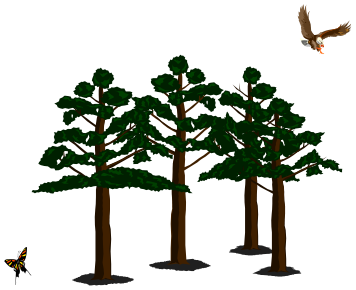
FEDERAL AVIATION ADMINISTRATION

AIRPORTS DIVISION

Short Environmental Assessment Form for AIRPORT DEVELOPMENT PROJECTS



Airport Name: Gerald R. Ford International Airport Identifier: GRR

Project Title: Runway 8R Wildlife Habitat Mitigation

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA official.

_____ _____

Responsible FAA Official Date

INSTRUCTIONS

THIS FORM IS FOR LIMITED USE ON SPECIFIC TYPES OF PROJECTS. AIRPORT SPONSORS MUST CONTACT YOUR LOCAL AIRPORTS DISTRICT OFFICE (ADO) ENVIRONMENTAL PROTECTION SPECIALIST (EPS) BEFORE COMPLETING THIS FORM.

This form was prepared by FAA Eastern Region Airports Division and is being used by the Great Lakes Region Detroit Airports District Office, in coordination with Regional Airports General Counsel.

Introduction: This Short Environmental Assessment (EA), is based upon the guidance in Federal Aviation Administration (FAA) Orders 1050.1F – *Environmental Impacts: Policies and Procedures*, and the *Environmental Desk Reference for Airport Actions* and 5050.4B – *NEPA Implementing Instructions for Airport Actions.* These orders incorporate the Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA), as well as US Department of Transportation environmental regulations, and other applicable federal statutes and regulations designed to protect the Nation's natural, historic, cultural, and archeological resources. The information provided by sponsors, with potential assistance from consultants, through the use of this form enables the FAA ADO offices to evaluate compliance with NEPA and the applicable special purpose laws.

Use: For situations in which this form may be considered, refer to the APPLICABILITY Section below. The local ADO has the final determination in the applicability of this form to a proposed Federal Action. Proper completion of the Form will allow the FAA to determine whether the proposed airport development project can be processed with a short EA, or whether a more detailed EA or EIS must be prepared. **If you have any questions on whether use of this form is appropriate for your project, or what information to provide, we recommend that you contact the environmental specialist in your local ADO.**

This Form is to be used in conjunction with applicable Orders, laws, and guidance documents, and in consultation with the appropriate resource agencies. Sponsors and their consultants should review the requirements of special purpose laws (See 5050.4B, Table 1-1 for a summary of applicable laws). Sufficient documentation is necessary to enable the FAA to assure compliance with all applicable environmental requirements. Accordingly, any required consultations, findings or determinations by federal and state agencies, or tribal governments, are to be coordinated, and completed if necessary, prior to submitting this form to FAA for review. Coordination with Tribal governments must be conducted through the FAA. We encourage sponsors to begin coordination with these entities as early as possible to provide for sufficient review time. Complete information will help FAA expedite its review. This Form meets the intent of a short EA while satisfying the regulatory requirements of NEPA for an EA. Use of this form acknowledges that all procedural requirements of NEPA or relevant special purpose laws still apply and that this form does not provide a means for circumvention of these requirements.

Submittal: When using this form for an airport project requesting *discretionary funding*, the documentation must be submitted to the local ADO by April 30th of the fiscal year preceding the fiscal year in which funding will be requested. **When using this form for an airport**

project requesting *entitlement funding*, the documentation must be submitted to the local ADO by November 30th of the fiscal year in which the funding will be requested.

Availability: *An electronic version of this Short Form EA is available by contacting your local FAA ADO EPS. .Other sources of environmental information including guidance and regulatory documents are available on-line at http://www.faa.gov/airports_airtraffic/airports/environmental.*

APPLICABILITY

Local ADO EPSs make the final determinations for the applicability of this form. If you have questions as to whether the use of this form is appropriate for your project, contact your local EPS BEFORE using this form. Airport sponsors can consider the use of this form if the proposed project meets either Criteria 1 or Criteria 2, 3, and 4 collectively as follows:

1) It is normally categorically excluded (see paragraphs 5-6.1 through 5-6.6 in FAA Order 1050.1F) but, in this instance, involves at least one, but no more than two, extraordinary circumstance(s) that may significantly impact the human environment (see paragraph 5-2 in 1050.1F and the applicable resource chapter in the 1050.1F Desk reference).

2) The action is one that is not specifically listed as categorically excluded or normally requires an EA at a minimum (see paragraph 506 in FAA Order 5050.4B).

3) The proposed project and all connected actions must be comprised of Federal Airports Program actions, including:

(a) Approval of a project on an Airport Layout Plan (ALP),
(b) Approval of Airport Improvement Program (AIP) funding for airport development,
(c) Requests for conveyance of government land,
(d) Approval of release of airport land, or
(e) Approval of the use of Passenger Facility Charges (PFC).

4) The proposed project is not expected to have impacts to more than two of the resource categories defined in the 1050.1F Desk Reference.

This form cannot be used when any of the following circumstances apply:

1) The proposed action, including all connected actions, requires coordination with another Federal Agency outside of the FAA.

2) The proposed action will likely result in the need to issue a Record of Decision.

3) The proposed action requires a construction period exceeding 3 years.

4) The proposed action involves substantial public controversy on environmental grounds.

5) The proposed project would have impacts to, or require mitigation to offset the impacts to more than two resources[1] as defined in the 1050.1F Desk Reference.

6) The proposed project would involve any of the following analyses or documentation:
    a. The development of a Section 4(f) Report for coordination with the Department of the Interior,
    b. The use of any Native American lands or areas of religious or cultural significance,
    c. The project emissions exceed any applicable *de minimis* thresholds for criteria pollutants under the National Ambient Air Quality Standards, or
    d. The project would require noise modeling with AEDT 2b (or current version).

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[1] A resource is any one of the following: Air Quality; Biological Resources (including Threatened and Endangered Species); Climate; Coastal Resources; Section 4(f); Farmlands; Hazardous Materials, Solid Waste, and Pollution Prevention; Historical, Architectural, Archaeological, and Cultural Resources; Land Use; Natural Resources and Energy Supply; Noise and Noise-Compatible Land Use; Socioeconomics; Environmental Justice; Children's Environmental Health and Safety Risks; Visual Effects; Wetlands; Floodplains; Surface Waters; Groundwater; Wild and Scenic Rivers; and Cumulative Impacts.

Complete the following information:

Project Location
Airport Name: Gerald R. Ford International Airport Identifier: GRR
Airport Address: 5500 44th Street SE
City: Grand Rapids County: Kent State: MI Zip: 49512

Airport Sponsor Information
Point of Contact: Michelle Baker
Address: 5500 44th Street SE
City: Grand Rapids State: MI Zip: 49512
Telephone: (616) 233-6022 Fax: (616) 233-6025
Email: mbaker@grr.org

Evaluation Form Preparer Information
Point of Contact: Michelle Baker
Address: 5500 44th Street SE
City: Grand Rapids State: MI Zip: 49512
Telephone: (616) 233-6022 Fax: (616) 233-6025
Email: mbaker@grr.org

1. Introduction/Background:
The Runway 8R Wildlife Habitat Mitigation project. This project will remove wildlife habitat including the removal of approximately 3.49 acres of wetland and stream near the Runway 8R touchdown zone. The site location is shown on **Figure 1**.

As it exists currently, the nearly 30-acre project area (identified on Airport figures as Site 16) is undeveloped, consisting of rolling hills traversed by approximately 1,071 feet of airfield ditch and 3.49 acres of wetland. The area has been used to stockpile clean waste soils removed during construction projects at the terminal apron.

During the most recent Wildlife Hazard Assessment (**Attachment A**), the wetland and stream on Site 16 were identified as potential habitat for nuisance wildlife species, including flocking birds, raptors, and small mammals, which present a safety hazard to the aircraft operations. Given their proximity to Runway 8R/26L to the south, the airport's Wildlife Hazard Management Plan (WHMP, **Attachment B**) includes removal of the existing wetland and water features to mitigate the potential habitat. This project assists in meeting this goal of the WHMP.

2. Project Description (List and clearly describe **ALL** components of project proposal including all connected actions). **Attach a map or drawing of the area with the location(s) of the proposed action(s) identified:**
This project will result in a graded site, available for future aviation development. It includes removal of approximately 68,000 cubic yards of muck/wetland soils ranging from 3 to 20 feet deep and replacement with clean fill material obtained from off-site sources. Excavated soils will be placed at an on-site waste soil stockpile location, via the haul route indicated on **Figure 2**.

The wetland will be mitigated at a ratio of 1.5:1, creating 5.24 acres of wetland at the Buck Creek Wetlands, a wetland mitigation bank located within the Grand River watershed and approved by Michigan Department of Environment, Great Lakes and Energy (EGLE). An EGLE Part 303 Permit application has been submitted for these activities and work will commence once that permit is issued by the EGLE Water Resource Division (**Attachment C**).

Stormwater controls will include new stormwater detention and piping to mitigate the existing drainage ditch. Final site grades will be established to promote positive drainage and future aeronautical developments. This project will provide grades to support future development but does not include design or construction of additional infrastructure (i.e., roadway, utilities, etc.) to support these planned developments.

3. Project Purpose and Need:

The purpose of this project is to remove wildlife habitat including approximately 3.49 acres of wetland and ditch, replacing them with clean fill material and a new stormwater detention system. These activities will meet the following airport needs:

- The wetland is a wildlife attractant, which creates safety challenges, such as bird strikes, for aircraft operations. Removal of this wildlife habitat is in accordance with the airport's Wildlife Hazard Assessment, Wildlife Hazard Management Plan, and Airport Master Plan.
- Improve downstream stormwater management by constructing stormwater detention to reduce the flow of stormwater runoff from impervious surfaces, thereby reducing downstream, off-site flooding potential.
- By removing the wetlands and stream the parcel becomes available for additional aeronautical development to provide both direct and indirect economic and social benefits to the community. These opportunities are consistent with long-term development identified in the Airport's FAA approved Master Plan.

4. Describe the affected environment (existing conditions) and land use in the vicinity of project:

The Gerald R. Ford International Airport (GRR) is located in southeastern Kent County, Michigan, approximately eight to nine miles southeast of the downtown Grand Rapids area. The airport property lies within Cascade Township, the City of Kentwood and the City of Grand Rapids. The Airport is set on approximately 3,133 acres of land with a mean elevation of 794 feet above mean sea level.

The proposed project is located within the airport property boundary. It is inside the Airport Operation Area (AOA) and is bounded on the west by the perimeter road, north by Taxiway Z1, east by Taxiway Z, and to the south by Taxiway D2. Property use to the west, outside the AOA fence, consists of service centers for the rental car agencies operating at the airport, as well as the cell phone and rideshare parking lots. Land use on the remaining adjacent property is utilized for aviation-related activities, including private hangars occupied by Kent County Intermediate School District and corporate tenants to the north and east, with the airfield to the south. The existing project site consists of undeveloped property previously used as a stockpile area for clean soils

wasted from construction projects. It is traversed by an open ditch and includes a wetland, for which a mitigation permit has been applied. The ground surface is mowed turf grass.

5. Alternatives to the Project: Describe any other reasonable actions that may feasibly substitute for the proposed project, and include a description of the "No Action" alternative. If there are no feasible or reasonable alternatives to the proposed project, explain why (attach alternatives drawings as applicable)**:**

Alternatives
An alternative to performing this project would be postpone it until a future date, putting off the work to mitigate the wildlife attractant wetland and stream. This alternative would allow the areal extent of wetland and wildlife habitat to grow, cause the existing permit to expire, and require the Authority to obtain a new mitigation permit.

No Action Alternative
The No Action alternative would leave the site as is, including the existing stream and wetland.

Explanation
By completing this project, the Gerald R. Ford International Airport Authority eliminates approximately 30 acres of wildlife attractant which creates safety challenges, such as potential bird and mammal strikes, for airport operations. Finally, a permit has already been opened for this work and expires on April 3, 2025, making the project time sensitive to implement. Additionally, by removing the wetlands and stream, the parcel becomes available for additional aeronautical development to provide both direct and indirect economic and social benefits to the community.

6. Environmental Consequences – Special Impact Categories (refer to the Instructions page and corresponding sections in 1050.1F, the 1050.1F Desk Reference, and the Desk Reference for Airports Actions for more information and direction. Note that when the 1050.1F Desk Reference and Desk Reference for Airports Actions provide conflicting guidance, the 1050.1F Desk Reference takes precedence. The analysis under each section must comply with the requirements and significance thresholds as described in the Desk Reference).

(A) AIR QUALITY
(1) Will the proposed project(s) cause or create a reasonably foreseeable emission increase? Prepare an air quality assessment and disclose the results. Discuss the applicable regulatory criterion and/or thresholds that will be applied to the results, the specific methodologies, data sources and assumptions used; including the supporting documentation and consultation with federal, state, tribal, or local air quality agencies.
The proposed project is not expected to cause or create a reasonably foreseeable emission increase. Upon completion, the site will be a turfed field.

(2) Are there any project components containing unusual circumstances, such as emissions sources in close proximity to areas where the public has access or other considerations that may warrant further analysis? If no, proceed to (3); if yes, an analysis of ambient pollutant concentrations may be necessary. Contact your local ADO regarding how to proceed with the analysis.
There are no project components containing unusual circumstances that may warrant further analysis.

(3) Is the proposed project(s) located in a nonattainment or maintenance area for the National Ambient Air Quality Standards (NAAQS) established under the Clean Air Act?
The proposed project is located in Kent County, Michigan. According to the USEPA Green Book (current as of December 31, 2023), Kent County has been designated as a maintenance area for Ozone 8-hr (1997 standard) since 2007.

4) Are all components of the proposed project, including all connected actions, listed as exempt or presumed to conform (See FRN, vol.72 no. 145, pg. 41565)? If yes, cite exemption and go to (B) Biological Resources. If no, go to (5).
The proposed project is classified as exempt under category #2 – Routine Maintenance and Repair Activities.

(5) Would the net emissions from the project result in exceedances of the applicable *de minimis* threshold (reference 1050.1F Desk Reference and the *Aviation Emissions and Air Quality Handbook* for guidance) of the criteria pollutant for which the county is in non-attainment or maintenance? If no, go to (B) Biological Resources. If yes, stop development of this form and prepare a standard Environmental Assessment.
N/A

(B) BIOLOGICAL RESOURCES
Describe the potential of the proposed project to directly or indirectly impact fish, wildlife, and plant communities and/or the displacement of wildlife. Be sure to identify any state or federal species of concern (Candidate, Threatened or Endangered).

(1) Are there any candidate, threatened, or endangered species listed in or near the project area?
State and federal listed candidate, threatened, or endangered species lists were reviewed to determine whether any species might be known or expected to be present in or near the project area (see **Attachment D**).

The Information, Planning and Conservation (IPaC) system is a tool utilized by the United States Fish and Wildlife Service (USFWS) to streamline the environmental review process. This system provides a species list that identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat that may occur within the boundary of the study area and/or may be affected by the proposed project. An official list of federal and state listed endangered, threatened or candidate species and critical habitats was reviewed and no impacts to listed species are anticipated. Per IPaC, no critical habitats were identified within the proposed project area. Endangered, threatened, and candidate species identified by IPaC as occurring on-airport include (**Attachment D**):

- Tricolored bat (proposed endangered)
- Northern Long-eared Bat (endangered)
- Indiana Bat (endangered)
- Karner Blue Butterfly (endangered)
- Whooping Crane (experimental population, non-essential)
- Eastern Massasauga (threatened)

- Monarch Butterfly (candidate)
- Golden Eagle (warrants attention because of Bald Eagle Act)
- Bald Eagle (warrants attention because of Bald Eagle Act)

According to the IPaC Resource List, there are no critical habitats located within the proposed project area. No other Federally threatened or endangered species, or environmentally-sensitive habitat areas were identified.

The Michigan Department of Agriculture and Rural Development also provides a list of state-listed endangered species by county. This resource indicates that there are no state-listed endangered species in Kent County.

(2) Will the action have any long-term or permanent loss of unlisted plants or wildlife species?
The project area consists of regularly mowed turf grass and a wet-weather stream. No unlisted plants or wildlife species are expected to exist in the vicinity of this project.

(3) Will the action adversely impact any species of concern or their habitat?
As discussed above, there are no known species of concern or associated habitat. A goal of the project is to eliminate habitat for nuisance wildlife species which present a potential safety hazard to aircraft operations. This project is not likely to adversely affect any species of concern.

(4) Will the action result in substantial loss, reduction, degradation, disturbance, or fragmentation of native species habitats or populations?
Wildlife species located at the project site are nuisance species whose habitat is abundant in the region. There is no reason to expect that this project will result in any substantial loss, reduction, degradation, disturbance or fragmentation of native species habitats or populations.

(5) Will the action have adverse impacts on a species' reproduction rates or mortality rate or ability to sustain population levels?
Wildlife species located at the project site have abundant habitat in the region. This project is not expected to adversely impact their reproduction or mortality rates or ability to sustain population levels elsewhere.

(6) Are there any habitats, classified as critical by the federal or state agency with jurisdiction, impacted by the proposed project?
According to the IPaC Resource List, there are no critical habitats located within the proposed project area. No other Federally threatened or endangered species, or environmentally-sensitive habitat areas were identified.

(7) Would the proposed project affect species protected under the Migratory Bird Act? (If **Yes**, contact the local ADO).
A list of migratory birds that have the potential to occur in the project area was obtained through the USFWS IPaC tool (**Attachment D**). The proposed project area does not support habitat for the listed migratory birds and is not anticipated to have the potential to take birds protected by the Migratory Bird Treaty Act. However, in the instance that this is necessary, official consultation with the USFWS will be conducted. During construction, construction equipment access and material

staging will be limited to the project area and previously disturbed areas to avoid affecting potential bird nests that may be located in other areas on Airport property.

If the answer to any of the above is "Yes", consultation with the USWFS and appropriate state agencies is required and attach all correspondence and documentation, including IPaC.

(C) CLIMATE

(1) Would the proposed project or alternative(s) result in the increase or decrease of emissions of Greenhouse gases (GHG)? If neither, this should be briefly explained and no further analysis is required and proceed to (D) Coastal Resources.

This project is not expected to have any impact on greenhouse gas (GHG) emissions. Upon project completion, the site will be a field, vegetated with turf grass. The only activities to take place on the site will be periodic mowing. This is not a change from current operations; therefore, there is no net expected change in emissions of GHGs.

(2) Will the proposed project or alternative(s) result in a net decrease in GHG emissions (as indicated by quantitative data or proxy measures such as reduction in fuel burn, delay, or flight operations)? A brief statement describing the factual basis for this conclusion is sufficient.

N/A

(3) Will the proposed project or alternative(s) result in an increase in GHG emissions? Emissions should be assessed either qualitatively or quantitatively as described in 1050.1F Desk Reference or Aviation Emissions and Air Quality Handbook.

N/A

(D) COASTAL RESOURCES

(1) Would the proposed project occur in a coastal zone, or affect the use of a coastal resource, as defined by your state's Coastal Zone Management Plan (CZMP)? Explain.

According to coastal zone boundary maps prepared for the Michigan Coastal Management Program (MCMP), the proposed project will not take place in or around a coastal zone management area. The Michigan EGLE Environmental Assistance Center provides mapping of the State's Coastal Zone Management Boundaries and Coastal Zone Management Areas. The proposed project is located in Kent County, MI, which is landlocked and not located within a state coastal zone.

(2) If **Yes**, is the project consistent with the State's CZMP? (If applicable, attach the sponsor's consistency certification and the state's concurrence of that certification).

N/A

(3) Is the location of the proposed project within the Coastal Barrier Resources System? (If **Yes**, and the project would receive federal funding, coordinate with the FWS and attach record of consultation).

Review of the USFWS Coastal Barrier Resource System Mapper indicated that there are no coastal barrier resource system units located on or adjacent to the airport.

(E) SECTION 4(f) RESOURCES

(1) Does the proposed project have an impact on any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or an historic site of national, state, or local significance? Specify if the use will be physical (an actual taking of the property) or constructive (i.e. activities, features, or attributes of the Section 4 (f) property are substantially impaired.) If the answer is "No," proceed to (F) Farmlands.

The proposed project is taking place entirely within the boundary of airport property. There will be no impact to properties protected under Section 4(f) including publicly owned parks, recreation areas, or wildlife or waterfowl refuges or land from a historic site of national, state or local significance. Review of the USFWS Map of the National Wildlife Refuge System indicates that the closest national park to GRR is the Shiawassee National Wildlife Refuge, located 81 miles northwest of GRR.

The closest publicly owned parks and recreation areas to the proposed project area include:

- Thomas Walsh Park, informally referred to as the airport viewing area, borders GRR and is approximately 3,800 feet southeast of the proposed project site.
- Cascade Township Park is located across I-96 from GRR, approximately two miles northeast of the proposed project. Cascade Town Park was funded by the Land and Water Conservation Fund (LWCF) State and Local Assistance Program and is considered a Section 6(f) resource.

The proposed project is occurring entirely on airport property and will create a use consistent with existing airport conditions. It is not anticipated to affect any Section 4(f) resources.

(2) Is a *De Minimis* impact determination recommended? If "yes", please provide; supporting documentation that this impact will not substantially impair or adversely affect the activities, features, or attributes of the Section 4 (f) property; a Section 106 finding of "no adverse effect" if historic properties are involved; any mitigation measures; a letter from the official with jurisdiction concurring with the recommended *de minimis* finding; and proof of public involvement. (See Section 5.3.3 of 1050.1F Desk Reference). If "No," stop development of this form and prepare a standard Environmental Assessment.

N/A

(F) FARMLANDS

Does the project involve acquisition of farmland, or use of farmland, that would be converted to non-agricultural use and is protected by the Federal Farmland Protection Policy Act (FPPA)? (If **Yes**, attach record of coordination with the Natural Resources Conservation Service (NRCS), including form AD-1006.)

The proposed project is occurring entirely on airport property and does not involve acquisition, or use, of farmland.

(G) HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

(1) Would the proposed project involve the use of land that may contain hazardous materials or cause potential contamination from hazardous materials? (If Yes, attach record of consultation with appropriate agencies). Explain.

The project is not expected to involve the use of land that may contain hazardous materials or cause potential contamination from hazardous materials. However, a surface water sample collected at the outfall into Site 16 reported a detection of 48.6 ng/L of Perfluorooctanesulfonic acid (PFOS), which is above State of Michigan (Rule 57) Water Quality Criteria for Surface Water (12 ng/L). No other per- and polyfluoroalkyl substances (PFAS) have been detected in samples collected at this point and the source of the contamination has not yet been identified. The Airport continues to conduct sampling activities to investigate further upstream of Site 16. These source identification efforts are being coordinated with EGLE Remediation and Redevelopment Division (RRD). No soil samples have been collected in this area. However, out of an abundance of caution, all excavated soils will be placed on-site in an area that has been set aside for any excavated soils that may contain PFAS.

(2) Would the operation and/or construction of the project generate significant amounts of solid waste? If **Yes**, are local disposal facilities capable of handling the additional volumes of waste resulting from the project? Explain.
As discussed in the project description, this project will include the excavation and removal of approximately 68,000 cubic yards of muck. This material will be wasted on-site, at the location shown on **Figure 2**; there is no expected Impact on local disposal facilities due to this project.

(3) Will the project produce an appreciable different quantity or type of hazardous waste? Will there be any potential impacts that could adversely affect human health or the environment?
This project is not expected to produce an appreciable quantity of hazardous waste. Because there is a possibility of PFAS impacts, the project will be performed in accordance with the airport's Due Care Plan (**Attachment E**) to protect project workers.

(H) HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

(1) Describe any impact the proposed project might have on any properties listed in, or eligible for inclusion in the National Register of Historic Places. (Include a record of consultation and response with the State or Tribal Historic Preservation Officer (S/THPO)).
A search on the National Register of Historic Places Database found no historic or cultural resources located near the proposed project area. Review of the Michigan Economic Development Corporation's Local Historic Designation districts indicates that the City of Grand Rapids contains the Heritage Hill Historic District. However, this district is located outside of the proposed project area's APE.

(2) Describe any impacts to archeological resources as a result of the proposed project. (Include a record of consultation with persons or organizations with relevant expertise, including the S/THPO, if applicable).
The proposed project does not involve work within or upon identified historic sites or structures or within potential archeologically sensitive areas. Therefore, no impact to historic or cultural resources is expected.

According to the U.S. Environmental Protection Agency's map of "Indian Lands in US EPA Region 5," there are several federally recognized tribal lands in the state of Michigan. The closest tribal land to the proposed project is the Match-e-be-nash-she-wish, located in Wayland, Michigan

approximately 17 miles southwest of GRR. No impacts to tribal land or land of interest to tribes is anticipated by the proposed project.

(I) LAND USE

(1) Would the proposed project result in other (besides noise) impacts that have land use ramifications, such as disruption of communities, relocation of residences or businesses, or impact natural resource areas? Explain.

This project is not expected to result in any land use ramifications. Stream and wetLand mitigation efforts will improve natural resource areas off airport property but within the Grand River Watershed.

(2) Would the proposed project be located near or create a wildlife hazard as defined in FAA Advisory Circular 150/5200-33, "Wildlife Hazards On and Near Airports"? Explain.

As discussed previously, this project will mitigate previously identified wildlife hazards on airport property. The result of this project will be a grass-turfed field area. Vegetation to be planted will be non-wildlife attracting. It will be mowed regularly to appropriate heights as identified in FAA AC 150/5200-33 and the airport's wildlife management plan.

(2) Include documentation to support sponsor's assurance under 49 U.S.C. § 47107 (a) (10), of the 1982 Airport Act, that appropriate actions will be taken, to the extent reasonable, to restrict land use to purposes compatible with normal airport operations.

The property is located within the airport's AOA and access is restricted to badged personnel only.

(J) NATURAL RESOURCES AND ENERGY SUPPLY

What effect would the project have on natural resource and energy consumption? (Attach record of consultations with local public utilities or suppliers if appropriate)

As with any construction project, there will be short-term increases in electricity, diesel, and gasoline usage to power construction equipment and for worker travel. A temporary increase in energy and consumable natural resources related to construction activities is anticipated to occur. Once completed, the proposed project area will consist of a level, turf field area. No increase in energy consumption is anticipated.

(K) NOISE AND NOISE-COMPATIBLE LAND USE

Will the project increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe? (Use AEM as a screening tool and AEDT 2b as appropriate. See FAA Order 1050.1F Desk Reference, Chapter 11, or FAA Order 1050.1F, Appendix B, for further guidance). Please provide all information used to reach your conclusion. If yes, contact your local ADO.

Upon completion, the project is not expected to result in any change in noise levels. Equipment-related increases in noise levels will be observed during construction activities. However, these noise level increases are temporary; noise levels will return to pre-project levels once construction is complete.

(L) SOCIOECONOMICS and CHILDREN'S HEALTH and SAFETY RISKS

(1) Would the project cause an alteration in surface traffic patterns, or cause a noticeable increase in surface traffic congestion or decrease in Level of Service?

Traffic associated with construction vehicles is temporary and is not expected to be significant. The project will not cause changes in existing surface traffic, and therefore, will not result in an increase in congestion or create a degradation of level of service provided. Traffic associated with construction vehicles is temporary and not expected to be significant.

(2) Would the project cause induced, or secondary, socioeconomic impacts to surrounding communities, such as changes to business and economic activity in a community; impact public service demands; induce shifts in population movement and growth, etc.?
The project is not expected to cause induced, or secondary, socioeconomic impacts to surrounding communities, including changes to business and economic activity in a community; impact public service demands; or induce shifts in population movement and growth.

(3) Would the project have the potential to lead to a disproportionate health or safety risk to children?
This project is not expected to have the potential to lead to health or safety risk to children.

If the answer is "YES" to any of the above, please explain the nature and degree of the impact. Also provide a description of mitigation measures which would be considered to reduce any adverse impacts.
N/A

(M) VISUAL EFFECTS INCLUDING LIGHT EMISSIONS
(1)Would the project have the potential to create annoyance or interfere with normal activities from light emissions for nearby residents?
No light emission impacts are anticipated as a result of the proposed project.

(2) Would the project have the potential to affect the visual character of nearby areas due to light emissions?
No light emission impacts are anticipated as a result of the proposed project. Therefore, no impact to visual character as a result of light emissions is expected.

(3) Would the project have the potential to block or obstruct views of visual resources?
During construction activities, views may be obstructed as a result of operation by construction equipment. However, upon completion, the project site will be a level grade, with no obstructions present across the site.

If the answer is "YES" to any of the above, please explain the nature and degree of the impact using graphic materials. Also provide a description of mitigation measures which would be considered to reduce any adverse impacts.

(N) WATER RESOURCES (INCLUDING WETLANDS, FLOODPLAINS, SURFACE WATERS, GROUNDWATER, AND WILD AND SCENIC RIVERS)

(1) WETLANDS
(a) Does the proposed project involve federal or state regulated wetlands or non-jurisdictional wetlands? (Contact USFWS or appropriate state natural resource agencies if protected resources are affected) (Wetlands must be delineated using methods in the US Army Corps of Engineers 1987

Wetland Delineation Manual. Delineations must be performed by a person certified in wetlands delineation Document coordination with the resource agencies).
The site includes 3.49 of primarily emergent wetland. Delineation has been completed and a Part 303 Permit has been obtained from EGLE for wetland mitigation.

(b) If yes, does the project qualify for an Army Corps of Engineers General permit? (Document coordination with the Corps).
EGLE WRD maintains jurisdiction over wetlands in the State of Michigan. Appropriate permitting has been completed (**Attachment C**).

(c) If there are wetlands impacts, are there feasible mitigation alternatives? Explain.
This project is being performed to remove this wetland from airport due to its role as a wildlife attractant in contradiction to FAA AC 150/5200-33, "Wildlife Hazards On and Near Airports"? A suitable mitigation site consisting of 5.24 acres will be created at an EGLE-approved wetland mitigation bank within the Grand River Watershed.

(d) If there are wetlands impacts, describe the measures to be taken to comply with Executive Order 11990, Protection of Wetlands.
This project is being implemented with the intent of removing the existing 3.49-acre wetland located on this site. This effort is being undertaken in an effort to improve site safety and mitigate wildlife hazards on the airport. To support the Sponsor's obligation under E.O. 11990, the on-site wetland to be removed will be mitigated at a ratio of 1.5:1, creating 5.24 acres of wetland at the Buck Creek Wetlands, an EGLE-approve wetland mitigation bank located within the Grand River watershed.

(2) FLOODPLAINS
(a) Would the proposed project be located in, or would it encroach upon, any 100-year floodplains, as designated by the Federal Emergency Management Agency (FEMA)?
No, the proposed project is not located in a FEMA floodplain. Additionally, the proposed project will take place on previously paved areas on Airport property. Therefore, the proposed project is not anticipated to create additional impervious surfaces in the project area. The FEMA FIRMETTE for the project area is provided in **Attachment G**.

(b) If Yes, would the project cause notable adverse impacts on natural and beneficial floodplain values as defined in Paragraph 4.k of DOT Order 5620.2, *Floodplain Management and Protection*?
N/A

(c) If Yes, attach the corresponding FEMA Flood Insurance Rate Map (FIRM) and describe the measures to be taken to comply with Executive Order 11988, including the public notice requirements.
N/A

(3) SURFACE WATERS
(a) Would the project impact surface waters such that water quality standards set by Federal, state, local, or tribal regulatory agencies would be exceeded or would the project have the potential to contaminate a public drinking water supply such that public health may be adversely affected?

This project is not expected to adversely impact water quality in surface water or contaminate public drinking water supplies. All appropriate engineering controls and best management practices for erosion protection and sediment control will be implemented to prevent adverse impacts to surface water.

(b) Would the water quality impacts associated with the project cause concerns for applicable permitting agencies or require mitigation in order to obtain a permit?
This project is not expected to adversely impact water quality.

If the answer to any of the above questions is "Yes", consult with the USEPA or other appropriate Federal and/or state regulatory and permitting agencies and provide all agency correspondence.

(4) GROUNDWATER
(a) Would the project impact groundwater such that water quality standards set by Federal, state, local, or tribal regulatory agencies would be exceeded or would the project have the potential to contaminate an aquifer used for public water supply such that public health may be adversely affected?
This project is not expected to have any impact on groundwater.

(b) Would the groundwater impacts associated with the project cause concerns for applicable permitting agencies or require mitigation in order to obtain a permit?
This project is not expected to adversely impact ground water in the project area.

(c) Is the project to be located over an EPA-designated Sole Source Aquifer?
According to the NEPAssist tool, the Project is not located within a Sole Source Aquifer or an area of public water supply.

If the answer to any of the above questions is "Yes", consult with the USEPA or other appropriate Federal and/or state regulatory and permitting agencies and provide all agency correspondence as an attachment to this form.

(5) WILD AND SCENIC RIVERS
Would the proposed project affect a river segment that is listed in the Wild and Scenic River System or Nationwide River Inventory (NRI)? (If Yes, coordinate with the jurisdictional agency and attach record of consultation).
Based on a review of the National Park Service Wild and Scenic Rivers Program, there are no listed Wild, Scenic, or Recreational rivers located in vicinity of the airport or its surrounding area.

(O) CUMULATIVE IMPACTS
Discuss impacts from past, present, and reasonably foreseeable future projects both on and off the airport. Would the proposed project produce a cumulative effect on any of the environmental impact categories above? Consider projects that are connected and may have common timing and/or location. For purposes of this Form, generally use 3 years for past projects and 5 years for future foreseeable projects.

This cumulative impact analysis only considers the environmental categories impacted by the proposed project. These categories include:

- Surface Water Resources
- Wetlands

Past, ongoing, and reasonably foreseeable projects assessed for cumulative impacts are identified below.

