Component Plan A

127th Wing
Bird Aircraft Strike Hazard (BASH) Plan 91-21

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MICHIGAN AIR NATIONAL GUARD
SELFRIDGE AIR NATIONAL GUARD BASE

127th WING
BIRD AIRCRAFT STRIKE HAZARD (BASH) PLAN 91-212

May 2013
Change 4 (September 2017)

ACRONYMS AND ABBREVIATIONS

127 WG	127th Wing
AFB	Air Force Base
AFCESA	Air Force Civil Engineer Support Agency
AFCESA/CESM	AFCESA, Mechanical/Electrical Engineering Division, Pest Management
AFI	Air Force Instruction
AFM	Air Force Manual
AFPAM	Air Force Pamphlet
AFSC	Air Force Safety Center
AFSC/SEFW	Air Force Safety Center, Flight Safety, Wildlife (BASH Team)
AGL	Above Ground Level
AHAS	Avian Hazard Advisory System
ANG	Air National Guard
ANG/CEVP	Air National Guard, Civil Engineering, Environmental Planning
AOA	Airport Operating Area
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
AWOS	Automated Weather Observing System
BAM	Bird Avoidance Model
BASH	Bird Aircraft Strike Hazard
BCE	Base Civil Engineer
BHWG	Bird Hazard Working Group
CAM	Chief, Airfield Management
CCTV	Closed Circuit Television
COE	Corps of Engineers, US Army
DC	Deployment Commander
DoD	Department of Defense
DSN	Defense Switch Network
FAA	Federal Aviation Administration
FAAO	Federal Aviation Administration Order
FOD	Foreign Object Damage
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IPM	Integrated Pest Management
JNGB	Joint National Guard Base
KIAS	Knots Indicated Airspeed
LATNA	Low Altitude Tactical Navigation Area
LG	Logistics Group
MAJCOM	Major Command
MOA	Military Operations Area
MSL	Mean Sea Level
OG	Operations Group
OGV	Standardization and Evaluation
OG/CC	Operations Group Commander
OG/OSF	Operations Group, Operational Support Flight
OPR	Office of Primary Responsibility
PA	Public Affairs
SE	Safety
SAS	Safety Automated System
MI ANG	Michigan Air National Guard
SOF	Supervisor of Flying
SSO	Squadron Flying Safety Officer
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

MICHIGAN AIR NATIONAL GUARD
HEADQUARTERS 127TH WING (ACC)
SELFRIDGE ANG BASE, MICHIGAN

10 July 2016

MEMORANDUM FOR 127 WG

FROM: 127 WG/CC

SUBJECT: 127WG Bird Aircraft Strike Hazard (BASH) PLAN 91-212

1. Attached is a BASH plan providing guidance for Bird/Wildlife Aircraft Strike Hazard reduction in areas where flying operations are conducted. It implements AFI 91-202, *US Air Force Mishap Prevention Program*. This instruction applies to all 127th Wing members, Geographically Separated Units (GSUs), and transient/deployed units to the Selfridge Air National Guard Base and its associated airspace.

2. This plan is mandatory and effective upon receipt. Blanket waivers for this instruction are prohibited. The 127 WG/CC or SE may grant waivers on individual sections/procedures.

3. Tasked organizations will develop checklists for implementation procedures and forward them to wing safety for review.

4. Tasked organizations must annually review the plan, update it as needed, and forward comments to wing safety annually as necessary.

5. The office of primary responsibility (OPR) for coordinating this plan is the 127 WG Safety Office.

6. This document is UNCLASSIFIED and there are no release restrictions on the document; handle it in accordance with Department of Defense directives.

7. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW AFMAN 33-363, *Management of Records*, and disposed of IAW the Air Force Records Disposition Schedule (RDS) as specified in AFI 33-364, *Records Disposition – Procedures and Responsibilities*. Official records created or received as a result of this instruction will be maintained under the disposition authority/schedule of the Web-based Records Information Management System (Web-RIMS) Records Disposition Schedule, Table 091-4, at: https://webrims.amc.af.mil/rds/indes.cfm. Public Law 104-13, *The Paperwork Reduction Act of 1995* and AFI 33-360, Volume 2, *Content Management Program-Information Management Tool (CMP-IMT)*, affect this publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through the appropriate functional chain of command.

8. The National Environmental Policy Act (NEPA) of 1969 requires the federal government to consider the environmental consequences for Federal undertakings. The Council on Environmental Quality (CEQ) is the federal agency charged with implementing NEPA. Air Force Instruction 32-7061, *The Environmental Impact Analysis Process*, promulgates CEQ regulations and DoD directives for NEPA compliance within the Air Force and the Air National Guard. The environmental consequences for an updated installation Bird Aircraft Strike Hazard (BASH) Plan were carefully considered and there are no adverse environmental impacts. The environmental analysis for the updated BASH Plan is consistent with Categorical Exclusion (CATEX) A2.3.7 in AFI 32-7061 (32 CRF 989): "Continuation or resumption of pre-existing actions, where there is no substantial change in existing conditions or existing land uses and where the actions were originally evaluated in accordance with applicable law and regulations, and surrounding circumstances have not changed." The provisions in NEPA and requirements of AFI 32-7061 have been fulfilled. No further environmental analysis is required and neither an environmental assessment nor an environmental impact statement will be prepared.

9. See Distribution List (ANNEX Z).

JOHN D. SLOCUM, BGen, MI ANG
127th Wing Commander

127 WG BASH Plan 91-212

SECURITY INSTRUCTION/RECORD OF CHANGES/ANNUAL REVIEW

1. The long title of the plan is 127th Wing Bird/Wildlife Aircraft Strike Hazard (BASH) Plan 91-212. The short title is 127 WG BASH Plan.

2. This document is UNCLASSIFIED. Handle in accordance with Air Force Directives

3. This document does not contain information affecting the national defense of the United States.

RECORD OF CHANGES

Change Number	Date of Change	Date Entered	Posted By
CH 1.14	1 JULY 14	1 JULY 14	Maj Rundell
CH 2	1 JULY 15	1 JULY 15	Maj Whitener
CH 3	1 JUNE 16	10 JULY 16	Maj Donnellon
CH 4	1 SEP 17	1 SEP 17	Maj Donnellon

RECORD OF ANNUAL REVIEW

Reviewed By	Date Reviewed	Remarks
Maj Rundell	1 MAY 2014	Names and maps need updating
Maj Whitener	1 MAY 2015	Updates to airfield nomenclature
Maj Donnellon	1 MAY 2016	Numerous updates & changes.
Maj Donnellon	1 SEP 2017	Added Green Laser and LRAD

127 WG BASH Plan 91-212

PLAN SUMMARY

1. Purpose. To provide an active program to minimize bird and other wildlife strikes to aircraft.

2. Conditions for Execution. This plan is based on hazards from both resident and seasonal bird populations as well as for other species of wildlife. Implementation of specific portions of the plan is continuous, while other portions will be implemented as required by bird or other wildlife activity.

3. Operations to be Conducted:

a. Specific operations include:

(1) Establishment of a Bird Hazard Working Group (BHWG).

(2) Procedures for reporting hazardous bird activity and altering or discontinuing flying operations.

(3) Provisions to disseminate information to all assigned and transient aircrews for specific bird hazards and procedures for avoidance.

(4) Procedures to eliminate or reduce environmental conditions that attract birds and other wildlife to the airfield.

(5) Procedures to disperse birds and other wildlife from the airfield.

b. Tasked organizations: As listed in ANNEX A.

c. Supporting documents: Functional areas will develop operational instructions or checklists as required to support this plan.

127 WG BASH Plan 91-212

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127 WG (MI ANG)
Selfridge ANGB, MI 48045
10 July 2016

127 WG BASH Plan 91-212

BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH) PLAN

1. References:

AFI 13-204V3, *Airfield Operations Procedures and Programs*
AFI 13-213, *Airfield Driving*
AFI 31-117, *Arming and Use of Force by Air Force Personnel*
AFI 36-2226, *Combat Arms Program*
AFMAN 31-229, *USAF Weapons Handling Manual*
AO-15-18, *AM Personnel Arming Group Requirements*
AFI 32-7064, *Integrated Natural Resource Management*
AFI 32-1053, Integrated *Pest Management Program*
AFI 32-7061, *The Environmental Impact Analysis Process*
AFI 32-7086, *Hazardous Materials Management*
AFI 33-360, *Publications and Forms Management*
AFI 33-364, *Records Disposition –Procedures and Responsibilities*
AFMAN 33-363, *Management of Records*
AFI 91-202, *The US Air Force Mishap Prevention Program*
AFI 91-204, *Safety Investigations and Reports*
AFMAN 91-223, *Aviation Safety Investigations and Reports*
AFPD 91-2, *Safety Programs*
AFPAM 91-212, *Bird Aircraft Strike Hazard (BASH) Management Techniques*
UFC 3-260-01, *Airfield and Heliport Planning and Design*
14 CFR Part 139.337, *Wildlife Hazard* Management
FAA AC 150/5200-33B *Hazardous Wildlife Attractants On Or Near Airports*
Public Law 104-13, *The Paperwork Reduction Act of 1995*

2. Introduction. A bird/wildlife aircraft strike hazard exists at the Selfridge Air National Guard Base (MI ANG) and its vicinity, due to resident and migratory bird species and other wildlife. Daily and seasonal bird movements create various hazardous conditions. This plan establishes procedures to minimize the hazard to Michigan Air National Guard aircraft at the installation and in their operating areas. This plan updates existing documents and is based on historical bird/wildlife strike records from the 127 WG and its operating areas, the existing BASH Plan and the spring 2005, winter 2008, and spring 2013 visits by NGB. As part of that visit, a review of historical records, documentation, and current hazard assessment are included in APPENDIX 1, attached to the updated Bird/Wildlife Aircraft Strike Hazard Plan. Detailed observations, and the biological and operational basis for resulting recommendations are included in the appendix for implementing the 127 WG BASH Plan. Birds observed in the vicinity are listed in APPENDIX 2. Additional BASH references are attached in APPENDIX 3. No single solution

exists to this BASH problem, and a variety of techniques and organizations are involved in the control program. This plan is designed to:

a. Establish a Bird Hazard Working Group (BHWG) and designate responsibilities to its members.

b. Establish procedures to identify high hazard situations and to aid supervisors and aircrews in altering or discontinuing flying operations when required.

c. Establish aircraft and airfield operating procedures to avoid high-hazard situations.

d. Provide for disseminating information to all assigned and transient aircrews on bird hazards and procedures for bird avoidance.

e. Establish guidelines to decrease airfield attractiveness to birds.

f. Provide guidelines for dispersing birds when they are present on the airfield.

g. Provide guidelines for avoiding birds in operating areas away from the airfield.

h. Identify organizations/OPRs with authority to upgrade, initiate, or downgrade Bird Watch Conditions.

i. Provide guidelines to maintain the working relationship between ANG and tenant units on the Selfridge ANG Base.

3. Summary of Recommendations:

a. Designate ANG personnel or contractors to conduct the wildlife control program.

b. Maintain current depredation permits for all agencies and personnel to control birds, mammals, and other wildlife that may pose potential aviation hazards.

c. Maintain turf over the entire AOA with a dense, uniform monoculture of grass maintained between 7 and 14 inches (AF Mandate).

d. Remove all old operating surfaces, broken tarmac, bare areas, etc. from the AOA.

e. Continue to reduce wetland habitat within the AOA and ensure any mitigation efforts are conducted off-site. See MOA with US Army Corps of Engineers Memo.

f. Remove all trees and brush within the AOA and ensure all landscaping vegetation in proximity to the field is selected such that it does not attract birds and other wildlife.

g. Construct or replace any new sections of fencing to recommended standards. Monitor the security fences and gates for wildlife breeches and treat sections where breeches routinely occur.

h. Conduct dispersal operations using standard frightening techniques such as bioacoustics, pyrotechnics, gas cannons, or others. ANG and tenant agencies must have this equipment at their disposal to use at all times as needed.

i. Remove or configure with anti-perching devices, any known bird perches or nest sites in the AOA.

j. Conduct harassment or depredation activities on birds nesting and roosting in hangars and other airfield structures.

k. Disperse roosting birds from local area sites through active harassment or depredation.

l. Conduct training for all aircrews and use the Bird Avoidance Model and Avian Hazard Advisory System for flight planning when away from the home airfield.

m. Prohibit all personnel from feeding or otherwise attracting birds or other wildlife on base property.

4. BASH Plan Execution:

a. Concept of Operations:

(1) Phases. Designate Phase I and Phase II periods of bird activity based on historical information. Phase II represents heavy bird activity, normally associated with migratory seasons. Records indicate migratory seasons (April – June and September – November) as most likely periods of significantly increased local bird activity. Publish Phase I and II designations in the Flight Information Publication and post in Airfield Management/Flight Planning room, as appropriate.

(2) Coordination. Reducing the bird strike hazard at the 127 WG requires a cooperative effort between several MI ANG organizations, tenant units, and the surrounding community. The OPR for coordinating this plan is the 127 WG Safety Office.

(3) Bird Hazard Working Group (BHWG):

(a) Function. Collects, compiles, and reviews data on bird strikes. Identifies and recommends actions to reduce hazards. Recommends changes in operational procedures. Prepares informational programs for aircrews. Assists the installation commander by acting as a point of contact for off-installation BASH issues.

(b) Authority. The BHWG submits all recommendations to the installation commander for approval. Implementation is through the normal chain of command.

(c) Composition. The chairperson will be the Wing Commander or designee. As a minimum, the group will consist of a representative from flight safety, aircraft maintenance, civil engineering (pest management, natural resources, grounds maintenance, etc.), airfield management, environmental management, ATC, and representatives from other tasked organizations (ANNEX A) as required. Meeting minutes will be maintained and appropriate distribution made.

(d) Meeting Schedule. As requested by the chairman of the BHWG, but at least semi-annually in accordance with AFI 91-202.

b. **Tasks:** ANNEX C outlines the general and continuing tasks and responsibilities for each organization and gives specific hazard reduction measures for varying bird hazard conditions.

ANNEXES:

A — Tasked Organizations
C — Operations
M — Mapping, Charting and Geodesy
S — Bird Hazard Warning System: Operation Bird Watch
Y — Reports and Forms
Z — Distribution

ANNEX A TO 127 WG BASH Plan 91-212

TASKED ORGANIZATIONS:

MICHIGAN AIR NATIONAL GUARD:

127 WG/CC
127 WG/CV
127 WG/SE
127 WG/PA
127 WG/CP
127 WG/BCE
127 OG/CC
127 ARG/CC
127 OG/AT
127 OSS/OSA
127 MXG/CC
127 MSG/CC
127 SFS/CC
127 WG/CEV
127 MDS/SGPB
127 MDS/SGPM
191 MXS/CC
171 ARS/CC
US Coast Guard Air Station-Detroit Aviation Safety

NOTE: This list is representative only; other interested or required agencies may be tasked as needed.

ANNEX C to 127 WG BASH Plan 91-212

OPERATIONS:

1. 127 Vice Wing Commander or Designee:

- **a.** Chairs BHWG meetings as per AFI 91-202.
- **b.** Approves or disapproves recommendations from the BHWG.
- **c.** Reviews notes from the 127 Wing Safety Meetings.
- **d.** Provides recommendations concerning Bird/Wildlife control measures to tenant units on Selfridge ANGB.

2. 127 Operations Group Commander (OG/CC):

- **a.** Evaluates and disseminates Bird Watch Conditions (declared by the Airfield Manager) for Selfridge ANGB, training areas, and deployed locations through OSS/OSA or other means (ANNEX S). The SOF is also explicitly authorized to conduct these procedures as the official designee of the Operations Group Commander.
- **b.** Issues specific guidance for aircrews and SOFs on procedures to be followed under Bird Watch Conditions (ANNEX S).
- **c.** Issues specific guidance to the command post concerning actions required to implement this plan (ANNEX S).
- **d.** Makes operational changes to avoid areas and times of known hazardous bird concentrations, mission and operations permitting. Considers the following, during periods of increased bird activity:

    (1) Coordinate with ATC to raise pattern altitude or change pattern direction, if possible.
    (2) Avoid takeoffs/landings at dawn/dusk $\pm$ 1 hour.
    (3) Reschedule local training or transition elsewhere.
    (4) Raise altitude en route to training areas.
    (5) Limit time in low-altitude environments to minimum for training requirements.
    (6) Select routes or training areas based on bird hazard data from HQ AFSC/SEFW, using the Bird Avoidance Model and Avian Hazard Advisory System (http://www.usahas.com) for low-level route and range analysis.
    (7) Make full-stop landings.

