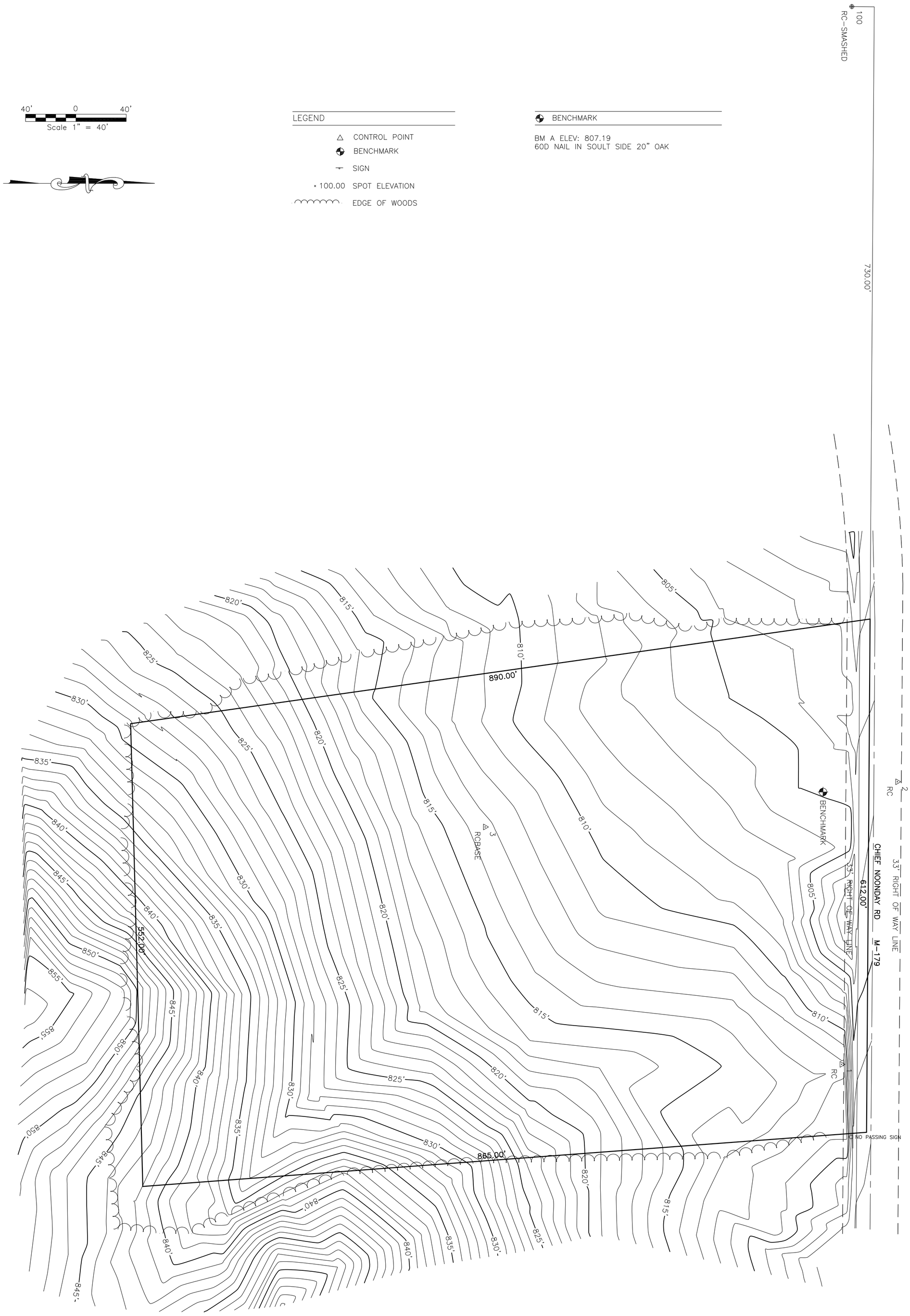
40' 0 40'
Scale 1" = 40'

LEGEND

- CONTROL POINT
- BENCHMARK
- SIGN
- × 100.00 SPOT ELEVATION
- EDGE OF WOODS

BENCHMARK

BM A ELEV: 807.19
60D NAIL IN SOULT SIDE 20" OAK



PROPOSED BARRY COUNTY SHOOTING RANGE

BARRY COUNTY, T3N, R9W, SECTION 18

SURVEY INFORMATION	
JOB NUMBER	1927
SURVEY DATE	3/3/2020
FIELD WORK BY	RR, BJ
DRAWN BY	BJ
SHEET	1 OF 1

Michigan Department of Natural Resources
4166 Legacy Parkway, Lansing Mi 48911