Past Projects (2022-2024):

Construction projects that have taken place at the Airport over the past three years include:

- Emergency Operations Center Construction
- Terminal Enhancements – Phase 1
- Reconstruction of Runway Lighting
- Terminal Apron Reconstruction and Expansion
- Maintenance Fuel Facility Construction
- Economy Parking Lot Expansion – Phases 1, 2 and 3
- ARFF Building Construction
- SRE Building Improvements and Expansion
- Taxiway V Rehabilitation
- Concourse A Expansion
- Airfield Pavement Repairs
- Runway 8L/26R Surface Treatment
- Blast Pad Rehabilitation

Ongoing Projects (2025):

- CONRAC Construction
- Airfield Pavement Repairs
- Terminal Enhancements – Phase 1, Year 2
- ATCT Relocation – Year 1
- ARFF Refurbishment for GSE Support
- Concourse B Enclosure Replacement – Year 1
- Taxiway L Extension
- Taxiway D Lighting Replacement

Future Foreseeable Projects (2026-2030):

A list of desired construction projects at the Airport over the next 5 years is as follows:

- CONRAC Construction (2026-2027)
- ATCT Relocation – Year 2 (2026)
- Terminal Enhancements (2026-2027)
- Concourse B Enclosure Replacement – Year 2 (2026)
- Federal Inspection Station Construction – Phases 2 and 3 (2026-2027)
- Taxiway F/G Lighting Replacement (2026)
- Taxiway F Rehabilitation North of Taxiway V and Taxiway G (2026)

- Taxiway D Rehabilitation East of Runway 17/35 (2026)
- Taxiway Z1 Rehabilitation (2026)
- Aviation Fuel Farm (2026)
- Terminal Enhancements – Phase 2 (2027)
- Hotspot 3 Correction – Taxiway K Extension/Wildlife Habitat and Wetland Mitigation/ Taxiway V Removal (2027)
- Taxiway B Lighting Replacement (2027)
- Taxiway J Rehabilitation – J4 to J5 (2027)
- Grand Canopy Extension (2027)
- Runway Intersection Pavement Replacement (2028)
- Taxiway F Pavement Removal (2028)
- Taxiway K Lighting Replacement (2028)
- GA Apron Rehabilitation – South (2028)
- North Parking Garage Construction (2028)
- Concourse C Enabling Projects (2029)
- Runway 8R/26L Rehabilitation – East of Runway 17/35 (2029)
- Concourse C – Year 1 (2030)
- Runway 8R/26L Rehabilitation –West of Runway 17/35 (2030)
- Airfield Electrical Improvements – Runway 8L/26R (2029-2030)

Of the 48 past, current, or future projects listed above, 44 consist of maintenance, rehabilitation, or replacement type projects taking place upon or within previously disturbed and developed areas on Airport property and are unlikely to create notable environmental impacts, other than short-term minor construction-related air quality and noise impacts.

Cumulative impacts related to the future ATCT Relocation, Aviation Fuel Farm Relocation, Hotspot 3 Correction and Taxiway L Extension projects, are discussed in further detail below.

Surface Waters

The proposed project will not create any new impervious areas but will include replacing a drainage ditch with stormwater pipe. The ATCT Relocation (5.8 acres), Aviation Fuel Farm Relocation (2.5 acres), Taxiway K Extension (6.7 acres) and Taxiway L Extension (2.4 acres) will result in an increase in impervious surfaces by approximately 17.5 acres. Stormwater runoff from the newly created impervious areas will be contained onsite through the construction of stormwater management infrastructure (i.e., stormwater drainage basins, dry swales, and/or installation of new drainage pipes), existing drainage patterns will be maintained, and projects will receive regulatory approvals or permits consistent with the state's water quality standards. Therefore, no cumulative surface water impacts are anticipated.

Wetlands

The proposed project requires approximately 3.49 of wetlands to be filled. Hotspot 3 Correction requires 2.7 acres of wetlands be filled to construct the taxiway and grade the taxiway safety area. An additional 21 acres of wildlife habitat and wetland will be removed and mitigated due to its location adjacent close to the intersection of the Airport's two commercial service runways. The

location of the proposed project, federal design standards that dictate the location of taxiways, and federal requirements to maintain a safe environment for aircraft operation by mitigating wildlife strike hazards, filling in wetlands cannot be avoided. Compensatory mitigation will be developed as part of the EGLE Part 303 permit process. The Taxiway L Extension, Aviation Fuel Farm and ATCT relocation are all located within mowed lawn areas and will not impact wetlands. Compensatory mitigation will offset the loss of wetlands associated with the projects identified above. Therefore, no significant cumulative impacts are expected.

Based on the information included above the effects of the proposed project when added to the effects of other past, current or future projects at the Airport are not expected to cause significant impacts that will exceed thresholds of significance.

7. PERMITS

List all required permits for the proposed project. Has coordination with the appropriate agency commenced? What feedback has the appropriate agency offered in reference to the proposed project? What is the expected time frame for permit review and decision?

- Kent County Soil Erosion and Sediment Control Permit (SESC) will be obtained by the contractor.
- State of Michigan EGLE National Pollutant Discharge Elimination System (NPDES) permit for Stormwater Discharges from Construction activity will be obtained by the contractor.
- State of Michigan EGLE WRD Part 303 Permit will be obtained by the Airport.

8. MITIGATION

Describe those mitigation measures to be taken to avoid creation of significant impacts to a particular resource as a result of the proposed project, and include a discussion of any impacts that cannot be mitigated.

- A Kent County SESC permit will be obtained by the contractor. All appropriate measures will be undertaken to control erosion and offsite sedimentation.
- A Michigan NPDES permits will be obtained by the contractor. All appropriate measures will be undertaken to control erosion and offsite sedimentation
- All excavated soil and muck will be disposed onsite to eliminate the potential of PFAS leaving the site.
- Site activities will be performed in accordance with the airport's Due Care Plan.
- If encountered, hazardous materials identified within the project area will be either stored on site or disposed of in accordance with federal, state, and local rules and regulations.
- During construction, construction equipment access and material staging will be limited to the project area and previously disturbed areas to avoid affecting potential bird nests possibly located in other areas on Airport property.
- If potentially hazardous materials are discovered during excavation activities, work in the area would cease until appropriate health and safety procedures are implemented and appropriate state agencies are notified. Any associated contamination, remediation, and removal activities would be conducted in accordance with applicable local, state, and federal regulatory guidelines, under the supervision of the appropriate regulatory agency. If encountered,

hazardous materials identified within the project area will be either stored on site or disposed of in accordance with federal, state, and local rules and regulations.

9. PUBLIC INVOLVEMENT

Describe the public review process and any comments received. Include copies of Public Notices and proof of publication.

The wetland permit application was subject to public notification and review, as part of the permitting process. Those records are not available.

This EA was made available for comment for 30 days on the airport's website. Notification was published in _____ and a copy is available in Attachment G.

10. LIST OF ATTACHMENTS

Figures:	1	Site Location
	2	Spoils Area
Attachments:	A	Wildlife Hazard Assessment
	B	Wildlife Hazard Management Plan
	C	Part 301/303 Permit
	D	Threatened and Endangered Species Documentation
	E	GFIA Due Care Plan
	F	FEMA FIRMETTE
	G	Public Notice (will include any comments received)

Project Title: Runway 8R Wildlife Habitat Mitigation **Identifier:** GRR

11. PREPARER CERTIFICATION

I certify that the information I have provided above is, to the best of my knowledge, correct.

Signature Date

Michelle J. Baker
Name

Environmental Manager
Title

Gerald R. Ford International Airport Authority 616-233-6022
Affiliation Phone #

12. AIRPORT SPONSOR CERTIFICATION

I certify that the information I have provided above is, to the best of my knowledge, correct. I also recognize and agree that no construction activity, including but not limited to site preparation, demolition, or land disturbance, shall proceed for the above proposed project(s) until FAA issues a final environmental decision for the proposed project(s), and until compliance with all other applicable FAA approval actions (e.g., ALP approval, airspace approval, grant approval) and special purpose laws has occurred.

Signature Date

Michelle J. Baker
Name

Environmental Manager
Title

Gerald R. Ford International Airport Authority 616-233-6022
Affiliation Phone #

Figures

Figure 1

Site Location

Wetland Mitigation Area

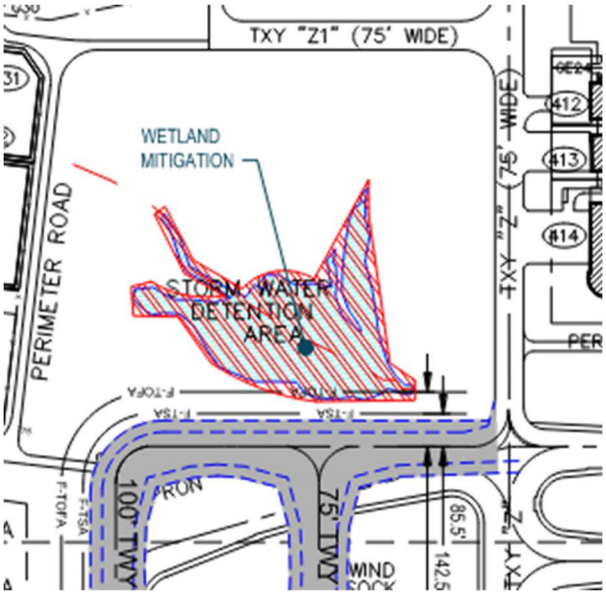

Figure 2

Spoils Area Location

Project Site

Spoils Area

GERALD R. FORD International Airport

Attachment A

Wildlife Hazard Assessment

Wildlife Hazard Management Plan

In Cooperation with:

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services
(USDA WS)

2803 Jolly Road, Suite 100
Okemos, MI 48864

Gerald R. Ford International Airport Authority
5500 44th Street SE

Table of Contents

Executive Summary

The Gerald R. Ford International Airport Authority (Authority) developed this Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture's Wildlife Services (USDA WS) and pursuant to Title 14, Code of Federal Regulations, Part 139.337(f) (Part 139). This plan will be reviewed periodically and updated as necessary. All subsequent updates made to this plan will be distributed to the distribution list on page iv.

This plan places emphasis on identification and abatement of wildlife hazards within the airfield environment. The Authority provides opinions and advice relative to community planning and development efforts that could create wildlife attractants (e.g., lakes, ponds, landfills, etc.) within five miles of the airfield.

The Authority will take immediate measures to eliminate the most significant wildlife hazards whenever they are detected or whenever the Authority has been advised of their presence. This plan outlines steps for monitoring, documenting, and reporting potential wildlife hazards and strikes at the Gerald R. Ford International Airport (GRR). Basic protocols for responding to wildlife hazards are outlined, including roles and responsibilities of various Authority personnel. Wildlife control methods for birds and mammals are also discussed in this plan.

Habitat on and around the airfield will be managed in a manner that is non-conducive to wildlife that could pose a hazard to aeronautical operations. The plan outlines priorities for habitat management, including target dates for completing specific measures where applicable.

Some wildlife species are protected under Federal or State regulations which may require special permits for their control. The plan briefly discusses laws and regulations governing the harassment or taking of various types of wildlife whose presence would be reasonably expected at GRR. The Authority's permit status for each type of wildlife is presented in tabular format, and examples of copies of required permits are included as attachments to this plan, current copies of permits are available upon request.

The Authority will maintain appropriate resources necessary for dispersing and controlling wildlife as outlined in the plan. Authority personnel will be trained to properly identify wildlife and execute wildlife control measures safely and effectively.

Preface

This Wildlife Hazard Management Plan was written to fulfill the requirements of Title 14, Code of Federal Regulations, Part 139.337(f) for GRR. This plan is designed for the Authority's use to safely and effectively manage wildlife hazards at GRR and is maintained in GRR's Airport Certification Manual.

Distribution of Wildlife Hazard Management Plan

Gerald R. Ford International Airport Authority
- President & Chief Executive Officer
- Vice President & Chief Operating Officer
- Public Safety and Operations Director
- Operations Manager
- Engineering Manager
- Chief Aircraft Rescue Firefighter
- Airport Operations
- Field Maintenance
- Building Maintenance
- Airport Master Copy

FAA Airports Division Great Lakes Regional office

United States Department of Interior – Fish and Wildlife Service

United States Department of Agriculture – Wildlife Services

1 - Introduction

1.1 General

The FAA has determined that the Authority needs a WHMP as a result of the findings of Wildlife Hazard Assessments conducted in 2002 and 2016 in accordance with Part 139. The WHMP identifies responsibilities, policies, and procedures to safely and effectively manage wildlife hazards at GRR. The WHMP must include the following components according to Part 139.337(f). Each of these components is sequentially represented as a separate chapter in this document.

1. The persons who have the authority and responsibility for implementing the plan.

2. Priorities for needed habitat modification and changes in land use identified in the ecological study, with target dates for completion.

3. Requirements for and, where applicable, copies of Federal and State wildlife control permits.

4. Identification of resources to be provided by the certificate holder (the Authority) for implementation of the plan.

5. Procedures to be followed during air carrier operations, including at least:
   (i) Assignment of personnel responsibilities for implementing the procedures;
   (ii) Conduct of physical inspections of the movement area and other areas critical to wildlife hazard management sufficiently in advance of air carrier operations to allow time for wildlife controls to be effective;
   (iii) Wildlife control measures; and
   (iv) Communication between the wildlife control personnel and any air traffic control tower in operation at the airport.

6. Periodic evaluation and review of the wildlife hazard management plan for:
   (i) Effectiveness in dealing with the wildlife hazard; and
   (ii) Indications that the existence of the wildlife hazard, as previously described in the ecological study, should be reevaluated.

7. A training program to provide airport personnel with the knowledge and skills needed to carry out the WHMP.

1.2 Problem Species

The species generally considered to present the greatest threats to aircraft at GRR are birds with flocking tendencies, such as starlings, doves, crows, blackbirds, killdeer or gulls, or of relatively large size, such as waterfowl or raptors. Coyotes are the largest mammal occasionally present at GRR. Other large mammals such as deer are not common at GRR due to perimeter control devices and facilities such as buildings, gates and fences.

1.3 Purpose And Scope

Safety of aeronautical operations is one of the Authority's primary objectives. The Authority's WHMP resolves to detect and manage wildlife hazards that threaten human health and safety associated with aircraft operating at GRR.

The actions outlined in the WHMP involve appropriate, effective, and biologically sound wildlife control methods. The Authority utilizes an Integrated Wildlife Damage Management approach, which includes both habitat management and direct wildlife control methods.

Habitat management provides the best long-term approach for reducing wildlife attractants on an airfield. Habitat management measures, discussed in Chapter 3 of the WHMP, consist of the physical removal, exclusion or manipulation of areas that are attractive to wildlife. Direct control efforts generally provide a more immediate response to hazardous situations, but the desired effects are often not as long lasting. Wildlife control procedures employed at GRR are discussed in Chapter 6 of the WHMP and include pyrotechnic hazing, vehicular harassment, trapping, toxicants, egg treatment, relocation, gassing, and shooting.

The plan will be reviewed every 12 consecutive calendar months or following a "triggering event", such as if an air carrier aircraft experiences multiple strikes; an air carrier aircraft experiences substantial damage from striking wildlife, or an air carrier aircraft experiences an engine ingestion of wildlife.

The Authority will revise the plan or portions thereof as necessary.

2 - Authority

FAR 139.337(f)(1)

The Chief Executive Officer has charged the Public Safety and Operations Director with the authority to implement the WHMP. Certain Authority units are assigned responsibilities as outlined in the WHMP. Clear communication among Authority personnel is exercised in carrying out WHMP provisions. The Public Safety and Operations Director will ensure that the FAA-approved WHMP complies with Federal, State and local laws.

2.1 Wildlife Hazard Working Group (WHWG)

The WHWG will review the WHMP on at least an annual basis. The WHWG will identify and discuss WHMP strengths, weaknesses and potential revisions that may be necessary.

The WHWG is represented by the following representatives that are able to attend:

- Airport Operations Manager
- Airport Planning Engineer
- Airport Operations
- Field Maintenance
- Airport Police
- FAA Airport Certification Safety Inspector
- Wildlife Services Biologist (USDA)
- FAA Air Traffic Control
- GRR-based corporate or air carrier pilot

2.2 Persons Responsible For Implementing The Plan

Airport Operations Manager

- Organize and lead the WHWG.
- Supervise, coordinate, and monitor wildlife control activities as outlined in the WHMP.
- Confer with a wildlife biologist for wildlife and habitat mitigation efforts as necessary.
- Ensure proper training of Authority personnel.
- Update the WHMP as necessary and obtain FAA approval of changes.
- Obtain Federal and State permits and submit associated reports as required.
- Perform Airport Operations duties as necessary.

Airport Operations

- Issue Notices to Airmen (NOTAM)s as appropriate.
- Ensure only properly trained personnel perform wildlife control measures.
- Conduct routine and special inspections for wildlife hazards and take corrective action as necessary.
- Conduct inspections for wildlife habitats/attractants (ponding, improper grass heights, brush, trees, perches, carcasses, trash, etc.) and take corrective action as necessary.
- Conduct inspections of the perimeter gates and fence lines to ensure its effectiveness in excluding medium and large animals and coordinate corrective action as necessary.
- Maintain wildlife control records.
- Investigate strike incidents and complete and submit necessary reports, including FAA Form 5200-7.
- Ensure compliance with applicable Federal and State regulations and permits.
- Ensure compliance with Airport Rules and Regulations.
- Notify Air Traffic Control (ATC) or pilots of imminent wildlife hazards.
- Coordinate takings with Airport Police or Field Maintenance personnel as necessary.
- Ensure proper disposal of wildlife carcasses.

Airport Planning Engineer

- Review all proposed on-airport development plans involving changes in land use or new airport structures/facilities to avoid attracting wildlife to the airport.
- Participate in local land use planning and development proposals within surrounding communities to avoid the creation of wildlife attractants near the airport.
- Consult with USDA WS as necessary.

Airport Police

- Assist/support Airport Operations with taking wildlife as requested.

Field Maintenance

- Assist/support Airport Operations with trapping wildlife and maintaining vegetation and fencing as requested.

FAA Great Lakes Region Airports Division

- Assist the Authority in reviewing proposed land use changes, construction plans, and mitigation projects for potential wildlife hazards to aircraft.
- Review/approve changes to the WHMP.

USDA WS

- Advise the Operations Manager, or designee, of potential wildlife hazards and provide options to reduce the hazards.
- Advise the Operations Manager, or designee, of habitat and other wildlife attractants and provide options to minimize the impacts of such attractants.
- Assist the Authority in reviewing proposed land use changes, construction plans, and mitigation projects for potential effects to wildlife as requested.
- Assist the Authority in carrying out wildlife management techniques as requested.
- Provide training to the Authority as requested.
- Inspect for wildlife hazards and take corrective action as necessary.
- Inspections for wildlife habitats/attractants (ponding, improper grass heights, brush, trees, perches, carcasses, trash, etc.) and recommend corrective action as necessary.
- Ensure compliance with applicable Federal and State regulations and permits.
- Ensure compliance with Airport Rules and Regulations.
- Notify Airport Communications or Airport Operations of imminent wildlife hazards.
- Coordinate takings with Airport Operations as necessary.
- Ensure proper disposal of wildlife carcasses.

3 - Habitat Management

FAR 139.337(f)(2)

3.1 General

Habitat management provides the most effective long-term remedial measure for reducing wildlife hazards on or near airports. Habitat management includes the physical removal, exclusion, or manipulation of areas that are attractive to wildlife. The ultimate goal is to make the environment fairly uniform and unattractive to the species that are considered the greatest hazard to aviation. Habitat modifications will be monitored carefully to ensure that they reduce wildlife hazards and do not create new attractions for different wildlife. Table 1 lists a series of habitat action items/priorities, with target dates for completion (as applicable).

Table 1. Projects and/or non-routine procedures to manage habitats at GRR are listed in the table below, along with the target completion dates when applicable. All wildlife control measures are of a "continuing" nature and are described elsewhere in this plan. Habitat projects that are of a "continuing" nature are labeled as "Ongoing".

Habitat Management Item	Target Completion Date
Mitigate two wetland areas near runways by wetland mitigation banking or relocation or managing conditions to eliminate standing water.	ACIP*
Eliminate drainage ditches on AOA. Authority to install pipe where projects impact existing ditches.	Ongoing
Install spike systems under perimeter fencing to prohibit dig unders.	Ongoing

* Wetland mitigation is now eligible for federal funding. They are depicted on the updated ALP. Three major wetlands are designated to be mitigated. One is included in the Airport Capital Improvement Program to be completed within five years.

3.2 Attractants

3.2.1 Scope of habitat attractants

The scope of this plan includes areas within 10,000' of any GRR runway centerline, which is the area where arriving and departing aircraft are typically operating at or below 500' above ground level (AGL). Most bird activity occurs below this altitude. Wildlife attractants in this area could potentially impact aircraft operating in and out of GRR, particularly those attractants that lie within the aircraft approach and departure paths. The objective of this plan is to actively reduce attractive wildlife habitat on property under the control of the Authority, while working cooperatively with local community land use planning and development efforts to discourage land-use developments that might increase wildlife hazards off airport. Some of the most prominent attractants on the property include the following:

- wetland located between the Economy Parking Lot and TWY J
- wetland located along the south side of the east end of runway 8R/26L
- wetland located east of runway 17/35 between taxiways D and V
- areas of open grass/fields
- open ditches

Potential off-site attractants include the following:

- The Golf Club at Thornapple Pointe located 4,500' east of the runway 26L threshold
- Thornapple River located 6,000' east of the runway 26L threshold
- Various croplands, wetlands, open fields, and small bodies of open water
- Stormwater treatment system located 2,200 feet NE of the runway 26L threshold

3.2.2 Off-airport projects

The Planning Engineer will participate in community land-use planning and monitor proposed development toward discouraging the creation of wildlife attractants. The FAA's Airports District Office (ADO) and Airports Division may provide technical guidance to the Authority in addressing land-use compatibility issues. The Authority (as per a Cooperative Service Agreement with the USDA) and the FAA (as per a Memorandum of Understanding with the USDA) may also request assistance from the USDA WS for technical and/or operational assistance in addressing issues or concerns associated with proposed project or land use changes. Proposed projects that will likely increase bird numbers within flight zones will be strongly discouraged or mitigated to a safe level. Incompatible land uses may include facilities such as storm water retention basins, ponds, wetlands, waste handling facilities, and wildlife refuges/sanctuaries.

3.2.3 Airport construction projects

The Planning Engineer and other Authority personnel will participate in the initial and early phases of all airport construction projects to avoid any inadvertent increase in wildlife attractants resulting from architectural or landscape changes. The FAA's ADO reviews proposed construction activities for potential wildlife attractants when an FAA Form 7460-1 application is submitted, and may solicit input from the USDA WS.

3.3 Water Management

3.3.1 Detention basins

Five detention basins located on the airport are designed to moderate storm water discharges and, therefore, may hold water for brief durations (48 hours maximum) following heavy rain events. These facilities continue to perform as designed and have typically attracted a minimal amount of wildlife (waterfowl) during the times when the basins are draining and have not been problematic.

3.3.2 Temporary standing waters and ditches

Land will be graded to provide positive drainage where feasible. Ditches will be designed to provide positive drainage from the airport. Enclosed drain systems may be utilized to replace open ditches as part of construction projects that involve major excavating. (See Table 1.)

3.3.3 Wetlands

There are several wetlands on the airport of various sizes and characteristics. While much of the vegetation in these wetland areas is controlled by mowing, portions of these wetlands are difficult to manage due to soil instability and, depending on the season, the presence of standing water, which attracts waterfowl. The Authority will facilitate proper drainage of these areas and pursue wetland mitigation banking as able. (See Table 1.)

The Authority will work with jurisdictions that are adjacent to airport property to discourage developments that could attract hazardous wildlife.

3.4 Vegetation Management

3.4.1 General

The Planning Engineer will review all proposed plantings on airport property and exclude those species that are known to be a wildlife attractant. Existing trees, shrubs and other plant growth will be managed or eliminated as appropriate. The USDA WS may be consulted for species evaluation.

3.4.2 Grass Management

Other than paved areas, grass will be the primary cover on the Air Operations Area (AOA). Grasses that produce large seeds and are known to attract wildlife will not be planted on the airport.

3.4.2.1 Grass Type

Grasses planted on the airport will produce small or no seeds, but still be able to generate new growth or re-seed itself to provide a thick, monotypic stand and prevent erosion. The selected ground cover should withstand drought, flooding, and other normal climatic conditions. Whenever possible, grass mixtures indigenous to the local area will be used at GRR when replanting as part of a construction project. The Authority will ensure that selected grasses meet erosion control standards and objectives.

3.4.2.2 Grass Height

Grass height throughout the airfield will normally be maintained at a height of 6-12 inches, except around runway and taxiway lights where it may be cut shorter for visibility interests. Additionally, grass may be cut shorter and more frequently during pollination periods where seed is exposed at the top of the grass. These grass heights will be maintained throughout the year subject to turf stability and the ability of resources to keep up during periods of rapid growth.

3.4.3 Ditches

Herbaceous vegetation growing on the edge of a drainage ditch or other wetland may provide preferred habitat for species considered most hazardous to aircraft. Grasses prescribed in this plan will be used alongside ditches on airport property. Rock (e.g., crushed stone, rip-rap) may be used to slow erosion. Ditches will be mowed where it is feasible to do so depending on the stability of the terrain along the ditch line.

3.4.4 Landscaping

Although certain areas of the airport are designed to be aesthetically pleasing, landscaping will not compromise air safety. Varieties of trees, bushes and other plantings that are unattractive to wildlife will be selected. Species that produce edible fruits, nuts, or berries will not be used on airport property if they are suspected to attract wildlife. The Authority will monitor trees for communal roosting near critical areas. Trees will be removed as necessary if other means to control roosting are ineffective.

3.5 Structure Management

3.5.1 General

Most structures provide, to varying degrees, cover and hunting perches for wildlife. The Planning Engineer and other Authority personnel will review proposed structures on the airport to ensure that they do not present unnecessary opportunities for nesting, perching or roosting. Abandoned structures, which tend to attract small mammals, small birds, predatory birds, etc., will be removed from airport property.

3.6 Food/Prey-Base Management

3.6.1 General

Small mammals, insects, earthworms, and other invertebrates are highly attractive to many species of birds and mammals and will be controlled where feasible. Handouts, trash, and scattered debris also provide food for wildlife. These issues are controlled through provisions of the Airport Rules and Regulations.

3.6.2 Small Mammals

Rodents appear to be the primary attractants of coyotes and hawks at GRR. Rodent populations will be monitored and the Authority will pursue appropriate control programs if it determines that a rodent species population has become a significant wildlife attractant.

3.6.3 Insects and Other Invertebrates

Insects and other invertebrates may attract many species of wildlife at GRR, particularly starlings, crows and gulls. If control is deemed necessary, USDA WS may be consulted in order to select the best pesticide or control method. Regulated pesticides will only be applied by a licensed applicator.

3.6.4 Trash, Debris and Handouts

Trash and debris are often responsible for attracting species such as gulls, crows, and pigeons. The Authority's maintenance personnel control trash and debris with frequent hand collections and regular receptacle servicing practices. Feeding wildlife on the airport is prohibited. Signs prohibiting such activity are posted at the public airport viewing area. Persons found in violation of these prohibitions are in violation of Airport Rules and Regulations and may be cited.

4 – Wildlife Control Permits

FAR 139.337(f)(3)

4.1 General

Federal, State and local governments administer laws and regulations that manage wildlife and their habitat. Federal and State agencies regulate the taking of many types of wildlife as well. There are no local permitting requirements. The Authority will obtain appropriate Federal and State permits as required.

4.2 Federal Regulations

The Authority is subject to various Federal regulations concerning wildlife control, including the Migratory Bird Treaty Act, the Lacey Act, the Endangered Species Act, Bald and Golden Eagle Protection Act and the National Environmental Policy Act. Federal wildlife laws are typically administered and enforced by the U.S. Fish and Wildlife Service (USFWS) and involve primarily migratory birds and threatened and endangered species.

4.3 State Regulations

State wildlife laws regarding resident birds, mammals, reptiles, and amphibians, as well as State threatened and endangered species generally are administered and enforced by the Michigan DNR.

4.4 Wildlife Categories

Federal and State laws define the categories of wildlife and regulations related to their management. For the purposes of this document, feral and free ranging dogs, cats and other domestic animals are considered "wildlife" because of the hazards they may pose to aircraft. Wildlife categories (Table 2) include migratory and resident, game and non-game, and threatened and endangered (T & E) species. This table summarizes Federal and State permit requirements for wildlife that may be reasonably expected at GRR.

Table 2. Wildlife Categories and permits necessary for lethal control as required by Federal (USFWS) and State (DNR) wildlife agencies. The table also shows whether the Authority has current Federal or State permits for each category.

Category	Species common to West Michigan	State Permit Required[1]	State Permit Obtained	Federal Permit Required	Federal Permit Obtained
Resident Game Birds	Quail, Ring-necked pheasant, Grouse, Turkey	Yes	Turkey	No	N/A
Non-protected Birds	European starlings, House sparrows, Pigeons	No	N/A	No	N/A
Migratory Birds	Geese, Ducks, Doves, Owls	State Concurrence Only	No	Yes	Ducks, Canada goose, Mallard duck, Mourning dove, Snowy owl
Migratory Nongame Birds	All species except game birds and domestic and exotic birds	State Concurrence Only	No	Yes	Ring-billed/Herring gull, Turkey vulture, Blue heron, Snowy egret, Sandhill crane, American kestrel, Red-tailed hawk, Rough-legged hawk, Cooper's hawk, Northern shoveler, Killdeer
Depredation Order Birds[2]	Crows, Blackbirds, Cowbirds	No	N/A	No	N/A
Game Mammals	White-tailed deer	Yes	White-tailed deer	No	N/A
Nongame Mammals	Non-game mammals, Furbearers, Domestic mammals	No	N/A	No	N/A
Depredation Order and Nongame Mammals	Coyotes, Raccoons, Skunks, Woodchucks, Opossums, Other non-furbearers, Domestic mammals	Yes	Coyote	No	N/A

Category	Species common to West Michigan	State Permit Required[1]	State Permit Obtained	Federal Permit Required	Federal Permit Obtained
Furbearers	Badgers, Rabbits, Foxes	Yes	Fox	No	N/A
Feral Domestic Mammals	Dogs, Cats	No	N/A	No	N/A
Threatened and Endangered Species[3]	Bald eagle, Peregrine falcon	State Concurrence Only	No	Yes	Bald eagle

[1] Control actions requiring a State permit are coordinated through the Michigan DNR.
[2] May be taken without permits "when concentrated in such numbers and manner as to constitute a health hazard or other nuisance" (50 CFR §21.43).
[3] Harassment and lethal taking permits required.

4.5 Permit Provisions

The Authority will comply with all provisions of Federal and State depredation permits. (Permit provisions usually relate to safety, methods, disposal and special considerations or restrictions and are specified on the permit.)

4.5.1 Migratory Bird Depredation Permit

The Authority obtains annually a USFWS permit to take specific migratory species that are regularly observed on the airport. By way of an agreement between the DNR and USFWS, the State authorizes all provisions of the USFWS permit by concurrence. The Authority also submits annually to the USFWS a Migratory Bird Damage Project Report (MBDPR). The Operations Manager, or designee, is responsible for the required annual renewal of the depredation permit. The MBDPR report details the type and quantity of species taken under the permit.

4.5.2 Damage and Nuisance Animal Control Permit

The Michigan DNR has issued a permit to the Authority to take specific game mammals and avian that are regularly observed on the airport. The Operations Manager, or designee, is responsible for maintaining the permit and submits reports as required under the permit.

4.6 Threatened and Endangered Wildlife

The Federal Endangered Species Act (Sec. 2 [16 U.S.C. 1531]) and Michigan Endangered Species Act both protect animal and plant species potentially threatened with extinction. These acts classify species as endangered or threatened. An "Endangered Species" is defined as "any species or subspecies which is in danger of extinction throughout all or a significant portion of its range." A "Threatened Species" is defined as "any species or subspecies which is in danger of becoming an endangered species within the foreseeable future throughout or over a significant portion of its range." Once listed, a threatened or endangered species cannot be taken or harassed without a special permit. Eagles are also afforded protection under the U.S. Eagle Protection Act. In Michigan, additional species may be given special protection by being listed as State threatened or endangered species. If a significant hazard exists with a listed species that jeopardizes air safety, either the USDA-WS or the Michigan DNR, depending on the protective status of the species involved, will be contacted for assistance. In many cases, only personnel from these or other agencies may obtain a permit to take individuals of a T & E species.

The USDA-WS and Michigan DNR maintain lists of endangered and threatened species. Appropriate Authority wildlife control personnel are familiarized with these lists and trained with respect to the regulatory permitting requirements for and special restrictions associated with the management of these species.

5 - Resources

FAR 139.337(f)(4)

5.1 Supplies

Habitat management and wildlife control supplies will be maintained for use by trained personnel as necessary. Supplies that will normally be maintained in the vehicles and/or stocked at the airport include:

- 15 mm pyrotechnic pistol launchers (for bangers, screamers, and whistlers)
- 12 gauge shotgun and ammunition
- Rifle w/ scope
- Cleaning kits for all firearms
- Field guide for bird identification
- Snare/catch pole
- Binoculars
- Latex gloves
- Garbage bags
- Mineral oil
- Waders
- Rodent gas cartridges
- Live and lethal traps

5.2 Authority Vehicles

The Airport Operations and Airport Police vehicles are stocked with appropriate supplies in order to respond immediately to wildlife hazards. They respond as necessary to disperse and/or take wildlife utilizing appropriate supplies. These vehicles are also equipped with lights and sirens, which are also used to disperse wildlife as appropriate.

5.3 USDA Wildlife Services

The Authority currently has a Cooperative Service Agreement with the USDA WS to provide expert wildlife hazard management advice and/or services to the Authority as needed.