3. 127 Air Refueling Group Commander:

- **a.** Issues specific guidance for aircrews and Duty Officers on procedures to be followed under Bird Watch Conditions (ANNEX S).
- **b.** Makes operational changes to avoid areas and times of known hazardous bird concentrations, mission and operations permitting. Considers the following, during periods of increased bird activity:

(1) Coordinate with ATC to raise pattern altitude or change pattern direction, if possible.
(2) Avoid takeoffs/landings at dawn/dusk ± 1 hour.
(3) Reschedule local training or transition elsewhere.
(4) Raise altitude en route to training areas.
(5) Limit time in low-altitude environments to minimum for training requirements.
(6) Select routes or training areas based on bird hazard data from HQ AFSC/SEFW, using the Bird Avoidance Model and Avian Hazard Advisory System (http://www.usahas.com) for low-level route and range analysis.
(7) Make full-stop landings.

4. 127 Maintenance Group Commander and 127 ARG Director of Maintenance:

a. Issues specific guidance to personnel for the reporting of all discovered bird strikes on aircraft to Quality Assurance and Wing Safety (ANNEX Y).
b. Issues procedures for the preservation of non-fleshy bird remains if discovered on aircraft. Even the smallest fragment of feather or smears should be forwarded to Wing Safety for identification (ANNEX Y).
c. Ensures all aircraft cavities and openings are inspected after even short periods on the ramp or after undergoing maintenance in hangars for birds or nesting materials before returning to operation.

5. 127 Safety:

a. Monitors installation compliance with AFPAM 91-212 and reports all bird strikes and hazards per AFIs 91-204, 91-202 and ANNEX Y of this plan.
b. Reports on BASH and includes BHWG recommendations and actions in the agenda and minutes of the wing's quarterly safety meetings (quarterly safety meetings are integrated into AOB Meetings).
c. Disseminates BASH data to BHWG and flying units.
d. Provides the BHWG with the current BASH guidance from higher headquarters and supplemental information from the US Fish and Wildlife Service or other agencies.
e. Maintains a current bird activity map for the Selfridge ANG Base and unit operating areas.
f. Provides any additional information on migratory, local, and seasonal bird activities through contact with the US Fish and Wildlife Service, Audubon Society, local ornithologists, and other agencies.
g. Monitors bird activity and strike statistics and advises the chairperson of the working group when a meeting is deemed necessary.
h. Coordinates with aircrews and maintenance personnel in collecting of non-fleshy remains after strikes. Sends any salvaged bird strike remains (feathers, beaks, and feet only) to the Smithsonian Institution (ANNEX Y).
i. 127 WG/SE collects/compiles all bird strike data for aircraft operating in and out of Selfridge ANGB.
j. Establishes and maintains a continuity folder with any pertinent BASH data and information to assure continuity of knowledge with personnel turnover.

k. Establishes a bird hazard awareness program in conjunction with squadron flying safety officers, to include films, posters, and information on local bird hazards and reporting procedures.

l. Provides training for the use of pyrotechnic devices.

6. 127 Operations Support Squadron and 191 Operations Support Squadron Tactics: Reviews with OG/CC and ARG/CC all proposed new routes and training areas or changes to existing routes/areas for BASH potential.

7. 127 Operations Group Standardization and Evaluation and 127 Air Refueling Group Standardization and Evaluation:

a. Reviews with the OG/CC or ARG/CC (as appropriate) proposed guidance for aircrew and the SOF/Director of Operations on procedures to be followed under bird watch conditions.

b. Reviews with the OG/CC or AG/CC (as appropriate) potential operational changes to avoid areas and times of known hazardous bird conditions.

8. 127 Operations Group Supervisor of Flying and 171 Air Refueling Squadron Operations Supervisor:

a. Obtains and posts current bird activity data – BAM and AHAS – and ensures it is readily available for aircrew briefings. Ensures Bird Watch Condition is posted on the Airfield Automation System (AFAS) and advises each crew of same. Informs aircrews of any changes to BWC, BAM and AHAS (AHAS particularly important for sorties of long duration or when excessive time has lapsed between the brief and the flight.)

b. Ensures aircrew reports all bird strikes and hazardous conditions promptly.

c. Ensures aircrew completes an AF IMT 853 if a bird strike occurs.

9. 127 Base Civil Engineer in conjunction with the Operations Group and Environmental Management:

a. Coordinates with airfield management staff on all civil engineering and habitat management issues as listed.

b. Provides representation to the BHWG to monitor and advise group of civil engineering procedures.

c. Develops procedures for removal or control of bird attractants on base property.

d. Initiates surveys and writes environmental impact assessments and statements as required.

e. Corrects environmental conditions to decrease BASH potential.

f. Uses land management practices that reduce BASH potential.

g. Modifies airfield habitat consistent with runway lateral and approach zone management criteria per AFI 32-1026 on base property. Habitat modification to reduce BASH beyond the 1000-foot distance criterion is desired and will further reduce BASH potential.

h. Incorporates the following practices into the installation Land Management Plan for base property:

(1) Managing Grass Height. Maintain a uniform grass height between 7 and 14 inches on the airfield. Determine mowing frequency as needed to maintain height requirements. Coordinate mowing with periods of low flight activity. Cut grass before it goes to seed to discourage seed eating birds from utilizing the airfield. As a rule, do not permit grass to exceed 14 inches, as taller grass will attract some bird species and rodents which, in turn, attract raptors (birds of prey) and mammalian predators. Airfields with a variety of grass species may have a fast-growing strain that reaches 14 inches sooner than the rest of the airfield. Mow when the average grass height reaches 14 inches. Growth inhibitors may be considered to reduce mowing requirements and prevent seed head formation. Obtain assistance in herbicide selection for weed control, appropriate grass seed selection, fertilization, growth inhibitors, and erosion control vegetation from the Agricultural Extension Service, the US Natural Resources Conservation Service, or HQ AFCESA/CESM, Tyndall AFB, FL. Also see APPENDIX 3, Attachment 5 for additional guidance.

(2) Controlling Broad-leaved Weeds. Keep broad-leaved weeds to a minimum on the airfield. Apply herbicides as necessary. Broad-leaved weeds attract a variety of birds, may produce seeds or berries, and may limit grass growth.

(3) Planting Bare Areas. Note that bare areas are frequently used by birds as feeding and resting sites, or to obtain grit. Eliminate them on the airfield. Plant grass as necessary and appropriate on the airfield and maintain irrigation, if required.

(4) Fertilizing. Selectively stimulate grasses to promote a uniform cover based on soil test results. Irrigation may be required to support turf growth for limited times, such as when establishing new cover.

(5) Reducing Edge Effect. Edge effect refers to the highly attractive transition zone between two distinct habitat types (e.g., brush to grassland). Maintain the airfield as uniformly as possible to reduce this effect.

(6) Leveling of Airfield. Level high spots and fill low spots on the field to reduce attractiveness to birds and prevent standing water.

(7) Removing Dead Vegetation. As soon as possible, remove dead vegetation such as brush piles, grass clippings, hay bales, etc., and the cover it affords.

(8) Removing Dead Birds and Animals. Remove dead birds or other animals from the field to avoid attracting vultures or other birds. Forward non-fleshy remains that may be caused by collision with aircraft to flight safety for identification.

(9) Controlling Pests. Invertebrates and rodents provide important food sources for birds. Civil engineering pest management section, should periodically survey and reduce these pests when required. Control insects, earthworms, rodents, etc., by using integrated pest management (IPM) techniques under the supervision of the installation pest management office with EPA-approved methods. Control should begin early in the spring.

(10) Maintaining Drainage Ditches. Regularly inspect ditches and keep them clear and obstacle free. Maintain ditch sides as steeply as possible—minimum slope ratio of 5:1—to discourage wading birds and emergent vegetation. Remove vegetation as often as necessary to maintain flow and discourage use by birds. Reference the Land Management Plan for procedures.

(11) Eliminating Standing Water. Eliminating standing water immediately is essential to avoid development of wetlands. Coordination with the Army Corps of Engineers and the appropriate state environmental permitting office is required prior to altering wetlands. Also see the 2004 Memorandum of Agreement between the Corps of Engineers, FAA, USAF, and other federal agencies regarding waivers or exemption for on-site wetland mitigation procedures. The memo may be found at http://www.faa.gov/airports/environmental/media/wildlife_hazard_mou_2003.pdf. Eliminate small ponds or puddles and some large bodies of standing water to reduce attractiveness to birds. Low spot and ditch maintenance is essential.

(12) Employing Erosion Control Vegetation. Use vegetation that is appropriate for the region and supports BASH reduction philosophy.

(13) Fencing. Employ fencing in accordance with AF guidelines to deter large mammals and other wildlife from entering the airfield environment (see also APPENDIX 3, Attachment 6 for additional guidance).

(14) Controlling Waste Disposal. Landfills are the most significant attractant to hazardous bird species. Operate disposal sites according to FAA guidelines and ensure they comply with state and federal laws. Do not dispose of wastes on-site and relocate landfills that do not meet FAA guideline criteria.

(15) Eliminating Roosting Sites. Control blackbird, starling, and crow roosts by vegetation management of roost sites where possible. Prune trees to reduce the number of perches available and remove entire trees or stands if necessary. Refer to the 2010 Integrated Natural Resources Management Plan (INRMP) and AFM 86-5 or AFI 32-7064. Use active harassment techniques for blackbird, starling, and crow roosts whenever necessary. USDA can conduct or assist in roost dispersal operations.

(16) Bird-proofing Buildings and Hangars. Pigeons, sparrows, and starlings frequently occur in buildings and hangars and should be excluded. Denying access by screening windows, closing doors, and blocking entry holes is most effective. When necessary, consider:

(a) Pellet Guns. Shoot birds for a short-term solution. Permits from the US Fish and Wildlife Service and state wildlife agency are required to kill most birds. (Permits are not required for Rock Pigeons, European Starlings, or House Sparrows). Experience has shown that all birds cannot be removed using this technique. Proper safety equipment and skilled personnel are necessary. Shooting in hangars containing aircraft is not permitted (with the exception of pellet gun). Ensure all personnel in the hangar are aware of the shooting in progress and will remain clear of the area.

(b) Netting. Install netting under building superstructure to exclude pest birds from roosting areas. Ensure no gaps or holes are present for birds to get through.

(c) Avitrol, Starlicide, or Other Avicides. Coordinate with USDA, Wildlife Services about using any labeled bird control chemicals.

(d) Trapping/Removal. Consider use of large cages with food, water, and other birds to trap pest birds in full compliance with provisions of the Migratory Bird Treaty Act and the State Natural Resources Department. Official consultation with Federal and State regulatory agencies is recommended if migratory birds are taken or could be impacted as non-target species.

(e) Design Features. Consider structures with the support features located on the outside of the building to greatly reduce bird numbers. Consider this design when planning new hangars or other structures.

(f) Door Coverings. Use netting or plastic strips suspended over the doors to exclude birds. Ensure no tears or holes are present that allow birds access to the hangar.

(g) Sharp Projections. Use in limited areas such as ledges, overhangs, or small places where birds cannot be allowed. Expense prohibits their use over the entire structure.

(h) Night Harassment. Use high pressure air or water to make hangars an undesirable roosting site. Persistence is the key.

(17) Preventing Other Animal Hazards to Aircraft. The 127th CES Pest Management Shop will be the OPR and use appropriate trapping methods for animals such as predators. Some species or individual animals, such as deer, foxes, or coyotes, may be removed by shooting. Coordinate with the Wildlife Management Plan (reference AFI 32-7064) and obtain appropriate permits.

10. Airfield Operations Officer, Supervisor of Flying and Airfield Manager: Per ANNEX S of this plan, the authority to declare Bird Watch Conditions is vested with the 127 WG Airfield Management (OSS/OSA) via inputs from aircrew, SOFs, SQ DOs, and airfield ground personnel during normal flight operations. Units deployed to the 127 WG should use their SOF as the POC for BASH issues when host unit resources are not available or appropriate. The Airfield Manager, or his/her designated representative, is the declaring authority. Ensure that any bird watch conditions passed to the control tower are coordinated between base assigned flying units such that conflicting conditions are not issued.

a. Declares bird watch conditions based on:

(1) Information relayed by aircrews.

(2) Observations made by and relayed to base operations by the air traffic control tower and transient personnel.

(3) Observations made by base operations personnel. NOTE: Airfield Management (OSA) will downgrade or cancel bird watch conditions, commensurate with updated information.

b. The Airfield Manager appoints a bird dispersal team to include, as a minimum, personnel from 127 CES Pest Management, Airfield Management (OSA), and 127 Safety. This team will be activated at any time when birds on the airfield create hazardous conditions (Moderate or Severe.) The bird dispersal team will have immediate access to pyrotechnic equipment for bird dispersal. This equipment must be stored where it is readily available. Personnel should be properly equipped and trained (see Attachment 1 to Annex C for pyrotechnic training).

c. When personnel from the Bird Dispersal Team are trained in the following listed areas they may then actively participate in bird harassment programs.

(1) Pyrotechnics. Pyrotechnics include 12-gauge scare cartridges that produce a secondary explosion, or screamers that produce a loud whistle to scare birds from the area. The scare cartridges are launched from either a shotgun or a pyrotechnic pistol (31-8 Very pistol) with a steel sleeve insert to modify the gun to the 12-gauge size. A 15mm hand held launcher is available to fire 15mm screamers and bangers (smaller versions of the 12-gauge cartridges – also see ANNEX C, Attachment 3). Pyrotechnics are effective for dispersing most bird species and can also be used for coyotes, foxes, and deer.

(2) Gas Cannons. Gas cannons may also be used as observed. These devices should be operated, especially at dawn and dusk, as birds come in to feed or roost. Cannons must be relocated frequently to avoid habituation problems. Remotely triggered models, fired only when necessary, are preferred to models on timers. These devices are very effective when used in conjunction with other harassment techniques on waterfowl and other game birds, and can also be used for gulls and blackbirds.

(3) Depredation. Birds must be killed occasionally as a reinforcement of other methods. Rock Pigeons (domestic pigeons), European Starlings, and House Sparrows can be killed without a permit. Most other species require federal and state permits. The 127th CES Pest Management will contact the US Fish and Wildlife Service and the Michigan State wildlife agency for permits and assistance in this area. 127th CES Pest Management shop is the also the primary office designated to develop Operating Instructions and matrixes before implementing depredation procedures on Selfridge ANGB property. Also see ANNEX C, Attachments 5 and 6.

(4) Other Devices. Ingenuity is encouraged in the bird scare program. Other devices may be used. Falconry or dogs may be considered based on availability and problem bird species. Contact the BASH team at HQ AFSC/SEFW, Kirtland AFB, NM for advice in this area.

(5) Ineffective Methods. Ultrasound, rubber snakes, stuffed owls, rotating/flashing lights, loud music, and other such devices have not proven effective and should not be used.

d. Notifies security forces and ATC when significant bird scare activities will be necessary on the airfield.

e. Conducts daily airfield survey. Dead birds should be removed. Bird sighting surveys should be filled out and sent to wing safety as appropriate.

11. Air Traffic Control:

a. Reports observed/reported bird activity to Airfield Management as appropriate and required by FAA Handbook 7110.65.
b. Issues bird watch advisories to aircrews as required by FAA Handbook 7110.65, paragraph 2-1-22.
c. Provides airfield management immediate access to the runway under bird watch condition MODERATE or SEVERE, giving priority to landing traffic.
d. Identifies radar targets as possible bird activity when appropriate to provide warning to pilots as required by FAA Handbook 7110.65, paragraph 2-1-21, Traffic Advisories.
e. Issues traffic advisories such that pilots can make operational changes such as missed approaches or delayed takeoffs when possible bird hazards appear on ATC radar.
f. Updates bird hazard advisories on Automatic Terminal Information Service (ATIS) as required and if available, by FAA Handbook 7110.65, paragraph 2-9-3.
g. Coordinates with bird hazard patrol personnel when active dispersal is required or on-going within the airport operating area on a workload-permitting basis.
h. Uses very specific language to communicate locations, times, and behaviors of birds identified as possible hazards to aircraft as required by FAA Handbook 7110.65, paragraph 2-1-22.
i. Activates bird cannon system automatically upon taxi of locally based KC-135 and A-10 aircraft.

12. Public Affairs: 127 WG public affairs will participate as required and upon request will provide a public information program designed to inform base personnel, dependents, and the general public on the hazards and costs of uncontrolled bird activity and the measures being taken to minimize them.

a. Provides photographic services to document bird strikes and related activities as required.
b. Provides graphic support to publicize bird hazards and actions taken to minimize them as required.

13. Training Areas/Ranges: Use the Bird Hazard Warning System (ANNEX S) to report significant bird activity noted away from the base. Report sightings to the SOF or Safety Office and advise aircrews on hazardous conditions.