5.4 Kent County Animal Control

Kent County Animal Control may assist with free-ranging dogs and cats. If the animal poses an immediate threat to aviation, wildlife control personnel will attempt to catch, disperse, or lethally remove it.

6 - Wildlife Control Procedures

FAR 139.337(f)(5)

6.1 Inspections

Airport Operations personnel conduct inspections of the airport in accordance with CFR Part 139 requirements, including inspections for the presence of wildlife and wildlife attractants (food sources), standing water, grass heights and other vegetation growth and the AOA fence lines and gates. Special inspections are also conducted as appropriate (e.g. following a bird strike, addressing seasonal presence of certain species, responding to pilot reports of wildlife, etc.). Inspection results are documented in accordance with the following section.

6.2 Record Keeping

Airport Operations personnel document all significant wildlife conditions and events, such as strikes, dispersals, takings, and unusual hazardous conditions or activities. Any animal or bird carcass that is recovered within 250' of a runway centerline is also reported via FAA Form 5200-7. Wildlife incidents that affect flight or damage an aircraft are also documented as an Operations Incident Report. Feathers of unidentifiable birds may be sent to the Smithsonian Institution Feather Lab for positive identification.

6.3 General Control

Wildlife behavior is extremely variable and is dependent on multiple factors, including species, season and weather. Therefore, the Authority utilizes flexible, innovative, and adaptive measures in managing the wildlife. When wildlife does not satisfactorily respond to habitat management or hazing efforts, frequency of efforts and/or methods used will increase incrementally until such measures are effective or until all reasonable measures have been exhausted, including lethal control measures.

6.4 Bird Control

According to GRR's most recent Wildlife Hazard Assessment, nearly all of the top 25 Relative Hazard Score species were observed at GRR with varying degrees of prevalence throughout the year.

Airport Operations personnel disperse (haze) wildlife utilizing resources described earlier. Airport Operations may take wildlife or coordinate takings with Airport Police Officers or other staff when non-lethal measures become ineffective or if the hazard warrants immediate lethal action. Takings are conducted in accordance with applicable permits utilizing resources described earlier.

Live traps may be used to control the presence of various species. Target species will then

either be relocated or destroyed in accordance with permit requirements when applicable.

Toxicants (zinc phosphide on wheat, e.g.) may be used to take targeted wildlife. This and other poisons may be used for the taking of wildlife in accordance with manufacturer recommendations or in close consultation with USDA-WS personnel.

Eggs that are discovered may be treated with mineral oil or shaken so as to covertly destroy the embryos.

Exclusion methods (e.g., grid systems, net systems, fencing) may be employed when appropriate.

The Operations Manager, or designee, may also contact the USDA WS to take or relocate a species.

6.5 Animal Control

The airport maintains perimeter fence lines and gates to prevent larger animals from accessing the AOA. Portions fence lines are supplemented with skirting attached to the bottom of the fence fabric to prevent larger animals from digging under the fence. Airport Operations personnel will harass these animals if they are posing a threat to movement areas and may also take animals when hazing efforts fail or if the hazard warrants taking the animal.

Smaller mammals (e.g., ground hogs) are occasionally observed on the AOA. Airport Operations may perform or coordinate mammal takings with Field Maintenance personnel (gassing burrows) and Airport Police (shooting).

Lethal traps may be used to control the presence of various species.

Live traps may be used to control various species. Target species will then either be relocated or destroyed.

The Operations Manager, or designee, may contact USDA WS or Kent County Animal Control to relocate or take wildlife as necessary.

6.6 Coordination of Control Efforts with ATC

Airport Operations personnel are equipped with radios and have had proper training to effectively communicate with FAA ATC personnel. Airport Operations will ensure that ATC is advised and aware of any dispersal operation that could impact any aircraft operation before commencing control measures and will advise ATC when the operation is completed. No dispersal method shall be employed in critical airfield areas immediately prior to or during aircraft departures or arrivals. Should wildlife present an immediate hazard to aircraft operations, Airport Operations will so advise ATC and, if necessary, close those portions of the AOA that are not safe until the problem is corrected as necessary. NOTAMs shall be issued as appropriate.

7 - WHMP Evaluation and Review

FAR 139.337(f)(6)

The plan will be reviewed every 12 consecutive calendar months or following a "triggering event", such as if an air carrier aircraft experiences multiple strikes; an air carrier aircraft experiences substantial damage from striking wildlife, or an air carrier aircraft experiences an engine ingestion of wildlife. The review will include the status of projects that may increase the presence of wildlife, including project completion dates.

WHMP records will be reviewed regularly to identify trends in wildlife hazards. The Authority, working with USDA WS, will address negative trends and determine appropriate measures to control the wildlife hazard.

8 - Training

FAR 139.337(f)(7)

8.1 General

Airport Operations personnel undergo initial and recurrent training every 12 consecutive calendar months according to their roles and responsibilities outlined in the WHMP. The Authority may obtain special training from the USDA WS and other expert sources (e.g., specialty conferences) regarding applicable Federal and State law, wildlife identification, habitat modification and management, effective dispersal and taking techniques, appropriate use of insecticides or other topic relative to wildlife management.

Basic provisions for appropriate wildlife management (e.g., prohibitions on littering, bird feeding and open refuse containers) are included in the Airport Rules and Regulations, which apply to everyone on airport property.

8.2 Airport Operations

Airport Operations personnel are provided initial and recurrent training every 12 consecutive calendar months by a qualified airport wildlife biologist or by a person that has been trained by a qualified airport wildlife biologist in accordance with AC 150/5200-36. The training includes, but is not limited to, the following items:

- Identification of indigenous wildlife to GRR
- Habitat management objectives as outlined in the WHMP
- Wildlife depredation permits issued to the Authority
- Basic Federal and State laws governing certain wildlife
- Safe and effective dispersal techniques
- The safe use of equipment used to control wildlife
- Coordination of wildlife control measures with other Authority personnel
- Coordination of wildlife control measures with ATC
- Record keeping and reporting protocol

Airport Operations may coordinate with Airport Police to assist with wildlife takings. Airport Police are fully trained in the use of firearms and adhere to section procedures governing the use of firearms for wildlife control. They are also familiarized with the provisions of wildlife depredation permits issued to the Authority.

Airport Operations may coordinate with Field Maintenance to assist with live and lethal trapping of wildlife and to apply insecticides to control food sources for specific wildlife.

8.3 Airport Police

Airport Police Officers are provided initial and recurrent training every 12 consecutive calendar months by a qualified member of the Operations staff. The training includes, but is not limited to, the following items:

- Identification of the most hazardous wildlife observed at GRR
- Wildlife depredation permits issued to the Authority
- Basic Federal and State laws governing certain wildlife
- Safe and effective dispersal techniques
- Reporting observed wildlife to Operations Officers
- Procedures for using firearms for wildlife control

8.4 Field Maintenance

Field Maintenance personnel are provided initial and recurrent training every 12 consecutive calendar months by a qualified member of the Operations staff. The training includes, but is not limited to, the following items:

- Identification of indigenous wildlife to GRR
- Habitat management objectives as outlined in the WHMP
- Wildlife depredation permits issued to the Authority
- Safe and effective dispersal techniques
- Reporting observed wildlife to Operations Officers

8.5 Planning Engineer

Planning Engineer is provided initial and recurrent training every 12 consecutive calendar months by a qualified member of the Operations staff. The training includes, but is not limited to, the following items:

- Habitat management objectives as outlined in the WHMP

Attachment B

Wildlife Hazard Management Plan

Wildlife Hazard Assessment

Gerald R. Ford International Airport
Grand Rapids, Michigan

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Contents

Acronyms

AC	Advisory Circular
AOA	Airport Operations Area
ATCT	Air Traffic Control Tower
BGEPA	Bald and Golden Eagle Protection Act
GRR	Gerald R. Ford International Airport Authority
CFR	Code of Federal Regulations
DNR	Department of Natural Resources
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
MBTA	Migratory Bird Treaty Act
USFWS	United States Fish and Wildlife Service
WHA	Wildlife Hazard Assessment
WHMP	Wildlife Hazard Management Plan
USDA	United States Department of Agriculture

Chapter 1 Introduction

1.1 Need for a Wildlife Hazard Assessment at Gerald R. Ford Airport Authority

GRR had a WHA completed in November 2002 by Environmental Associates. However the need to update this WHA is necessary due to time lapse from the last WHA. GRR has also incurred wildlife strikes that fall under the FAA "triggering events" identified by 14 CFR 139.337 (Appendix B). The criteria for a trigger event are as follows;

1. An air carrier aircraft experiences multiple wildlife strikes
2. An air carrier aircraft experiences substantial damage from striking wildlife
3. An air carrier aircraft experiences an engine ingestion of wildlife
4. Wildlife of a size, or in numbers, capable of causing an event described in paragraph (1), (2), or (3) of this section is observed to have access to any airport flight pattern or aircraft movement area

In October 2015, Wildlife Services entered into a Cooperative Service Agreement with Gerald R. Ford Airport Authority for the purpose of conducting a Wildlife Hazard Assessment (see Appendix E). This report is the conclusion of the assessment.

1.2 Objectives

The objectives of this WHA are to:

1. Identify avian and mammalian species, numbers, locations, movements, activity, habitat use, and daily/seasonal occurrences on and adjacent to GRR
2. Identify habitats/land uses attractive to wildlife on and adjacent to GRR
3. Describe wildlife hazards documented at GRR to airport personnel
4. Provide GRR with management recommendations for reducing and/or eliminating wildlife hazards and establish a framework for developing GRR's WHMP

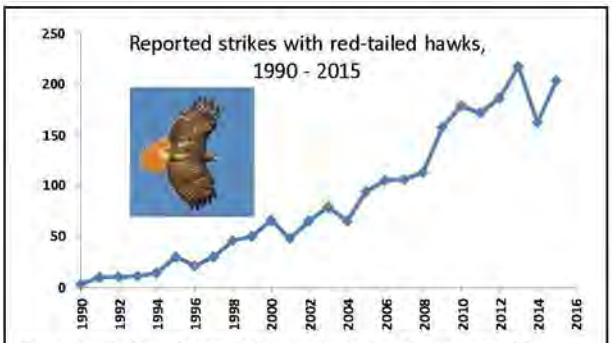
1.3 Overview of Wildlife Hazards to Aircraft

Conflicts between aircraft and wildlife have occurred since the dawn of aviation. Orville Wright documented the first known bird strike during a flight over Dayton, Ohio, in 1905. The first fatality associated with a wildlife strike occurred on April 3, 1912. Calbraith Rodgers, the first man to fly across the United States, died after his aircraft struck a gull and crashed in Long Beach, California (Thorpe 1996).

The number of strikes annually reported to the FAA has increased 7.4-fold from 1,847 in 1990 to a record 13,795 in 2015. The 2015 total was an increase of 103 strikes (<1 percent) compared to the 13,692 strikes reported in 2014. For 1990–2015, 169,856 strikes were reported (166,276 in USA and 3,580 strikes by U.S.-registered aircraft in foreign countries). In 2015, birds were involved in 95.8 percent of wildlife strikes.

Several factors have evolved in recent years to affect the relationship between wildlife and aviation safety. Important factors include:

1. The use of faster and quieter aircraft. Commercial air carriers have replaced their older three- or four-engine aircraft fleets with more efficient, faster, and quieter two-engine aircraft. In many cases, birds are less able to detect and avoid new aircraft using turbofan engines. In the event that wildlife is ingested by aircraft engines, aircraft with two engines may be more vulnerable than earlier aircraft equipped with three or four engines (FAA, 2012).
2. Increased air traffic. Passenger enplanements in the USA increased from about 495 million in 1990 to 705 million in 2000 and 780 million in 2015. Commercial air traffic in the USA increased from about 23.3 million movements in 1990 to a peak of 29.5 million movements in 2000. Since 2000, commercial air traffic has declined to 24.6 million movements in 2015.
3. Increased wildlife populations and adaptation to urban areas. The populations of many large bird species like Canada geese and Red-tailed hawks have increased markedly in the last three decades (FAA 2011). As development has increased, the availability of natural or open areas that support these species has decreased. In addition, the size of the areas that once separated airports and nearby metropolitan areas also has decreased. As a result, the remaining open space provides habitat, shelter, and feeding areas for greater populations of wildlife (FAA 2011).



The red-tailed hawk population in North America increased by 50% from 1990-2015 (Sauer et al, 2016). The number of reported strikes peaked at 217 in 2013 and was 203 in 2015. Hawk photo courtesy of: www.simply-san-juan.com.

As a result of these factors, ongoing changes in the aviation industry, ongoing development, and changes in land use, the number of wildlife strikes on and near airports continues to increase worldwide. The FAA wildlife strike database includes records for more than 169,856 wildlife strikes during the 25-year period from 1990 and 2015, but the FAA estimates that the database represents only a portion of the actual number of bird strikes that occurred during this period (FAA 2014). The FAA estimates that the database includes approximately 39% of the actual number of strikes that have occurred since 2009, and an even smaller percentage for the period from 1990 to 2009. Based on FAA strike records, most wildlife strikes occurred in the immediate airport vicinity during aircraft

approach or departure and at altitudes of less than 3,000 feet above ground level (AGL) (FAA 2011, FAA 2012).

1.3.1 Safety Effects

For the 26-year period from 1990 through 2015, reports were received of 68 aircraft destroyed or damaged beyond repair due to wildlife strikes. The majority (43; 63 percent) were small (<2,250 kg maximum take-off mass) general aviation (GA) aircraft. Terrestrial mammals (primarily white-tailed deer) were responsible for 31 (46 percent) of the incidents. Canada geese (5 incidents) and vultures (4 incidents) were responsible for 41 percent of the 22 incidents involving birds in which the species or species group was identified.
The FAA's most recent analysis on wildlife strikes to civil aviation in the U.S. addresses the period from 1990 through 2015 using FAA wildlife strike database records. According to the strike records, a total of 11,881 strikes (approximately 9% of the total number of bird strikes) resulted in aircraft damage. A total of 3,003 aircraft sustained substantial damage and 60 aircraft were destroyed (FAA 2015).

For the 26-year period, reports were received of 12 wildlife strikes that resulted in 26 human fatalities. Six of these strikes resulting in 8 fatalities involved unidentified species of birds. Red-tailed hawks (8 fatalities), American white pelicans (5), Canada geese (2), and white-tailed deer, brown-pelicans, and turkey vultures (1 each) were responsible for the other 18 fatalities. Reports were received of 229 strikes that resulted in 400 human injuries. Waterfowl (ducks and geese; 53 strikes, 159 humans injured), vultures (34 strikes, 42 injuries), and deer (20 strikes, 29 injuries) caused 107 (58 percent) of the 183 strikes resulting in injuries in which the species or species group was identified. Canada geese caused 117 (35 percent) of the 339 injuries in which the species or species group was identified (FAA 2015).

1.3.1 Economic Losses

Wildlife strikes also can pose economic challenges to aircraft operators. Wildlife strikes may cause expensive structural and mechanical damage to aircraft even if they do not result in a crash (Blokpoel 1976; Cleary and Dolbeer 2005). The aircraft components most commonly reported as struck by birds from 1990 through 2015 were the nose/radome, windshield, wing/rotor, engine, and fuselage. Aircraft engines were the component most frequently reported as being damaged by bird strikes (28 percent of all damaged components) (FAA 2015).

Of the 24,478 reports from 1990 through 2015 that indicated the strike had an adverse effect on the aircraft and/or flight, 8,911 provided an estimate of the aircraft downtime (949,768 hours). Regarding monetary losses, 3,945 reports provided an estimate of direct aircraft repair costs ($649.3 million), and 2,962 reports gave an estimate of other monetary losses ($81.7 million). Other monetary losses include

such expenses as lost revenue, the cost of putting passengers in hotels, re-scheduling aircraft, and flight cancellations (FAA 2015).

1.4 Regulatory Background

FAR Part 139 addresses wildlife hazard management because it is a safety issue. To ensure compliance with Title 14, CFR Part 139.337b, the FAA requires the operator of a certificated airport to conduct a Wildlife Hazard Assessment (WHA), and if necessary, prepare a Wildlife Hazard Management Plan (WHMP) when a "triggering event" occurs on or near the airport. See Appendix B for clarification of "trigger events".

1.4.1 Wildlife Hazard Assessment

If one or more of the conditions identified in CFR Part 139.337b occurs, an airport operator must perform a WHA. The performance of a WHA is the first step in developing a more complete and site-specific understanding of wildlife hazards at an airport. The WHA must be conducted by a qualified wildlife biologist who meets the requirements of Advisory Circular 150/5200-36A, "Qualifications for Wildlife Biologists Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards at Airports" (FAA 2012, see Appendix C). In October 2015, Wildlife Services entered into a cooperative service agreement with GRR for the purpose of conducting a wildlife hazard assessment.

A WHA includes 12 months of ongoing wildlife monitoring to identify the presence of wildlife species, especially migratory birds, and seasonal fluctuations in the behaviors and abundance of species that occur at the airport and in its vicinity. Based on the results of the 12-month monitoring effort, specific measures or recommendations are formulated to reduce wildlife hazards at the airport.

To fulfill regulatory requirements, a WHA must be conducted in accordance with the protocols set forth by the FAA in CFR Part 139.337 and the FAA's Wildlife Hazard Management Manual. Pursuant to CFR Part 139.337, a WHA must address the following:

1. An analysis of the events or circumstances that prompted the assessment. In this case, numerous wildlife strikes have occurred, the presence of hazardous wildlife persists, and a formal WHA has not been done, together prompted the need for a WHA.
2. Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences. There are two primary sources for this information:

a. Thorough review of available wildlife strike records associated with the airport and;

b. Field studies to determine wildlife population including such factors as: abundance, seasonal fluctuations, movement patterns, behaviors, and periods of activity, with a particular emphasis on the species most threatening to aircraft safety.

3. Identification and location of features on and near the airport that attract wildlife. The WHA must identify potential habitat for wildlife attractants on the airport and within the airport vicinity.

4. A description of wildlife hazards to air carrier operations.

5. Recommended actions for reducing identified wildlife hazards to air carrier aircraft. The WHA must provide specific recommendations for reducing wildlife hazards to air carrier operations. The prioritized recommendations will serve as a framework for the development of a WHMP, should the FAA Administrator determine that one is necessary.

1.5 Wildlife Hazard Management Plan

When a completed Wildlife Hazard Assessment is submitted by the airport to the FAA for review and approval, the FAA will use it to determine if the airport must do a Wildlife Hazard Management Plan. In reaching this decision, the FAA will consider the Assessment, the aeronautical activity at the airport, the views of the certificate holder and airport users, and any other pertinent information (14 CFR 139.337 (d)(1–6)).

The goal of an airport's Wildlife Hazard Management Plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport. The Plan accomplishes this through the identification of hazardous wildlife and their attractants, suitable proactive and reactive management techniques, necessary resources and supplies to successfully implement a wildlife hazard management program and personnel responsibilities and training requirements. Appropriate federal, state and possible local wildlife control permits should be identified as well as a schedule and methodology to evaluate and update the Plan.

Chapter 2: Airport Setting

2.1 Airport Location

GRR is located in Kent County, Michigan, and is approximately 9 miles from downtown Grand Rapids. GRR is Michigan's second largest airport serving 24 domestic cities and in 2016 breaking its passenger enplanement record with 1,333,956 passengers departing GRR. The facility also is a ramp location for FedEx. The area surrounding the airport is a mix of woodlands, agricultural fields, residential areas and industrial parks. The Thornapple Pointe golf course and the Thornapple River are located to the east of GRR.

Figure 2.1. Aerial photo of GRR

2.2 Adjacent Habitat

The AOA at GRR is contained by a series of perimeter fencing material which serves the dual purpose of airport security and wildlife deterrent. Fencing types range from 10' chain link, to 12' chain link. The fence is well maintained and does provide good exclusion for wildlife species such as deer.

Within its perimeter fence GRR comprises approximately 3,127 acres. There are two large wetlands inside the perimeter fence that are nine acres or greater. The majority of the land cover is open grass, maintained at different mowing regimens.

The airport includes large areas of mowed fields. Additionally the airport and its immediate vicinity provide a combination of woodlots, shrubs, fruit, nuts, and other seed-producing plants, and water sources. Of particular concern is the 20 plus acre wetland located to the east of runway 17/35. This wetland offers a diverse landscape for wildlife. There also is a nine acre wetland to the south of runway 8L/26R. These wetland hold varying amount of water through the year. Additionally there are several wetlands on airport property located outside the perimeter which are also attractants.

Offsite attractants include the Thornapple River to the east as well as surrounding agricultural fields to the south and east of GRR. Large numbers of deer have been documented on airport property outside the AOA to the southeast of the airfield in between the Paul B Henry Freeway and the airport.

2.3 Wildlife Strike Data

In 1992, Bird Strike Committee Canada developed a wildlife strike definition that has been adopted by the FAA, International Civil Aviation Organizations (ICAO), Bird Strike Committee USA, Bird Strike Committee Europe, and the U.S. Air Force. Under this definition, a wildlife strike is considered to have occurred if:

1. A pilot reports a strike.

2. Aircraft maintenance personnel identify damage as having been caused by a bird or mammal strike.

3. Personnel on the ground report an aircraft strike of one or more bird(s) or mammal(s).

4. Bird or mammal remains are found on any movement area or within 250 feet of a runway, unless other mortality factors are identified.

Wildlife strike data provides information to airport personnel about wildlife hazards, including species struck and daily/seasonal trends. From 1990 to 2015, 169,856 strikes were reported to the FAA, including 529 bird species, 43 terrestrial mammal species, 22 bat species, and 18 reptile species (FAA 2016). From 1990 through 2015, the majority of bird strikes (52%) occurred between the months of July and October. Most bird strikes (63%) occurred during daylight hours, whereas 63% of terrestrial mammal strikes occurred at night. (FAA 2016). Sixty-eight aircraft have been destroyed by wildlife strikes, of which 60% occurred at GA airports (FAA 2016).

Table 1. Documented wildlife strikes with civilian aircraft in the U.S. from 1990 to 2014[1].

Wildlife Group	Total Strikes	Damaging Strikes	Total Cost ($)
Birds	151,267	12,982	643,517,150
Terrestrial Mammals	3,360	1,055	60,112,366
Bats	1,264	11	4,591,626

[1] Taken from Dolbeer et al. 2015

Wildlife strike rates (the number of strikes per number of aircraft movements) can provide a useful index for assessing the severity of wildlife hazards at a given airport and for monitoring the effectiveness of wildlife management actions. Consequently, understanding the correlation between aircraft operations and accurate collection of wildlife strike data must be a priority for airport managers. Wildlife strike statistics based solely on pilot reports are generally unreliable and yield incomplete information because most pilots do not report strikes (Linnell et al. 1999). Additionally, the proportion of strikes reported by pilots often varies due to factors such as decreased pilot awareness of birds during critical phases of flight, animal size, flock size, weather conditions, time of day, or heightened pilot awareness during migratory seasons (Linnell et al. 1999). By collecting the remains of wildlife found on runways during routine runway inspections, airport managers can obtain information that would have otherwise been unavailable providing a more accurate assessment of actual wildlife strike events and species at any particular airport.

In addition to the wildlife observations made during the observation period, wildlife strike data can be an important resource for airport personnel when determining how to deal with wildlife on the airport. Quality strike data can be useful to show what type of species are present, being struck, and causing damage. Also trends may be revealed over time indicating problems involving certain species which may be increasing or decreasing. For these reasons, an analysis of the FAA Wildlife Strike Database was conducted for the time interval starting with September 2003 through April 2016 which is the most current data available on the FAA Wildlife Strike Database. Information utilized can be found at: http://wildlife.faa.gov/database.aspx Each category of wildlife species was considered separately and the results of the review are included in each section. In total there have been 411 strikes reported to the database in this time frame (FAA 2016).

Figure 2.2. Reported Wildlife Strikes at GRR from September 2003 through April 2016 (FAA 2017).

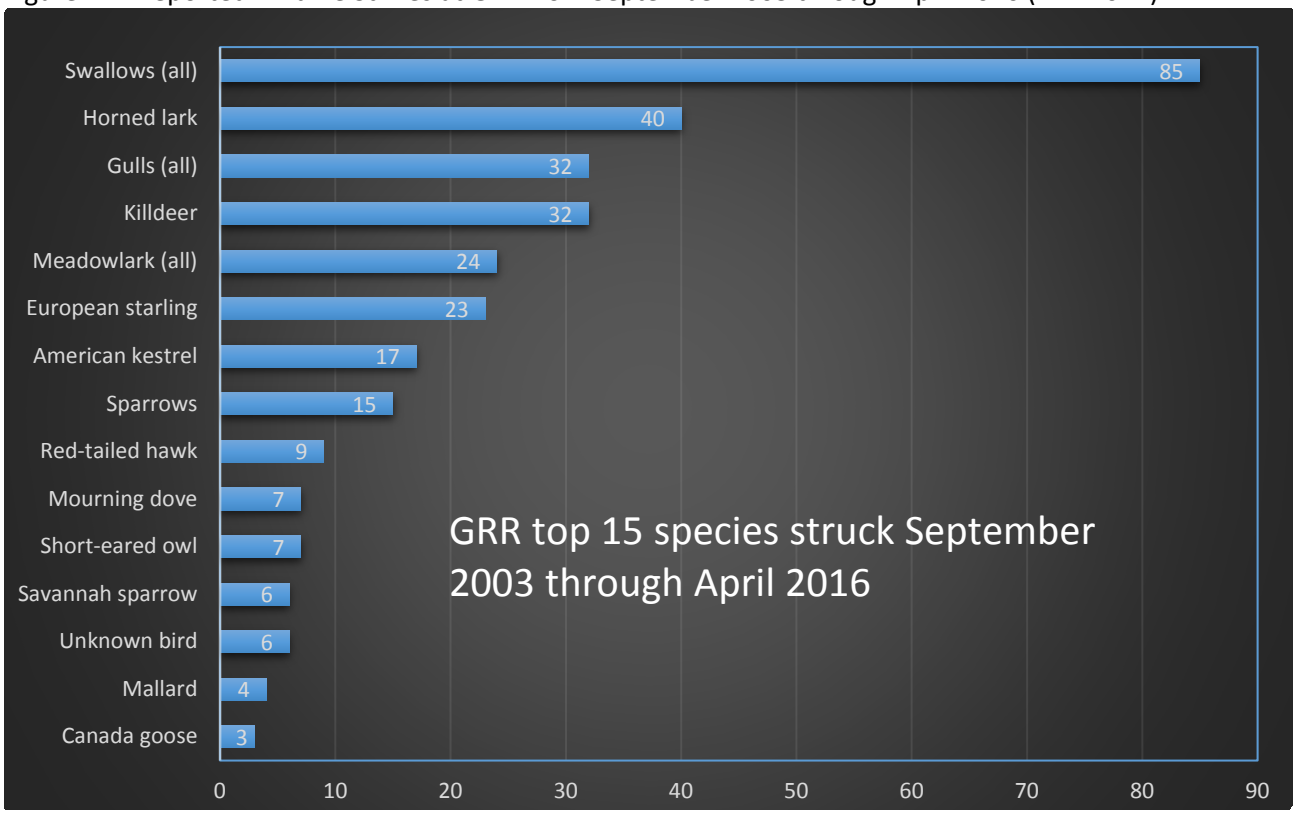


Figure 2.3. Reported Wildlife Strikes at GRR from September 2003 through April 2016 last (FAA 2017).

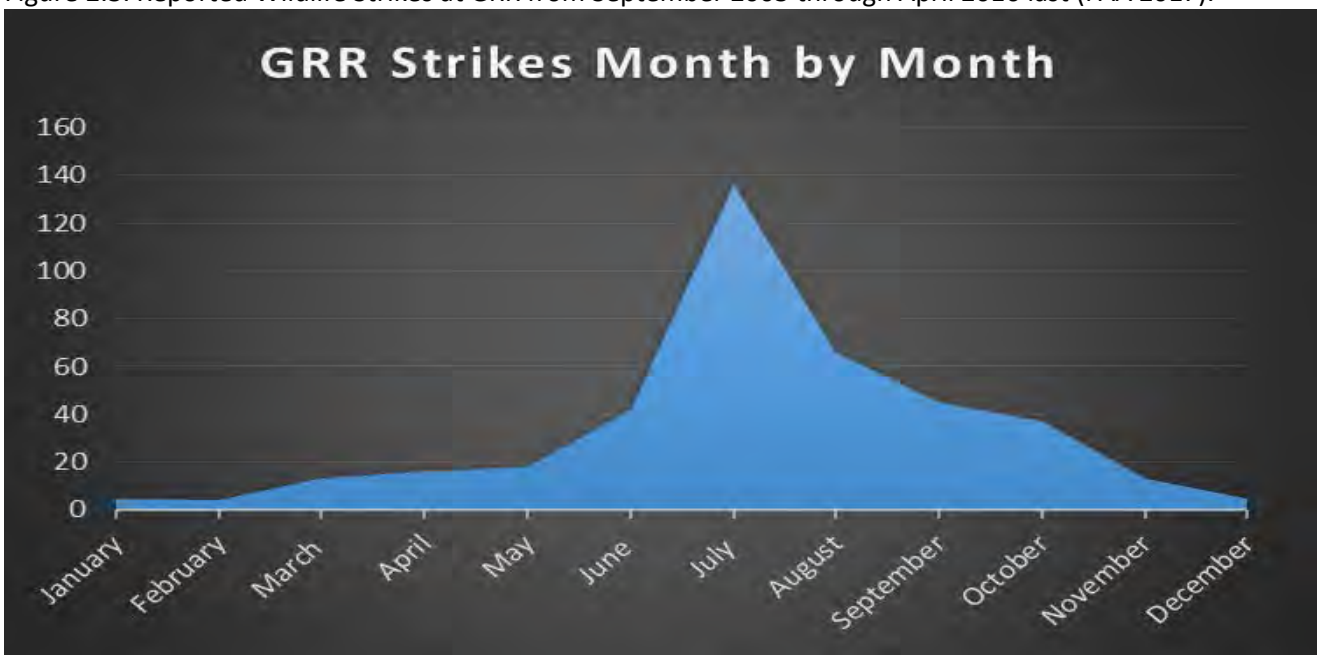


Figure 2.4. Reported strikes causing Minor damage (FAA 2017).

Figure 2.5. Reported strikes causing Minor and Substantial damage (FAA 2017).

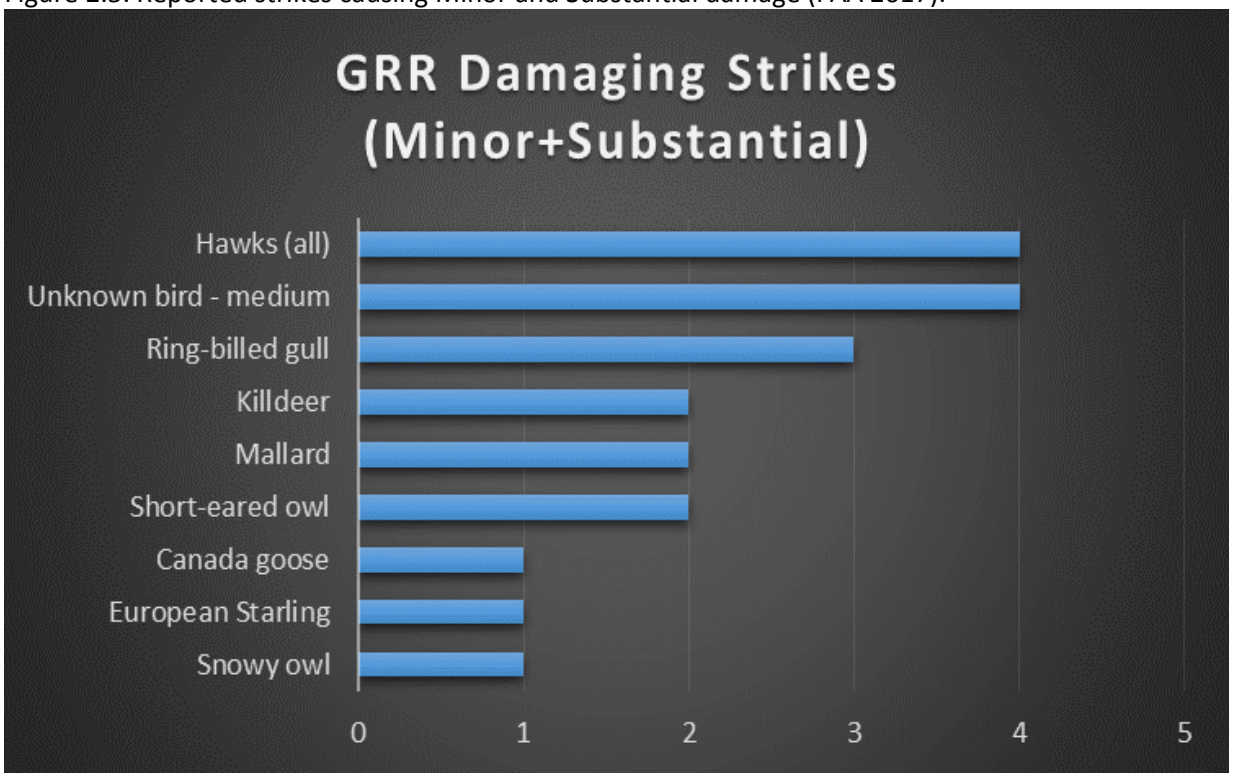


Figure 2.6. Reported Wildlife Strikes causing substantial damage (FAA 2017).

Date	Airline	Plane	Species
6/29/2009	NORTHWEST AIRLINES	DC-9-30	Mallard
3/22/2009	FEDEX EXPRESS	A-310	Snowy owl
7/9/2002	TRANS STATES AIRLINES	BA-41 JETSTR	Killdeer
5/20/1999	CHAUTAUQUA AIRLINES	BA-31 JETSTR	Unknown bird - medium

Chapter 3: Methods

The monitoring locations associated with the 12-month WHA study were selected to identify and document the presence of species that spend time in the local environment. Monitoring locations (points) were specifically placed in areas where the majority of species were likely to frequent. The overall goal of the monitoring effort was to record all the species that have the potential—directly or indirectly—to increase the risk of interaction with aircraft or attract other species that could negatively impact airport operations.