ATTACHMENT 1 to ANNEX C, 127 WG BASH Plan 91-212

SANGB Bird/Wildlife Aircraft Strike Hazard (BASH) PYROTECHNICS SAFETY Program

This Wing Operating Instruction establishes procedures for the handling, storage, training and use of pyrotechnics for wildlife dispersion. This program applies to all personnel assigned to the Bird Dispersal Team designated in the wing BASH Plan 91-212. A copy of this instruction will be maintained by all organizations in which personnel will be required to use pyrotechnics for the BASH program.

1. REFERENCES:

TO 11A-13-10-7, Storage and Maintenance Procedures Small Arms Ammunition
TO 11A-1-46, Fire Fighting Guidance, Transportation, and Storage Management Data
AFMAN 91-201, Explosive Safety Standards
AFP 91-212. Bird/Wildlife Aircraft Strike Hazards (BASH) Management Techniques
127 WG BASH Plan 91-212
AFI 91-204, Safety Investigations and Reports

2. RESPONSIBILITIES:

2.1 **Supervisors of personnel required to use pyrotechnics will:**

2.1.1 Ensure their personnel have been trained in the safe practices applicable to this activity.

2.1.2 Act positively to eliminate any potential accident hazards.

2. 2 **Personnel required to use pyrotechnics will:**

2.2.1 Complete training IAW with Section 10 of this instruction and maintain annual currency on approved pyrotechnic equipment.

2.2.2 Understand and strictly observe all safety standards, requirements and precautions applicable to pyrotechnics.

2.2.3 Immediately report to their supervisor any unsafe conditions, equipment, or materials.

2.2.4 Warn others who may be exposed to hazards or fail to observe safety precautions.

2.2.5 Use approved protective clothing/equipment for eye and hearing protection.

2.2.6 Report to the supervisor any injury or evidence of impaired health or damage to property occurring in the course of work or duty.

2.2.7 Pick up spent cartridges if they lie on any airfield pavement area to prevent FOD.

2.3 **Supervisors/Personnel**

2.3.1 Supervisors and operating personnel are responsible for immediately reporting injuries, damage, or mishaps to the appropriate agencies indicated:

a. Safety ext. 5854
b. Fire Department ext. 911
c. Security Police ext. 4673
d. Airfield Manager ext. 4115/5322

3. GENERAL SAFETY PRECAUTION/ REQUIREMENTS:

3.1 Wear or use approved personnel protective equipment (PPE) to include eye and hearing protection at all times when using pyrotechnic equipment.

3.2 Smoking is not permitted within 50 feet of pyrotechnic cartridges.

3.3 Flame and spark producing devices will not be used within 50 feet of pyrotechnics.

3.4 Pyrotechnics will not be stored, handled, or used near sources of heat.

3.5 Flammable liquids will not be stored with the pyrotechnics.

3.6 Limit the number of personnel in areas where pyrotechnic operations are conducted. The maximum limits will be one supervisor, two workers, and 2 casuals. A minimum of one worker can conduct pyrotechnical work as long as radio contact is maintained with the control tower and Base Operations has been notified.

3.7 Any individual conducting pyrotechnic operations will be familiar with all information within this instruction.

3.8 Pyrotechnics dropped from any height will be considered unserviceable, marked as unserviceable and turned into munitions storage for disposition.

3.9 Appropriate fire symbols and hazard markings will be posted on the building and the doors leading to rooms within the building where the munitions are stored. Notify the Fire Department of munitions stored in the building.

3.10 Personnel will be out of their vehicles when launching pyrotechnic cartridges.

4. EMERGENCY PROCEDURES:

4.1.1 If an emergency occurs notify Airfield Management, which will notify the appropriate agencies.

4.2 Non-essential personnel will be cleared from the area.

5. PYROTECHNICS:

5.1 Pyrotechnics will be stored in an approved locker located in Buildings 50 and 837.

5.2 Airfield Management, 127 Safety, and 127 Pest Management personnel will have control of pyrotechnics for use.

5.3 Unserviceable pyrotechnics will be turned in to munitions immediately.

6. EXPLOSIVE LIMITS:

6.1.1 The following numbers are the maximum quantities to be stored in the approved lockers in Bldg 50 and Bldg 837:

C/D	Comp GP	Nomenclature	Qnty	NEW	Fire Symbol
1.4	G	Cartridge, Pyrotechnics, Screamer (1370014549861)	300	N/A	4
1.4	G	Cartridge, Pyrotechnics, Banger (1370014552640)	300	N/A	4
1.4	S	Cartridge, 6MM Blank (1305014562560)	600	N/A	4

7. EQUIPMENT AUTHORIZED:

7.1 Pyrotechnic munitions are only to be used with their specifically designed launcher.

7.2 No other tools or equipment are authorized for use in conjunction with pyrotechnics.

8. OPERATIONAL PROCEDURES:

8.1 Inventory of the items will be conducted at the time of issue.

8.2 Personnel on the SANGB Bird Dispersal team not assigned to 127th WG Airfield Management will sign out on an AF Form 1297, Temporary Issue Receipt, when issued launchers and cartridges from Base Operations.

8.3 Prior to dispensing pyrotechnics for either wildlife dispersion or training, notify both Airfield Management and the Control Tower. Airfield Management will in turn notify Security Police.

8.4 Unused and old pyrotechnic cartridges and launchers will be controlled in the storage lockers until they are used or turned into the base munitions storage area.

8.5 Issue and turn-in will be via the base munitions storage area.

9. TRANSPORTING OF PYROTECHNICS:

9.1 Pyrotechnics will not be left in vehicles overnight.

9.2 Pyrotechnics will not be left unprotected.

9.3 Pyrotechnics will be kept away from other items and enclosed in a clearly marked metal container.

9.4 One 2A:10BC fire extinguisher will be carried in the vehicle as approved by the Selfridge Fire Chief.

10. TRAINING:

10.1 The 127 WG Chief of Safety (or his/her designated representative) will provide Airfield Management with documentation stating personnel qualified as trainers for bird dispersal pyrotechnics on an annual basis by means of MFR. The list will be maintained with this OI and with Airfield Management.

10.2 Individuals involved with bird dispersal will receive initial hands on training on the use and handling of the launchers and pyrotechnics, and annual training thereafter.

10.3 Documentation of initial and annual pyrotechnic training for personnel assigned to the bird dispersal team will be kept on file using the AF IMT 1098 at their individual duty locations. Annually trained personnel will also be listed on a MFR and sent to 127 WG Safety.

10.4 **Training will consist of:**

10.4.1 Handling, transporting and wear of protective equipment when using pyrotechnic devices.

10.4.2 Using the attached instruction guide when loading and firing pyrotechnic launchers.

10.4.3 Proper storage of pyrotechnic cartridges and launchers.

//SIGNED//
Bartley J. Ward, Maj, MI ANG
127th WG Chief of Safety

127 WG (MI ANG)
Selfridge ANGB, MI 48045
1 September 2017

ATTACHMENT 2 to ANNEX C, 127 BASH Plan 91-212

MICHIGAN AIR NATIONAL GUARD
HEADQUARTERS 127TH WING (ACC)
SELFRIDGE ANG BASE, MICHIGAN

190 MarchJuly 20156

MEMORANDUM FOR RECORD FROM:

127 WG/SE

SUBJECT: BASH Pyrotechnics Trainer Designation

1. This letter appoints Tim Forys, Leonard Brockmann, Maj Brian Donnellon, and Maj Bart Ward as bird dispersal pyrotechnic trainers for all team members that are not contractors.

2. Tom McMenemy is the primary and Roberta Peters, Anthony Milano, and Erik Greer are the alternate bird dispersal pyrotechnic trainers for all contract team members.

3. The responsibilities include ensuring all members of the team receive both initial hands-on training and annual refresher training on the handling and use of the launchers and pyrotechnics IAW the 127th Wing BASH Plan, 91-212.

4. After completion of training, provide the 127 WG Chief of Safety and the Airfield Manager with documentation that the personnel assigned to the bird dispersal team have been satisfactorily trained in the use of pyrotechnics and the procedures necessary to use them.

5. This memo supersedes all subsequent memos on this subject.

Bartley J. Ward, Maj, MI ANG
127th WG Chief of Safety

cc:
SMSgt Kelli Martin (127OSF/OSA)
Tim Forys (127 WG/CEOP)
Maj Brian Donnellon (127 WG/SE)
Tom McMenemy (Starlight Services Airfield Management) Roberta Peters (Starlight Services Airfield Management)

ATTACHMENT 3 to ANNEX C, 127 WG BASH Plan 91-212
Launcher Instructions

RG-46 Launcher Instructions

7 SHOTS, CAL. 6 MM (.22 CAL) ITEM #6051 BLANK CARTRIDGES ONLY

FUNCTIONING:
This launcher has a semi- automatic trigger-cocking mechanism. Pull trigger and cylinder operates automatically (double action system). Launcher can however also be cocked by hand (single action system). DO NOT PULL TRIGGER WITH EMPTY CYLINDER; THE CRIMPED BLANK CARTRIDGE SEATS AND THE FIRING PIN WILL BE DAMAGED.

SAFETY:
When cylinder is swung out or not fully snapped back the trigger mechanism is blocked. When the hammer is cocked, the cylinder cannot be swung out. The built-in automatic safety system prevents cartridges being fired inadvertently.

LOADING: (ONLY .22 CALIBRE BLANKS, TO BE USED WITH THIS LAUNCHER Item #6050)
Always point muzzle to the floor when loading crimped blanks. Push release on the left side of the frame forward (to disengage cylinder) and swing cylinder out to the left. Insert crimped blanks and swing cylinder back into original position.

FIRING: Dry Firing (with no blanks in chamber) will permanently damage launcher Screw cartridge muzzle onto the barrel. Insert 15 mm pyrotechnical cartridge into the end of the muzzle as per instructions on pyrotechnic cartridge packaging, ie: BLACK or HOLLOW end in first. Fire at 45-degree angle above ground. When all seven crimped blanks are fired, it will be necessary to reload the cylinder.

REMOVING OF FIRED SHELLS:
Swing out cylinder as described above. When extractor (cylinder axle) is pushed backwards the seven shells are ejected simultaneously dispense in scrap metal container.

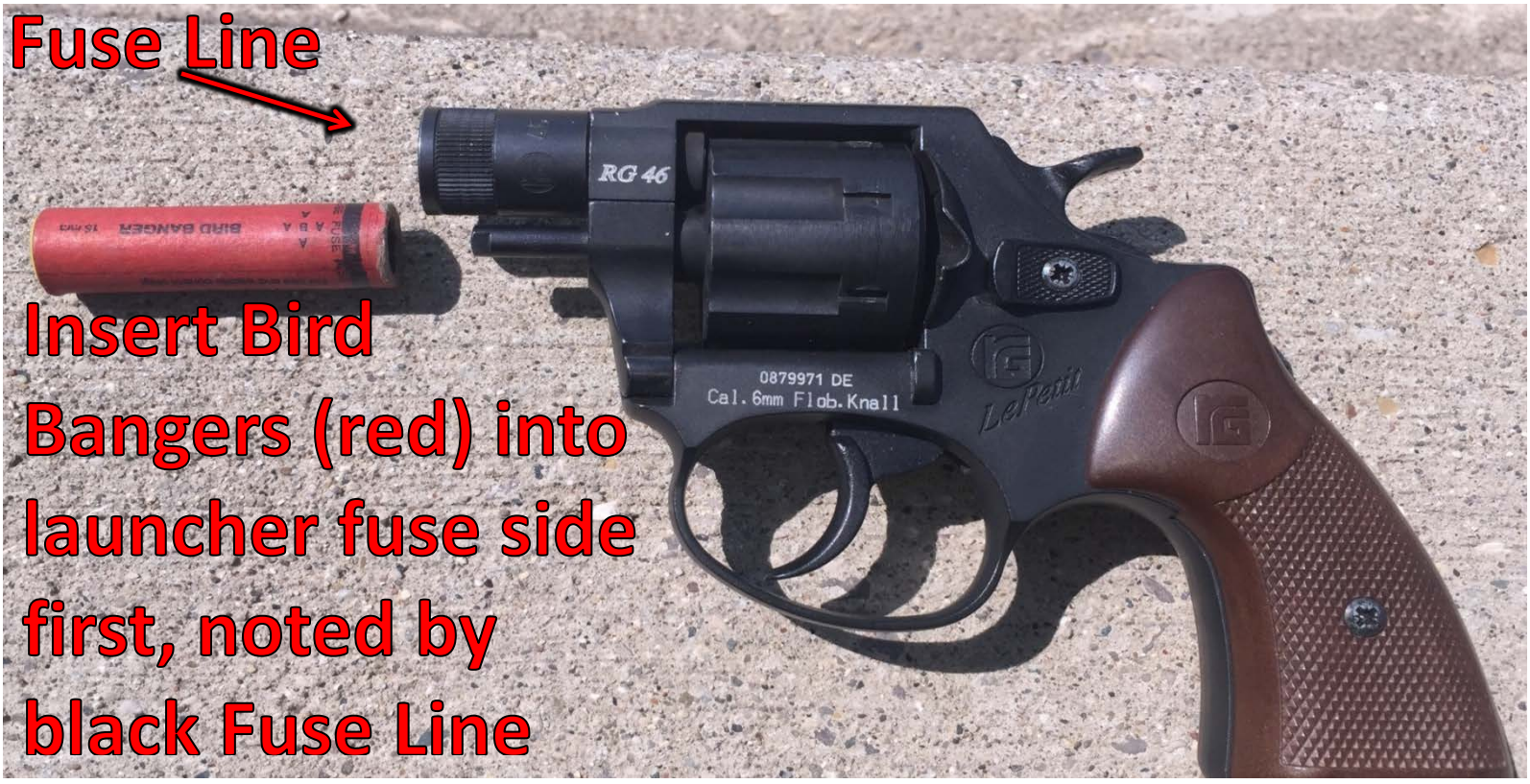
CLEANING:
After each use cleaning will occur at CATM. Clean crimped blank chamber, muzzle adaptor and barrel with a 6mm bore brush and water. Dry all parts thoroughly after cleaning. Proper maintenance will increase the efficiency and life of the launcher. NB It is extremely important, that launcher & chamber be kept very clean, especially after heavy use, as it is possible for flash of blank to be impeded by carbon build up and

flash backwards, igniting all blanks in chamber at once. Please see below for detailed instructions.

SAFETY INSTRUCTIONS:

- Operator must only fire this launcher in area clear of all personnel. Personnel should be a minimum of 5 meters behind launcher operator. Always fire at a 45-degree angle above the ground.
- Do not make any modification to any components of this launcher.
- Never load or fire this launching device from a vehicle or vessel. Do not fire at humans, animals, buildings, and dry fields or at any flammable materials or liquids. Keep an adequate distance from all flammable objects.
- Always wear eye and ear protection when using or handling this launching device.
- Never store launcher with crimped blanks or pyrotechnical cartridges inserted.
- This device is intended solely for the purpose of wildlife management and control. The proper safe use of this device is the sole responsibility of the operator/owner. The seller assumes no responsibility or liability for the improper or illegal use, resale, physical injury or property damage resulting from the deliberate or accidental discharge, modifications to the device or cartridges, careless operation, and launcher maintenance neglect. The seller guarantees care in the manufacture but assumes no further responsibility.
- Only mature, responsible adults who have a clear understanding of the functions of this device and a working knowledge of pyrotechnical scare cartridges and launchers should operate this tool. Persons under 18 years of age should not operate this device.
- Always keep manufacturer instruction sheet with the launcher.
- This launcher is not a firearm; it is a powder-actuated tool.
- Failure to comply with these safety instructions could result in serious injury or death.

IF UNCLEAR ON ANY OF THE ABOVE TOPICS, PLEASE CONTACT MARGO SUPPLIES LTD.
Phone: 403-652-1932 Fax: 403-652-3511 Email: info@margosupplies.com



CARTRIDGE MAY EXPLODE IN MUZZLE IF INSERTED BACKWARDS

Revolver Cleaning

REMOVE ALL CARTRIDGES & BLANKS!

Carbon deposits build up inside the cylinder chamber and muzzle over time. Routine cleaning is required to ensure reliable operation and longevity. The launcher should be cleaned after each use. M-Pro 7 (#5700) cleaning solution is recommended to lubricate and clean the launcher. Using M-Pro 7 or water and the bristle brush (included with the launcher) clean crimped blank chamber, muzzle adaptor and barrel. Hardened carbon deposits can be loosened by submersing in boiling hot water for a few minutes. In extreme cases when a launcher has not been cleaned for an extended period, a metal pick may be required to remove stubborn carbon deposits. It is extremely important that the launcher and chamber be kept very clean, especially after heavy use, as it is possible for the blank flash to be impeded by carbon build up and flash backwards. It is also important to tighten the cylinder axle and muzzle cup to ensure they do not become loose.