Field work for the WHA was accomplished through three tasks that were performed during the period from January 2016 through December 2016. These tasks included:

- Twice monthly monitoring events focusing on avian wildlife
- Two nocturnal wildlife surveys using a FLIR (Forward Looking Infrared Camera) were used to index the abundance and composition of mammals

Sections 3.1 through 3.3 summarize the methods used to conduct these tasks.

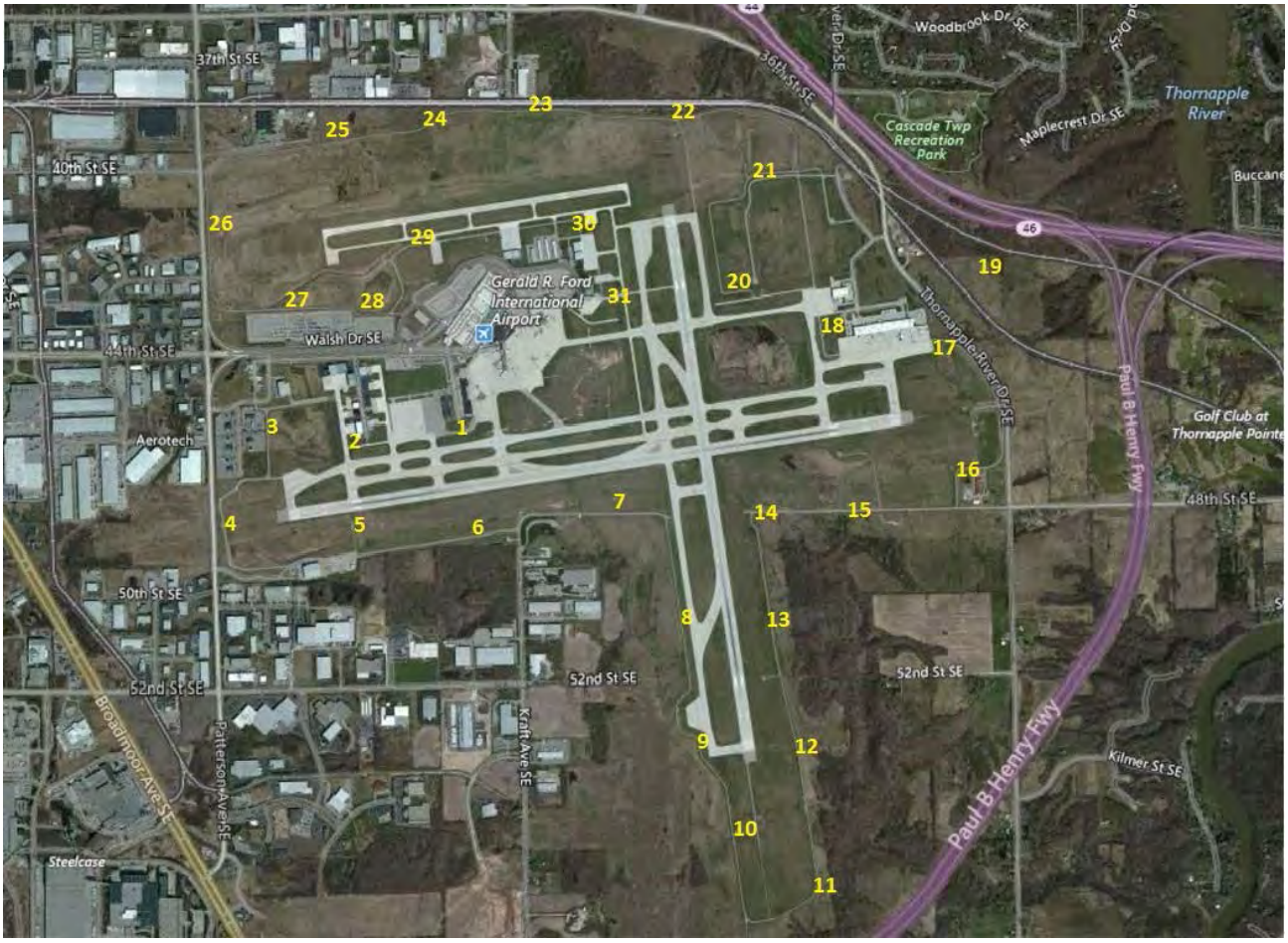
3.1 Preliminary Site Reconnaissance Visit

Preliminary site visits are performed to identify potential wildlife attractants and monitoring locations for project surveys. In accordance with FAA AC 150/5200-33B, "Wildlife Hazard Attractants on and Near Airports", the project team considered the area within 10,000 feet of the airport when identifying monitoring locations for the surveys. The preliminary site visit was not performed as Wildlife Services was able to identify monitoring points during routine visits under the previously established Cooperative Service Agreement for wildlife hazard mitigation services.

3.2 Wildlife Surveys

Diurnal and nocturnal wildlife surveys were conducted at GRR each month for 12 consecutive months from January 2016 through December 2016. Survey methods, based on the standardized USFWS Breeding Bird Survey, consisted of observing wildlife activity for 3-minute intervals at each of the 31 designated survey stations, points herein, as well as while traveling between points to document wildlife species occurrence on the entire airfield. Collectively, all survey points were selected to cover the airfield property. Wildlife surveys consisted of recording spatial coordinates, date, time, species observed, number observed, habitat and wildlife activity or behavior (ex. flying, perching, feeding, or vocalizing) using a Trimble® GPS mobile mapping unit along with ArcPad version 8.0 data collection software (Environmental Systems Research Institute 2009). Field optics (binoculars, spotting scopes, and thermal imagery) were used to identify wildlife species and count individuals. Smaller bird detectability decreases substantially at farther distances, thus small songbirds were only detected when observed or heard at close range. Consequently, the number of small, solitary birds may have been underestimated.

Figure 3.1. Standardized survey locations at Gerald R. Ford International Airport



3.3 Nocturnal Wildlife Surveys

Nocturnal surveys were conducted each month at GRR. These surveys occurred during the hours of one hour after sunset and complete by midnight. Specifically, a Forward Looking Infrared (FLIR) camera was used to observe mammalian activity, and to some degree avian activity. Nocturnal surveys did not follow the wildlife survey protocol. Instead, nocturnal surveys were conducted by slowly driving the perimeter roads to view wildlife activity on the airfield.

3.4 Data Analysis

Data analyses were conducted using Microsoft Excel® to determine wildlife population indices of abundance and frequency of observations among the survey periods and during the 12 consecutive months of this WHA. Furthermore, daily and seasonal wildlife trends were identified for each guild to represent temporal wildlife activity at GRR. In addition, ArcGIS 10.1 (Environmental Systems Research Institute 2012) was used to display spatial locations of wildlife observed and to provide wildlife incidence mapping on and

near the airfield. Results of these analyses are intended as spatial and temporal wildlife indices from January 2016 through December 2016 and not as wildlife population estimates of abundance or density for GRR. However, for purposes of this WHA, abundance is defined as the total number of animals counted during an observation or the total number counted among all observations and/or subset (i.e. Month, Survey Period, and Guild). An observation is one account, or incident, of wildlife observed whether one individual or multiple individuals of a particular species.

Chapter 4: Results

4.1 Ranking of Wildlife Hazards

Not all wildlife is equally hazardous to aviation. In consideration of this, there are guidelines that can be followed in order to effectively analyze the comparative threats posed by various species of wildlife.

The conventional guideline in assessing threats posed by birds considers three priorities. They are, in descending order of severity, 1) large flocking birds such as gulls or waterfowl, 2) small flocking birds such as starlings and 3) large singular birds such as hawks or herons. The rationale for this is that large birds, due to their greater body mass can strike an airplane with a much higher impact and thereby cause more damage. Not only do birds that congregate in large flocks provide increased opportunities for a strike compared to solitary birds, flocking birds have the capacity to disable more than one engine.

A more scientific analysis of the comparative hazards of various wildlife species was provided in a study by Richard A. Dolbeer, (2000) entitled “Ranking the hazard level of wildlife species to aviation”. This study reviewed 18,083 wildlife strikes reported in the United States from 1991-1998 to compare the relative hazards to aviation presented by different wildlife species. The analysis was then updated with additional data from 1998 -2003 and included in the report “Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA” (Dolbeer et. al. 2003). It considered not only the number of strikes caused by each species but also the severity of damage caused and the resulting effect on the flight of the impact. The wildlife species that was determined to be most hazardous, deer, was arbitrarily assigned a hazard value of 100. All other wildlife species were then assigned a numerical value in proportion to its risk compared to that of deer. A numerical ranking of relative hazards was developed which somewhat reinforces the conventional guidelines. In general, this formula also recognizes a greater threat of large-bodied wildlife. A summary of the relative hazards to aviation is included here in Table 4.1.

Table 4.1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003.[1]

Species group	Ranking by criteria			Composite ranking[2]	Relative hazard score[3]
	Damage[4]	Major damage[5]	Effect on flight[6]		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Herons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. lark/s. bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

[1] Excerpted from the *Special Report for the FAA, "Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA: Update #1, July 2, 2003".* Refer to this report for additional explanations of criteria and method of ranking.

[2] Relative rank of each species group was compared with every other group for the three variables, placing the species group with the greatest hazard rank for ≥ 2 of the 3 variables above the next highest ranked group, then proceeding down the list.

[3] Percentage values, from Tables 3 and 4 in Footnote 1 of the *Special Report*, for the three criteria were summed and scaled down from 100, with 100 as the score for the species group with the maximum summed values and the greatest potential hazard to aircraft.

[4] Aircraft incurred at least some damage (destroyed, substantial, minor, or unknown) from strike.

[5] Aircraft incurred damage or structural failure, which adversely affected the structure strength, performance, or flight characteristics, and which would normally require major repair or replacement of the affected component, or the damage sustained makes it inadvisable to restore aircraft to airworthy condition.

[6] Aborted takeoff, engine shutdown, precautionary landing, or other.

4.2 Definition of Hazard Ranking

Wildlife at GRR can be separated into three hazard priority groups: critical, high, and moderate. Determination was made based on several factors including observation data such as abundance and duration, nature of the wildlife (size, body density, proximity to aircraft movement areas), strike data analysis and relative hazard ranking by Dolbeer et al. (2003). The most hazardous groups of wildlife are large bodied birds which tend to fly in flocks, followed by smaller bodied birds which may or may not flock together, and lastly smaller, singular birds. All three levels present serious strike risks to aircraft and warrant attention. Additionally, any wildlife present in excessive numbers, extended duration of time, with large body size or is observed in close proximity to the aircraft movement areas would be considered a critical risk.

1. **Critical:** Wildlife species that present the most serious threats and should always be considered the highest priority for action. Generally, birds in this category are larger bodied and have flocking tendencies.
2. **High:** Wildlife species which are not present in as high of numbers, observed less frequently on the airfield, may have smaller body sizes, or do not have large flocking tendencies as those included in the Critical category.
3. **Moderate:** Wildlife species which are seen in fewer numbers, have smaller bodies, or occupy the airfield for shorter periods of time. Species in this category tend to be struck infrequently or seldom incur damage.

Table 4.2. Summary of Species' Category Ranking

Category	Species Included
Critical	deer, turkey vultures, geese, ducks, cranes, swans, wild turkeys
High	gulls, coyotes, large flocks of starlings, hawks, pigeons, mourning doves,
Moderate	meadowlarks, swallows, sparrows, American kestrels, horned larks and snow buntings, shorebirds

4.3 Wildlife Survey Results

During the WHA survey, 21 of the 25 species groups of wildlife (as ranked according to Dolbeer et. al. 2003) were identified. These groups are depicted in Table 4.1. Sections 4.5 through 4.15 describe the specific results for each group. The discussion for each group includes additional pertinent information relating to specific observations in each group. From January 2016 through December 2016, WS conducted 26 airfield surveys resulting in 724 wildlife observations totaling 27,431 individuals comprised of 60 bird and 8 mammalian species (Table 4.3).

Table 4.3. Survey Totals by Species

Species	Totals				
European Starling	21438	Green-winged Teal	32	White-crowned Sparrow	5
Killdeer	884	Upland Sandpiper	24	Rabbit	5
Canada Goose	816	Grasshopper Sparrow	23	Sandhill Crane	4
Red-winged Blackbird	593	Tree Swallow	21	Blue-winged teal	3
Savannah Sparrow	540	Turkey Vulture	20	Canine Scat	3
Mallard	509	Wilson's Snipe	19	Northern Harrier	3
Deer	478	Rough-legged Hawk	18	Solitary Sandpiper	3
Eastern Meadowlark	417	Snow bunting	17	Bald Eagle	2
Mourning Dove	337	Blue Jay	15	Cooper's Hawk	2
Horned Lark	320	Dark-eyed Junco	12	Green Heron	2
American Robin	233	Snowy owl	12	Herring Gull	2
Barn Swallow	185	Spotted Sandpiper	10	Henslow's Sparrow	2
Bobolink	107	House Sparrow	9	Wood Duck	2
American Goldfinch	106	Lesser Yellowlegs	9	Yellow Warbler	2
House Finch	85	Northern Flicker	9	Black duck	1
Rock Pigeon	85	Eastern Bluebird	6	Canine sign	1
American Kestrel	79	Eastern Kingbird	6	Domestic cat	1
Ringed-billed gull	73	Northern Cardinal	6	Coyote	1
American Crow	69	Skunk	6	Gray Catbird	1
Red-tailed Hawk	59	Woodchuck	6	Greater Yellowlegs	1
Common Grackle	52	Common Yellowthroat	5	Indigo Bunting	1
Song Sparrow	44	Great Blue Heron	5	Marsh Wren	1
Field Sparrow	36	Raccoon	5	Red Fox	1
				Sora	1
				totals	27890

Figure 4.1. Monthly Wildlife Observations and Abundance Recorded during the Wildlife Hazard Assessment.

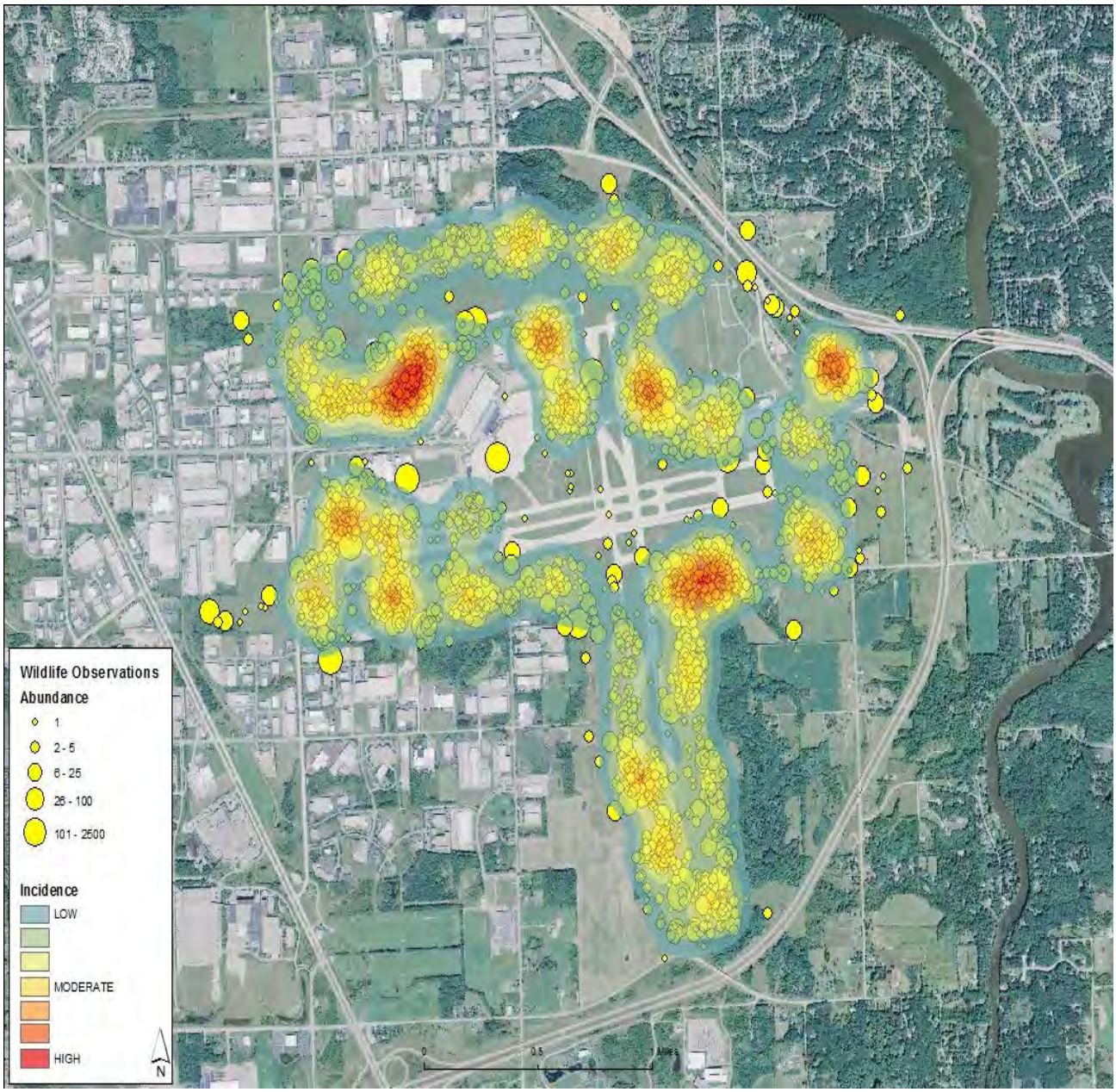
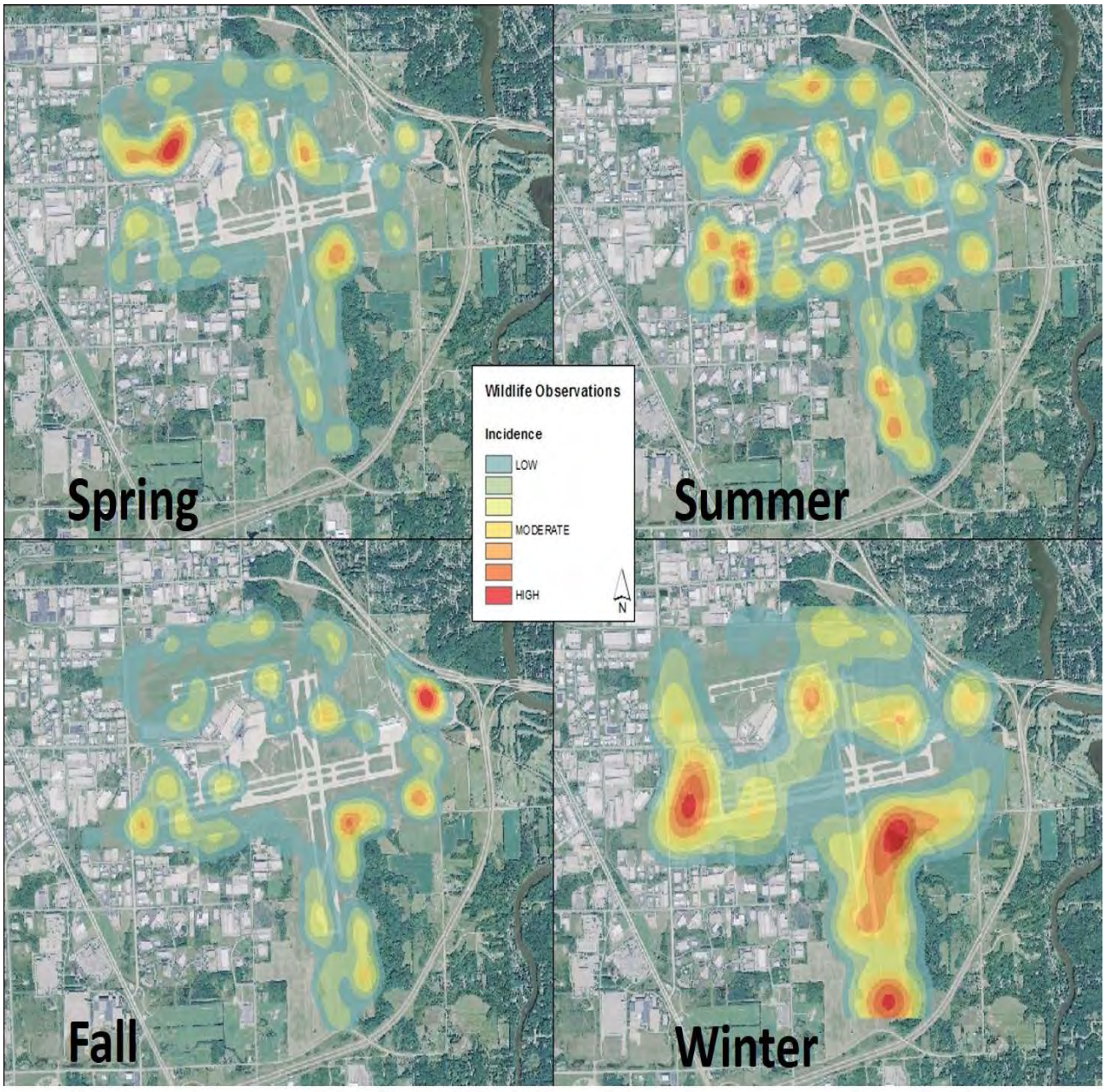


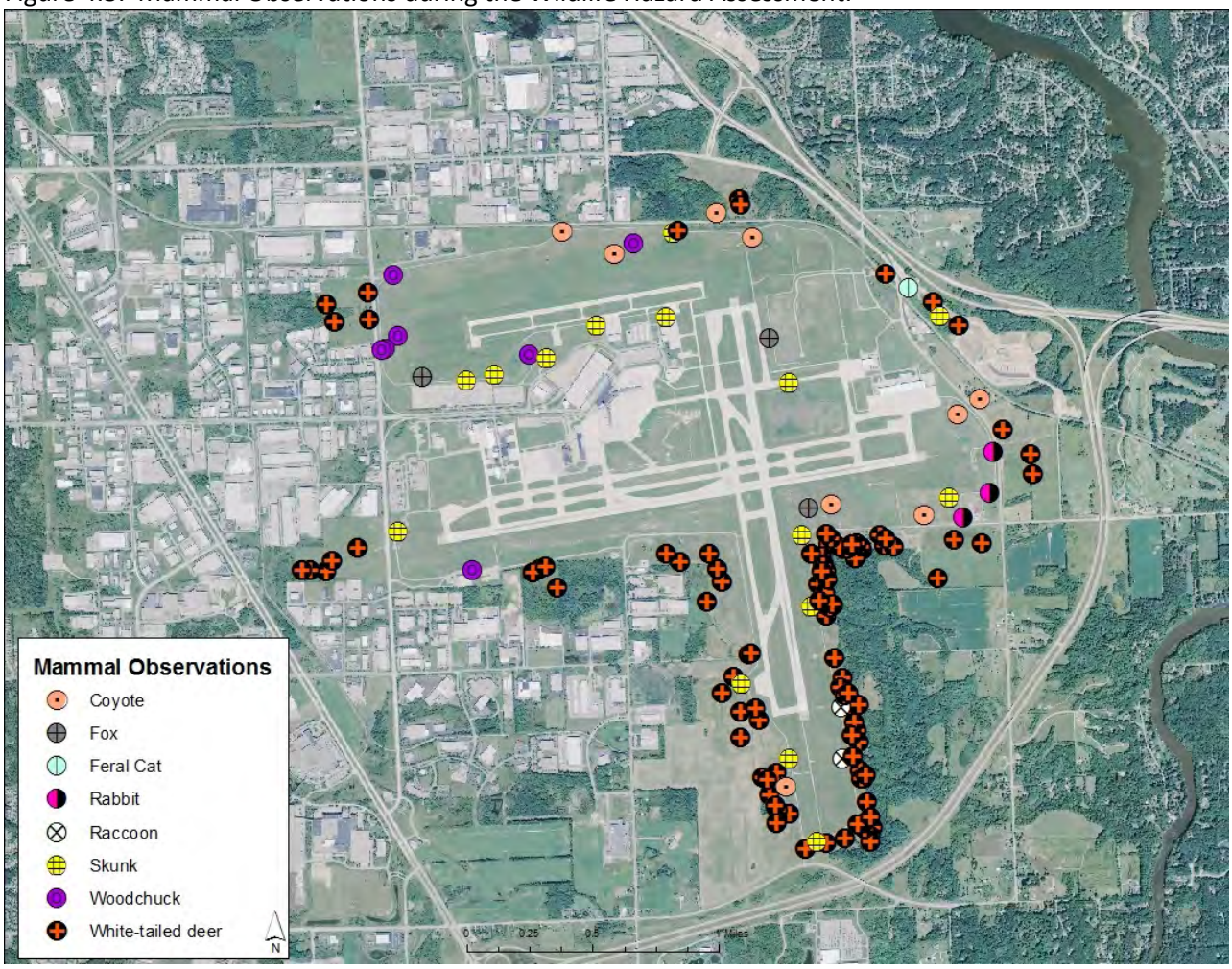
Figure 4.2. Seasonal Wildlife Abundance during the Wildlife Hazard Assessment.



4.5 Mammals

Eight species of mammals were recorded during the 12 month WHA. Mammals observed during GRR's WHA consisted of small herbivores (cottontail rabbits), small omnivores (raccoons, skunks), medium carnivores (coyotes, fox, feral cat), and large ungulates (deer). Small mammals are an indirect hazard to aircraft on airfields because they provide a prey base for larger, more hazardous carnivores and raptors. Large herbivores, such as deer are hazardous to aircraft because of their size and gregarious nature.

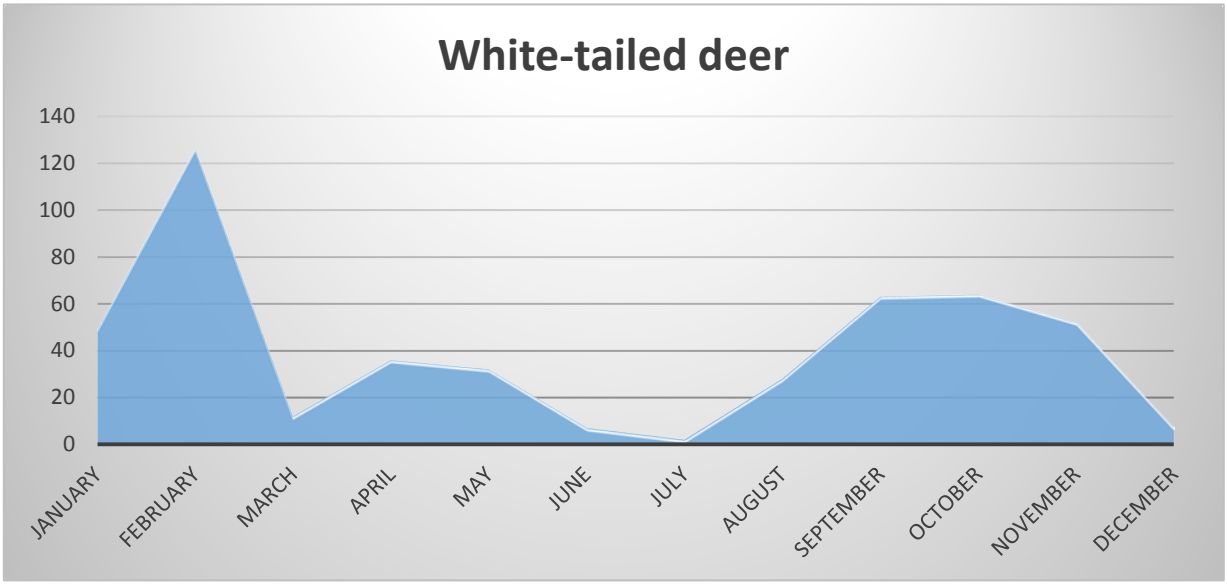
Figure 4.3. Mammal Observations during the Wildlife Hazard Assessment.



4.5.1 White-tailed deer

No white-tailed deer were seen inside the perimeter fence at GRR during the WHA. All observations were of deer outside the AOA fence. GRR AOA fence is proving to be effective at keeping deer off the airfield. In addition GRR Operations (OPS) personnel have been vigilant at monitoring the AOA fence integrity.

Figure 4.4. White-tailed Deer Observations during the Wildlife Hazard Assessment.



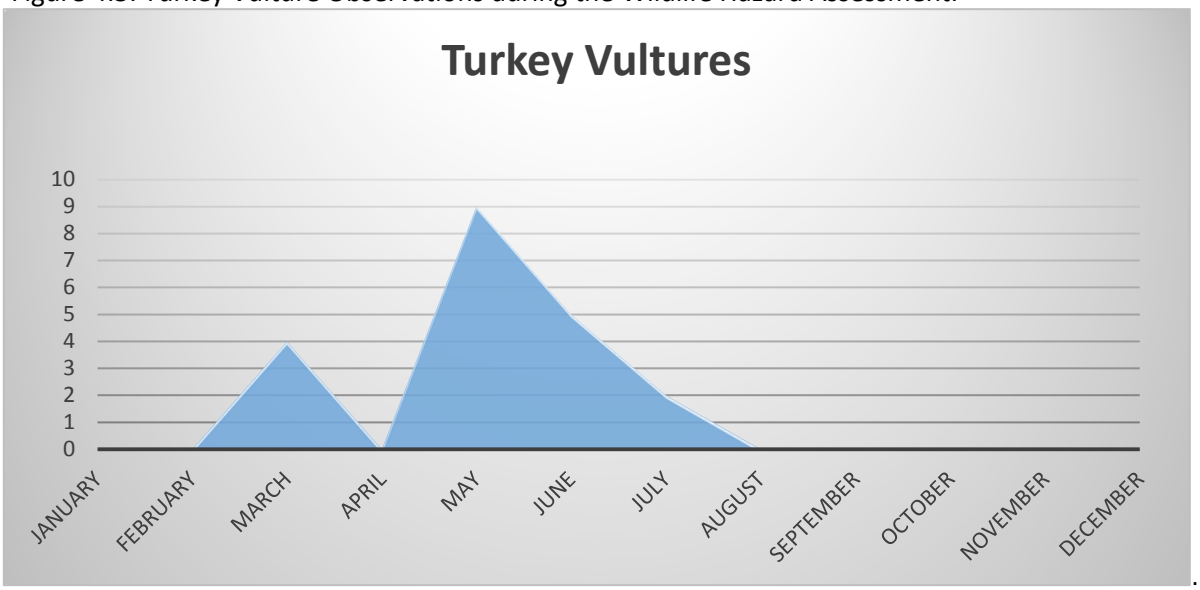
4.5.2 Coyotes

Coyotes were observed five times during the 12-month WHA. Three observations were at night using the FLIR unit. Two were seen during daylight surveys. Coyote tendency to dig under fences (creates opening for other mammals) makes them a potential threat to aviation safety. Cottontail rabbits, and smaller rodents such as mice and voles, can pose an indirect threat to aircraft because they are a prey base for larger, more hazardous predators such as coyotes, red fox and raptor species. GRR OPS personnel are diligent at identifying and filling in dig-unders, but until the perimeter fence has skirting to prevent dig-unders it will continue to be a problem. If a coyote' head can fit through a gap its body can follow, so fence gate gaps should be less than 6 inches x 4 inches. Table 4.1 Dolbeer et al (2003) ranks coyotes 16th on the list of hazardous wildlife.

4.6 Turkey Vultures

Turkey vultures were seen in the months of March, May, June and July. The peak month for vulture observations was May, with nine being counted. In all instances except for one, the vultures were flying over the airfield. The other instance involved two vultures feeding on a dead animal on the airfield. Removal of carcasses from the airport is extremely important as turkey vultures have excellent eyesight and have an amazing sense of smell. They can smell carrion from over a mile away, and due to their nature of soaring and riding thermals they pose a significant risk to flight safety.

Figure 4.5. Turkey Vulture Observations during the Wildlife Hazard Assessment.



4.7 Waterfowl (Ducks and Geese)

This group includes medium to large sized birds from a variety of families such as ducks, geese, herons, cormorants, pelicans, and egrets. Generally, waterfowl feed on a variety of forage items such as vegetation, crops, invertebrates, and fish. Many species within this guild are migratory; however, non-migratory populations of geese and ducks inhabit many areas surrounding GRR due to the prevalence of water on and around GRR. For GRR purposes the waterfowl guild will compromise just ducks and geese. Birds within this guild are considered extremely hazardous to aviation safety because of their large size and flocking behavior (Dolbeer et al. 2014).

Figure 4.6. Waterfowl Observations during the Wildlife Hazard Assessment.

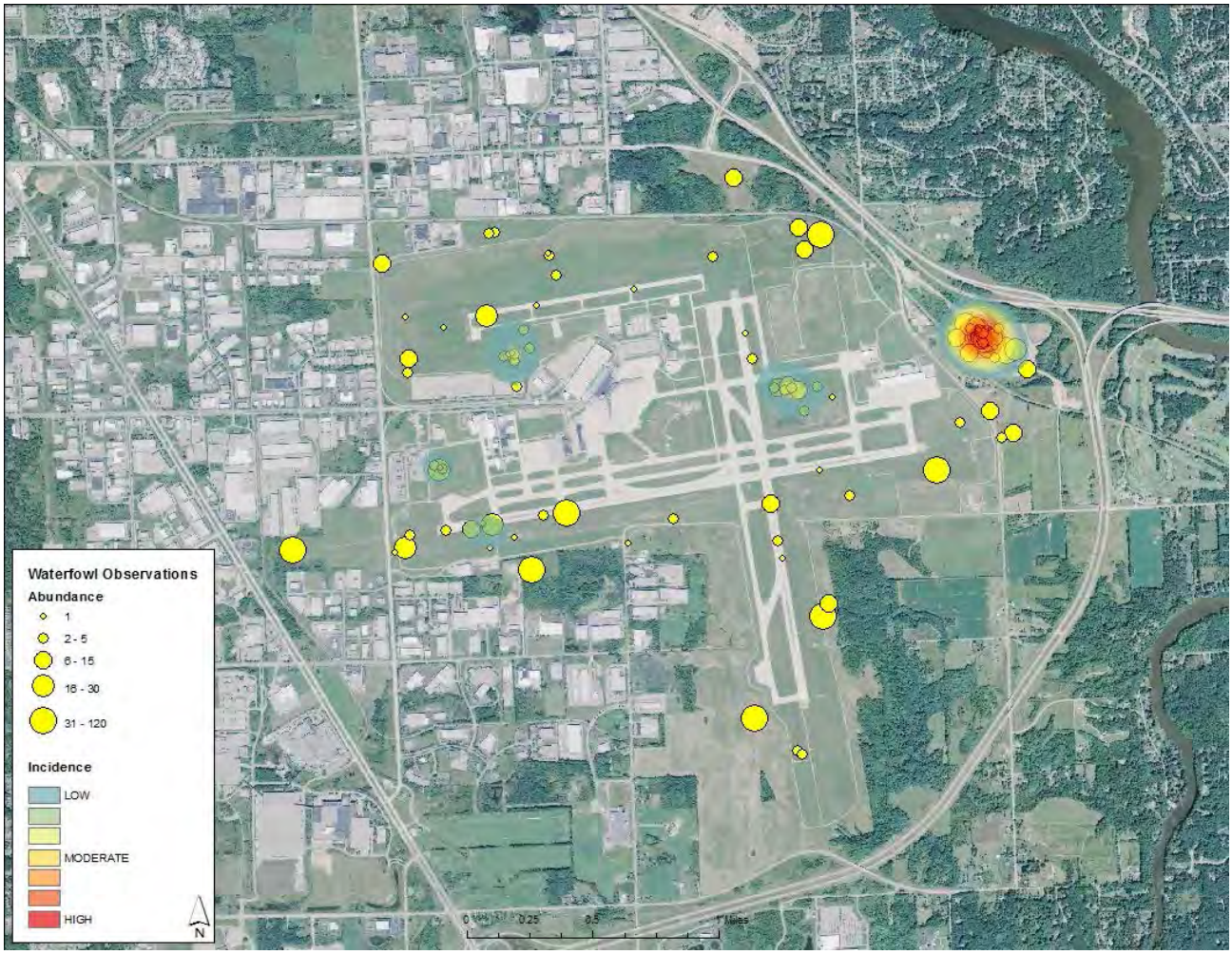


Figure 4.7. Canada goose Observations during the Wildlife Hazard Assessment

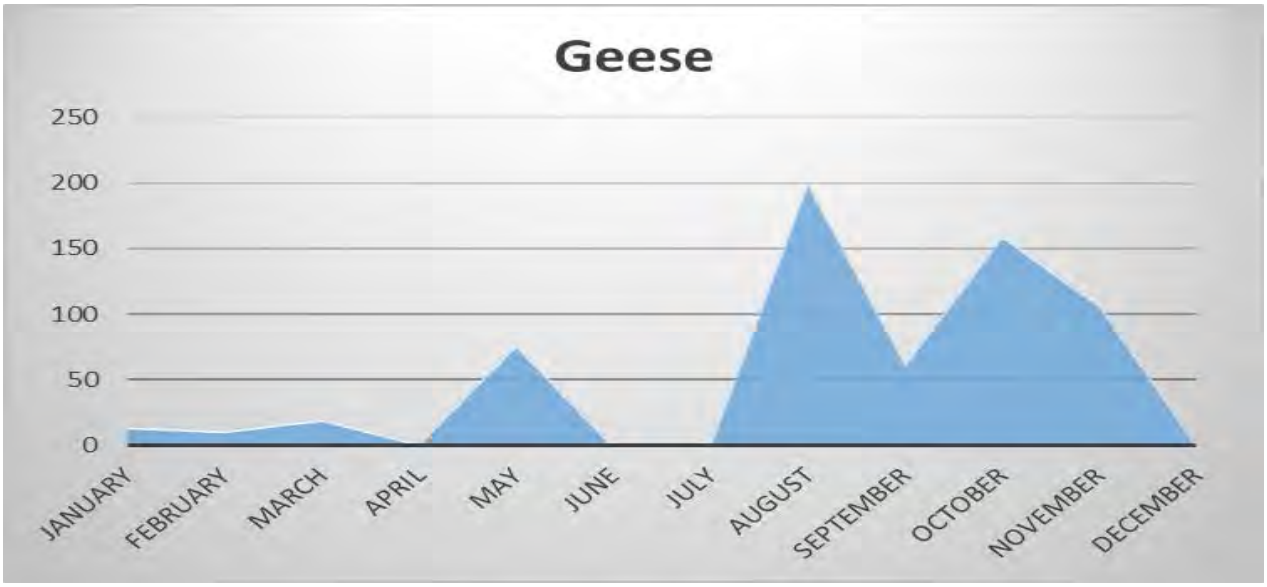
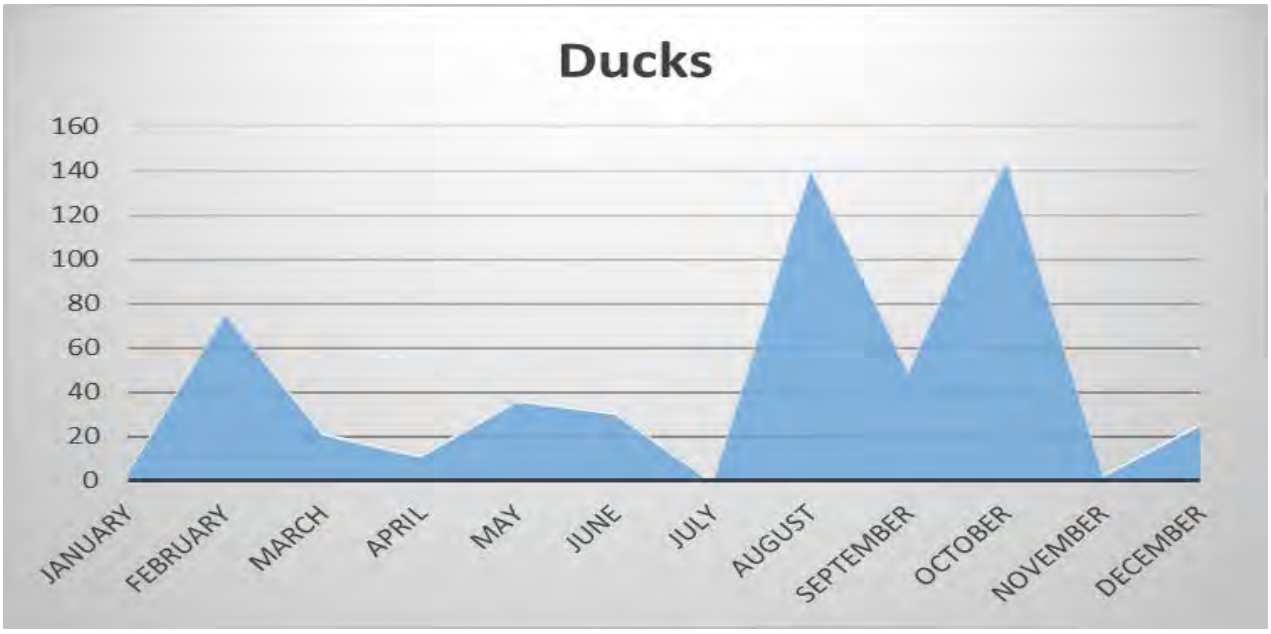


Figure 4.8. Duck Observations during the Wildlife Hazard Assessment



4.8 Sandhill Cranes/Great Blue Herons

Cranes and herons were only observed a few times during the WHA. A pair of sandhill cranes were observed in May and June. Great blue herons were observed in April (n=1), May (n=2) and July (n=2).

4.9 Raptors

Raptors are considered extremely hazardous to aircraft because of their large size and habituation to airport environments. Whether hunting, perching, soaring, or towering; airfields offer raptors a variety of habitat requirements. According to the FAA National Wildlife Strike database nationwide, raptors accounted for 521 damaging strikes resulting in over a $117M in civil aircraft damages (Dolbeer et al. 2015).Raptors are comprised of eagles, hawks, falcons, owls, and vultures varying in size from a small American kestrel to a large bald eagle. Nine species of raptors were identified during GRR's WHA. Red-tailed hawks, and American kestrels were the most frequently observed species. Common prey items include small mammals, birds, insects, and fish. Raptors were often observed perching on navigational aids, trees, and infrastructure (utility poles, glide slope antenna) on and around GRR. Individuals from this guild are considered to be extremely hazardous because of their large size and use of the airfield. For example, raptors are commonly observed soaring above movement areas due to thermal updrafts from the warm airfield pavement. Additionally, raptors commonly use navigational aids as perches for hunting and nesting. Red-tailed hawks were commonly found perching in trees off the south-eastern end of the airfield, navigational aids, and utility infrastructure. Raptors are considered migratory; however, individuals across many species are considered residents to Michigan year round.

Figure 4.9. Raptor Observations during the Wildlife Hazard Assessment.

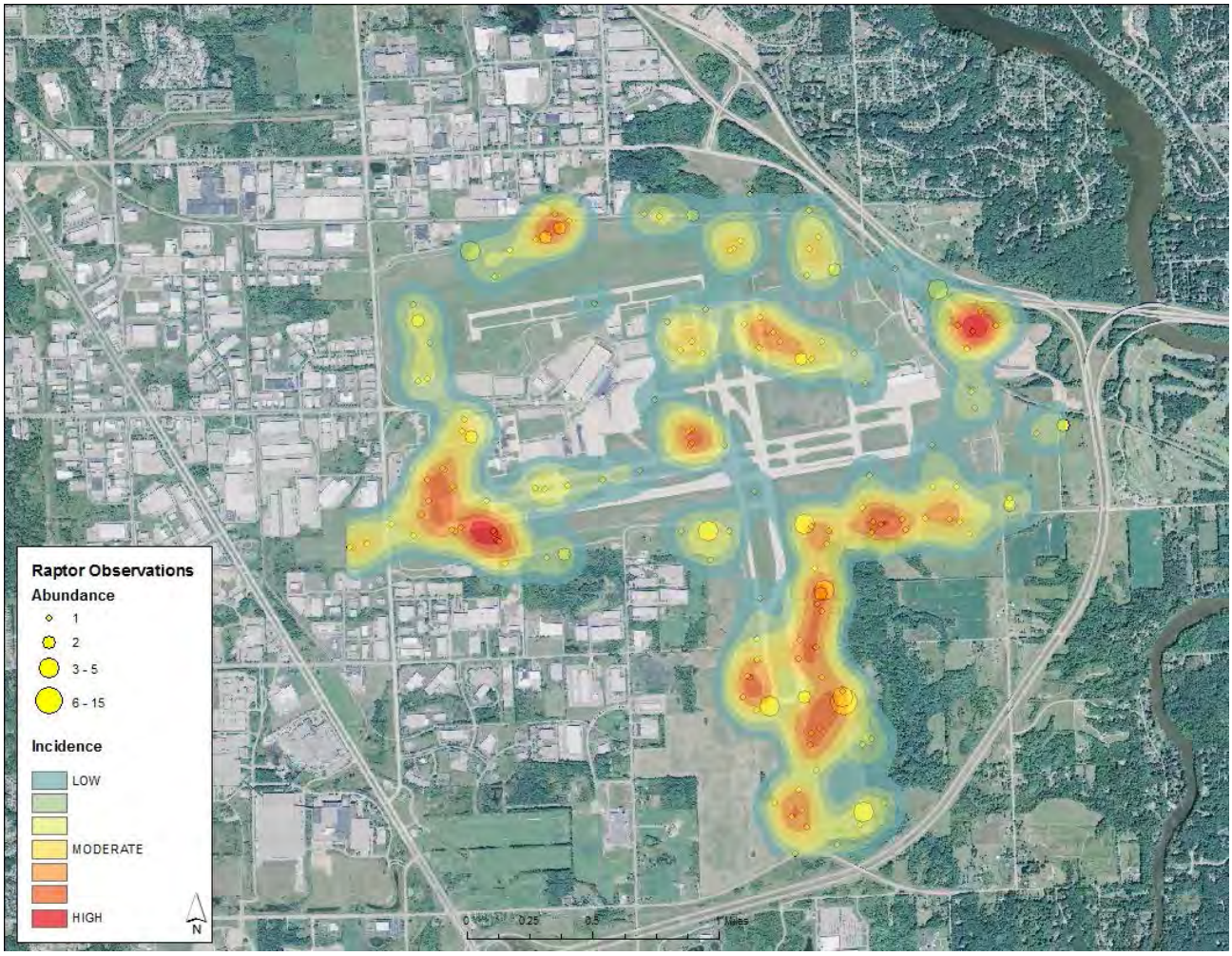
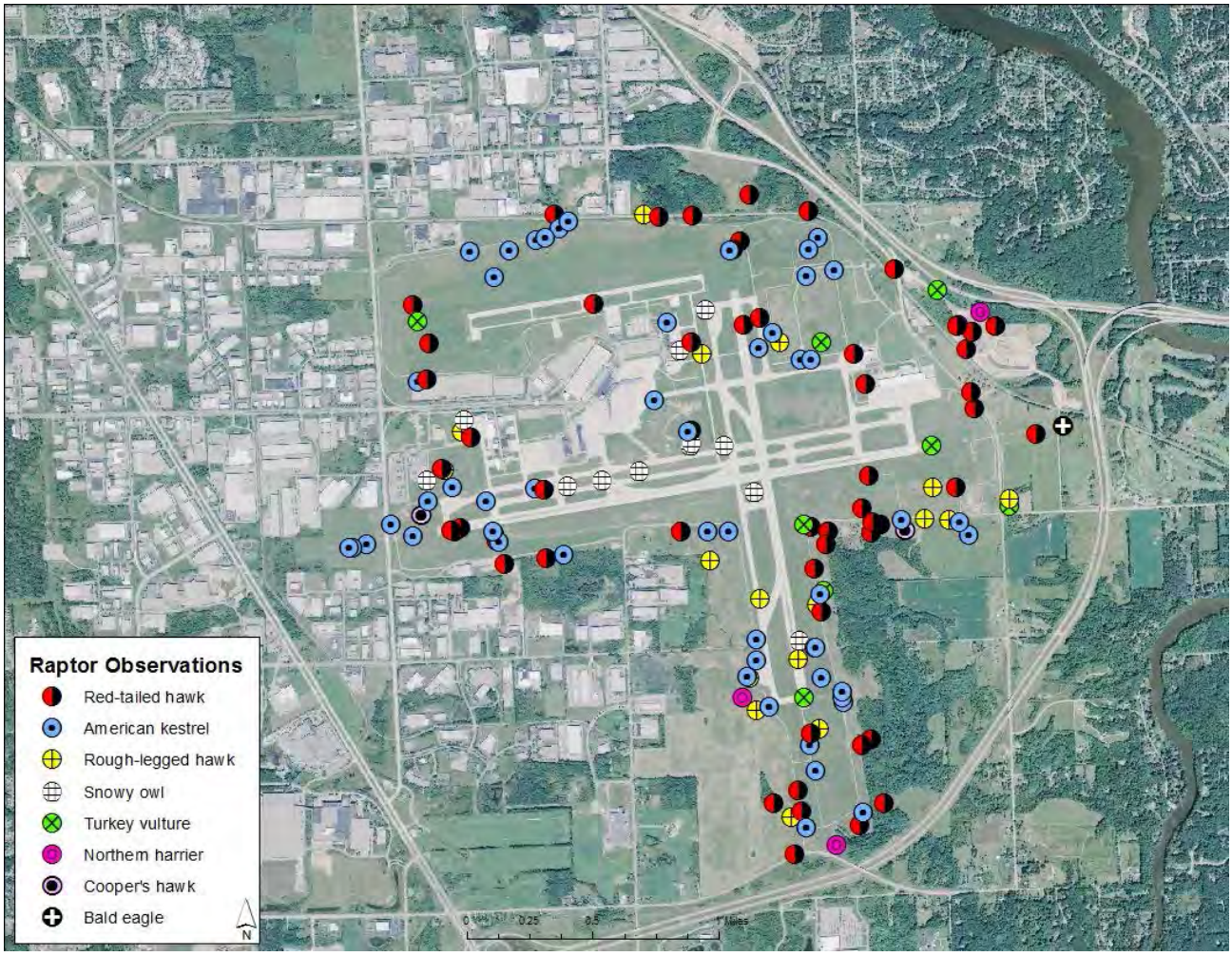


Figure 4.10. Raptor Abundance and Incidence during the Wildlife Hazard Assessment.



4.10 Gulls

The most frequently observed gull during the GRR WHA was the ring-billed gull followed by the herring gull. Gulls also were the third most frequently hit bird at GRR. After rain storms gulls frequent the AOA to pick up earthworms that crawl on to the runways and taxiways. In the summer wind can blow insects like grasshoppers on to the pavement leaving them exposed as an easy meal for gulls. In the colder months gulls will also loaf or roost on runways and taxiways because the concrete will absorb heat during the day and slowly release it at night providing a warmer spot to roost.

Ring-billed bulls loafing on taxiway at GRR

Figure 4.12. Gull Abundance during the Wildlife Hazard Assessment.

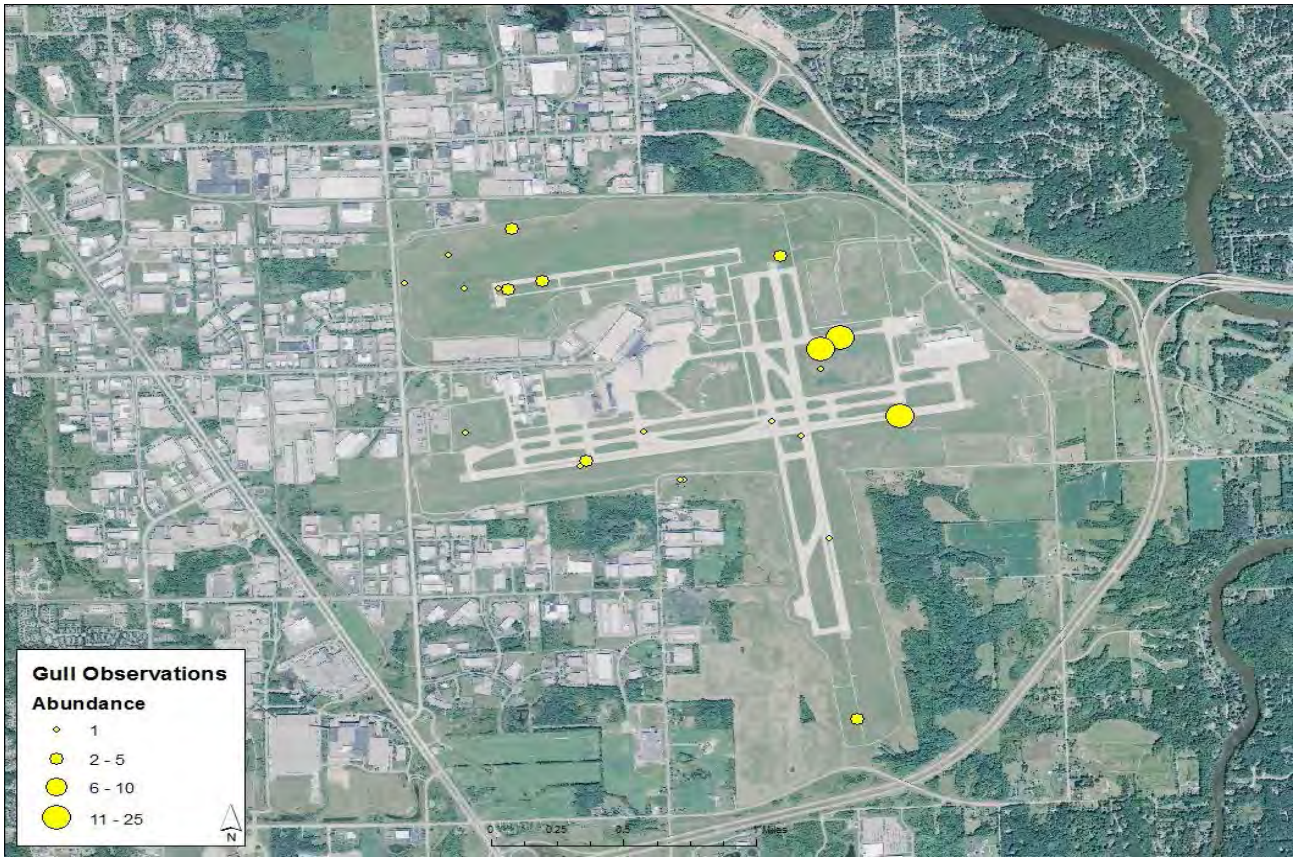
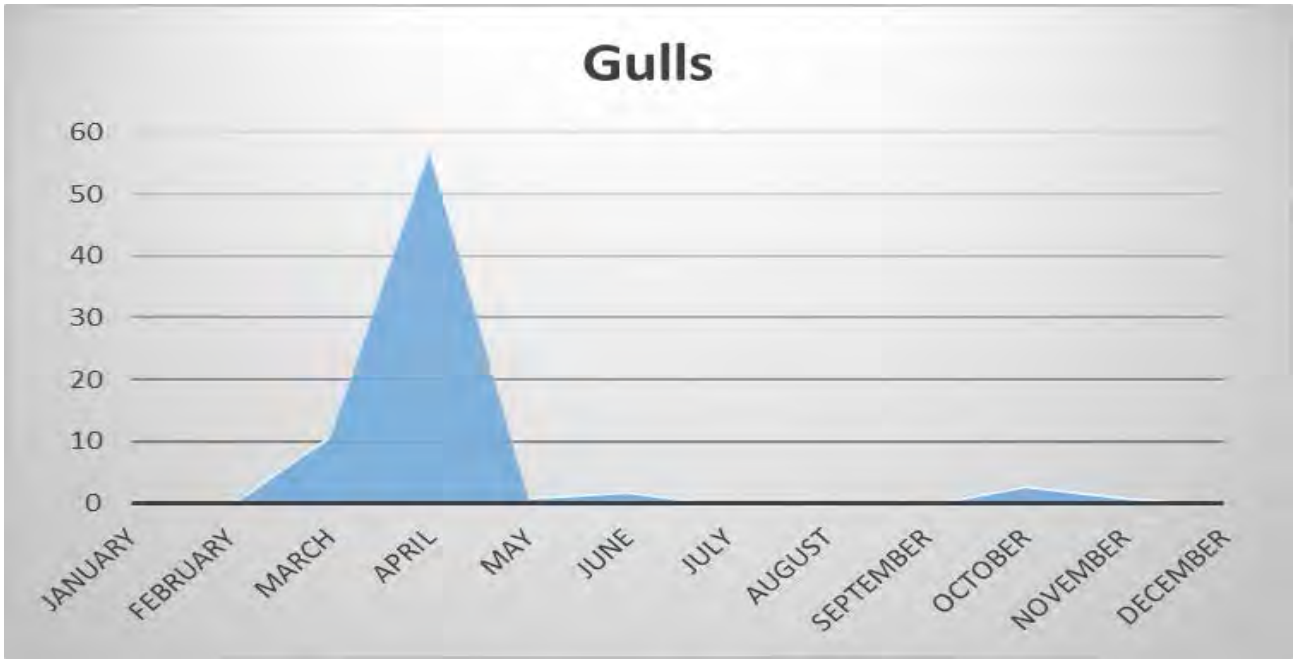


Figure 4.13. Gull Observations during the Wildlife Hazard Assessment.



4.11 Icterids (Blackbirds and Starlings)

During GRR's WHA, five species of Icterids were observed: European starlings, Eastern meadowlarks, red-winged blackbirds, common grackles and bobolink. European starlings encompassed nearly 80% of all birds surveyed. This is due to family groups coming together in early fall and congregating to make large flocks. In general, Icterids were observed perching on navigational aids, trees, shrubs, and fencing. Meadowlarks commonly nest on airport grassland habitats across the country. Although primarily solitary, meadowlarks will flock up in the fall with their young. Various species of blackbirds come together in the fall to form flocks in the thousands.

Figure 4.14. Blackbird and Starling Abundance during the Wildlife Hazard Assessment.

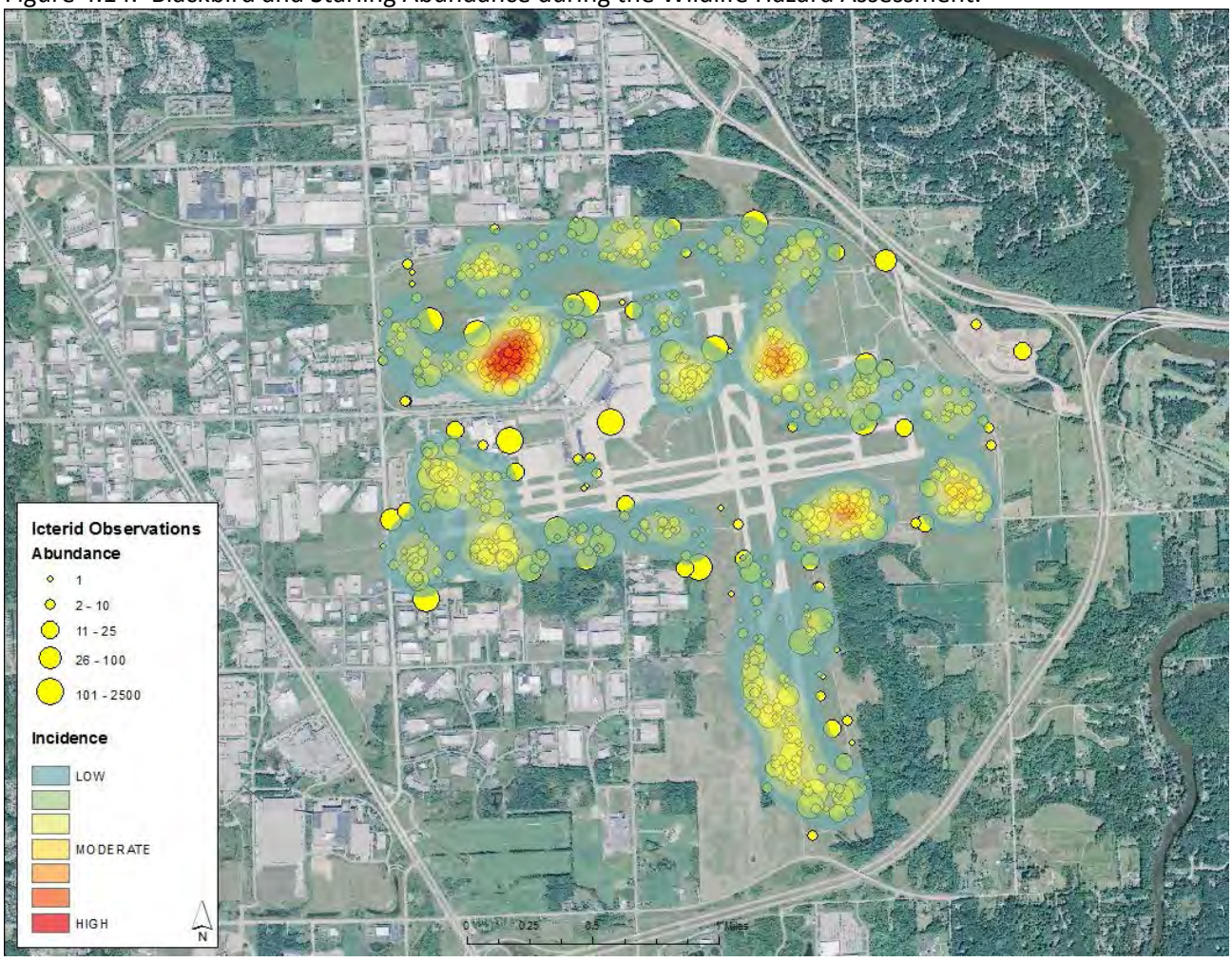
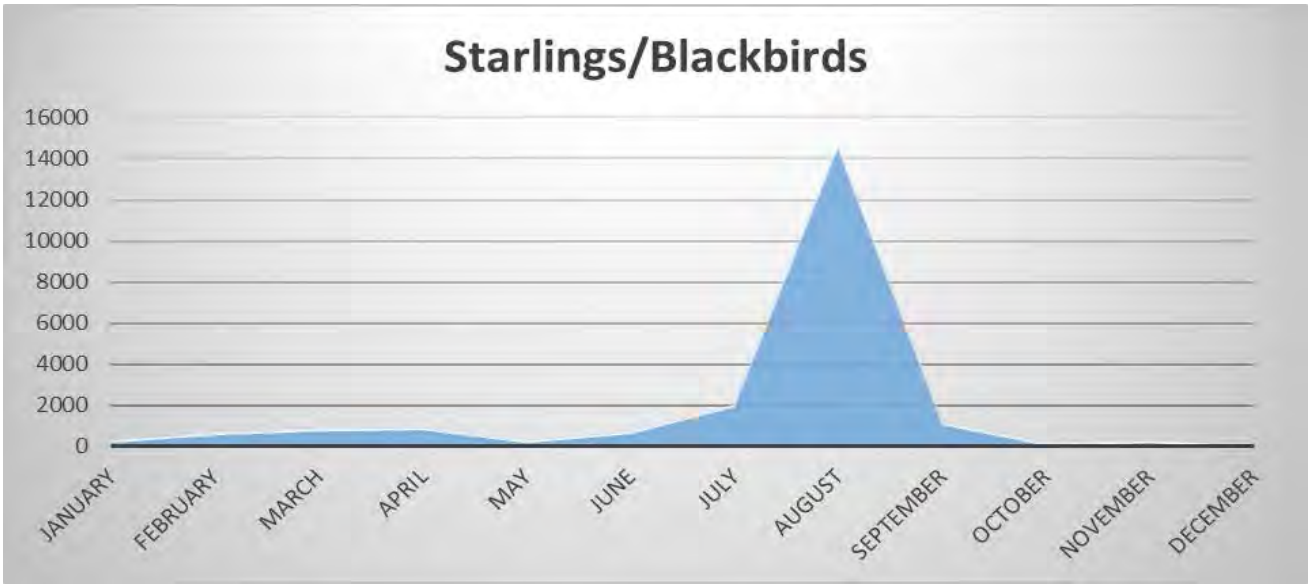


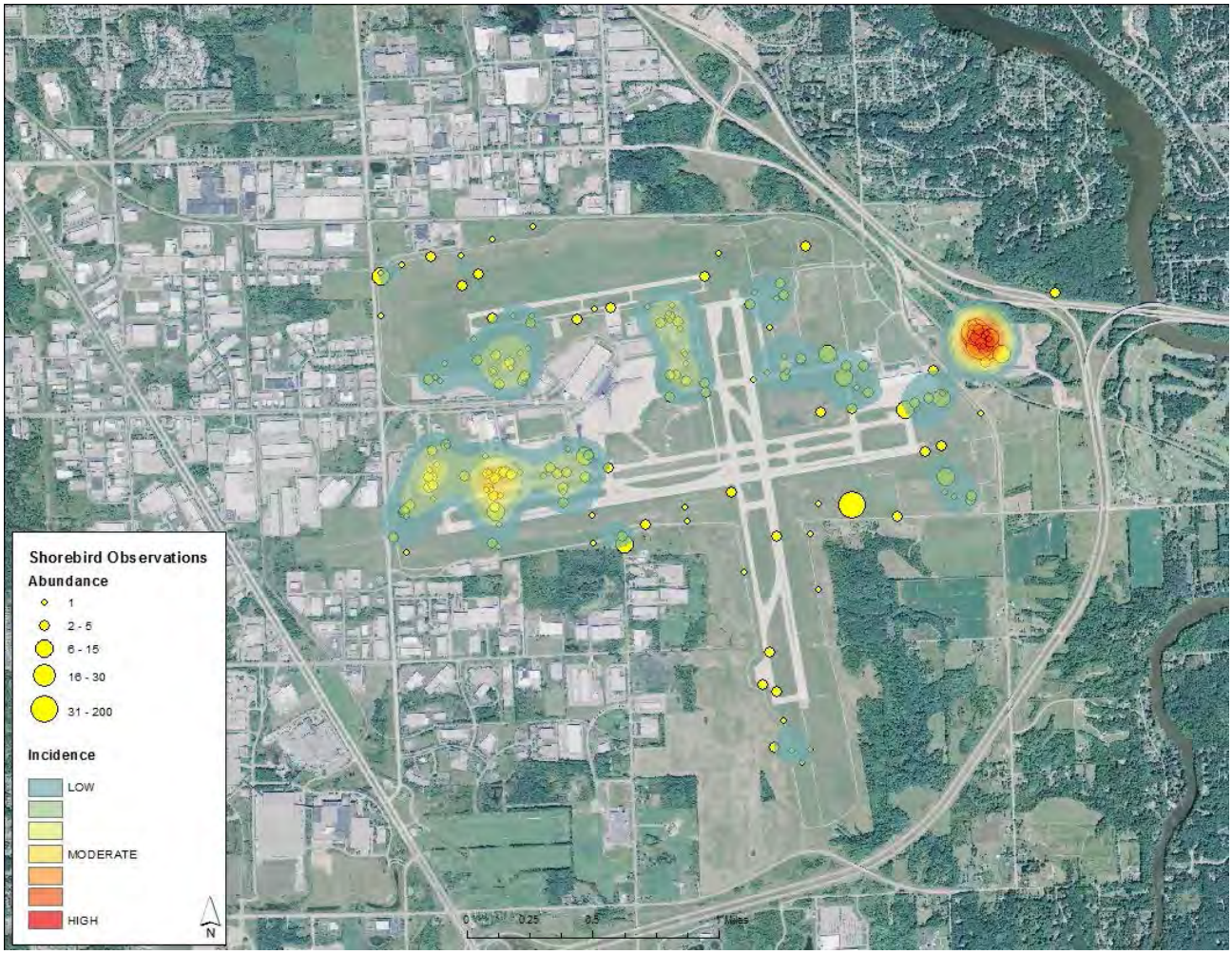
Figure 4.15. Blackbird and Starling Observations during the Wildlife Hazard Assessment.