Remove muzzle cup and clean with bristle brush.

Open cylinder and clean muzzle.

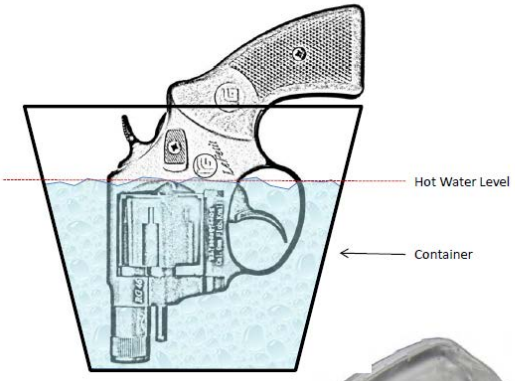
Remove muzzle cup and clean with bristle brush.

Open cylinder and clean muzzle.

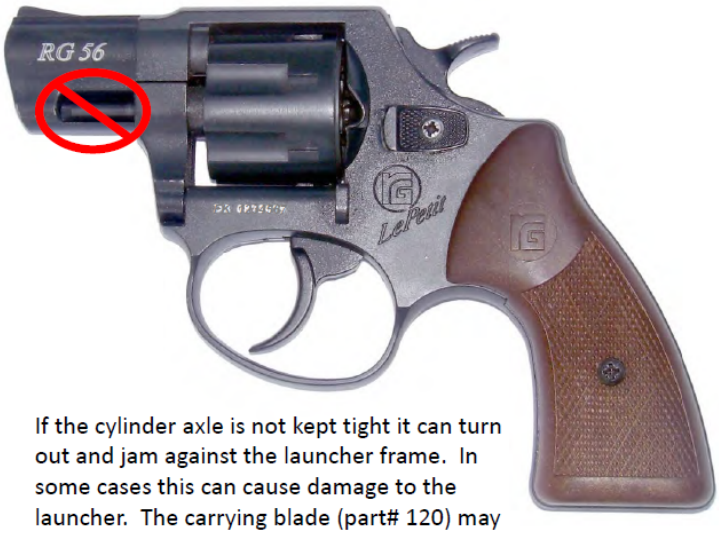
Open cylinder and clean with bristle brush.

Open cylinder and clean with bristle brush from other side.

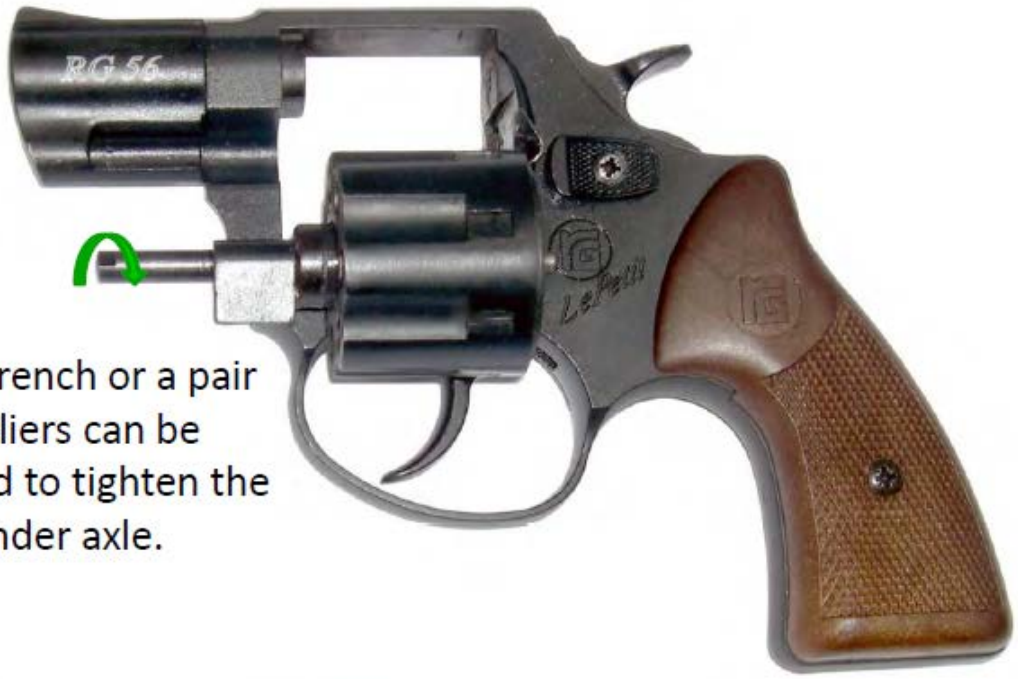
Hardened carbon deposits can be loosened by submersing in boiling hot water. Submerse launcher in hot water until the cylinder is covered, then let stand for a few minutes. After removing from the water, clean launcher with the brush. A metal pick may be used to remove extra hard carbon deposits. Several hot water treatments may be required. Make sure all parts are completely dry before use.



Revolver Axle Tightening



If the cylinder axle is not kept tight it can turn out and jam against the launcher frame. In some cases this can cause damage to the launcher. The carrying blade (part# 120) may break (this part rotates the cylinder to fire the next blank). The cylinder (part# 250) may also incur damage as a result of the firing pin striking off mark. Indication of this is blanks not firing. A loose cylinder axle can also fall out causing the cylinder to come apart resulting in launcher failure.



A wrench or a pair of pliers can be used to tighten the cylinder axle.

Once the cylinder axle is tight there will be sufficient clearance.

Margo Supplies Ltd.
Box 5400
C5 South Airport Road
High River, AB T1V 1M5
Phone: (403) 652-1932
Fax: (403) 652-3511
Email: info@margosupplies.com

ATTACHMENT 4 to ANNEX C, 127 WG BASH Plan 91-212

RADIO CONTROLLED AIRCRAFT OPERATIONS

PURPOSE: This operating instruction establishes procedures for flight operations of remote/radio controlled aircraft(s) on and around the airfield located at Selfridge Air National Guard Base, MI. Flight operations may take place during, before, or after normal airfield duty hours.

1. Personnel will conduct radio control aircraft operations to deter bird hazards when pyrotechnics prove to be ineffective or unable to reach appropriate altitudes. Identified personnel, when available, can be tasked by ATC, Airfield Management, Pest Management, and the Wing Safety Office.

2. Notification to Air Traffic Control (Tower), Airfield Management, and Security Forces personnel of intension to fly aircraft
    a. Request clearance from tower, for engine start, launches, and expected duration of the flight
    b. Give approximate location of bird activity, flight plan, and recovery sites
    c. Maintain radio contact with Tower personnel during flight operations
    d. Notify Tower, Airfield Management, and Security Forces personnel when flight operations are terminated

3. Tower and/or Supervisor of Flying (SOF) personnel may terminate Radio Controlled Aircraft Operations at any time

4. Record all flight data, bird activity, and results to include:
    - Pilot(s), aircraft used, and duration of flight(s)
    - Specific location(s) of each flight
    - Species of target bird(s) and any other species encountered during flight
    - Results of harassment activity

5. Report bird species and harassment result(s) to Airfield Management

6. Prohibited flight activity:
    - Radio Controlled Aircraft Operations during full scale aircraft operations
    - Flight over or within 300 feet of any parked or taxiing aircraft
    - Flight over or within 300 feet of any hardened facility
    - Flight activity over property other than that of Selfridge Air National Guard Base, MI
    - Flight activity conducted other than authorized personnel

ATTACHMENT 5 to ANNEX C, 127 WG BASH Plan 91-212

Depredation Procedures

BY ORDER OF THE COMMANDER
127th WING (ANG)

CEO OPERATING INSTRUCTION 32-33
16 May 2011

Civil Engineering

BASH PROGRAM/DEPREDATION OF BIRDS OPERATION: COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

OPR: 127WG/CEO, (Tim Forys X6761) Certified By: 127WG/CE/CC (LtCol Sierakowski)
Supersedes: OI 32-07, 23 Apr 08 Pages: 2

CE, CEO, CEOP, CER, CEV, CERR, OSF/OSA, SFS, AT, SE, PA

1. PURPOSE: This operating instruction establishes procedures for lethally removing Birds located on Selfridge ANG Base, MI.
    a. **CHANGES:** OI was renumbered due to reorganization.
2. RESPONSIBILITY: This procedure is the responsibility of all personnel listed above, and all who participate in the removal of birds on Base.
3. PRODEDURE: Notification of intention to lethally remove Birds on Selfridge Air National Guard Base, MI. Notification will be given as far in advance as possible to Air National Guard Security Forces, Airfield Management, Air Traffic Control, Real Property, Environmental Management.
4. Supervisor of depredation operations will ensure a valid depredation permit from U.S. Fish and Wildlife is in effect, and will also ensure that all shooters are current in their shotgun training from CATM.
5. Locate bird populations.
    a. Determine species.
    b. Determine the number of individual birds.
    c. Determine that the birds are in a firing zone as determined by "shooting and firing parameters map". (See attached map)
    d. This instruction must be available during depredation operations.
6. Personnel Limits: A good safety practice may dictate use of the buddy system even though only one person may be required to perform the task.
    a. The number of shooters will be kept to a minimum as determined by the operations supervisor.
    b. Visitors are not allowed and Casuals will be limited to no more than 2 individuals. Casuals are persons not normally part of the operation, but have duties that require their presence.
    c. A wooded back drop or a clear zone of 300 – 500 yards must be in place before firing center fire rifles.
    d. Shooting will occur from an elevated position whenever possible.
7. Explosives Limits: Number of cartridges allowed for each depredation will be determined by the operation supervisor. The cartridges are in HD 1.4S.
8. PPE: Eye and ear protection will be worn when firing weapon.

9. Begin depredation operations:

a. Conduct radio check between all personnel to confirm all radios are operational.

b. Operational personnel will CLEAR shooting/firing area by visually checking all roads leading into and out of the depredation area.
c. Remove, transport and discard carcasses as stated on depredation permit.
d. Submit activity to Fish and Wildlife as required by the permit.

10. Emergency Procedures:
    a. If an accident occurs where an immediate response is required, call 911 and inform the dispatcher that the emergency is on Selfridge.
    b. The call will be re-routed to the Selfridge Fire Department.

ATTACHMENT 6 to ANNEX C, 127 WG BASH Plan 91-212

Depredation Procedures

BY ORDER OF THE COMMANDER
127th WING (ANG)

CEO OPERATING INSTRUCTION 32-34
16 May 2011

Civil Engineering

DEPREDATION OF MICHIGAN WHITE TAIL DEER AND COYOTE

OPR: 127WG/CEO, (Tim Forys X6761) Certified By: 127WG/CE/CC (LtCol Sierakowski)
Supersedes: OI 32-19, 10 July 2008 Pages: 2

CE, CEO, CEOP, CER, CEV, CERR, OSF/OSA, SF, AT, SE, PA

1. PURPOSE: The purpose of this Operating Instruction establishes the procedures for lethally removing Michigan White Tail Deer and Coyote located on Selfridge ANG Base, Michigan.
2. RESPONSIBILITY: This Operating Instruction includes all sections of personnel in departments listed above.
3. PROCEDURE:
    a. Notification of intention to lethally remove Michigan White Tail Deer and Coyote on Selfridge Air National Guard Base, MI.
        i. Notification will be given in advance to Air National Guard Security, Airfield Management, Air Traffic Control, Civil Engineering, Real Property and Environmental Management.
    b. Supervisor of depredation operations will ensure that a valid depredation permit from U.S. Fish and Wildlife is in effect and will ensure that all shooters are current on their shotgun training from CATM.
    c. This instruction must be available at the depredation site and briefed to all participants prior to starting depredation.
4. Personnel Limits:
    a. A good safety practice may dictate use of the buddy system even though only one person may be required to perform the task.
    b. The number of shooters will be kept to a minimum as determined by the operation supervisor.
    c. Visitors are not allowed and Casuals will be limited to no more than 2 individuals.
    d. Casuals are persons not normally part of the operation but have duties that require their presence.
5. Explosives Limits:
    a. Number of cartridges allowed for each depredation will be determined by the Operations Supervisor.
    b. The cartridges are in HD 1.4S.
6. PPE:
    a. Eye and ear protection will be worn when firing weapon.
7. Operations:
    a. Locate Deer or Coyote as location indicates.

b. Determine that Deer or Coyote are in a “firing zone” as determined by “shooting and firing parameters map”. (See attached map)
c. Notify affected organizations that lethal removal of deer or coyote will take place that day as targets become available throughout the day; shoot on site.
d. All safety concerns will be met before taking of animal.

8. Begin depredation.
    a. Conduct radio check between all personnel if in different locations to confirm that all radios are operational.
    b. Operational personnel will CLEAR shooting/firing area by visually checking all roads leading into and out of the depredation area.
    c. Personnel will take up shooting/firing positions. All personal will conduct final radio check confirming operational readiness and depredation will begin.
    d. A wooded back drop or a clear zone of 300 – 500 yards must be present when firing center fire rifles.
    e. Shooting will occur from an elevated position whenever possible.
    f. After all targets have been exhausted, depredation will end until another target is available.
    g. Tag and transport deer to processor, and bury coyote on property.
    h. Follow DNR permit for any further instructions or changes concerning disposition of deceased deer or coyote.

9. Emergency Procedures:
    a. If an accident occurs where an immediate response is required, call 911 and inform the dispatcher that the emergency is on Selfridge. The call will be re-routed to the Selfridge Fire Department.

ATTACHMENT 7 to ANNEX C, 127 WG BA

BASH Plan 91-212

GREEN LASER OPERATIONS

PURPOSE: This operating instruction establishes procedures for the use of a bird dissuading green laser at Selfridge Air National Guard Base, MI. Safety, Pest Management, Airfield Management and Tower personal are authorized to use the laser to dissuade birds on the airfield at any time.

1. Personnel will conduct laser operations any time it is safe to do so.

2. The user will aim the laser at the ground in between the user and the bird, then continue to shift the aim point until the laser is in an area that can harass the bird. Personnel will ensure that the laser is not pointed above ground level and that the laser is visible at all times. If the laser is not visible, the user will release the trigger and re-aim the laser.

3. At no time should the laser be pointed above ground level where it could inadvertently strike a person in the eyes that is on foot, driving or flying.

4. The laser is powerful enough to extend beyond the fence line no matter where the user is standing on the installation. All efforts need to be made to ensure the laser is not traveling off the installation.

5. The laser has a key that turns the laser on and off, the laser will be maintained in the off position until it is ready to be aimed at a bird.

6. The laser is effective for birds that are seagulls and larger. Smaller birds such as swallows and sparrows are not impacted by the dissuader.

ATTACHMENT 8 to ANNEX C, 127 WG BASH Plan 91-212

LONG RANGE ACCOUSTICAL DEVICE (LRAD) OPERATIONS

PURPOSE: This operating instruction establishes procedures for the use of the LRAD bird harassment system at Selfridge Air National Guard Base, MI. Safety, Pest Management and USDA personal are authorized to use the LRAD to harass birds on the airfield at any time.

1. Personnel will conduct LRAD operations any time it is safe to do so. The LRAD is capable of producing pressure levels in excel of 120db. Operators will wear hearing protection at all times while operating the LRAD. All Operators must read the instruction manual and be trained on the hazard zones of the LRAD by the Wing FSO.

2. The user will aim the LRAD in directions consistent Figure 6, Shotgun Firing Map. Personnel will ensure that the LRAD is not point the LRAD off base if the operator is near a fence line.

3. At no time should the operator stand in front of the LRAD while it is operating, even with hearing protection.

4. The operator will position the volume control in the green arc while starting a sound file. The volume will be increased to the minimum volume needed for effectiveness to reduce the possibility of hearing damage or nuisance.

5. The LRAD can be used while mounted on a truck or as a standalone device using the included battery pack.

6. The LRAD is effective for birds that are seagulls and larger. Smaller birds such as swallows and sparrows are impacted by the LRAD but to a lesser extent. This is due to the frequencies produced by the LRAD interfere with larger birds rather than smaller high-pitched birds.

7. The LRAD can also be used as harassment for mammals and be used to flush them out of dense vegetation for trapping or depredation.

ANNEX M to 127 WG BASH Plan 91-212

MAPPING, CHARTING and GEODESY:

1. General. This annex outlines the use and requirements of the maps and charts required to implement the BASH program. Wing Safety should maintain and update maps and charts as necessary.

2. Selfridge Air National Guard Base, Michigan and Surrounding Area Maps:

- **a.** Periodic habitat surveys should be conducted to identify major habitat types available to birds. Update maps based on these surveys as local land uses and habitat conditions change.
- **b.** When a specific hazard is identified and the location of the activity isolated, use the habitat map to determine if a specific attractant exists that can be altered within the scope of this plan.
- **c.** Use the habitat map as a guide for the long range civil engineering program to reduce actual and potential hazardous environmental factors at and near Selfridge Air National Guard Base.
- **d.** The local flying unit should procure maps and navigational charts of the surrounding area to designate features for BASH potential and attach them as part of this annex.
- **e.** A sample map and aerial photo are included at Figure 1. Tree removal/wetland areas, turf management, propane canon dispersal equipment and shooting/firing parameters maps are attached in Figures 2, 3, 4, and 5.

3. Training Area/Range Maps:

- **a.** The USAF Bird Avoidance Model (BAM) depicts relative risk of bird hazards for the continental United States and Alaska. It may be queried by route, range, city, airfield, or geographic location. It depicts risks for two week intervals and for four daily periods of day, night, dawn, and dusk.
- **b.** Additional information on bird hazards on low-level training routes, LATNAS, ranges, and MOAs may be obtained through the internet web site at www.usahas.com.
- **c.** The BAM should be used to develop risk maps for range operations. Bird strikes reported to the USAF Safety Center are overlaid on these maps in the model.
- **d.** Analyze and disseminate these data to the flying unit according to procedures outlined in ANNEX C.
- **e.** Sample BAM/AHAS outputs are included in Figures 5, 6, and 7.

FIGURE 1. Selfridge Air National Guard Base Local Sectional Chart

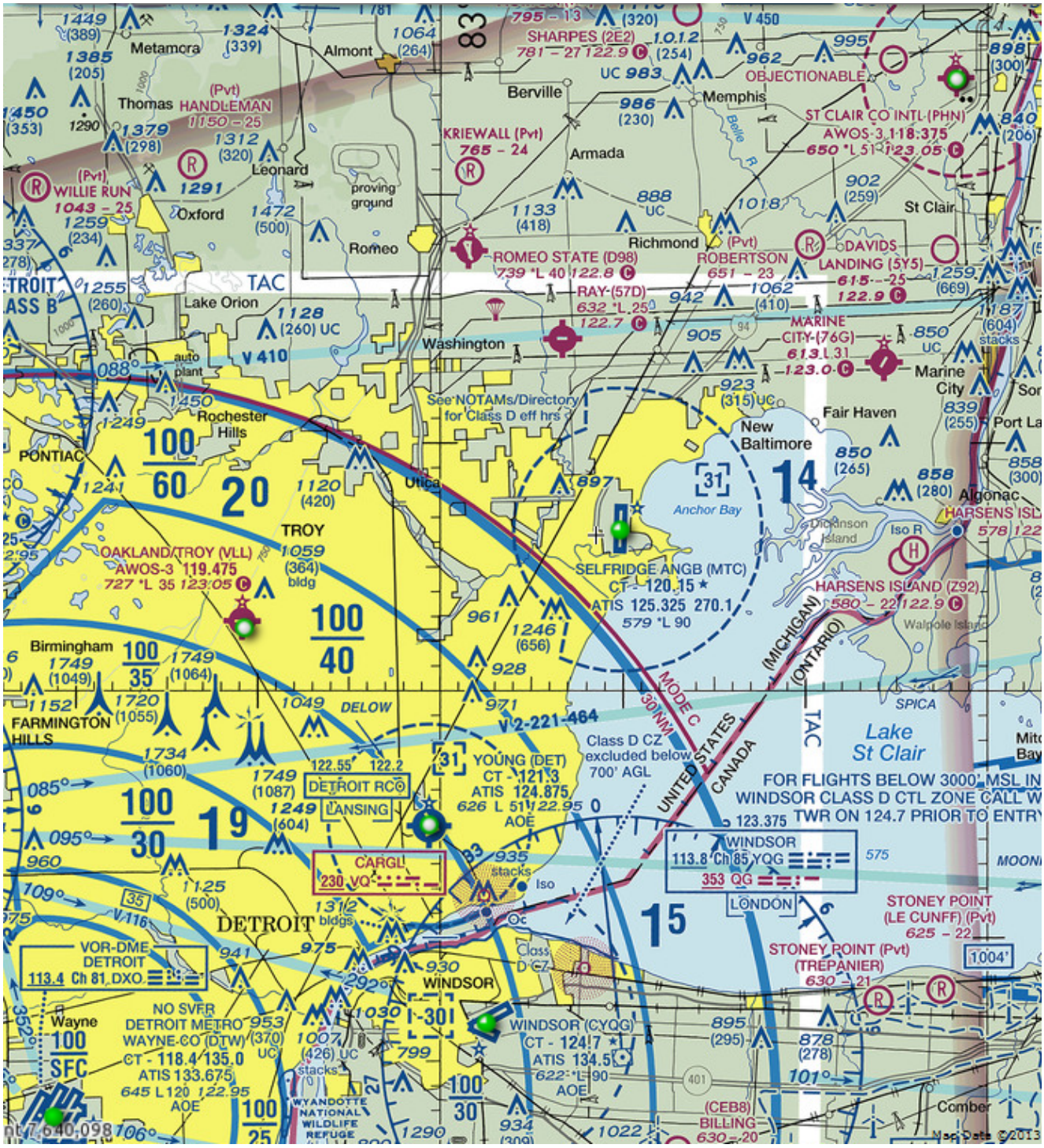


FIGURE 2. Selfridge ANGB Aerial Photo

FIGURE 3. Selfridge ANGB Tree/Wetland Removal Areas.

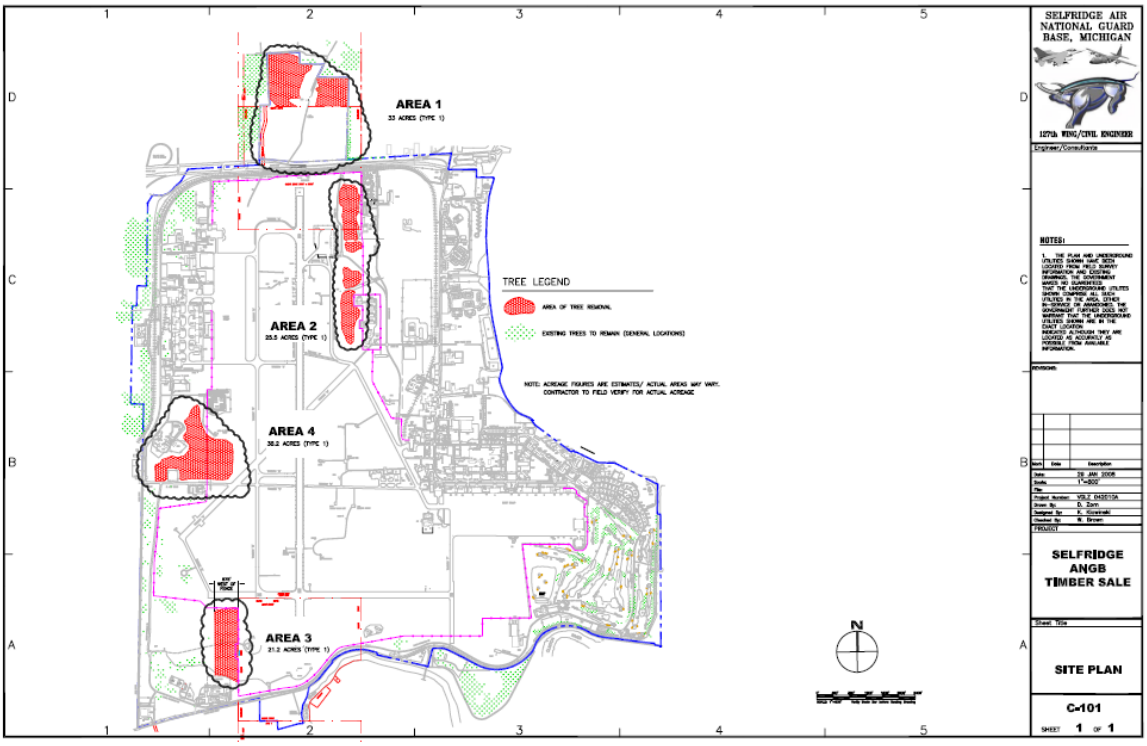


FIGURE 4. Selfridge ANGB Edophytic Fescue Turf Map.

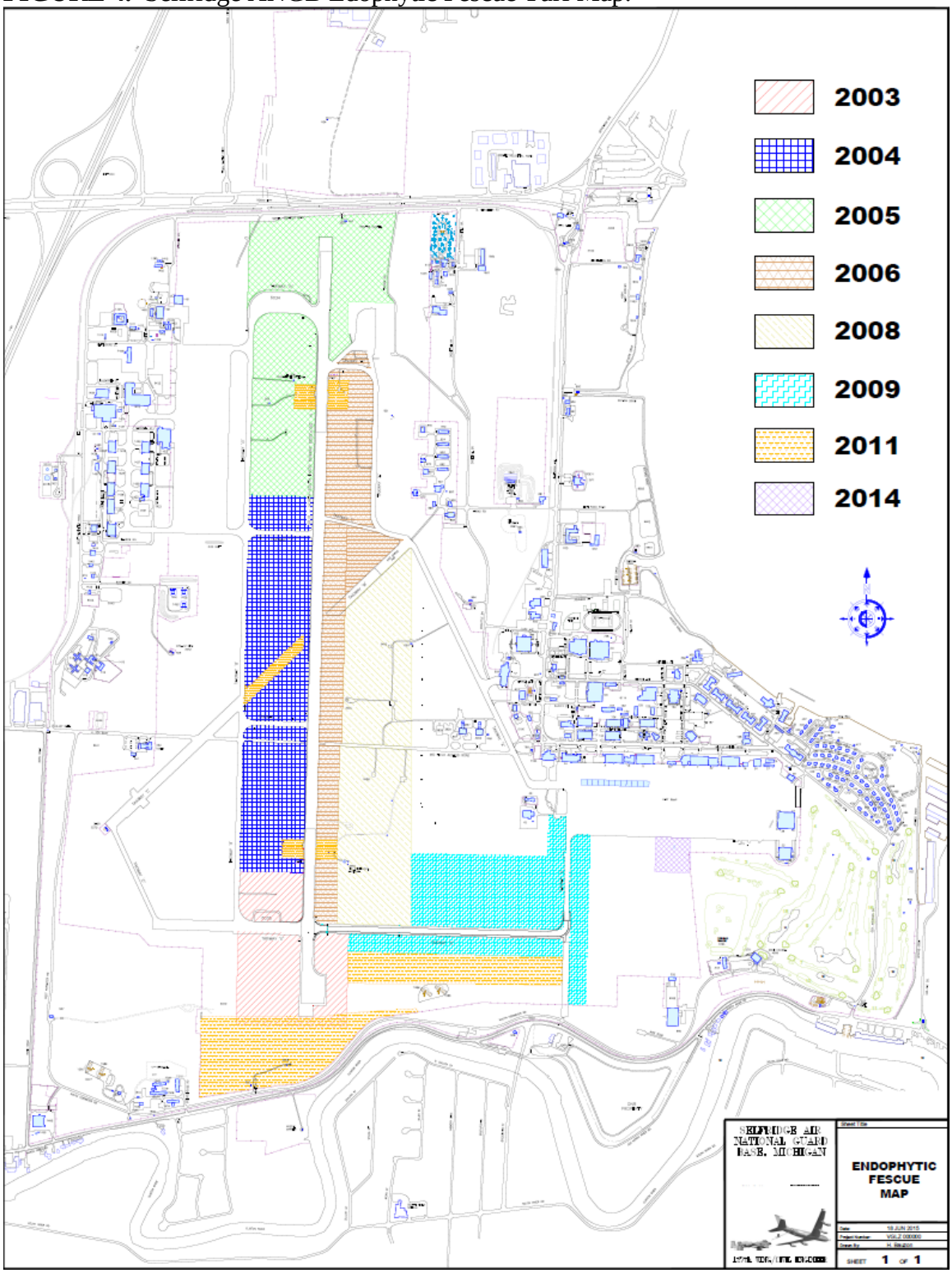


FIGURE 5. Selfridge ANGB "Scarewars" Propane Canon Locations.

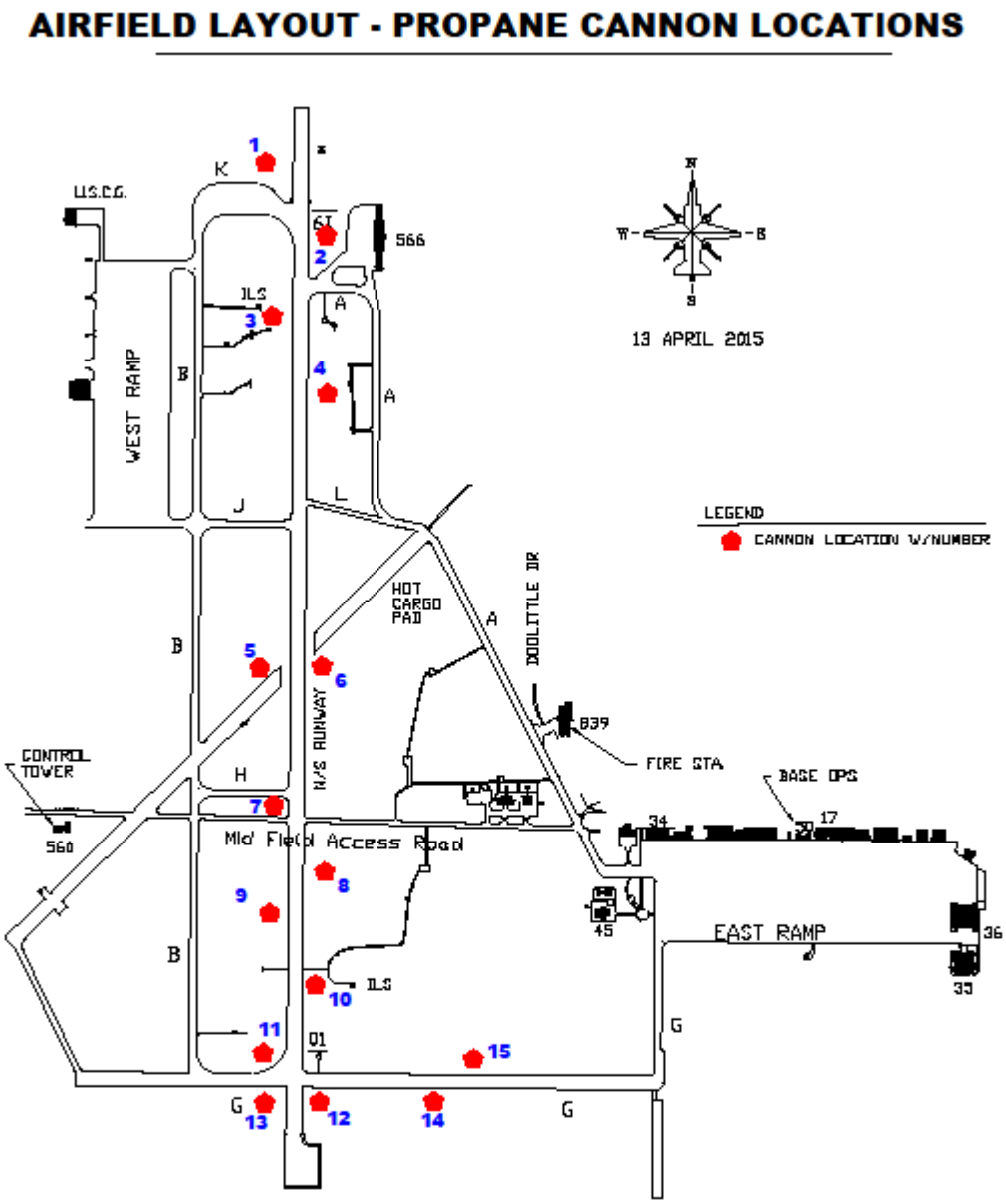


FIGURE 6. Selfridge ANGB Shotgun Shooting & Firing Parameters Map.