4.12 Shorebirds

Seven species of shorebirds were observed; killdeer, upland sandpiper, Wilson's snipe, spotted sandpiper, lesser yellowlegs, solitary sandpiper and sora. Of the seven species of shorebirds, killdeer were the second most numerous bird species counted at GRR, and they were also tied for third for the most frequently struck bird at GRR. Killdeer prefer ground with sparse vegetation and a rocky or gravel substrate. They lay their eggs on the grounds as they are camouflaged with the surrounding gravel.

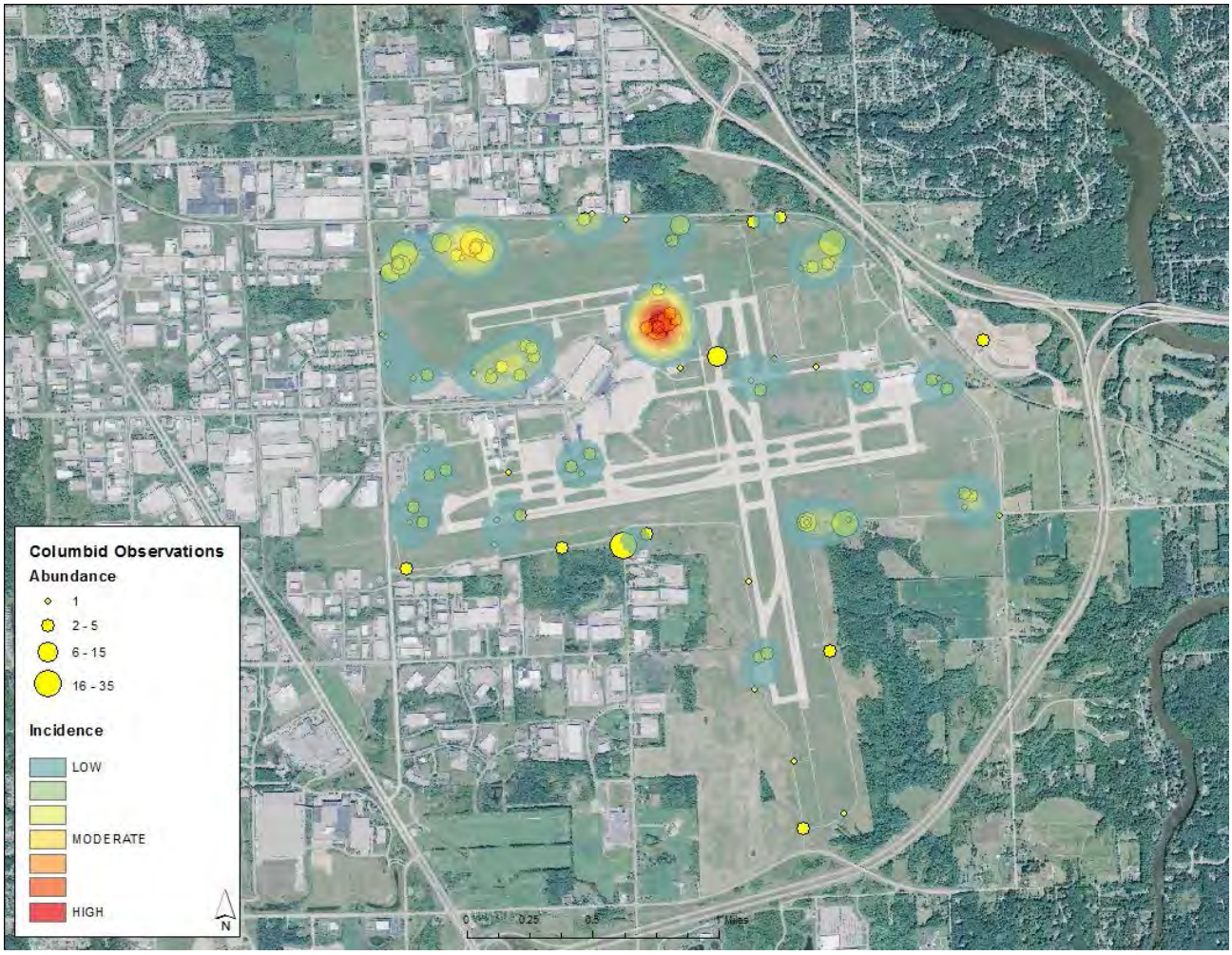
Figure 4.16. Shorebird Observations during the Wildlife Hazard Assessment.



4.13 Columbids (Mourning doves, Pigeons)

Nationally, from 1990 through 2014, Columbids were involved in 481 damaging strikes resulting in $21,737,259 in damages to civil aircraft (Dolbeer et al 2015). At GRR mourning doves were most often seen perched on fences and feeding on weed seeds along roadways. Pigeons were most frequently seen around the private hangars.

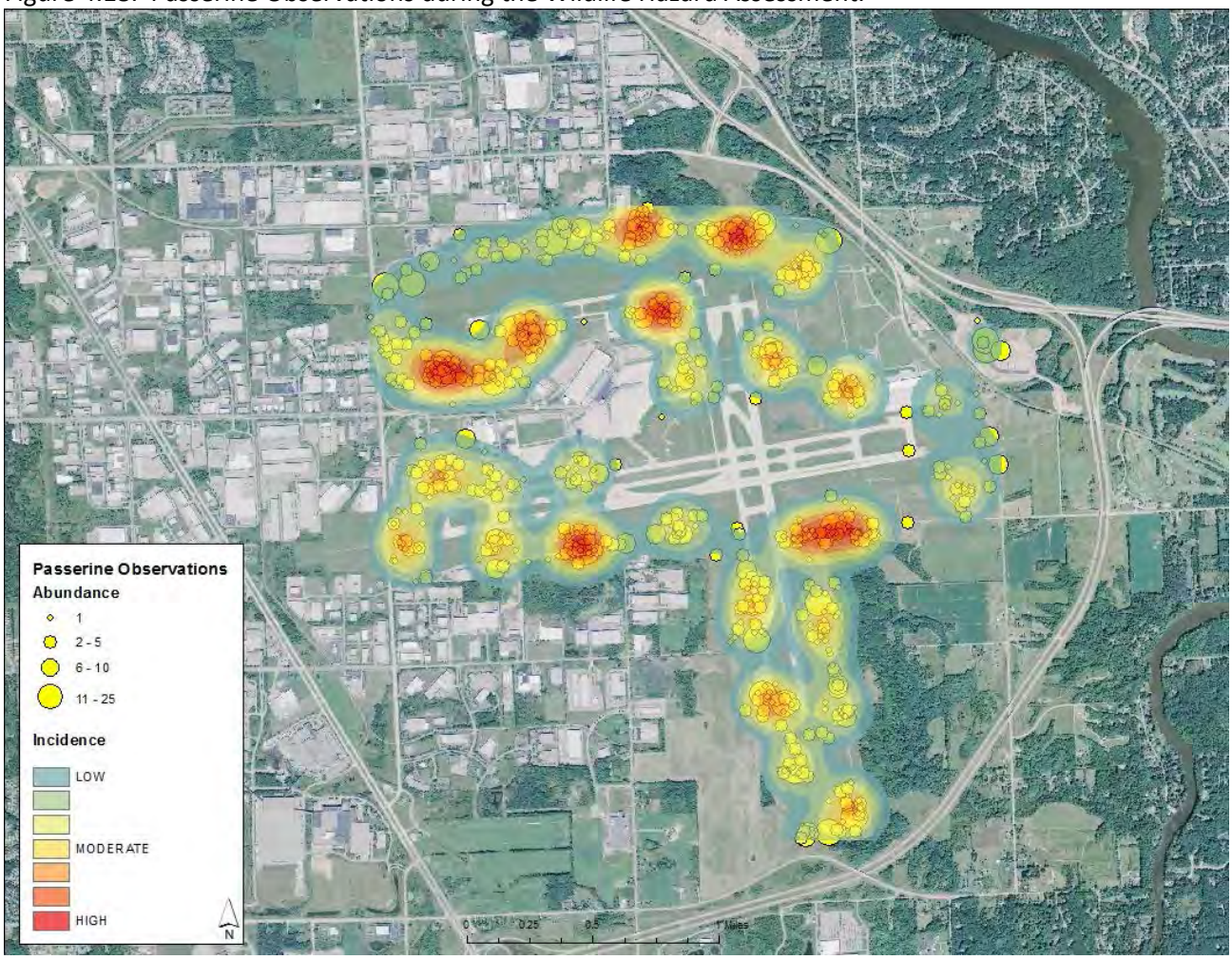
Figure 4.17. Mourning Dove and Pigeon Observations during the Wildlife Hazard Assessment.



4.14 Passerines (Horned Larks, Sparrows, Swallows)

Passerines, such as horned larks, sparrows, and swallows are common in strike records across the United States. Because of their smaller size many strikes go unnoticed, therefore unreported; however, Passerines, especially horned larks are very susceptible to being struck by aircraft. In the U.S., Passerines were involved in 281 damaging strikes causing $8,110,353 in damages to civil aircraft from 1990 through 2014 (Dolbeer et al. 2015). During our observations at GRR, 13 species of passerines were identified. American robins were commonly observed foraging within airfield grasslands. Various sparrow species were frequently observed utilizing movement area signs and lighting as perches for breeding vocalizations. Barn swallows were commonly observed hawking insects over open grass and along water ways. Moreover, insects potentially could be attracted to the runway for the same reason, resulting in abundant forage opportunities for swallows. Airfield grasslands provide many Passerines the opportunity to nest and forage, as well as perching for vocalizations. Managing airfield grass height, primarily by mowing, is a fundamental concept in airport wildlife management to decrease an airfield's attractiveness and subsequently reduce wildlife activity.

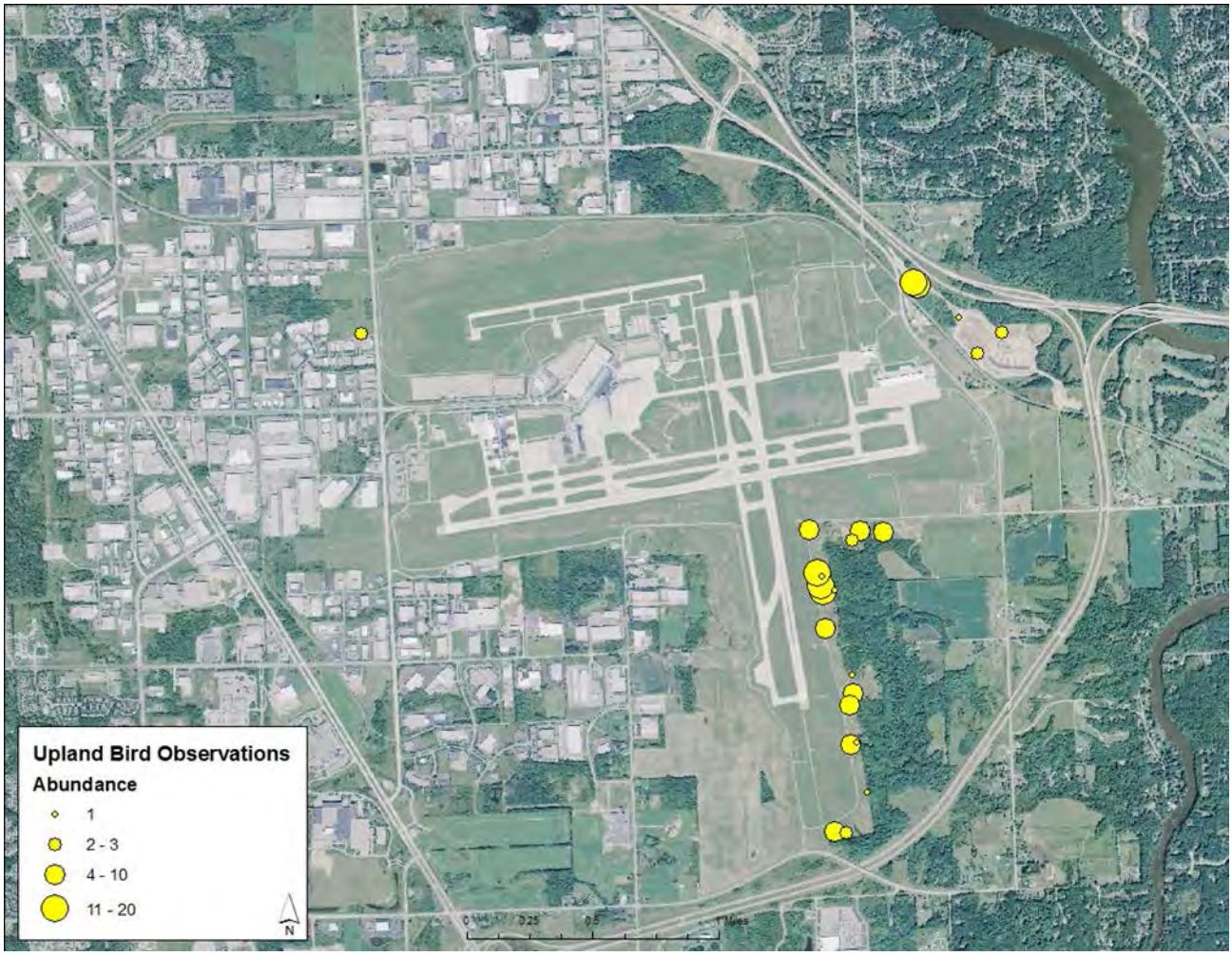
Figure 4.18. Passerine Observations during the Wildlife Hazard Assessment.



4.15 Wild Turkeys

Although not commonly seen on the AOA, turkeys are a year round presence near GRR since turkeys do not migrate. Adult male turkeys weigh around 20 pounds and can go up to 30 pounds. Because of their size and flocking behavior they pose a significant threat to aviation safety and should not be tolerated on the airfield.

Figure 4.19. Wild Turkey Observations during the Wildlife Hazard Assessment.



Chapter 5: Recommendations

This chapter provides site-specific recommendations to improve wildlife hazard management based on observations made during the 12-month WHA monitoring period. In accordance with FAR 139.337, the recommendations are intended to reduce the risk of wildlife strikes during air carrier operations. The recommendations would also serve as the foundation of a WHMP.

In resolving any wildlife damage problem, there are three general categories of methods that can be applied to reduce the damage, in this case, the hazards to aviation. Resolution of wildlife hazards can be achieved by:

1. Managing the resource, referring to any method undertaken to make the site, in this case the airport, less attractive to certain wildlife;
2. Managing the wildlife, referring to any method directed at certain wildlife to reduce their numbers;
3. Install barriers between the wildlife and the site so as to make it unavailable.

These methods can be used singly, in sequence or in combination. Rarely is one method consistently and continuously effective. Generally, the most effective approach is to incorporate many methods into an integrated wildlife damage management strategy. The following recommendations will reflect that philosophy.

Three general recommendations are presented and discussed in Sections 5.1 through 5.3:

1. Implement site-specific recommendations
2. Continue wildlife hazard management policies and procedures
3. Continue to update wildlife hazard management plan

5.1 Implement GRR-Specific Recommendations

Based on the results of the wildlife hazard assessment, GRR-specific recommendations were identified that would be protective of both the traveling public and the community's valued wildlife populations. The following recommendations were developed to represent a phased approach to management that range from passive techniques that discourage wildlife from using the airport to more direct techniques. Four site-specific techniques are recommended for implementation:

- **Take action to reduce wetland habitat and any open water on AOA**

- **Monitor detention basin off AOA**
- **Regularly inspect and maintain the perimeter fence and gates**
- **Implement species-specific recommendations and management techniques**

5.1.1 Take action to reduce wetland habitat and open water on AOA

The wetland habitat on GRR AOA is a major attractant for waterfowl and wildlife in general. GRR has two large wetlands located near runways that pose a risk to flight safety. Wetland attractants can be mitigated by "Wetland mitigation banking". Open ditch lines can also be an attractant to waterfowl and wading birds, enclosing open ditch lines will eliminate these foraging and loafing opportunities.

Wetland mitigation banking provides a way to mitigate unavoidable wetland impacts before those impacts occur. Purchasing credits from a bank does not give the purchaser title to wetland tracts that comprise a bank. Rather, the purchase is simply a payment to the wetland banker for wetland mitigation services that the bank provides. The FAA provides guidance for this process.

https://www.faa.gov/airports/environmental/policy_guidance/media/wetland-banking.pdf

Wetland 17-35

5.1.2 Monitor Detention Basin off AOA

The detention basin off the AOA to the east is a significant source of bird activity as indicated in the previous chapter. This off-site attractant still poses a potential threat to aviation safety. In the fall waterfowl often feed in the agricultural fields south of the airport. The detention basin is a roost site for these birds. Their flight paths to and from their roosting and feeding areas often take them directly over GRR runways. Continue to monitor the detention basin and utilize non-lethal harassment and lethal when necessary to disperse any waterfowl that may pose a potential threat to aviation safety.

5.1.3 Regularly Inspect and Maintain the Perimeter Fence and Gates

The FAA identifies deer as the greatest threat to aircraft among all mammal species. The FAA issued Certalert 04-16 in response to an increased number of wildlife strikes associated with deer (FAA 2004b, see Appendix I). While no deer were seen on the inside of the perimeter fence, 478 deer were observed on the outside of the fence. Continue to monitor and maintain the fence so that deer are prevented from accessing the airfield. Ensure gaps between the gates and fence are less than 6 inches x 4 inches to prevent entry by deer and coyotes. In addition, backfill any “dig-unders” that occur under the fence to prevent deer, coyotes, dogs, or fox from gaining access to the airfield. A permeant solution would be to install fence “skirting “along the perimeter fence. In addition check for wash-outs where drainage occurs under the perimeter fence.

5.1.4 Implement Species-Specific Recommendations and Management Techniques

An integrated approach to wildlife management is recommended at GRR. It is recommended to incorporate pyrotechnics, along with some lethal management activities (i.e, removal with firearms) as a last resort to reinforce non-lethal techniques. This strategy will typically provide the best results. In some cases, lethal management may be the only option to manage specific species. GRR airport has demonstrated diligence and must be commended in using lethal control in addressing species that are not responding to non-lethal harassment.

Waterfowl

Utilize pyrotechnics to disperse geese and other waterfowl from the airfield. Waterfowl respond well to pyrotechnics especially in the fall since they are a heavily hunted group of birds. If geese and waterfowl become accustomed to non-lethal harassment, lethal removal via firearms may be needed. Be especially vigilant during the months of March and April for any waterfowl attempting to nest. If waterfowl are observed, harassment or lethal removal should be utilized to remove them from the airfield. If waterfowl are observed on airport owned wetlands outside the perimeter fence, those birds should be addressed through harassment and possibly lethal control as well (if feasible). Non-lethal harassment and or lethal control should be implemented on non-native/invasive mute swans if observed on airport-owned wetlands.

Raptors

Harassment using pyrotechnic devices, such as bird bangers or screamers, is the preferred technique for discouraging raptors from using the airfield. When an individual becomes accustomed to harassment and persists in using the airfield, it should be removed lethally via firearms. All raptors are protected by the Migratory Bird Treaty Act (MBTA). A depredation permit from the USFWS is required for lethal management. If snowy owls (records indicate one strike with snowy owls) become a hazard to aviation, utilize non-lethal harassment or contact Wildlife Services for assistance in trapping and relocating these birds. As a last resort lethal removal may be necessary. If turkey vultures are observed, there is a possibility that there may be carrion or roadkill in the vicinity that may be attracting them. Removal and/or burial of this attractant may reduce the presence of turkey vultures.

Starlings

Starlings and blackbirds may be discouraged from feeding on the airfield when grass heights are eight inches or higher because the grass will obstruct the birds' view, interrupt communication, and make birds more vulnerable to predators. Any areas within the airfield where starlings are observed feeding and flocking should be monitored closely. Flocks of starling and blackbirds can be harassed from the airfield using distress calls and pyrotechnic devices, such as screamers and bangers. It is important to be persistent with these methods. Lethal removal with firearms may be necessary if the blackbirds become habituated to the pyrotechnics. Trapping of starlings is also a proven method of dealing with the birds. Wildlife Services can provide assistance with starling trapping. Starlings are not protected by the MBTA and may be taken at any time.

Deer and coyotes

Continually monitor and maintain fence to ensure gaps either between gates or under fence are less than 6 inches x 4 inches to reduce the potential for an incursion by either a coyote or deer. If deer or coyotes are observed on the airfield, consider them a critical threat hazard and immediately remove. Contact the local DNR field office to inquire about permits to allow for the lethal removal and a permit to control deer.

Turkeys

Utilize pyrotechnics to harass turkeys from the airfield. If turkeys become accustomed to the pyrotechnics, contact the local DNR field office to inquire about permits to allow for the lethal removal.

Horned lark/snow bunting

Utilize pyrotechnics and lethal removal to decrease the attractiveness of airport property to horned larks/snow buntings. Horned larks and snow buntings are protected by the MBTA. A depredation permit from the USFWS is required for lethal management.

Shorebirds

Killdeer are attracted to broken concrete/asphalt interspersed with grass and other weedy vegetation. Apply herbicides to reduce vegetation growing up through broken concrete or asphalt. Utilize pyrotechnics and lethal removal to discourage the attractiveness of airport property to killdeer and other shorebirds. Shorebirds are protected by the MBTA. A depredation permit from the USFWS is required for lethal management.

Doves/Pigeons

Utilize pyrotechnics and lethal removal to decrease the attractiveness of airport property to doves. Doves are protected by the MBTA. A depredation permit from the USFWS is required for lethal management. Pigeons are not protected by the MBTA and may be taken at any time.

Meadowlark, swallows, sparrows

Utilize pyrotechnics and lethal removal to decrease the attractiveness of airport property to meadowlarks, swallows, and sparrows. Meadowlarks and swallows are protected by the MBTA. A depredation permit from the USFWS is required for lethal management. House sparrows are not protected by the MBTA and may be taken at any time.

Table 5.1. Summary of Recommended Wildlife Control Actions at Gerald R. Ford International Airport		
Management Measure	**Description**	**Priority**
Habitat Control and Modification		
Maintain and inspect perimeter fence and gates	• Reduce gaps between fence posts and gates that are greater than 6 inches x 4 inches • Reduce bottom gaps that are greater than 6 inches x 4 inches to prevent burrowing beneath fence • Install fence skirting • Inspect regularly	High
Eliminate wetlands on AOA Eliminate open drainage ditches on AOA	• Wetlands removal requires wetland mitigation banking • Replace with pipe as able, maintain vegetation in ditches until ditches are enclosed.	High Moderate
Review any new design and construction plans	• A qualified biologist should review any newly proposed design and construction plans for the potential to create new wildlife attractants	Moderate
Review any new landscaping plans	• A qualified biologist should review any new landscaping plans for their potential to attract hazardous wildlife	Moderate
Species-Specific Management Measures		
Waterfowl	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement. • Be especially vigilant during March and April for nesting activity	Critical

Raptors	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement • Remove carcasses/carrion immediately	High
Turkey Vultures	• Continue harassment using pyrotechnics and lethal removal if warranted • Remove any roadkill or dead animals on airfield that may attract vultures	Critical
Starlings and Blackbirds	• Perform harassment using pyrotechnics and lethal removal • Implement a trapping program if appropriate	High
Gulls	• Ensure all trash receptacles are covered • Remove carcasses/carrion immediately • Continue harassment using pyrotechnics • Use lethal removal as reinforcement	High
Deer and coyotes	• Reduce gaps between fence posts and gates that are greater than 6 inches x 4 inches • Reduce bottom fence gaps that are greater than 6 inches x 4 inches to prevent burrowing beneath fence • Utilize lethal removal if deer and coyotes are observed on inside of fence • Install fence skirting	Moderate/Critical
Turkeys	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement	Critical
Horned lark/snow buntings	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement	Moderate
Shorebirds (killdeer)	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement	Moderate

Doves	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement	High
Meadowlarks, swallows, sparrows	• Continue harassment using pyrotechnics • Use lethal removal as reinforcement	Moderate

5.2 Continue Implementing Wildlife Hazard Management Policies and Procedures

The following ongoing policies and procedures should be implemented under the direction of the airfield operations personnel:

- Continue implementing wildlife hazard reporting and communications protocol
- Continue monitoring wildlife populations and use patterns on and near the airfield
- Continue reporting of wildlife strikes and management actions
- Continue maintaining records of wildlife management efforts.

5.2.1 Implement a Wildlife Hazard Reporting and Communications Protocol

GRR is a towered airport that utilizes communication among aircraft in the pattern to the air traffic control tower (ATCT). In the event that pilots or tower staff observe wildlife that could pose a risk to aircraft, communications protocol for pilots and ATCT staff to report the incidents to operations staff for abatement efforts and documentation of potentially hazardous wildlife is critical.

At a minimum, the protocol should address the following situations:

- Procedures for pilots to report wildlife hazards to ATCT and other pilots in the traffic pattern;
- Procedures for appropriate airport staff to alert pilots of potential hazards prior to takeoff or landing;
- Procedures for alerting airport operations staff to address wildlife hazards that require immediate attention; and
- Documentation procedures

5.2.2 Continue to Monitor Wildlife Populations and Use Patterns

The overall intent of the 12-month WHA effort was to document general occurrence, abundance, behavior, use patterns, and population characteristics of wildlife at GRR. The WHA also sought to identify significant wildlife attractants near GRR that could adversely affect the safety of air-carrier

operations. However, wildlife abundance and use patterns can be affected by numerous variables and the data provided during WHA monitoring effort should be considered as a baseline for comparison in future years. Continue regular surveillance for hazardous wildlife, noting location, numbers, and behavior of species hazardous to aviation safety.

5.2.3 Continue Reporting of Wildlife Strikes

As shown on Figure 2.2 in Chapter 2, six of the 310 wildlife strikes reported since 2003 were associated with unidentified bird species. One of the purposes of the WHA study was to identify the species that pose wildlife strike hazards at GRR. Ongoing efforts are necessary to identify the species that pose threats to aircraft or result in wildlife strikes. Utilize either Wildlife Services or the Smithsonian Institution to identify bird remains.

Improved wildlife reporting procedures, including training for species identification, are critical to reducing wildlife strike hazards. As previously noted, the airfield operations personnel should ensure that all bird strikes are recorded to the species level. In addition, clear records should be maintained regarding carcasses found on or near the AOA.

If bird/mammal remains are identified within 250 feet of the runway centerline during routine inspections of the airfield, the remains should be collected, and the incident should be recorded as a wildlife strike in the FAA wildlife strike database. The carcasses must be removed from the airfield immediately to avoid attracting scavengers such as carrion-eating wildlife. If remains are discovered, the species should be identified. If airport staff cannot identify remains to a species level or if only feather fragments or DNA are available, staff may send remains to the Smithsonian Institution for free identification. The remains should be accompanied by FAA Form 5200-7 and sent to the following address:

Feather Identification
Lab Smithsonian
Institution NHB, E600,
MRC 116

10th & Constitution Ave,
NW Washington, D.C.
20560-0116

Once the remains are identified, the information should be included in the wildlife strike database.

5.2.4 Maintain Records of Wildlife Management Efforts

Wildlife management is risk management. The airfield operations personnel and Airport Management should retain detailed records of wildlife harassment and management efforts. Keeping these records will provide a useful index of wildlife abundance and use of the airfield over time, and it will allow staff to monitor the effectiveness of harassment activities. Observation sheets

should include: the person conducting the action, the date and time of the action, the species and number of individuals, location on airfield, and management method applied. The airfield operations personnel should maintain these records on a computer database because the data can be easily extracted or sorted for reporting purposes.

5.3 Continue to Update Wildlife Hazard Management Plan

Gerald R. Ford International Airport is to be commended for their Wildlife Hazard Management Plan (WHMP) and efforts to update it annually. Continue to update this plan in response to any changes in wildlife activity on or around the airport. When updating the WHMP, both it and the subsequent wildlife hazard management program should identify specific policies, procedures, and target dates for initiation and completion of actions for staff and management including the following:

Establishing a Wildlife Hazard Working Group

Obtaining Permits to Manage Wildlife

Training Personnel in Wildlife Hazing Procedures and Species Identification

Obtaining Wildlife Hazard Management Supplies

Recording and Maintaining Wildlife Strike Information

Reviewing Land Use Changes on and Near the Airport

The program components are described in Sections 5.3.1 through 5.3.7.

5.3.1 Designate a Wildlife Coordinator

Currently, most wildlife hazard management activities are performed by members of the airport operations staff, who conduct routine inspections of the airfield and implement harassment if necessary. A Wildlife Coordinator should be designated to monitor the presence of hazardous wildlife. The Wildlife Coordinator would be responsible for implementing the recommendations set forth in the WHA, ensuring that all staff has adequate training, and alerting other staff to wildlife management policies, procedures, and activities.

The Wildlife Coordinator should receive training in wildlife hazard/damage management and be knowledgeable of airport operations and the local environment. In addition, the Wildlife Coordinator should be empowered by airport management with the authority to delegate wildlife hazard management responsibilities. The Wildlife Coordinator should be capable of carrying out the recommendations set forth in the WHA report. Specifically, the Wildlife Coordinator would:

- Obtain and maintain wildlife hazard management supplies;
- Maintain a database of wildlife hazard management activities, including information obtained from pilot reports, mechanical inspections, and daily observations;
- Obtain instruction for airport staff regarding wildlife hazards and wildlife hazard management policies and procedures;
- Implement wildlife management measures;
- Obtain and maintain necessary permits associated with wildlife management; and
- Record wildlife strikes and instruct other airport staff, tenants, ground crews, and pilots in wildlife strike reporting procedures

The Wildlife Coordinator would serve as a liaison between airport staff, tenants, airline pilots, and regulatory agencies when addressing issues associated with wildlife hazards and wildlife hazard management.

5.3.2 Maintain a Wildlife Hazard Working Group

The Wildlife Coordinator, with the support of Airport Leadership, should maintain the Wildlife Hazard Working Group (Working Group) to incorporate wildlife hazard management into airport operations, policies, and activities. The Working Group should include, but not be limited to:

- Representatives of relevant airport departments (administration, maintenance staff), management, and other County staff
- Aeronautical Tenants
- Airline representatives

The Working Group has met and should continue to meet at least annually for a general review of the overall wildlife hazard management program for the airport and to discuss special issues or problems as needed.

5.3.3 Obtain Permits to Manage Wildlife

Most of the bird species identified at GRR are protected by the MBTA or other federal and state regulations. USFWS is the agency authorized to provide permits for the removal of specific species. Currently, GRR does maintain a federal depredation permit. It is recommended that GRR continue to maintain this permit and add any additional species to the permit as needed.

Although blackbirds, European starlings, American crows, and house sparrows may also require management, a permit is not required to remove these species.

5.3.4 Train Personnel in Wildlife Hazing Procedures and Species Identification

Working with Airport Management, the airfield operations personnel would organize and obtain training for all Authority personnel that have wildlife management duties within the AOA. Personnel should be trained to recognize and respond to all potential wildlife hazards in an appropriate manner, including hazing and removal. Training should include the following components:

- Wildlife hazard identification
- Species identification, with emphasis on those that are present at GRR and pose the greatest risk to air-carrier operations
- Hazing and harassment techniques and safety procedures
- Reporting wildlife strikes and wildlife management actions

5.3.5 Maintain Wildlife Hazard Management Supplies

Appropriate Airport Authority vehicles that are used on the airfield (including airport maintenance vehicles) should be equipped with a pyrotechnic launcher, an ongoing supply of bird bangers/bombs and screamers/whistlers, and personal protective equipment (eye protection and hearing protection) so that harassment can be performed quickly. Maintaining these supplies will enable all trained airport personnel to perform harassment while conducting routine duties. Table 5.3 summarizes the wildlife hazard materials that should always be available at the airport.

Table 5.3. Wildlife Hazard Management Supplies

Supply	Description and Quantity
Pyrotechnics supplies	**Pistol Launchers.** The airport should maintain a supply of 15 mm pyrotechnic pistol launchers and caps. One pistol launcher should be available in each vehicle that does airfield inspections, and two spare pistols should be available.
	Screamers. Approximately 100 screamers should be available in each vehicle used for airfield inspections, and 400 should be available in storage.
	Bird Bangers. Approximately 100 bird bangers should be available in each vehicle used for airport inspections, and 400 should be available in storage.
	Personnel Safety Equipment. Eye and hearing protection should be maintained in each vehicle used for airfield inspections. Two set of protective eye goggles and ear protectors should be included in each vehicle, and extras should be maintained at all times.
Monitoring equipment	**Binoculars.** One pair of binoculars should be kept in each vehicle used to perform airfield inspections.
	Bird and mammal identification guides. A copy of each guide should be kept in all vehicles used to inspect the airfield, and an additional copy should be kept in the airfield operations personnel's office.
	Monitoring Log. A logbook/computer file should be available to document daily observations pertaining to wildlife hazards and all management activities.

Firearm/ammunition	**12-gauge shotgun and ammunition.** If lethal control is necessary, the airport should maintain a 12-gauge shotgun and non-toxic ammunition for use by appropriately trained, airport employees in addition to the airfield operations personnel.

Note: Additional supplies such as distress calls, mammal traps, rotating beacons, and sirens may be necessary as specific situations arise.

5.3.6 Record and Maintain Wildlife Strike Information

A database should be maintained of wildlife strike information collected from pilot reports, mechanical inspections, and routine airfield inspections. The Wildlife Coordinator would be responsible for ensuring that appropriate authority personnel understand the procedures for reporting strikes and for training staff on submitting strikes to the FAA wildlife strike database. Appendix A contains hyperlinks for submitting wildlife strikes, editing wildlife strikes, and searching the FAA wildlife strike database.