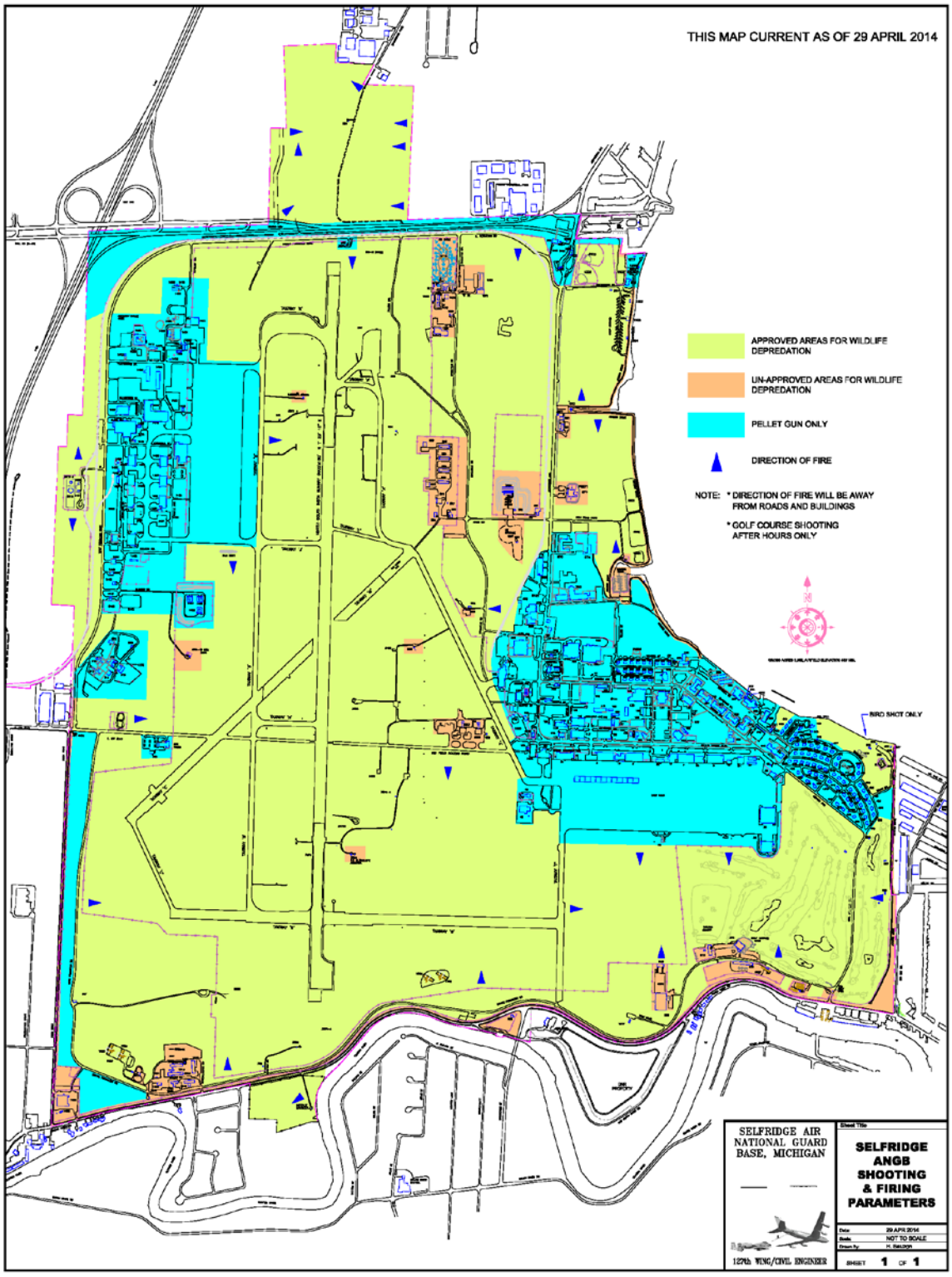


FIGURE 7. Sample Bird Avoidance Model (BAM) Map.

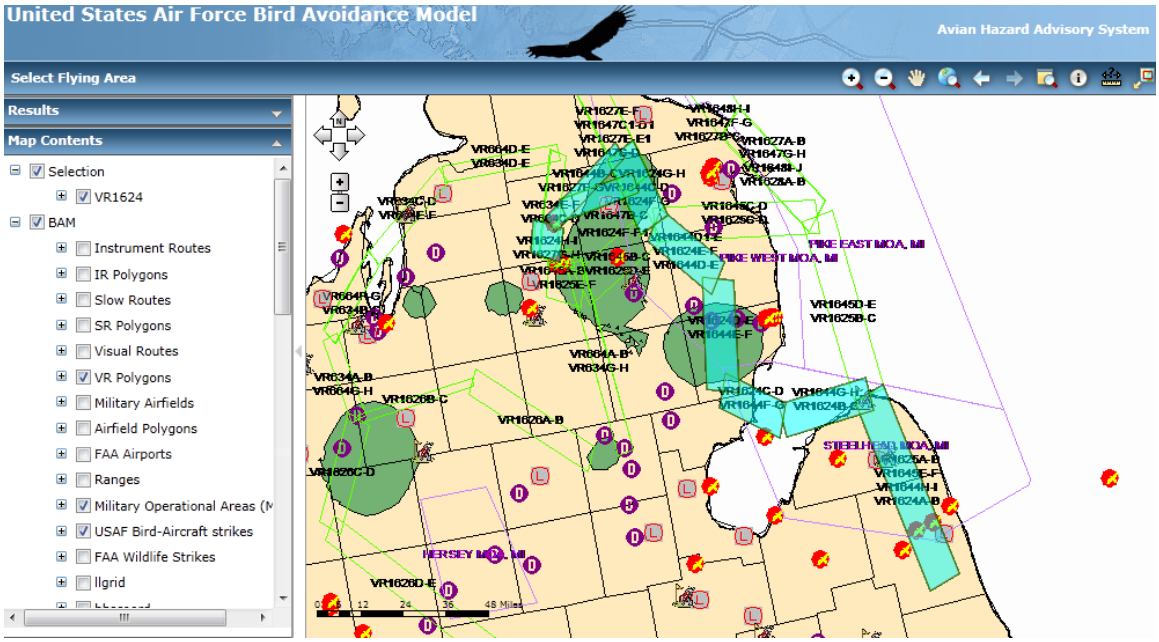


FIGURE 8. Sample BAM output using printer friendly option.

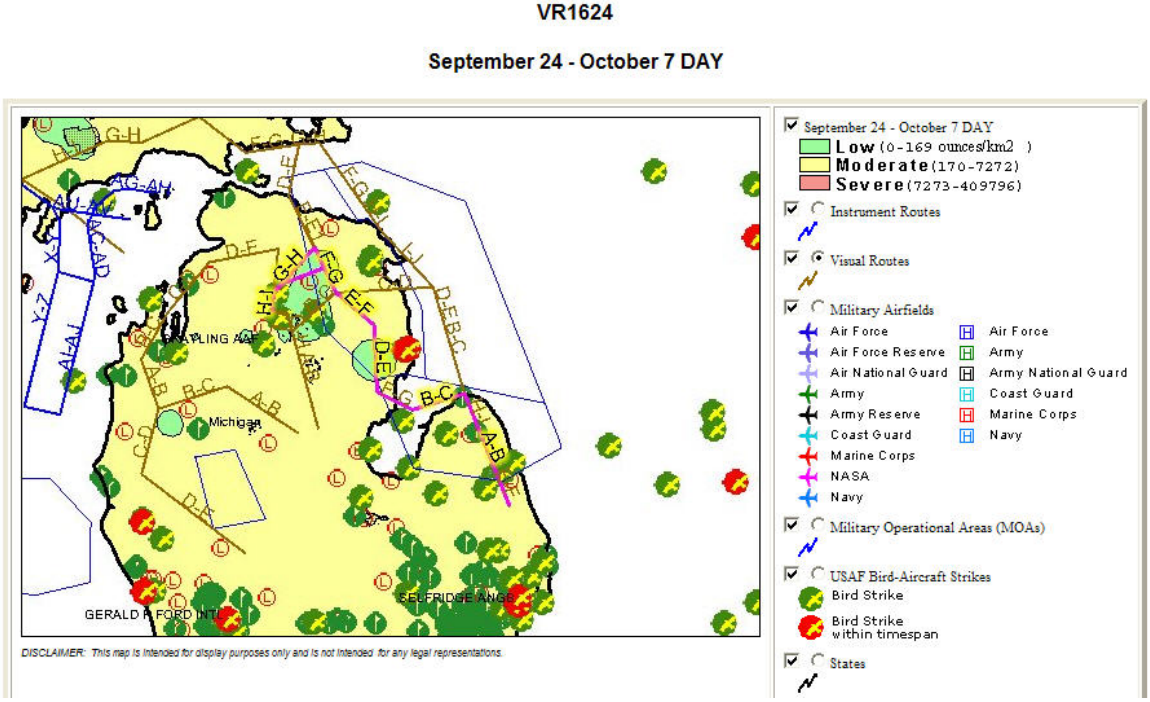
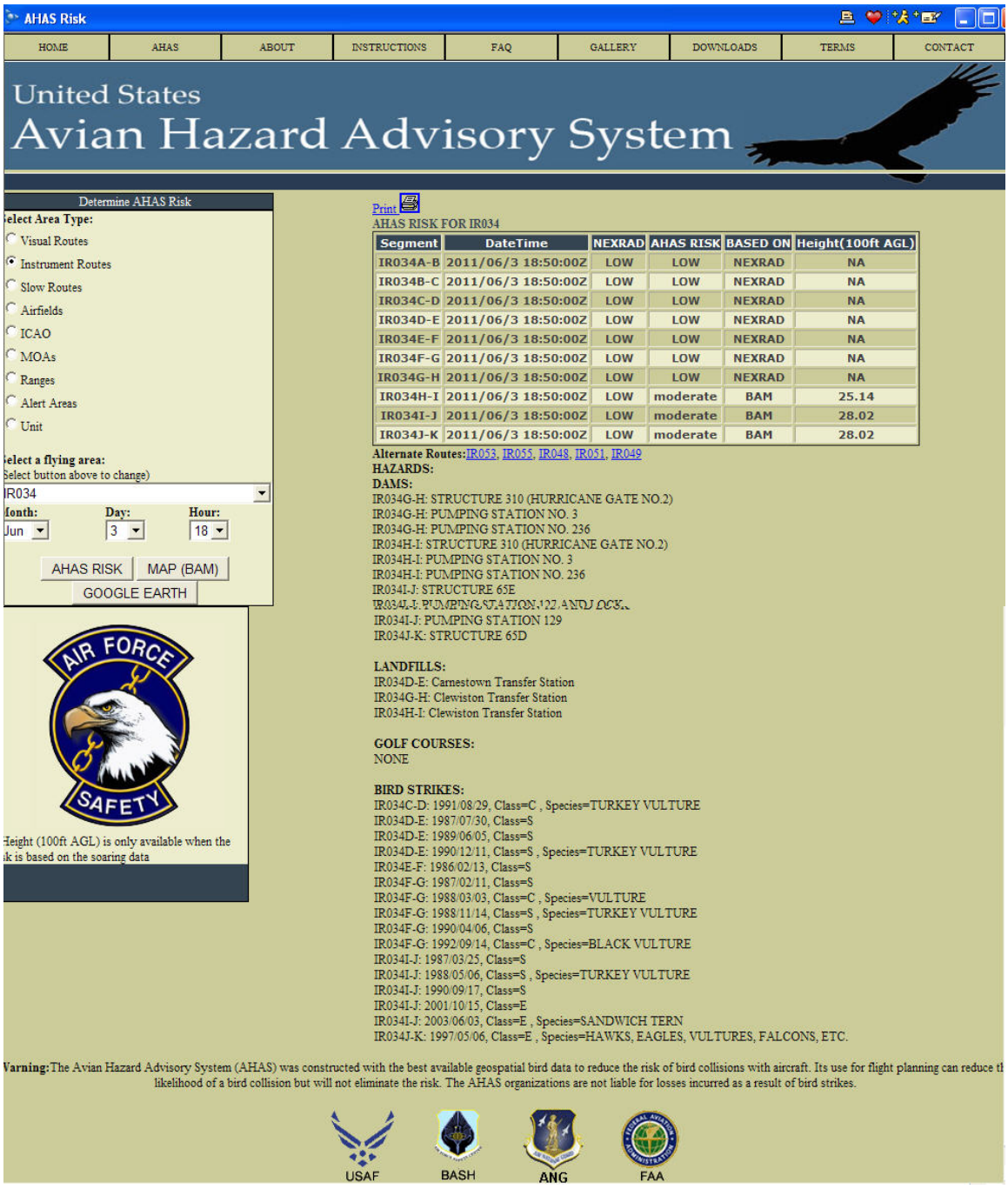


FIGURE 9. Sample Avian Hazard Advisory System (AHAS) Web Page.



ANNEX S to 127 WG BASH Plan 91-212

BIRD HAZARD WARNING SYSTEM:

OPERATION BIRD WATCH

1. General. This operation establishes procedures for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds that could pose a hazard to flight safety.

2. Bird Watch Conditions. Use the following terminology for rapid communications to disseminate bird activity information and implement unit operational procedures. Give bird locations with the condition code.

a. Bird Watch Condition SEVERE. Heavy concentration of birds on or immediately above the active runway or other specific locations that represent an immediate hazard to safe flying operations. Aircrews must thoroughly evaluate mission need before operating in areas under condition SEVERE.

(1) Traffic Pattern. Takeoffs and landings are not authorized except for ASA MSO launches or unless a greater emergency and/or immediate operational necessity dictate a landing or takeoff be made (e.g. minimum fuel or in-flight emergency). Airborne aircraft will hold waiting for a decrease in bird condition or until divert fuel is reached. If a suitable alternate is not available, or below divert fuel, make full stop landing only. In such circumstances, the pilot in command shall make a proper risk assessment obtaining as much information as possible about the bird hazard together with all available alternatives. Dispatch bird control unit immediately to disperse birds from the airfield.

(2) Training Areas. Tactical training is authorized, but crews should avoid flight levels and specific areas with reported bird activity. The minimum altitude will be 3,000 AGL to include weapons deliveries. Higher altitudes during migration events may be required and will be directed by the SOF or Flight Lead.

b. Bird Watch Condition MODERATE. Concentrations of birds observable in locations that represent a probable hazard to safe flying operations. This condition requires increased vigilance by all agencies and extreme caution by aircrews.

(1) Traffic Pattern. Multiple approach and traffic pattern activity for aircraft ceases. No formation take-off or landing permitted. A departure and full stop landing is allowed if the departure and approach route avoids identified bird activities. Pilots will modify events in

order to avoid bird activity and will thoroughly evaluate mission needs and limit approaches to the minimum number required for training (ie. only those required to complete check ride or re-currency training). Dispatch bird control unit immediately to disperse birds from the airfield.

(2) Training Areas. Tactical training is authorized, but crews should avoid geographic areas and land features where birds have been identified. The minimum altitude will be 1,500 AGL. Pilots are authorized to descend below 1,500 AGL during weapons employment.

c. Bird Watch Condition LOW. Normal bird activity on and above the airfield with a low probability of hazard. Continue with operations as normal.

3. Authority. The Airfield Manager, or his/her designated representative, is the declaring authority. SOF, Ops Sups, ATC, or others may be designated declaring authorities as appropriate and with approval by 127 OG/CC. Declaring authorities can declare conditions based on ground observations, pilot reports, radar observations, etc. If bird dispersal is requested or needed, immediately upgrade the Bird Watch Condition to MODERATE/SEVERE until the condition is mitigated.

4. Communications. Disseminate bird watch conditions by the following means:

a. During periods of flight operations, include bird hazard information other than low activity (ie. normal conditions) in the hourly ATIS information, if available, or as specified in FAA Handbook 7110.65. Ensure common language is used to direct specific attention to bird concentrations that may be hazardous to flight operations. When the OSS/OSA declares Bird Watch Condition MODERATE or SEVERE, Airfield Management will notify the control tower, Command Post, Wing Safety, Army Aviation, the flying squadron, and aircrews. Airfield Management personnel will post the Bird Watch Condition and change the airfield status display in Airfield Management.

b. Note that the primary means of transmitting bird watch conditions will be via ATIS and the Airfield Automation System (AFAS). However, under bird watch condition SEVERE, the air traffic control agency will ensure that the pilot understands the condition and is provided the option to delay, divert, or continue the proposed operation into the hazardous area.

5. Aircrew Responsibilities and Procedures:

a. If an aircrew observes or encounters any bird activity while in flight that could constitute a hazard, the aircrew should contact the SOF, control tower, command post, or range operator and request that the observed bird activity be passed on to all appropriate agencies. Wing Safety should be notified

when the Bird Watch Condition is SEVERE. The following information is necessary:

(1) Call sign.
(2) Location.
(3) Altitude.
(4) Time of sighting.
(5) Type of bird (if known).
(6) Approximate number of birds.
(7) Behavior of birds (soaring, flying to or from a location, etc.).

b. Additional direction to all pilots is provided based upon the coded bird watch conditions and the location under condition SEVERE:

(1) Traffic Pattern. Only full-stop landings are permitted. The SOF may consider changing runways, delaying takeoffs and landings, diverting aircraft, changing pattern altitude, etc.
(2) Training Areas. The minimum altitude will be 3,000 AGL to include weapons deliveries. Higher altitudes during migration events may be required and will be directed by the SOF or Flight Lead.
(3) Low-Level Routes. Note and avoid specific routes or segments. The Minimum altitude will be 3,000 AGL to include weapons deliveries. Higher altitudes during migration events may be required and will be directed by the SOF or Flight Lead.

c. Additional direction to all pilots is provided upon the coded bird watch conditions and the location under condition MODERATE:

(1) Traffic Pattern. Multiple approach and traffic pattern activity for aircraft ceases. A departure and full-stop landing is allowed if the departure and approach route avoids identified bird activities. Pilots will modify events in order to avoid bird activity.
(2) Training Areas and Low-Level Routes. Tactical training is authorized, but crews should avoid geographic areas and land features where birds have been identified. The minimum altitude will be 1,500 AGL. Pilots are authorized to descend below 1,500 AGL during weapons employment. On a bombing range start the descent on base leg. For direct attacks start the descent within 10 nm from the target. On egress, climb above 1,500 AGL when all flight members are visual.

ANNEX Y to 127 WG BASH Plan 91-212

REPORTS AND FORMS:

1. General. This annex outlines the procedures and forms required to report bird strikes per AFI 91-204 to enhance the BASH program at the 127 WG.

2. Reporting Bird/Wildlife Strikes (AFI 91-204 and AFMAN 91-223):

a. All damaging and non-damaging bird/wildlife strikes shall be reported to the BASH Team through the Air Force Safety Automated System (AFSAS). Additional information may be obtained on the Air Force Safety Center web page (http://www.afsec.af.mil/aviationsafetydivision/bash/index.asp). When bird/wildlife strikes occur to captive or live munitions (explosive/missiles), these are reported as if the bird/wildlife hit the aircraft. Reporting all bird/wildlife strikes is a necessary part of an effective BASH plan. An in-depth knowledge of the circumstances leading to a bird/wildlife strike is vital before realistic recommendations can be made.

b. Flight safety offices of the organization credited with the aircraft's flying hours will report all bird/wildlife strikes.

c. Report bird/wildlife strikes using the AFSAS in accordance with AFMAN 91-223. AFSAS requires a user profile (username and password). MAJCOM safety offices have designated AFSAS administrators to create BASH AFSAS accounts for each unit. Aircrews and maintenance personnel documenting the necessary data for reporting wildlife strikes through AFSAS can use AF Form 853.

d. For every bird strike, send remains (if available) to the Smithsonian National Museum of Natural History for identification. Remains may include feet, beak, and/or feathers. If no remains are apparent, spray blood smear with soapy water, or preferably 70% ethanol solution, and blot with a clean paper towel. Allow to dry, then fold towel and place into labeled zip-loc bag. Send a copy of the corresponding AFSAS report with the strike evidence to the following address: "Smithsonian Institution, Feather Identification Lab, NHB, E600, MRC 116, PO Box 37012, Washington, DC 20013-7012." For high priority mishap identifications ship remains via overnight delivery to the following address: "Smithsonian Institution, Feather Identification Lab, NHB, E600, MRC 116, 10th and Constitution Ave. NW, Washington, DC 20560." To ensure overnight delivery, time shipments to the Smithsonian to arrive Monday - Friday. (Also see APPENDIX 3, Attachment 9). If you collect a whole bird carcass, place it in a freezer and contact the Smithsonian at (202) 357-2334 to see if the museum can use the specimen in their collection. Remains found on the runway as the result of a suspected aircraft strike should also be recorded into AFSAS and sent to the Smithsonian for

identification. Once the Smithsonian has entered the identification into the AFSAS report, AFSAS will automatically notify the reporting unit of the species identification through email. Bird remains recovered from a mishap site should be collected IAW instructions outlined in the paragraph above. The ISB should not delay recovering and shipping remains to the Smithsonian Institution, as the sample could be compromised. If there are any questions, contact HQ AFSC/SEFW (DSN) 246-5679. (Also see APPENDIX 3, Attachments 7 and 8 for avian influenza guidelines).

e. For wildlife strikes other than birds, send samples of skin, fur, teeth or other non-fleshy remains, if possible, or a photograph of the remains along with the corresponding BASH SAS report to the Smithsonian for identification.

3. Technical Assistance (AFI 91-202): Technical assistance is available through the USAF BASH Team, HQ AFSEC/SEFW, 9700 G Avenue, Suite 266, Kirtland AFB, NM 87117-5670. DSN: 246-5674/5848/5673 or Commercial: (505) 846-xxxx, and electronically by accessing the Safety Center web page. Obtain additional information on wildlife strike hazard reduction from AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*, and on wildlife strike reporting from AFI 91-204, *Safety Investigations and Reports*, and AFMAN 91-223, *Aviation Safety Investigations and Reports*.
http://www.afsec.af.mil/aviationsafetydivision/bash/index.asp
SEFW@us.af.mil

4. Bird Sighting Report:

a. The Safety Office will develop a bird sighting report for making quick observations of bird activity as it occurs.

b. Bird data collected in a sighting report may be kept in the Daily Events log for reference.

c. The sighting report will be distributed for use by flying squadrons, CE, Airfield Management, or other applicable offices and can be used to target areas of concern.

ANNEX Z to 127 WG BASH Plan 91-212

DISTRIBUTION:

NGB/SE
HQ AFSC/SEFW, BASH Team, Kirtland AFB NM 87117
4AF/SEF
TAG MI
127 WG/CC
127 WG/CV
127 WG/SE
127 WG/OTM
127 WG/CP
127 WG/BCE
127 WG/XP
127 WG/PA
127 OG/CC
127 OSS/CC
127 OG/AT
127 MXG/CC
127 MSG/CC
127 SFS/CC
127 WG/CEV
127 MDS/SGPB
127 MDS/SGPM
127 ARG/CC
191 MXS/CC
191 OSF/CC
171 AS/CC
Base Weather
CGAS-Detroit
Det 1 Co.G (Aviation) 185th (Army National Guard)
Army Garrison Selfridge
US Coast Guard Safety (Air Station Detroit)
Department of Homeland Security

USDA Wildlife Services State Director

APPENDIX 1. BIRD/WILDLIFE HAZARD ASSESSMENT AND RECOMMENDATIONS

1. Historical Background. The USAF BASH Team has over 270 bird/wildlife strikes recorded from Selfridge Air National Guard Base in its data base for the period between 1992 and early 2013. The base has made great progress in many areas of the BASH program since the first BASH visit by NGB in 2003 and subsequent implementation of recommendations following that visit. Strike rates, largest hazardous species struck, and financial losses have also reduced significantly since 2003. Strikes to Selfridge-assigned aircraft involved Canada Geese, Canvasbacks, Ring-necked Ducks, Red-tailed Hawks, American Kestrels, Snowy Owls, Ring-billed Gulls, Killdeer, American Golden Plovers, Mourning Doves, Rock Pigeons, Barn Swallows, Bank Swallows, Cliff Swallows, Tree Swallows, Barn Swallows, European Starlings, American Robins, Eastern Meadowlarks, Red-winged Blackbirds, Horned Larks, a Sharp-shinned Hawk, Merlin, Bufflehead, Sora, Black-bellied Plover, Kentish Plover, Great Black-backed Gull, Franklin's Gull, Bonaparte's Gull, Ruby-throated Hummingbird, Blue Jay, Least Flycatcher, Magnolia Warbler, Bay-breasted Warbler, Savannah Sparrow, Shipping Sparrow, Song Sparrow, and other small perching birds. Also reported were several strikes with Big Brown Bats and other unidentified species of bats. Historic strike records are important to give an indication of the types of conditions to be addressed in the BASH Plan, recent trends, and specific control measures to undertake to reduce future hazards. There are concerns with a variety of species in the local airfield environment, the surrounding areas, and in the training areas where the 127th Wing operates. Many strikes to aircraft throughout the ANG and DoD generally occur in the airfield environment where the ANG has some control over the situation through habitat management, bird watch condition warnings, control of wildlife populations, and bird dispersal techniques. The local situation changes throughout the year with migrant birds such as ducks, geese, swans, shorebirds, raptors, gulls, doves, swallows, starlings, and blackbirds posing the most potential problems during both migration periods and resident species causing hazards throughout the year. The NGB has scheduled periodic follow-on visits to assess progress and review BASH programs and plans. A revisit to Selfridge ANGB during spring 2013 as part of NGBs recurrent update program and as per USAF requirements was deemed warranted to meet NGB objectives and update the existing BASH program at the base.

The MI ANG has an on-going BASH program with all of the basic elements in place. Information and assistance is freely shared between various ANG organizations and with other tenant units sharing the installation. Airfield habitat management, bird control, removal of other wildlife, and bird dispersal activities have all occurred in the past and have served to reduce the hazards at the airfield. The engineering staff conducts habitat management on the airfield. Much of the bird dispersal and control efforts have been conducted by Pest Management staff supplemented by Airfield Management personnel, the Base Safety Office, the base fire department, and others. Pyrotechnic dispersal techniques and an excellent

system of remotely-triggered gas cannons are employed. Additionally, several personnel had participated in the use of remotely controlled model aircraft for bird dispersal. The US Department of Agriculture, Wildlife Services (USDA/WS) has assisted with advice and removal of other hazardous wildlife such as deer occupying the base and now has a services contract through NGB and the base, to provide full time assistance and to be continued pending projected future funding availability.

2. Regional Bird/Wildlife Hazards. The Selfridge Air National Guard Base local area map (ANNEX M, M-2) depicts the immediate vicinity of the airfield. It may be used to show specific areas that may be attractive to birds considered hazardous to aircraft operating from the base. Several areas of concern are evident in the surroundings and on the airfield itself. Most of the airfield is covered in turf as recommended and is much improved since the previous visits by NGB. Several small weedy patches, bare areas, broken tarmac, and remnant forest patches, as well as significant water features are potentially attractive to a variety of bird species. Notable are several areas of wetlands on either side of runway 19/01 near the northern end of the airfield, abeam the runway near the Air Traffic Control Tower, and at the southwest end of the airfield near and in the Explosive Ordinance Disposal area. Trees, brush, and weeds have been almost completely removed from these areas as previously recommended, but state and federal jurisdiction over the water in these areas is the most significant remaining concern on the airfield. These areas are highly attractive to a variety of bird and other wildlife species and are largely responsible for attracting the birds noted in the base's bird strike records. Any regenerating trees and brush in these areas must be routinely removed and the wetlands should also be drained and filled as well. Broken and eroding tarmac on taxiways B and G also were highly attractive to birds using these areas to ingest grit and for unobstructed loafing areas. The east ramp was continuing to be used by groups of Ring-billed Gulls and smaller numbers of Herring Gulls on occasion, especially following inclement weather and during summer months. These birds are attracted to the warm pavement and to the open area for loafing and are especially abundant during the annual fish fly (Callibaetis mayfly) hatches. Gulls and Canada Geese were also noted in significant numbers on the ball fields at the outdoor recreation site near the main gate and also on the golf course to the southeast of the airfield. The airfield is currently surrounded by a fence for security and also to deter White-tailed Deer (*Odocoileus virginianus*) and Coyotes (*Canis latrans*) from entering the airfield and is particularly effective now that most of the stands of trees have been removed from the airfield. However, numerous deer have been killed under conditions of a depredation permit and with the assistance of the US Department of Agriculture in the past and the numbers now are low, but still may be present on the airfield.

The area surrounding the base also contains numerous features that are inherently attractive to a variety of birds and other wildlife potentially hazardous to nearby flying operations. The base abuts Lake St. Clair to its east side and the Clinton River runs along the south boundary. The nearby rivers and lake coast zones are

natural migration corridors for most species found in the area. Waterfowl including Canada Geese, Mallards, and Mute Swans are abundant in the lake and are observed crossing the airfield between the lake and other feeding areas. Cormorants, gulls, herons, and other species also exhibit similar patterns. In addition to larger bodies of water, many wetland areas surround the base and attract a wide variety of species. Abundant fish in Lake St. Clair and a walleye hatchery adjacent to the base attract numerous birds to the area. Agricultural areas several miles north of the base produce grain crops that attract birds such as starlings and blackbirds that were observed in large flocks staging before fall migration and may occur in large winter roosts in the local area. Much of the remaining surrounding area is suburban residential and may actually reduce attractiveness to the more natural state with the exception of associated parks, green belts, golf courses, and other such features. The base must be involved in community planning issues as surrounding areas are developed to ensure wildlife hazards are minimized. A preferred wildlife management plan has been added to the unit's Air Installation Compatible Use Zone (AICUZ) and incorporated in the Extended Use Lease to engage the local community in the base's concern for appropriate development and mitigation efforts in surrounding areas.

The unit's low level training areas also contain many features that attract birds in similar fashion to the local environment and should be identified so as to avoid bird concentrations during times of year when migrants may cause significant hazards. The airfield should be managed to make it as unattractive as possible so that birds will avoid it and use the many other alternatives available to them in the surrounding area. Parks, golf courses, industrial complexes, and other surrounding areas should also be monitored for roost sites, feeding areas, breeding and other behaviors that could impact local flight safety. Dispersal or control of birds in these areas may require access by airport personnel or by others such as USDA that can help if hazardous conditions arise. Bird concentrations away from the airfield or at transient operating locations should be monitored by pilot observations and use of the USAF models to avoid known bird hazards while away from the home unit. Lakes, ponds, agricultural areas, and wildlife refuges along the unit's low-level routes should also be monitored for seasonal peaks in bird concentrations to avoid such hazards.

3. Airfield Hazard Assessment and Recommendations. The Selfridge ANGB Civil Engineering staff is responsible for ensuring that airfield vegetation and drainage are managed to minimize bird and wildlife attractants. The Base Civil Engineering staff, with assistance from the 127 OG/OSF, should monitor and maintain the airfield in accordance with Air Force policy and recommended wildlife mitigation practices.

a. Airfield Turf. The airfield turf was a mixture of fescue, native grasses, and some broad-leaved weedy vegetation. The majority of the airfield supported dense vegetation that was routinely maintained. Vegetation grew right to the edge of the operating surfaces as recommended. Very significant

improvements in the turf have been made since the 2003 visit by NGB with almost all weedy vegetation removed and replaced by fescue turf and greatly reduced exposed bare areas of the airfield remaining. Notable exceptions exist in the areas where the base has recently removed extensive forested stands and wet soils and standing water prevent turf management as recommended. Ideally, the entire infield area of the airfield should be established in a thick, uniform stand of grass without openings or weedy vegetation present. During the spring 2008 and 2013 visits, the airfield turf was mowed at 7 inches tall and left to grow to recommended heights of between 7-14 inches (USAF mandate). Elevated lights and signs do not require special clearance and even the edges of the operating surfaces should continue to be maintained as recommended. Grass should not be maintained below recommended heights immediately adjacent to the operating surfaces in particular, as these are the most vulnerable areas of the airfield in terms of bird hazards.

Mowing the vegetation short and allowing it to reach heights where it goes to seed and becomes uneven encourages the growth of broad-leaved weedy vegetation. Such vegetation provides feeding and cover resources that increase bird hazards at the airfield. Mowing vegetation, especially if mown short, actually stimulates production and encourages weedy vegetation to invade grass stands. Mower paths should be altered so as not to create ruts by following the same routes with each cycle of mowing. Some of the field was rutted, due in part to traditional mower paths, but also as a result of traffic due to construction activities. Vehicle traffic over airfield turf should be eliminated or minimized to the maximum extent possible to avoid rutting the airfield and inadvertently leading to grass being mowed below recommended heights. Care must be taken to properly re-vegetate areas when any construction or habitat management projects are completed.

Fescue is an ideal airfield grass species as it grows in a dense, sod-forming manner that can eliminate bare spots and out-compete weeds. Varieties of fescue also grow to substantial heights before going to seed. Such grasses are also generally indigestible to the majority of bird and other wildlife species. The endophytic (symbiotic intercellular fungal association) varieties deter foraging by birds and especially herbivorous insects that in turn, attract birds and other wildlife. Selfridge ANGB has continued their excellent plan to re-vegetate the airfield in endophytic fescue as previously recommended and areas where it is now established are functioning as designed to minimize hazardous bird and other wildlife species (also see ANNEX M, M-4 for maps of areas thus treated). Ideally, the airfield should be maintained in such grasses and kept between 7 and 14 inches over the entire area to limit bird numbers and reduce maintenance costs. Selective application of herbicides has been necessary to eliminate weeds and allow grass to become reestablished in areas where it has been disturbed or initiated, but now that the grasses are established, should be self-sustaining and reduce future

maintenance costs. Taller grass excludes many birds due to limited visibility for flocking species, difficulty for birds to locate invertebrate food sources, prevention of predator detection, and limiting ease of movement. Taller grass also establishes a deep root structure that improves soils, prevents herbaceous weed growth and prevents many birds and other animals from pulling turf to access soil invertebrates. Grass should not be allowed to exceed 14 inches and to go to seed, as it may attract rodents, predators including raptors, and scavengers. Taller grass also grows more slowly and becomes even less digestible as it becomes senescent.