5.3.7 Review Land Use Changes on and Near the Airport

As identified in FAA advisory circular 150/5200-33B (Appendix C), the area associated with wildlife hazard management extends beyond the airport property boundary. The Wildlife Coordinator should actively participate in land-use projects or changes both on and outside of airport property that could increase wildlife hazards at GRR. If a proposed project has the potential to attract potentially hazardous wildlife, the airfield operations personnel should consult with project proponents, project sponsors, and local officials, and maintain a record of the communication.

Chapter 6: Legal Status of Species Identified

Most wildlife and their habitats are protected by one or more Federal, state, and/or local laws. Before conducting any type of wildlife hazard management activities at GRR, whether harassment or lethal control, the legal status of all species involved must be determined. Many of the resource management agencies (DNR, USFWS) involved in wildlife management require permits to actively manage the target species, and will generally issue permits depending on the species and management method used. The airport is responsible for adhering to the federal and state regulations regarding wildlife management and for obtaining the appropriate permits.

6.1 Regulatory Context and Applicable Federal Regulations

Several federal acts and statutes have been passed to protect wildlife, including:

- The Endangered Species Act (ESA)
- The Bald and Golden Eagle Protection Act (BGEPA)
- The Migratory Bird Treaty Act (MBTA)
- The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Each has the potential to affect wildlife management activities at airports and must be considered when enacting wildlife hazard management measures.

Endangered Species Act

The 1973 federal Endangered Species Act (ESA) provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. The ESA would be applicable at GRR if habitat management actions directed towards a species causing a threat to air traffic also affected critical habitat for a species listed as federally endangered or threatened. Compliance with the ESA also would affect abatement methods directed at a listed species that causes threats to air traffic. Activities that would affect species protected under the federal ESA were not identified during standardized wildlife surveys conducted at GRR. Federal and state listed species are hyperlinked in Appendix D.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the BGEPA or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the BGEPA.

The 1978 amendment authorizes the Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations. The BGEPA is applicable at GRR if eagles were nesting or frequented the airport so that abatement methods would be required to avert threats to air traffic. These situations have not been documented at GRR during standardized wildlife surveys.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) is a treaty that was established with the U.S., Great Britain (for Canada), Mexico, Japan, and Russia for the protection of migratory birds. Specific provisions include the establishment of a Federal prohibition, unless permitted by regulations, to:

> …pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention…for the protection of migratory birds…or any part, nest, or egg of any such bird (16 U.S.C. 703).

The MBTA applies to several species that were identified during standardized wildlife surveys at GRR. To reduce the threat that species afforded protection under the MBTA present at GRR, a permit from the U.S. Fish & Wildlife Service (USFWS) (depredation permit) will be required to lethally remove birds and nests with eggs or young. No permits are required from USFWS to manage habitat or harass/disperse MBTA species.

Federal Insecticide, Fungicide, and Rodenticide Act

FIFRA was passed in 1947, and essentially rewritten in 1972, and mandates that EPA regulate the use and sale of pesticides to protect human health and preserve the environment. Any activities undertaken to control rodents through poisoning will fall under the guidelines and regulations of FIFRA.

6.2 Legal Status of Key Species

American crows are protected by MBTA. However, pursuant to the Code of Federal Regulations (CFR) at 50 CFR 21.43, *Depredation Order for Blackbirds, Cowbirds, Grackles, Cows, and Magpies* (CFR 2010), these species can be taken any time of the year in Michigan without a federal or state permit when they are "found committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance." The following species are specifically listed in the Order: Brewer's blackbird, red-winged blackbird, yellow-headed blackbird, bronzed cowbird, brown-headed cowbird, shiny cowbird, boat-tailed grackle, common grackle, great-tailed grackle, greater

Antillean grackle, American crow, fish crow, northwestern crow, black-billed magpie, yellow-billed magpie.

Although these species can be taken, the order states that any person or agency acting under the depredation order must:

a. Attempt to control depredation by species listed under this depredation order using non-lethal methods before using lethal control.

b. If a firearm is used to kill migratory birds under the provisions of this order, nontoxic shot or nontoxic bullets must be used in most cases. However, this prohibition does not apply to the use of use an air rifle, an air pistol, or a .22 caliber rim-fire firearm for control of depredating birds under this order.

c. Allow any Federal, State, tribal, or territorial wildlife law enforcement officer unrestricted access at all reasonable times (including during actual operations) over the premises on which you are conducting the control. The officer must be furnished with whatever information he or she may require about the control operations.

d. Only kill birds under this order in a way that complies with all State, tribal, or territorial laws or regulations. You must have any State, tribal, or territorial permit required to conduct the activity.

e. Not sell, or offer to sell, any bird, or any part thereof, killed under this section, but you may possess, transport, and otherwise dispose of the bird or its parts.

f. Provide to the appropriate Regional Migratory Bird Permit Office an annual report for each species taken. A report must be submitted by January 31 of the following year.

Chapter 7: References

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Federal Aviation Administration. 2009. Certalert No. 09-10, "Wildlife Hazard Assessments in Accordance with Part 139 Requirements." Airport Safety and Operations Division, AAS-300. Washington, D.C. Available at http://www.faa.gov/airports/airport_safety/certalerts/media/cert0910.pdf.

Federal Aviation Administration. 2011a. "Overview of the Wildlife Strike Problem." Airport Technology Research and Development Branch. Washington, D.C. Downloaded March 24, 2010. Available at: http://wildlife-mitigation.tc.faa.gov/wildlife/overview.aspx.

Federal Aviation Administration. 2011b. "About the FAA: Wildlife Strike database." Airport Technology Research and Development Branch. Washington, D.C. Downloaded March 24, 2010. Available at http://wildlife-mitigation.tc.faa.gov/wildlife/default.aspx.

Federal Aviation Administration. 2012. Advisory Circular 150/5200-36A "Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports." Washington, D.C. Available at http://rgl.faa.gov/Regulatory_and_Guidance_Library%5CrgAdvisoryCircular.nsf/0/9F72C90F4035_0F598625719B006A018D?OpenDocument.

Federal Aviation Administration. 2012a. *Wildlife Strikes to Civil Aircraft in the United States 1990-2011.* National Wildlife Strike Database, Serial Report No. 18. Report of the Associate Administrator of Airports, Office of Airport Safety and Standards. Washington, D.C.

Federal Aviation Administration. 2013. *Wildlife Strikes to Civil Aircraft in the United States 1990-2012.* National Wildlife Strike Database, Serial Report No. 19. Report of the Associate Administrator of Airports, Office of Airport Safety and Standards. Washington, D.C.

Federal Aviation Administration. 2014. Wildlife Strike Database. Available online at http://wildlife.faa.gov/.

Thorpe, J. 1996. Fatalities and destroyed aircraft due to bird strikes, 1912-1995. Proceedings Bird Strike Committee Europe 23:7-31.

Appendices

Appendix A. FAA Wildlife Strike Resources with Hyperlinks

FAA Wildlife Strike Database, https://wildlife.faa.gov/database.aspx, FAA Wildlife Strike Database

Submit a strike, https://wildlife.faa.gov/strikenew.aspx, Submit a strike

Edit a strike, https://wildlife.faa.gov/strikeedit.aspx, Edit a strike

Appendix B. 14 CFR 139.337

In a manner authorized by the Administrator, each certificate holder shall ensure that a Wildlife Hazard Assessment is conducted when any of the following events occurs on or near the airport.

A wildlife hazard assessment, conducted by a Qualified Airport Wildlife Biologist, must be conducted if—

1. An air carrier aircraft experiences a multiple wildlife strike

Multiple wildlife strike defined; Aircraft strikes more than one animal (geese, starlings, bats, deer, coyotes, etc.).

2. An air carrier aircraft experiences substantial damage from striking wildlife. As used in this paragraph, substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component

Substantial damage definition is taken directly from the International Civil Aviation Organization Manual on the International Civil Aeronautics Organization Bird Strike Information System.

3. An air carrier aircraft experiences an engine ingestion of wildlife, or wildlife is ingested into a turboprop, turbofan, or turbojet engine. Engine damage does not have to result from the ingestion.

4. Wildlife of a size, or in numbers, capable of causing an event described in paragraph (1), (2), or (3) of this section is observed to have access to any airport flight pattern or aircraft movement area.

Airports with a standing Notice to Airmen (NOTAM), announcements on their Automatic Terminal Information Service (ATIS), or comments in Airport/Facility Directory (A/FD) warning pilots of wildlife hazards on or near the airport meet this condition. Permanent or blanket generic advisories should not be issued without actionable mitigation measure

Appendix C. FAA AC No 150/5200-33B and Pertinent Wildlife AC

https://www.faa.gov/documentLibrary/media/advisory_circular/150-5200-33B/150_5200_33b.pdf

Wildlife-Related Advisory Circulars

70-1	Outdoor Laser Operations
150/5200-32	Reporting Wildlife Aircraft Strikes
150/5200-33	Hazardous Wildlife Attractants On or Near Airports
150/5200-34	Construction or Establishment of Landfills near Public Airports
150/5200-36	Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports
150/5200-38	Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans (to be issued)
150/5220-25	Airport Avian Radar Systems

Wildlife-Related CertAlerts

16-03	Recommended Wildlife Exclusion Fencing (PDF)
14-01	Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls (PDF)
13-01	Federal and State Depredation Permit Assistance (PDF)

Wildlife-Related CertAlerts

06-07	Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports (PDF)
98-05	Grasses Attractive To Hazardous Wildlife (PDF)

Appendix D. Threatened and Endangered Species Resources (Hyperlinks)

Federally Listed Threatened and Endangered Species

State Listed Threatened and Endangered Species

Appendix E. Cooperative Service Agreement between USDA Wildlife Services and GRR

WS-ER (6/14) Agreement No.:

WBS Element:

COOPERATIVE SERVICE AGREEMENT
between
Gerald R. Ford International Airport
and
UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)
WILDLIFE SERVICES (WS)

ARTICLE 1

The purpose of this Cooperative Service Agreement is to perform a Wildlife Hazard Assessment at Gerald R. Ford International Airport. The Gerald R. International Airport is transitioning from a department of Kent County to the Gerald R. Ford International Airport Authority (Authority). This transition is anticipated to be completed in 2016. When the transition to an Authority is completed, the Authority will assume all responsibility for the administration of this contract that currently lies with the County of Kent.

ARTICLE 2

APHIS WS has statutory authority under the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C.426-426b) as amended, and the Act of December 22, 1987 (101Stat. 1329-331, 7 U.S.C. 426c), to cooperate with States, local jurisdictions, individuals, public and private agencies, organizations, and institutions while conducting a program of wildlife services involving mammal and bird species that are reservoirs for zoonotic diseases, or animal species that are injurious and/or a nuisance to, among other things, agriculture, horticulture, forestry, animal husbandry, wildlife, and human health and safety.

ARTICLE 3

APHIS WS and Gerald R. Ford International Airport mutually agree:

The parties' authorized representatives who shall be responsible for carrying out the provisions of this Agreement shall be:

Gerald R. Ford International Airport:
Brian D. Ryks
Kent County Department of Aeronautics
5500 44th Street SE
Grand Rapids, MI 49512
APHIS WS:
Anthony Duffiney, State Director
USDA, APHIS, WS
2803 Jolly Road, Suite 100
Okemos, MI 48864

To meet as determined necessary by either party to discuss mutual program interests, accomplishments, needs, technology, and procedures to maintain or amend the Work Plan (Attachment A). Personnel authorized to attend meetings under this Agreement

shall be Bruce Applebach or his designee, the State Director or his designee, and/or those additional persons authorized and approved by Bruce Applebach, and the State Director.

APHIS WS shall perform services more fully set forth in the Work Plan, which is attached hereto and made a part hereof. The parties may mutually agree in writing, at any time during the term of this Agreement, to amend, modify, add or delete services from the Work Plan.

ARTICLE 4

Gerald R. Ford International Airport agrees:

To authorize APHIS WS to conduct a wildlife hazard assessment at Gerald R. Ford International Airport. These activities are defined in the Work Plan. APHIS WS will be considered an invitee on the lands controlled by Gerald R. Ford International Airport. Gerald R. Ford International Airport will be required to exercise reasonable care to warn APHIS WS as to dangerous conditions or activities in the project areas.

To reimburse APHIS WS for costs of services provided under this Agreement up to but not exceeding the amount specified in the Financial Plan (Attachment B). Gerald R. Ford International Airport will begin processing for payment invoices submitted by APHIS WS within 30 days of receipt. The Gerald R. Ford International Airport ensures and certifies that it is not currently debarred or suspended and is free of delinquent Federal debt.

To designate to APHIS WS the Gerald R. Ford International Airport authorized individual whose responsibility shall be the coordination and administration of activities conducted pursuant to this Agreement.

To notify APHIS WS verbally or in writing as far in advance as practical of the date and time of any proposed meeting related to the program.

APHIS WS shall be responsible for administration and supervision of the program.

To coordinate with APHIS WS before responding to all media requests.

To provide an indoor working space to complete necessary paperwork.

ARTICLE 5

APHIS WS Agrees:

To conduct activities at Gerald R. Ford International Airport as described in the Work and Financial Plans.

Designate to Gerald R. Ford International Airport the authorized APHIS WS individual who shall be responsible for the joint administration of the activities conducted pursuant to this Agreement.

To bill Gerald R. Ford International Airport quarterly for actual costs incurred by APHIS WS during the performance of services agreed upon and specified in the Work Plan. APHIS WS shall keep records and receipts of all reimbursable expenditures hereunder for a period of not less than one year from the date of completion of the services provided under this Agreement and Gerald R. Ford International Airport shall have the right to inspect and audit such records.

To coordinate with Gerald R. Ford International Airport before responding to all media requests.

ARTICLE 6

This Agreement is contingent upon the passage by Congress of an appropriation from which expenditures may be legally met and shall not obligate APHIS WS upon failure of Congress to so appropriate. This Agreement may also be reduced or terminated if Congress only provides APHIS WS funds for a finite period under a Continuing Resolution.

ARTICLE 7

APHIS WS assumes no liability for any actions or activities conducted under this Cooperative Service Agreement except to the extent that recourse or remedies are provided by Congress under the Federal Tort Claims Act (28 U.S.C. 1346(b), 2401(b), and 2671-2680).

ARTICLE 8

Pursuant to Section 22, Title 41, United States Code, no member of or delegate to Congress shall be admitted to any share or part of this Agreement or to any benefit to arise therefrom.

ARTICLE 9

Nothing in this Agreement shall prevent APHIS WS from entering into separate agreements with any other organization or individual for the purpose of providing wildlife damage management services exclusive of those provided for under this agreement.

ARTICLE 10

Gerald R. Ford International Airport certifies that APHIS WS has advised the Airport that there may be private sector service providers available to provide wildlife management services that the Gerald R. Ford International Airport is seeking from APHIS WS.

ARTICLE 11

The performance of wildlife damage management actions by APHIS WS under this agreement is contingent upon a determination by APHIS WS that such actions are in compliance with the National Environmental Policy Act, Endangered Species Act, and any other applicable federal statutes. APHIS WS will not make a final decision to conduct requested wildlife damage management actions until it has made the determination of such compliance.

ARTICLE 12

This Cooperative Service Agreement may be amended at any time by mutual agreement of the parties in writing. Also, this Agreement may be terminated at any time by mutual agreement of the parties in writing, or by one party provided that party notifies the other in writing at least 120 days prior to effecting such action. Further, in the event the Gerald R. Ford International Airport does not provide necessary funds, APHIS WS is relieved of the obligation to provide services under this agreement.

In accordance with the Debt Collection Improvement Act of 1996, the Department of Treasury requires a Taxpayer Identification Number for individuals or businesses conducting business with the agency.

Gerald R. Ford International Airport:
Taxpayer Identification Number (TIN) _____

Gerald R. Ford International Airport:

BY: _____ _____
Brian D. Ryks Date
Kent County Department of Aeronautics
5500 44th Street SE
Grand Rapids, MI 49512

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES

BY: _____ _____
Anthony Duffiney, State Director Date
USDA, APHIS, WS
2803 Jolly Road, Suite 100
Okemos, MI 48864

ATTACHMENT A
WORK PLAN

Introduction

The U.S. Department of Agriculture (USDA) is authorized to protect American agriculture and other resources from damage associated with wildlife. The primary authority for APHIS WS is the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C.426-426b) as amended, and the Act of December 22, 1987 (101Stat. 1329-331, 7 U.S.C. 426c). Wildlife Services activities are conducted in cooperation with other Federal, State and local agencies; private organizations and individuals.

The APHIS WS program uses an Integrated Wildlife Damage Management (IWDM) approach (sometimes referred to as IPM or "Integrated Pest Management") in which a series of methods may be used or recommended to reduce wildlife damage. IWDM is described in Chapter 1, 1-7 of the Animal Damage Control Program Final Environmental Impact Statement (USDA, 1994). These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. However, controlling wildlife damage may require that the offending animal(s) are killed or that the populations of the offending species be reduced.

Purpose
The purpose of this Agreement is for WS to perform a Wildlife Hazard Assessment at Gerald R. Ford International Airport. WS is being asked to evaluate potential wildlife hazards to aviation at this airport. WS will perform wildlife observations, data analysis and report writing.

Planned APHIS WS Activities
WS plans to make 2 visits per month to the airport to evaluate potential wildlife hazards to aviation. These visits will consist of morning and evening observations of wildlife activity on the airport. Night wildlife surveys will periodically be conducted. Additional visits may also be made to trap small mammals. Wildlife activity will be monitored off airport property to better evaluate off-site wildlife attractants. Once the last observation is completed, WS will proceed with data analysis and writing the Wildlife Hazard Assessment. WS will have the Assessment completed and delivered within 3 months of the last wildlife observation

Effective Dates
The agreement shall become effective on January 1, 2016, and shall expire on March 31
31, 2017.

ATTACHMENT B
FINANCIAL PLAN

Personnel Costs……..$13,330.00
Supplies ……..$ 100.00

Subtotal (Direct Costs)…….$13,430.00

Pooled Job Costs……..$ 1,477.30

Indirect Costs ……..$ 2,168.95

TOTAL
..……$17,076.25

The distribution of the budget from this Financial Plan may vary as necessary to accomplish the purpose of this agreement, but may not exceed $17,076.25.

Financial Point of Contact

Gerald R. Ford International Airport:

_____
<Name to call for billing questions> Phone

APHIS WS: Vickie Bovee (Vickie.l.bovee@aphis.usda.gov) 517-336-1928 ext. 24

Phone

Attachment C

EGLE Part 303 Permit

(to be provided)

Attachment D

Threatened and Endangered Species Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To:
Project Code: 2024-0034868
Project Name: NEPA Documentation

January 10, 2024

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Official Species List
The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

Consultation requirements and next steps
Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in making determinations for listed species for some projects. In many cases, the determination key

will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit https://www.fws.gov/media/mifo-ipac-instructions (and click on the attachment). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance. If you evaluate the details of your project and conclude "no effect," document your findings, and your listed species review is complete; you do not need our concurrence on "no effect" determinations. If you cannot conclude "no effect," you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to EastLansing@fws.gov. Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers >450 feet that use guy wires**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

Migratory Birds
Please see the "Migratory Birds" section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/program/eagle-management/eagle-permits to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your consideration of threatened and endangered species during your project

planning. Please include a copy of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

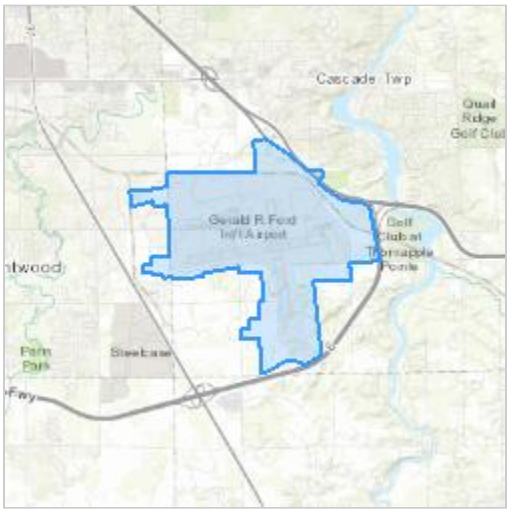
This species list is provided by:

Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
(517) 351-2555

PROJECT SUMMARY

Project Code: 2024-0034868
Project Name: NEPA Documentation
Project Type: Airport - Maintenance/Modification
Project Description: NEPA documentation for on-airport project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.880020900000005,-85.51929408852652,14z



Counties: Kent County, Michigan

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/YFMWAAUGX5FPJANJJVQJXHTVUE/documents/generated/6982.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

REPTILES

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- For all Projects: Project is within EMR Range

Species profile: https://ecos.fws.gov/ecp/species/2202
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/YFMWAAUGX5FPJANJJVQJXHTVUE/documents/generated/5280.pdf

INSECTS

NAME	STATUS
Karner Blue Butterfly *Lycaeides melissa samuelis*	Endangered

There is **proposed** critical habitat for this species.
Species profile: https://ecos.fws.gov/ecp/species/6656

Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

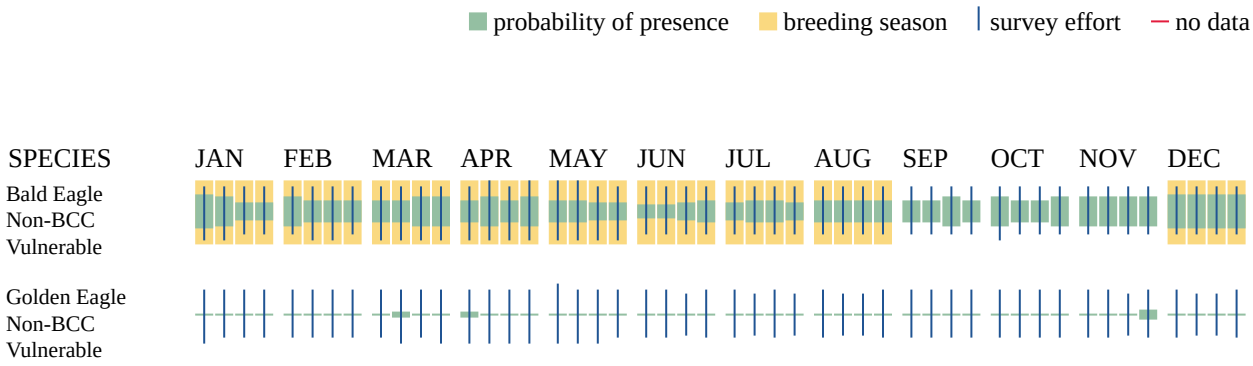
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)

A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Tern *Chlidonias niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 22 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

NAME	BREEDING SEASON
Golden-winged Warbler *Vermivora chrysoptera* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Henslow's Sparrow *Ammodramus henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds May 1 to Jul 31
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10633	Breeds elsewhere
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere

NAME	BREEDING SEASON
Upland Sandpiper *Bartramia longicauda* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9294	Breeds May 1 to Aug 31
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31
Yellow Rail *Coturnicops noveboracensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9476	Breeds May 15 to Sep 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

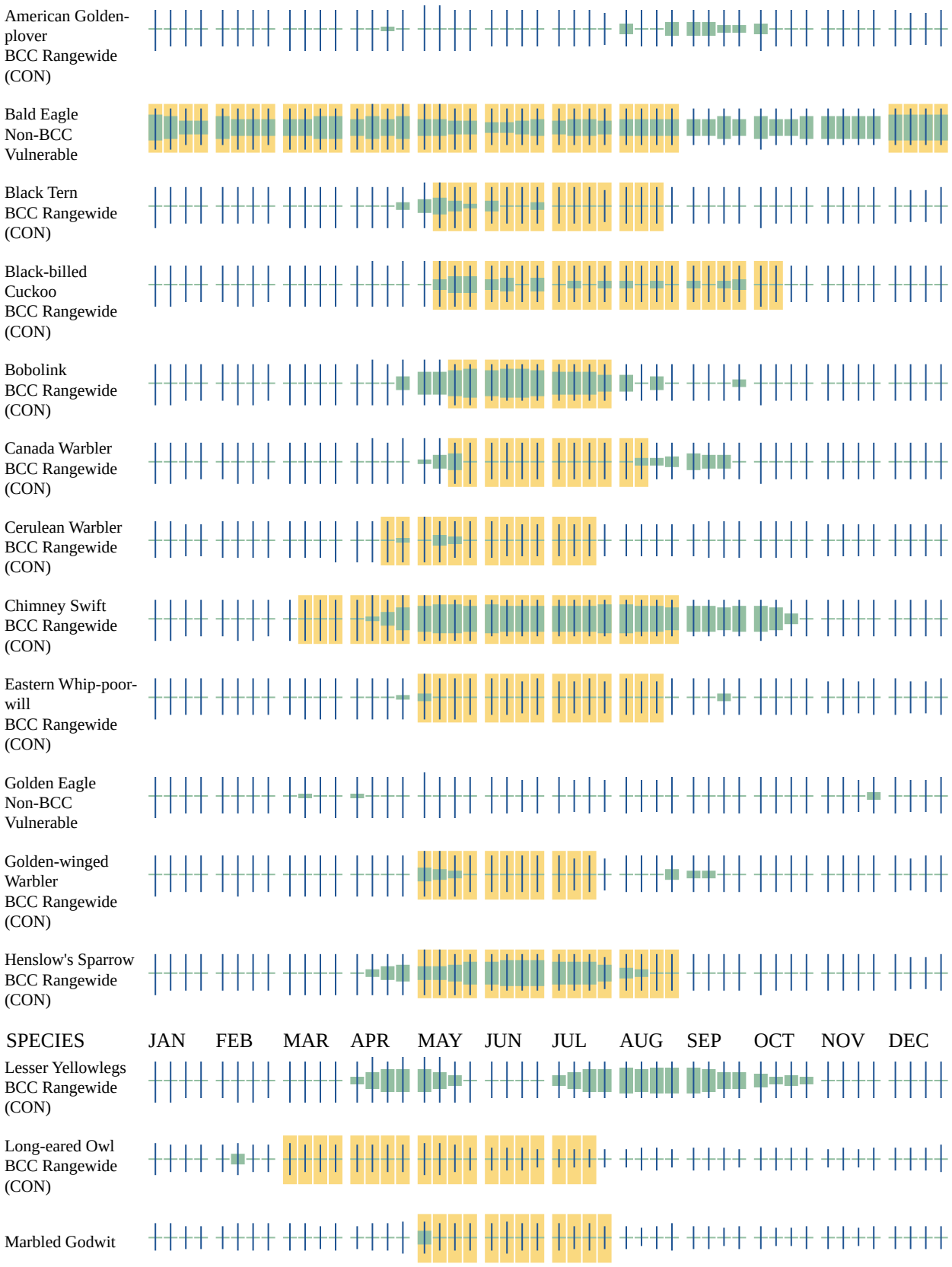
Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC


American Golden-plover BCC Rangewide (CON)
Bald Eagle Non-BCC Vulnerable
Black Tern BCC Rangewide (CON)
Black-billed Cuckoo BCC Rangewide (CON)
Bobolink BCC Rangewide (CON)
Canada Warbler BCC Rangewide (CON)
Cerulean Warbler BCC Rangewide (CON)
Chimney Swift BCC Rangewide (CON)
Eastern Whip-poor-will BCC Rangewide (CON)
Golden Eagle Non-BCC Vulnerable
Golden-winged Warbler BCC Rangewide (CON)
Henslow's Sparrow BCC Rangewide (CON)
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Lesser Yellowlegs BCC Rangewide (CON)
Long-eared Owl BCC Rangewide (CON)
Marbled Godwit

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1A
- PFO1C
- PSS1Ad
- PSS1C
- PFO1A

RIVERINE

- R5UBFx
- R5UBH

FRESHWATER EMERGENT WETLAND

- PEM1Ad
- PEM1Af
- PEM1C
- PEM1Cd
- PEM1F
- PEM1A

FRESHWATER POND

- PUBF

IPAC USER CONTACT INFORMATION

Agency:	Federal Aviation Administration
Name:	Shannon Eibert
Address:	1500 Market Street
Address Line 2:	Suite 2410W
City:	Philadelphia
State:	PA
Zip:	19102
Email	seibert@cscos.com
Phone:	2157094340

Attachment E

GFIA Due Care Plan

Due Care Plan

Gerald R. Ford International Airport

Grand Rapids, MI

June 30, 2022

LimnoTech

Water Environment | Scientists Engineers

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LimnoTech
Water Environment | Scientists Engineers

501 Avis Drive
Ann Arbor, MI 48108
734.332.1200
www.limno.com

Due Care Plan
Gerald R. Ford International Airport
Grand Rapids, MI

June 30, 2022

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1 Introduction

This Due Care Plan (DCP) describes the measures to be taken to mitigate possible exposure to hazardous substances related to known soil and groundwater contamination at the Gerald R. Ford International Airport (the Airport) in Grand Rapids, MI, and prevent exacerbating such risks. This plan was prepared in accordance with the due care obligations identified in Section 324.20107a of Part 201 of Michigan Act 451, as amended (generally referred to as "Part 201").

Under Part 201, a "facility" is defined as a property with soil or groundwater impacts exceeding the residential criteria promulgated by the state for the protection of human health, even if the property is not being used for residential purposes. The Airport meets this regulatory definition based on the findings from site investigations performed to date. Specifically, certain chemicals referred to as per- and polyfluoroalkyl substances (PFAS) have been measured in soil and groundwater at the Airport, at concentrations above their respective Part 201 cleanup criteria. More detail on these chemicals is provided in Section 3.

The Section 324.20107a due care obligations require owners/operators (and tenants) of environmentally impacted properties, meeting the regulatory definition of "facility," to take the following actions with respect to hazardous substances at the facility:

- Undertake measures as necessary to prevent exacerbation of existing contamination;
- Exercise due care by undertaking response activity necessary to mitigate unacceptable exposure to hazardous substances, mitigate fire and explosion hazards due to hazardous substances, and allow for the intended use of the facility in a manner that protects the public health and the environment; and,
- Take reasonable precautions against reasonably foreseeable acts or omissions of a third party and the consequences that could foreseeably result from those acts or omissions.

This Due Care Plan provides documentation for owner/operator and tenant compliance with these continuing obligations by providing the following information:

- Detailed characteristics of property use and site history pertaining to its designation as a "facility" under Part 201;
- Hazardous substance information;
- Current response activities; and,
- Evaluation and demonstration of compliance with Section 324.20107a due care obligations.

Specific provisions of this Due Care Plan are described in Section 4.

2
Property Use and Characteristics

The Gerald R. Ford International Airport (the Airport) is a commercial service airport in Cascade Township approximately 13 miles southeast of the City of Grand Rapids, Michigan. The Airport is the second largest commercial airport in Michigan and its property covers approximately 3,100 acres. The airport is bounded on the east and south by Michigan Route 6. Kraft Avenue and Patterson Avenue generally bound the airport on the west. To the north, the airport is bounded by the CSX Railroad and Interstate 96.

As a commercial service airport, the Airport must operate in accordance with certification requirements under federal regulations at 14 CFR Part 139 (Part 139), including the requirement to provide on-site Airport Rescue and Fire Fighting (ARFF) facilities that are equipped with aqueous film-forming foam (AFFF) that meets military specifications (MIL-PRF-24385)(MilSpec)[1]. In addition, the Federal Aviation Administration (FAA) mandates that airport operators regularly test and calibrate their equipment to ensure proper operation in case of an emergency. The Airport must comply with the terms of its Part 139 certification or risk the loss of its certificate to operate and federal funding.

The Airport is served by municipal water and sanitary sewer service from the City of Grand Rapids. Groundwater is not used for human consumption, industrial processes or any other purpose at the site. Stormwater runoff, from areas of the Airport that are the subject of this Due Care Plan, is collected in a network of catch basins, storm sewers and open ditch systems, which were historically routed to a series of outfalls (i.e., Outfalls 001, 004, 007, and 011). These outfalls discharge either directly into the Thornapple River (Outfall 011) or to unnamed tributaries of the Thornapple River (Outfalls 001 and 004) and Plaster Creek (Outfall 007). With completion of the long-term stormwater/deicing management system in 2015, flow from those drainage areas is discharged from Outfall 011.

Figure 2-1 shows the areas where AFFF is known to have been used at the Airport.

[1] AFFFs that meet the MilSpec are listed on the Navy's Quality Product Database (QPD) website: https://qpldocs.dla.mil/search/parts.aspx?qpl=1910&param=QPL-24385&type=256

Figure 2-1. Locations of Known AFFF Use.

Though these are the known locations of AFFF use, the provisions of this Due Care Plan apply to the entire airport.

3 Hazardous Substance Information

As described in Section 2 of this plan, the Airport has been required by Federal regulations to train with and calibrate equipment that dispenses AFFF for emergency response purposes. Six areas have been identified and investigated with respect to past AFFF use at the Airport: the former firefighter training area (FFTA), the ARFF (and its apron area), Ramp 5, the future Airport Operations Center (AOC), the Taxiway D emergency response incident area, and the Runway 8R/26L emergency response incident area.

3.1 Nature and Extent of Impacts

Environmental investigations of the six areas have been performed to assess the nature and magnitude of any soil and/or groundwater PFAS impacts. Investigations to delineate the full extent of impacts are continuing. The current understanding of these impacts is summarized below.

3.1.1 PFAS in Soil at the Airport

PFAS impacts in soil at the Airport can be summarized as follows:

- Perfluorooctanesulfonic acid (PFOS) is the most commonly detected PFAS[2] in soil samples at the Airport, with concentrations above detection limits being reported in 210 out of 450 samples (47%). At least one soil sample from each identified AFFF release area was found to have PFOS concentrations above the Part 201 cleanup criteria for groundwater-surface water interface (GSI) protection of 0.24 µg/kg.
- Perfluorooctanoic acid (PFOA), the only other PFAS for which a Part 201 soil cleanup criterion has been promulgated, has been detected in 151 of the 450 soil samples collected to date and all reported concentrations are well below the Part 201 soil cleanup criterion of 10,000 µg/kg for PFOA.

Although there has not been enough soil sampling to fully delineate all PFAS impacts in soil at the Airport, there is enough data in surface soil (shallower than one foot) to preliminarily map the areal extent of PFOS impacts. Preliminary maps of PFOS in surface soil in each of the investigation areas are shown in Figures 3-1 through 3-6. These maps will be revised as new data are generated. Further investigation of the AFFF release areas with the highest PFOS concentrations is being planned to evaluate the need for soil remediation.

3.1.2 PFAS in Groundwater at the Airport

Investigation activities have shown that the Airport is underlain by a substantial clay layer that appears to have effectively limited the vertical migration of PFAS in soil beneath the Airport. Isolated areas of shallow groundwater (i.e., above the clay layer) have been observed only in the

[2] For which a Part 201 soil cleanup criterion has been promulgated.

FFTA and Ramp 5 investigation areas. PFAS impacts in groundwater at the Airport are summarized below:

- Four PFAS have been measured in deep groundwater at the FFTA above their respective Part 201 cleanup criteria for drinking water: PFOA, perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS), and PFOS.
- PFAS impacts in deep groundwater appear to be limited to the FFTA area and sampling in the direction of groundwater flow near the northern property boundary has not shown the presence of PFAS concentrations in excess of Part 201 cleanup criteria for drinking water in deep groundwater at the property boundary.
- Four PFAS have been measured in shallow groundwater above their respective Part 201 cleanup criteria for drinking water: PFOA, PFNA, PFHxS, and PFOS.
- Based on evaluation of soil conditions and the presence/absence of shallow groundwater in various soil borings around the FFTA and Ramp 5, it appears that shallow groundwater is limited to relatively small, isolated areas. The Airport's investigative activities to date have revealed that shallow groundwater does not appear to have the potential to seep off Airport property and affect local aquifers.

Based on this analysis, special due care will be exercised in the vicinity of these prior uses. Figures 3-1 through 3-6 show these due care areas.

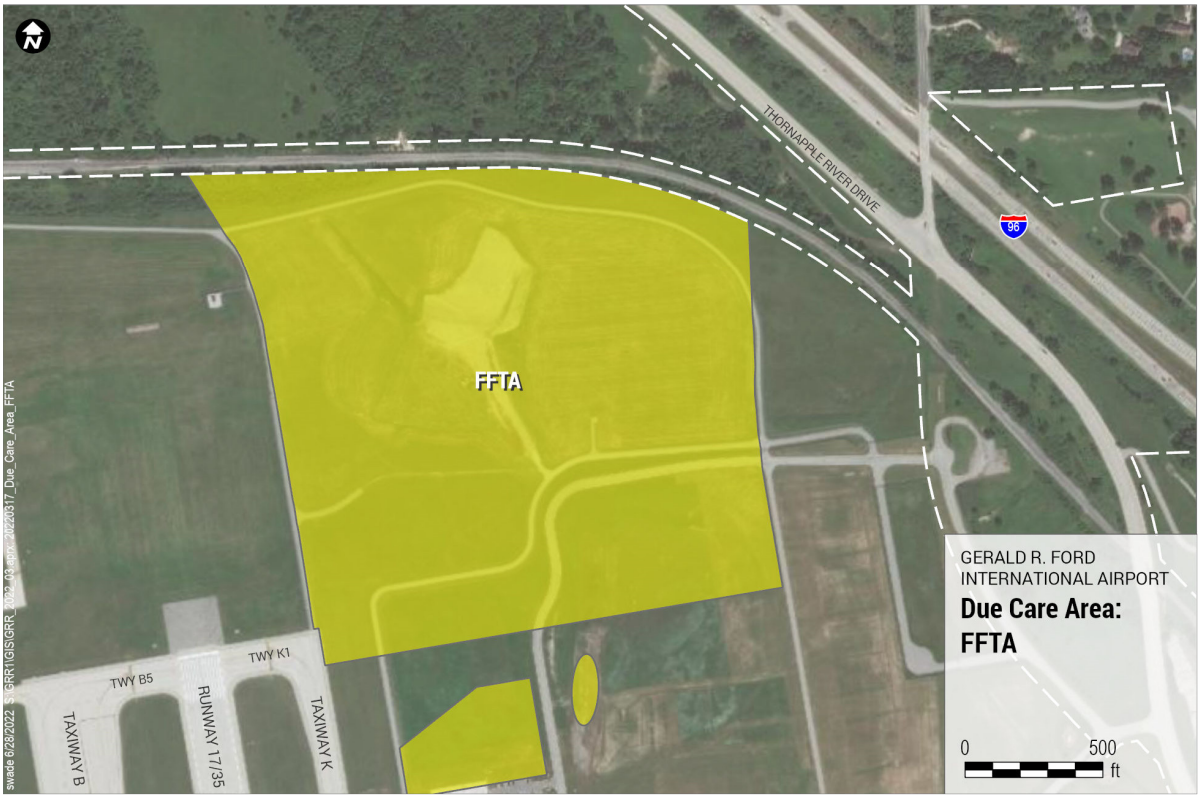

Figure 3-1. FFTA Due Care Area.

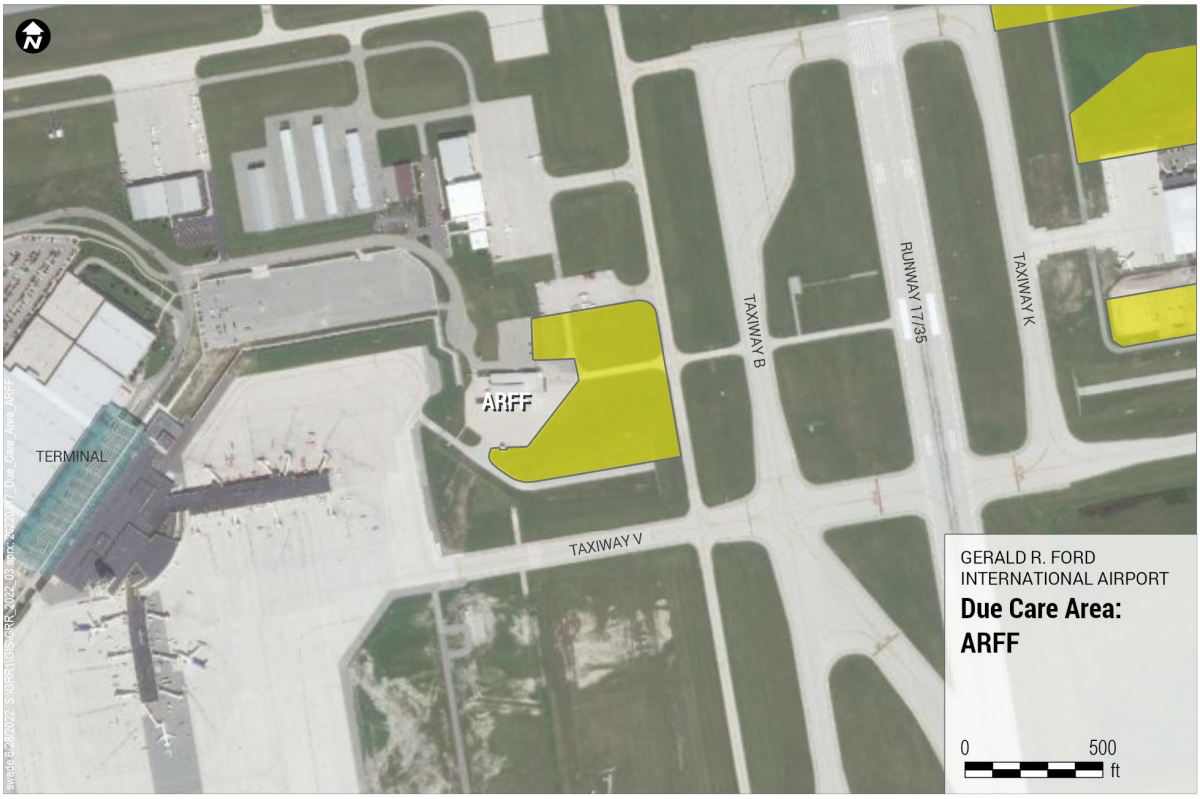

Figure 3-2. ARFF Due Care Area.

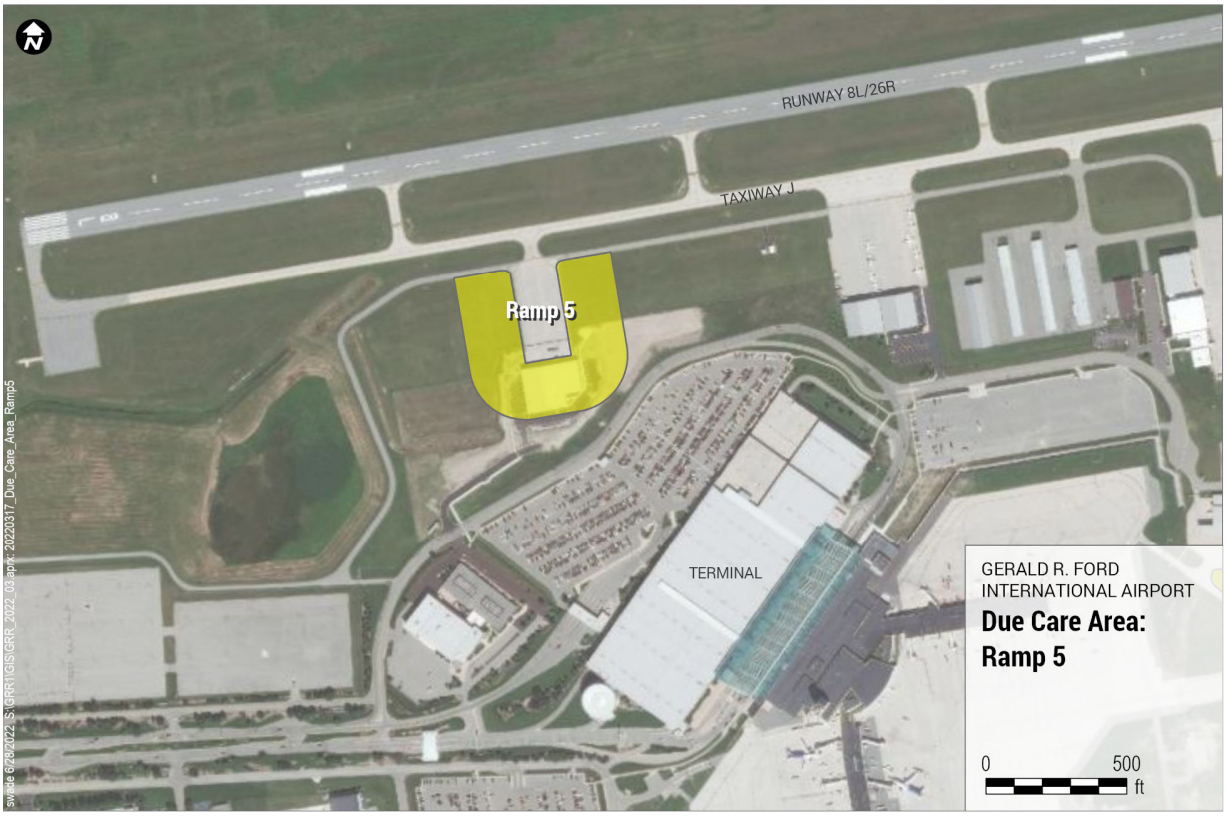

Figure 3-3. Ramp 5 Due Care Area.

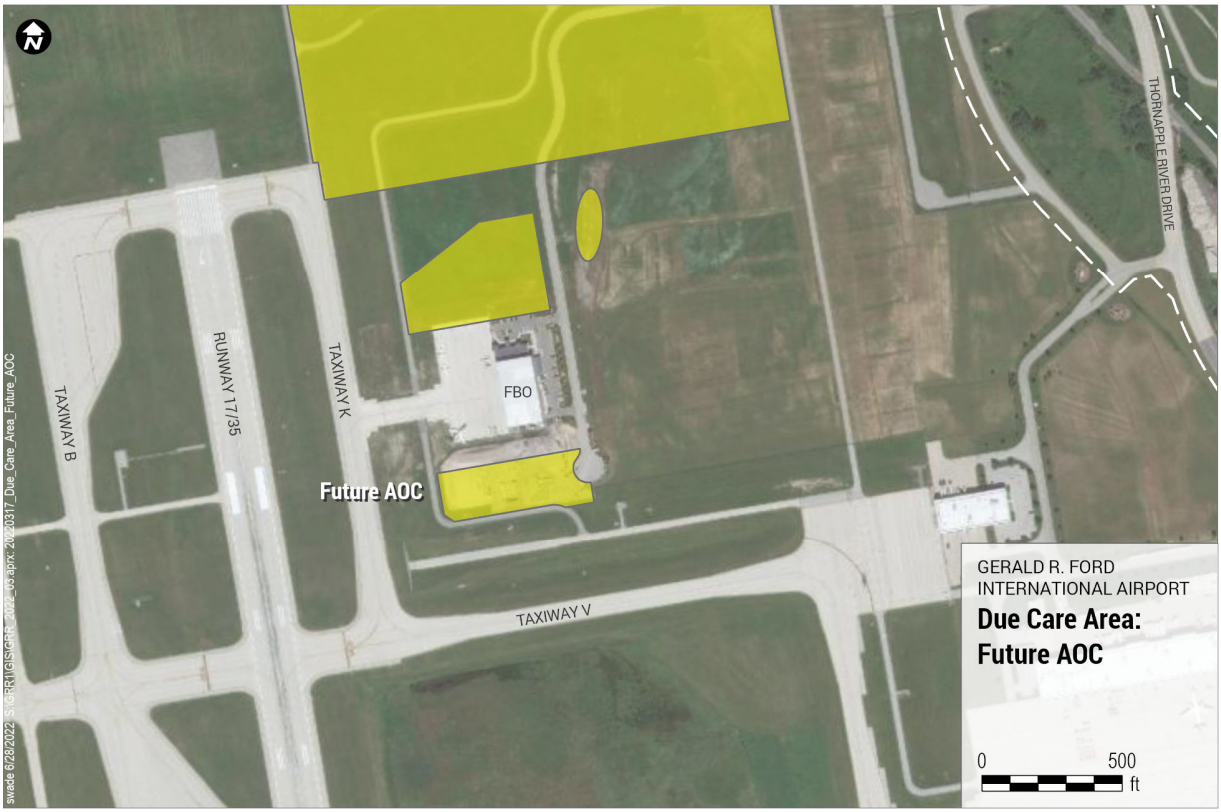

Figure 3-4. Future AOC Due Care Area.

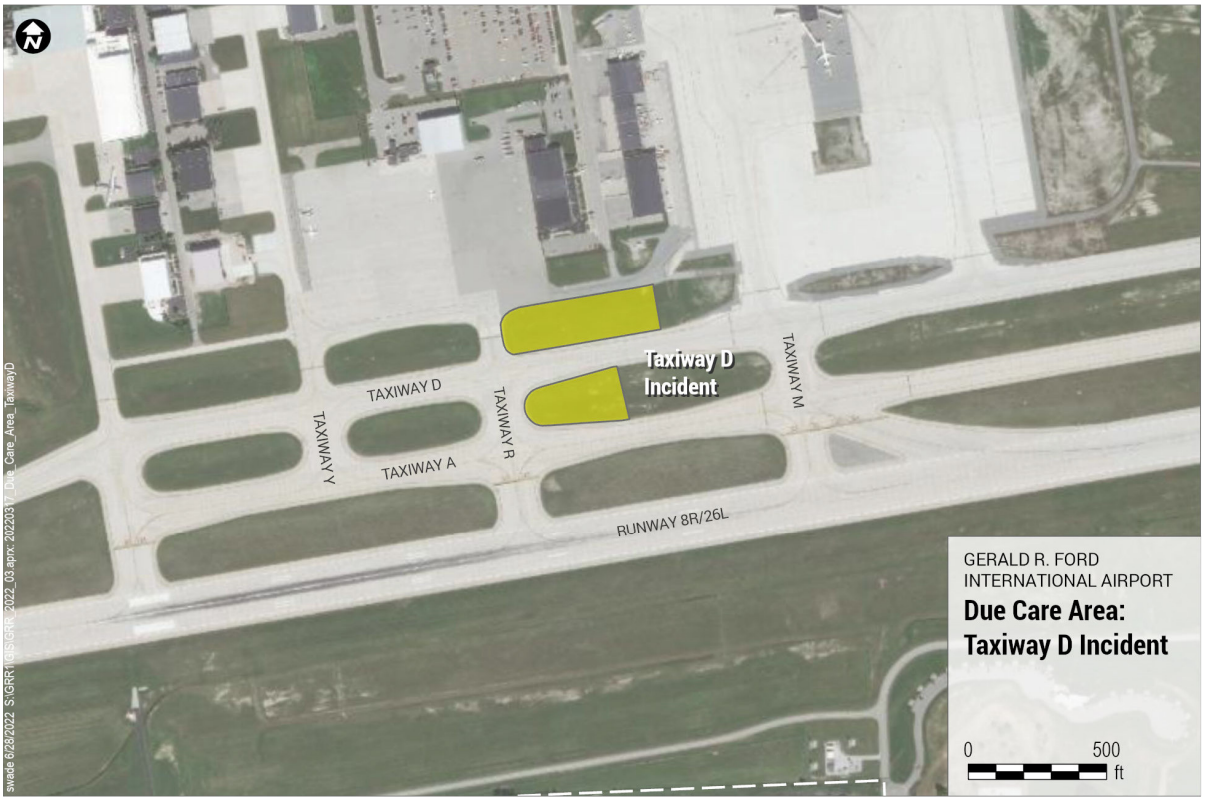

Figure 3-5. Taxiway D AOC Due Care Area.

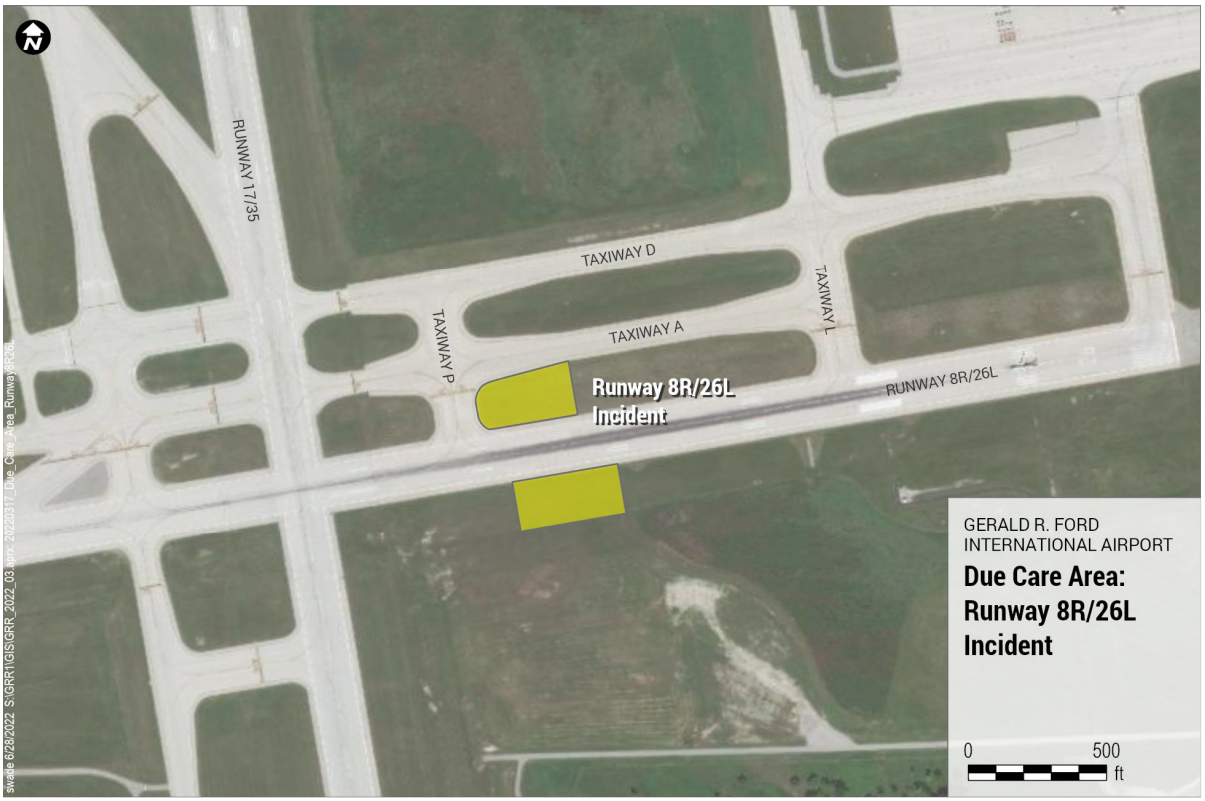

Figure 3-6. Runway 8R/26L AOC Due Care Area.

3.2 Human Exposure Pathways Evaluation

Human exposure pathways have been evaluated for PFOS and PFOA impacts related to soils at each investigation area and for groundwater. This evaluation assesses whether or not each pathway is, or could result in, a human exposure under intended use scenarios. In addition, the Airport compared its analytical data and related understanding of the Airport's property and operations to EGLE's guidance for various exposure pathways. The human exposure pathways evaluated for the Airport's property are described below with a comparison of site data to their respective Part 201 pathway criteria.

3.2.1 Drinking Water

EGLE has developed drinking water criteria to protect humans from potentially harmful effects of ingesting impacted groundwater. The drinking water criteria represent concentrations safe for long-term, daily consumption. The following site-specific factors inform the assessment of the drinking water pathway at the Airport, which found that:

- PFAS impacts in deep groundwater appear to be limited to the area immediately beneath the FFTA. Sampling in the direction of groundwater flow near the northern property boundary has not shown the presence of PFAS concentrations in excess of Part 201 cleanup criteria for drinking water in deep groundwater at the property boundary.
- There are no drinking water wells at the Airport.
- The shallow groundwater at the Airport is found only in discontinuous, isolated areas and in poorly transmissive soil types, making it unusable as any potential source of potable water.
- The Airport is adequately served by a reliable municipal water supply.

Based on these factors, the Airport concludes that currently there is no complete drinking water pathway and it is unlikely to change in the future.

As noted in Section 3.1, PFOS in soil at the six investigation areas exceed GSI criteria. Stormwater from those areas drains to Outfall 011. Although the Thornapple River and Plaster Creek are not currently used as drinking water sources, the Airport will take due care measures to prevent impacting the Thornapple River and Plaster Creek from PFOS in soil that could get collected by stormwater drainage.

3.2.2 Volatilization to Indoor Air

PFOS and PFOA are not considered volatile; human exposure via inhalation is not considered a primary exposure pathway outside of a manufacturing environment where high PFAS concentrations are used. In addition, EGLE has not promulgated Part 201 criteria for this pathway, for these PFAS. For these reasons, this exposure pathway is not applicable for the PFOS and PFOA containing soils at the Airport.

3.2.3 Dermal Contact Exposure

Adsorption of PFOS and PFOA through the skin is not considered a significant exposure pathway for humans. In addition, EGLE has not promulgated PFOS or PFOA Part 201 criteria for dermal contact exposure. For these reasons, this exposure pathway is not applicable for the PFOS and PFOA containing soils at the Airport.

3.2.4 Explosivity and Flammability

While not a human health exposure pathway, EGLE has developed criteria for determining concentrations of some chemicals that would exhibit a possible risk for explosion or flammability. PFOS and PFOA are not chemicals that EGLE believes could be explosive or flammable.

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4 Due Care Activities

The Airport will conduct "due care activities" described below to mitigate any unacceptable exposure to hazardous substances related to any soil and groundwater contamination at the Airport.

4.1 Site-Wide Due Care Activities

Site-wide due care activities, designed to address impacts in all areas where soil and groundwater is impacted by PFAS, are described in this Section.

Specific provisions of this Due Care Plan are summarized as follows:

- GFIAA will make this Due Care Plan available to Airport employees, tenants, and contractors for review.
- No water supply wells will be installed on the property unless there is pre-approval by Airport Facilities staff and it is determined there will not be any resulting unacceptable exposures (see Section 4.1.1).
- Employees, tenants and contractors must protect groundwater monitoring wells, immediately report damage to wells and provide access for sampling when needed.
- Tenants and contractors must avoid subsurface activities at the site without GFIAA's advance permission and consideration of residual contamination.
- Demolition and construction activities will be reviewed by Airport operations and subject to observation by an environmental professional, if deemed necessary and appropriate by the Airport (see Section 4.1.3).
- Paving and repaving activities will be reviewed and subject to observation by an environmental professional, if deemed necessary and appropriate by the Airport.
- Soil excavation plans will be reviewed and soil excavation will be subject to observation by an environmental professional, if deemed necessary and appropriate by the Airport. Soil will not be excavated, transported, stockpiled or reused without Airport review and approval (see Section 4.1.4).
- If any tenant or site contractor uses any materials containing the chemicals of concern, they must store, manage, and dispose of the materials according to all applicable laws and regulations. If any of the materials are released to the environment, the tenant or site contractor must report the release to the owner, in addition to all other legally required reporting obligations, if any. Copies of safety data sheets (SDSs) may be required. Special storage and use restrictions may be imposed (see Section 4.1.5).

4.1.1 Groundwater as Drinking Water Use Restriction

As described in Section 3.2.1, PFAS impacts in deep groundwater appear to be limited to the area immediately beneath the FFTA and shallow groundwater at the Airport is not present in sufficient quantity or yield to serve as a drinking water resource. As a due care measure, the Airport will not allow on-site groundwater to be used for drinking water and will not approve any plans involving any tenants that would attempt any beneficial use of groundwater at the Airport.

4.1.2 Mitigation of Possible Soil Impacts to Stormwater Drainage

The Airport is currently planning further sampling at the investigation areas to more completely delineate PFOS and PFOA levels in related soils. Upon completion of that sampling, the Airport will evaluate possible measures to mitigate stormwater impacts from those areas.

4.1.3 Construction/Demolition Activities

Any planned construction or demolition activities in the vicinity of the Due Care Areas will be reviewed by the Airport Engineering and Planning Director and/or Environmental Manager prior to the Airport's approval or any land-disturbing activity begins. As part of the review process, GFIAA staff will review the Construction Permit Application and will provide the Due Care Plan to the tenant or contractor for review, if applicable. If work involves exposure of underlying soil, the work will be scheduled to allow observation of subsurface conditions by an environmental professional, at the Airport's discretion. In such cases, the Airport's environmental professional will inspect the area, recording visual and other observations as necessary.

4.1.4 Excavation/Transport/Reuse of Soil

Any land-disturbing work involving soil excavation will be reviewed by the Airport Engineering and Planning Director and/or Environmental Manager for prior approval. As needed, and at the Airport's discretion, soil sampling and testing will be conducted by an environmental professional to ascertain the quality of the soil with respect to PFOS and PFOA. In such cases, the Airport's environmental professional will document the sampling event in writing and may also take photographs. Records of soil sampling will be maintained on file. No soil will be excavated, transported, stockpiled, or reused without the Airport's prior review and approval in writing.

4.1.5 Chemical Use, Reporting and Storage

All Airport tenants will be required to identify any PFAS-containing materials used in their operations, including but not limited to Class B AFFF, brought to or used on site, and confirm that such materials are handled to prevent exposure to the environment. The Airport reserves its right to suspend or prohibit tenant actions that may cause unnecessary risk of exposure. In accordance with State of Michigan requirements, tenants are required to report any releases of AFFF. GFIAA staff may direct targeted inquiries to tenants that are potential or likely users of AFFF or other PFAS-containing products.

The Airport's Stormwater Pollution Prevention Plan (SWPPP) describes the management practices used by GFIA ARFF for handling and storing AFFF. GFIA uses equipment that allows for certification

testing to be conducted without discharging any AFFF. In the event AFFF is used during an emergency response, the affected area will be demarcated, cleaned up, and investigated pursuant to State of Michigan requirements.

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5 Operator/Tenant Section 324.20107a Compliance

5.1 Avoid Exacerbation

The Airport will continue to operate at its current location for the foreseeable future. It does not anticipate any groundwater usage by the Airport or tenants. For soil, the due care measures outlined in Section 4 should ensure that exacerbation of existing impacts does not occur, either by the Airport or tenants (see Section 4).

5.2 Exercise Due Care

Potential impacts on stormwater runoff associated with PFOS found in certain soils has been identified as a possible pathway. The Airport and its tenants and contractors shall be responsible for addressing this pathway through the due care actions described in Section 4.0. Additional planned sampling at the investigation areas will provide the basis for evaluation of other possible mitigation activities to block this possible pathway. This Due Care Plan will be updated when those mitigation activities are defined.

5.3 Take Reasonable Precautions

Section 324.20107(1)(c) states that an operator is obligated to "…take reasonable precautions against the reasonably foreseeable acts or omissions of a third party and the consequences that could foreseeably result from those acts or omissions." No foreseeable scenario is known in which unacceptable exposures would occur from third-party acts or omissions, but Airport tenants and contractors will be provided a copy of this Due Care Plan, as needed, to avoid such a scenario.

5.4 Documentation of Due Care

The following documentation of due care activities at the Airport will be kept in a Due Care Plan Documentation file that will be maintained with this Plan at the Airport:

- Completed Construction Permit Application forms including date of plan transmittal for construction/demolition activities determined to require specific review of the Due Care Plan.
- Copies of the sampling results for soil that is relocated on Airport property will be kept on file, along with a written summary of the date(s) of the relocation and the volume of relocated soil.
- Copies of requests to tenants about PFAS-containing materials, and tenants' responses.
- Copies of all potable water test results for the Airport.

5.5 Site Environmental Contact

Parties interested in further information regarding environmental conditions at the site should contact:

Michelle Baker, Airport Environmental Manager
Gerald R. Ford International Airport Authority
5500 44th St. SE
Grand Rapids, MI 49512
(616) 233-6022
mbaker@grr.org

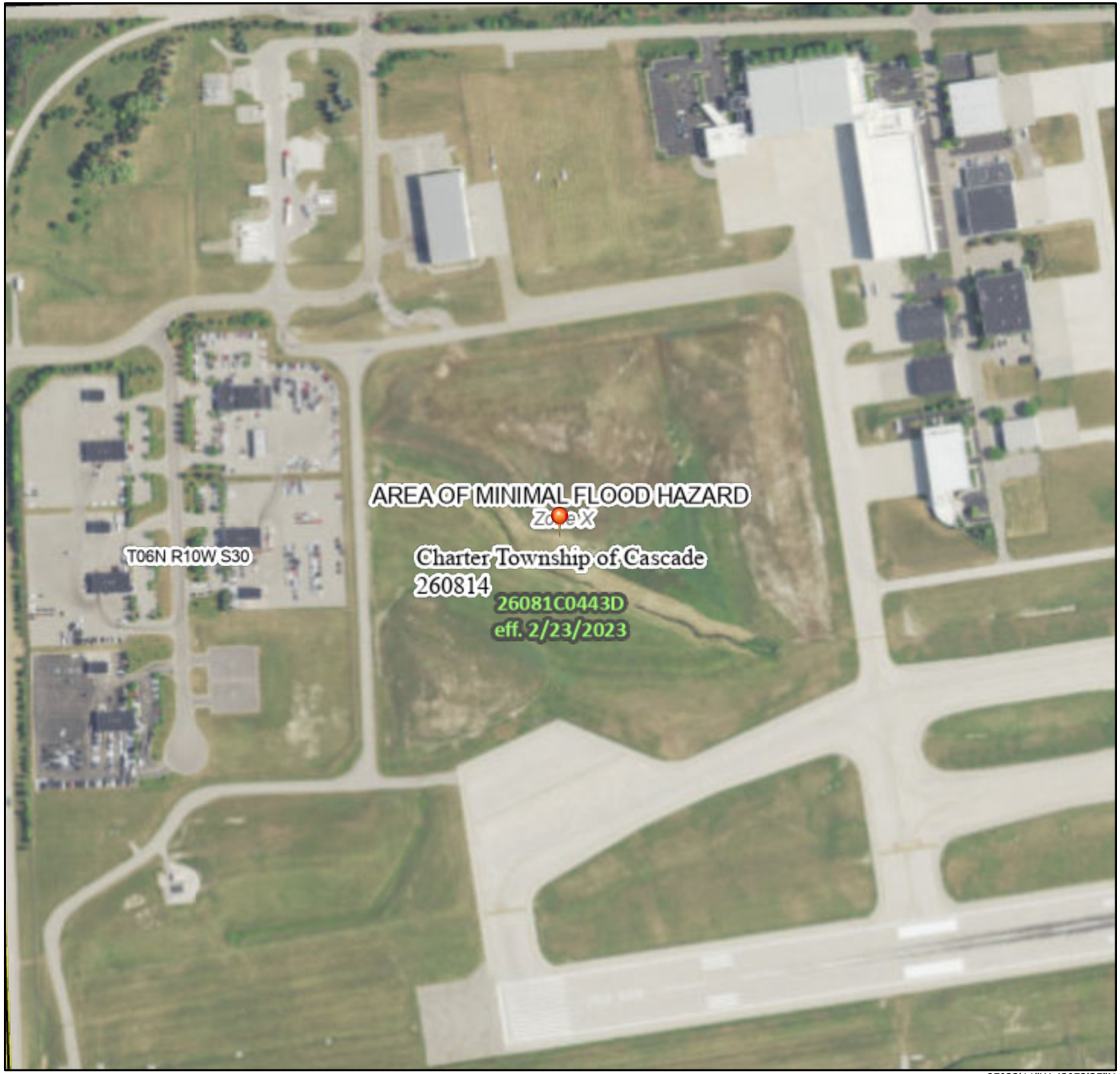
Attachment F

FEMA FIRMETTE

National Flood Hazard Layer FIRMette

FEMA

85°32'49"W 42°53'1"N



85°32'11"W 42°52'35"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/1/2024 at 2:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment G

Public Notice

(to be provided)