Maintaining grass as recommended will reduce costs of mowing operations through the growing season. Mowing may attract some birds during operations and dispersal techniques must be on hand at such times. The last mowing of the growing season should be to top grass off at 7 inches where it will dry and stand through the winter. Tall grass, once established, will out-compete and thus reduce broad-leaved weed species as observed. This will enable a reduction in the amount of broad-leaved herbicide applied to the field, if applicable. More information on airfield turf management may be obtained from the Air Force Civil Engineer Center or the local County Extension Agent. Also see APPENDIX 3, Attachment 5.

Management of airfield turf surrounding bi-annual air shows presents a continual issue for the base. An area of the field must necessarily be denuded in preparation of pyrotechnics demonstrations to preclude fire hazards. In preparation of the shows, an area of the field should be selected so as to minimize subsequent bird hazards. The location should be as far as practicable from the runways. The area must be targeted for intense bird harassment activities preceding the air shows and again afterwards. The denuded area should be reseeded to reestablish turf as quickly as possible following the events, presuming there is enough growing season left to reestablish turf. Water (fire trucks may be used as a portable source) and fertilizer may be necessary to hasten growth. If the demonstration areas have a well-established turf with deep-rooted systems promoted by proper mowing regimes, these areas will recover very quickly on their own and may actually be stimulated by fire to do so following pyrotechnics displays. If the soils are scorched deeply, or if root systems are not well established, and more permanently, the bare area can be secured with a binding agent that prevents weed growth and soil erosion. Binding agents used in such bare areas also reduce potential FOD issues near the operating surfaces. Thus treated, the bird hazard is reduced significantly, though not eliminated and must be targeted for other dispersal techniques.

b. Airfield Mowing Plan. Selfridge ANGB maintains an Airfield Mowing Plan (AMP) that can be attached as an additional reference, but is not included in BASH Plan. The plan should depict areas of coverage and tentative schedules and be monitored to ensure standards are maintained as described

above for the entire airfield operating area. Additionally, no provisions for alteration of recommended standards should be made for state-listed threatened and endangered species or species of special concern (see FAA CertAlert at APPENDIX 3, Attachment 10).

c. Bare Areas. A limited number of bare areas continue to exist on the airfield, some associated with prior construction activities or unused old operating surfaces. New bare areas associated with tree removal in the forested wetlands on the field are now a major concern. Many of the other bare areas in the infield are much improved over the 2003 and 2008 visits by NGB as turf has become better established and maintained since that time. Bare areas may provide ideal roosting and loafing sites for Mourning Doves, Killdeer, gulls, and waterfowl. They also provide nesting sites for birds such as Killdeer and grassland passerines and prevent turf management as described above. Bare areas also contain gravel and grit that is highly attractive to birds such as doves that use these materials to aid in digestion. These areas also capture windblown seeds that are visible and attractive to a variety of birds. Bare areas should be eliminated and seeded with grass to establish a thick turf wherever possible and as described above. Turkey Vultures, Red-tailed Hawks, and other raptors may soar over bare soil as it warms early in the day and thus provides ideal thermal soaring conditions. Construction sites and air show areas must be targeted for reseeding as soon as possible after project completion. There were also several areas on the airfield where old operating surfaces had deteriorated and broken tarmac was still in place. Cracks in these surfaces were filled with a mixture of vegetation, and gravel and grit were scattered over the areas. These surfaces provide ideal feeding, nesting, and loafing areas for a wide variety of birds. The areas are relatively open so that visual communication between flock members can occur. They provide grit that can aid in digestion as in the bare areas mentioned above. The sparse vegetation also serves to capture windblown seeds and insects as a food source. Unfortunately, the majority of these surfaces occur in the most vulnerable areas of the airfield operating areas; alongside runways and taxiways and in the overruns. Ideally, target unused old surfaces for removal, and they should be reseeded with grass. The base's long range plan should address these conditions. In the interim, it is best to remove the vegetation via mechanical means or herbicide applications as observed and routinely sweep the gravel and grit from these cracked surfaces. Consider also treating these areas with petroleum-based binding agents that will make the gravel and grit less accessible, mildly toxic as a deterrent to ingestion, and will also reduce FOD concerns.

d. Drainage. Much of the airfield is very well drained with a system of drainage ditches and underground culverts. Some of the underground systems and less of the above ground structures had become clogged (possibly collapsed) and caused water to back up on several areas of the field, especially following heavy rains as occurred preceding and during the 2013 visit by NGB. These

areas are identified and targeted for repair as necessary. Most ditches were excellently maintained however with steep sides and trimmed vegetation. Some of the ditches had aquatic vegetation such as cattails, rushes, and other brushy vegetation established in the bottoms and banks of the structures. Wetland vegetation should be routinely removed from these areas and flow of drainage water maintained to prevent recurrence of aquatic vegetation.

Unfortunately, the airfield also contains several areas of jurisdictional wetlands that are protected by state and federal regulations. These areas also contained flooded timber that has been removed but will continue to regenerate and require routine maintenance so long as the standing and sub-surface water remains in these areas (also see ANNEX M, M-3). These wetlands are highly attractive to a variety of birds and other wildlife and prevent turf management as described above. In addition to small regenerating trees and brush, associated wetland vegetation such as cattails, bulrushes, willows and other species provide feeding and cover resources for potentially hazardous wildlife. Ideally, these wetlands must be drained, filled, and mitigated off-site or preferably waived from mitigation by the state and federal natural resources agencies.

Ensure alteration of any potential wetland habitat complies with Federal and State regulations. Any potential wetlands mitigation efforts should never occur in the airport operating area (AOA) and cooperation between federal agencies, especially the Corps of Engineers, must be sought so as not to compromise flight safety for the objectives of wetlands mitigation programs. Consult the 2003 Memorandum of Agreement between the FAA, USAF, Corps of Engineers, USDA, and other federal agencies for specific guidance. It may be found at: www.epa.gov/owow/wetlands/pdf/FAAmitigationmoa.pdf or http://www.faa.gov/airports/environmental/media/wildlife_hazard_mou_2003.pdf. Conditions at Selfridge ANGB certainly warrant such an exemption and must be addressed to reduce the potential wildlife hazard posed by these on-site wetlands. Federal guidelines take precedence over state recommendations and cooperation from all agencies is required to minimize this hazard. Unfortunately, it is reported that the state natural resources agencies have been given authority over these issues by the Corp of Engineers and feel they are not given any judgment and leeway by state law to exempt the base from having to mitigate these wetlands at great expense on or off site. They have agreed to allow the base not to conduct on-site mitigation, but funding constraints may preclude off-site mitigation and perpetuate a significantly hazardous wildlife situation on the airfield unless a waiver can be formulated. Consequently, the base's Integrated Natural Resources Management Plan (INRMP) is also not currently in concert with the BASH Plan in that it states that the preferred alternative is to mitigate the wetland areas through an off-site bank. The base may not be able to afford the option. The INRMP should be modified to state that the preferred

alternative is to seek a waiver and not conduct any mitigation as per the Federal Memorandum of Agreement and only seek alternative remedies should legal options to the waiver be denied, with the associated liability therein, by the state. The Federal memorandum should allow for this waiver and is also being re-written to strengthen the language that may afford the state more leeway in granting such appropriate waivers. The Selfridge ANGB leadership and possibly even the State Guard Bureau leadership may need to get directly involved with the state regulatory agencies to negotiate an acceptable agreement on these issues. Contact the NGB Natural Resources division and USAF BASH Team for further assistance, if required. Also contact the FAA Staff Wildlife Biologist for their assistance as primary author of the Federal MOA, if required.

Periodic puddling of water following heavy rains occurs due to drainage issues and poor soils and these areas should be identified for filling or draining to prevent standing water from occurring on the airfield. Puddling on the parking ramps should also be addressed and can be reduced by sweeping in poorly drained areas. Any remaining areas should be addressed in the long-range plan to eliminate standing water, whenever possible.

In places where permanent standing water is present, including potentially the golf course ponds, a barrier system may be installed to prevent birds from using these sites. Heavy monofilament fishing line, or preferably new "superlines," attached to rebar or similar material, strung at one-meter spacing and above the water surface acts as a psychological barrier for birds attempting to land or depart the wetland. Birds clip their wings when they set to land and this deters them from their approach.

e. Trees and Landscaping. There are a now very few trees remaining within the airfield boundaries. Removal of such stands in the past has served to significantly reduce the presence of birds and other wildlife. Any remaining trees, including small patches or even individual trees can potentially attract perching and roosting birds and harbor other wildlife such as White-tailed Deer, Coyotes, and Red Foxes (*Vulpes vulpes*). In areas where extensive stands have been removed, but water remains problematic, routine maintenance, by hand if necessary, will be required to prevent regeneration in the future (also see ANNEX M, M-3) and the installation Integrated Natural Resources Management Plan (INRMP). Any stands of trees, brush, or aquatic vegetation induce wildlife to follow these patches as a corridor for movement onto the field and subsequently provide protection for wildlife once they have entered the field, encouraging them to remain.

Large bird roosts may develop in forested areas anywhere on base. Continue to monitor any stands of trees within the base property to ensure no bird roosts develop. If roosts are noted, active dispersal can be employed to disrupt any such sites. The USDA, Wildlife Services can assist in roost

dispersal (see APPENDIX 3 for guidance in this area). Alternately, individual trees or stands can be targeted for thinning or removal to reduce attractiveness to birds. Open canopies and sparse stands of trees eliminate these sanctuaries. Ensure these provisions are addressed and specified in the INRMP with local procedures developed for monitoring and periodic updates as necessary.

Additionally, an abrupt transition between the forest and the airfield grass area should continue to be maintained to limit edge effect. Edge effect, or the gradual transition from one cover type to another, is highly attractive to species of both cover types and can significantly increase local population densities. Brush and small trees should be removed from these transition areas and anywhere they occur on the airfield. The large area of brush on the west side of the field in the EOD area should be specifically targeted and maintained with turf as described above.

Ornamental trees and shrubs on the airfield and surrounding facilities should be carefully selected to reduce attractiveness to hazardous bird species. Ensure species are chosen with open canopies and sparse foliage to prevent roosting birds from becoming established near the airfield. Periodic pruning of tree limbs in the interior of the trees may need to occur and dispersal agents employed to create unsuitable roosting conditions. Spacing of individual trees or other vegetation such that crowns do not overlap when mature will also prevent most use as roosting and nesting habitat. Ornamental vegetation should be chosen so that feeding and shelter are minimized. Vegetation that produces berries, seeds, fruits, etc. or that provides dense cover should be avoided.

f. Security Fencing. The airfield is enclosed in a chain link fence for security and to deter wildlife from entering the field. Proper fencing can deter access to the airfield by wildlife such as Coyotes, White-tailed Deer, Red Foxes, and even feral dogs (*Canis domesticus*). Deer have been noted on the airfield in large numbers in the past and have been killed on the base to reduce local populations. Fencing of alternate heights ranging from 8 feet to 12 feet and the addition of concrete footers, though non-universally applied, have served to significantly reduce the problem. However, evidence of deer and other wildlife were clearly present and observed from ground-based and aerial surveys during the NGB visits. Deer are capable of jumping over fences up to eleven feet tall however, and coyotes and domestic dogs will frequently breech fences by digging under them or will access any small openings such as gates that are not tightly secured. Deer will exploit such breeches and will squeeze under small holes created by erosion or other wildlife. Thus, continuous monitoring of wildlife inside the fence is necessary. Unfortunately, fences are as effective at confining animals inside as they are at deterring them from entering in the first place. This is especially true when

there is suitable habitat inside the fences, as observed in several small patches of trees, brush, and wetland habitat on the airfield.

Installed properly, fencing can significantly limit wildlife breeches and the requirement for routine monitoring and maintenance. Ideally, the fence should contain at least eight feet of chain link topped by angled strands of barbed wire up to eleven feet, as observed. The angled top assists by necessitating wildlife not only clear the height, but also the width of the fence. Additionally, a section of at least four feet of chain link, buried and attached to the base of the fence prevents burrowing animals from breeching the bottom of the fence. This section should be sloped away from the outside of the fence to be most effective. A concrete footer 12-18 inches deep can also prevent undermining of the fence in lieu of buried chain link. See also APPENDIX 3, Attachment 6 for additional guidelines in this area. Improvements to the fence can be made over time and should be identified in the base's long range plan. As sections of fence are targeted for routine relocation, replacement, or repairs, new sections can be added in a piecemeal fashion to meet desired specifications.

The completed fence line must be checked regularly for breeches by wildlife, to ensure all gates are closed, and for security reasons. Construction debris or rock rip-rap can be piled against the base of the fence in areas routinely undermined by burrowing wildlife. It may not be possible to completely exclude all wildlife from the field and controlled hunting or depredation, as has been conducted in past years, may be necessary on an as-needed basis. USDA, Wildlife Services can assist in this area.

g. Perch and Nest Sites. Sites such as isolated trees, airfield structures, runway markers, poles, equipment, and others should be monitored for birds using them as perches or nesting sites. Several species of birds such as Red-tailed Hawks, American Kestrels, Turkey Vultures, and song birds frequently use these sites. Where practical, remove these structures or configure them to limit suitable perching sites. For isolated structures such as poles and runway markers, anti-perching devices such as spike strips on larger surfaces or inverted golf tees for structures such as airfield lights, can be used on a limited basis. These devices are much more effective and persistent than sticky tactile repellents that may melt in heat, deteriorate in ultraviolet light, dry, and collect dust. Additionally, rubber snakes, owls, and effigies should not be used as they rapidly lose effectiveness due to habituation by birds. If not feasible to eliminate or configure such attractants, target these structures for active dispersal techniques as described below.

h. Wildlife Attractants. Several bird boxes once commonly observed in many areas of the installation have been reduced or eliminated and any remaining boxes should be monitored for hazardous bird species. Birds such as European Starlings will often out-compete targeted species such as Eastern

Bluebirds for these sites and may increase the local population of hazardous species. Ensure base personnel are made aware of the risks of improper practices such as construction of nest sites and improper disposal of wastes and food products, such as open dumpsters or food left in picnic or break areas. ANG personnel should be prohibited from building structures, erecting nesting platforms or boxes, feeding birds, improperly disposing of wastes, or otherwise encouraging birds or other hazardous wildlife in areas of the installation that may threaten flight operations.

i. Agricultural Outleases. Selfridge ANGB does not currently outlease any of its property for agricultural practices. Agricultural practices, including hay production, are considered by the FAA as incompatible with safe airport operations and such practices should not be considered on base property. Private property outside the airport cannot be regulated, but should be monitored for potentially hazardous bird species in proximity to the airport. Bird dispersal can be considered in these areas with permission of the property owners.

4. Bird/Wildlife Management and Control Measures. Bird control and dispersal is primarily accomplished by Airfield Management personnel. However, a variety of dispersal and control measures should also be available to other ANG personnel to use on an as-needed basis. These measures should be readily available at any time when birds or other wildlife threaten airfield operations. Pyrotechnic equipment may be stored in an Airfield Management cabinet for immediate access. These devices may also be taken on deployments where periodic use may be necessary away from the home unit.

a. Active Harassment. A combination of frightening devices should be available for use whenever birds are present on the airfield or in surrounding areas. Primary among those are pyrotechnic devices that can be fired from 15mm “starter” pistols, standard 12-gauge shotguns, or modified flare pistols. Pyrotechnics are listed in the Air Force Table of Allowances for airfield bird control and may also be ordered through local purchase mechanisms if necessary. Also see APPENDIX 3, Attachment 4 for Air Force classification of pyrotechnic launchers and Attachments to ANNEX C for use of these devices. These devices project pyrotechnics many meters over flocks of birds that present hazards. Skillful use of the devices can disperse birds from the field in desired directions. They produce a variety of loud sounds and explosions, bright flashes of light, and/or trailing smoke. Training for safely using the devices and coordination with the Air Traffic Control (ATC) Tower is imperative. Pyrotechnic devices can be extremely effective in dispersing waterfowl, gulls, crows, shorebirds, starlings, and flocks of blackbirds. Gulls, starlings, crows, and blackbirds may also be dispersed using a combination of pyrotechnics and bioacoustics.

These active harassment techniques should be used on the airfield and in all hazardous surrounding areas. These techniques may also be used in coordination with local property owners, to disperse any known bird roosts from dense trees such as found in nearby parks, golf courses, ponds, and other structures. Active harassment devices may also be taken on deployments to areas where airfield bird control may not be conducted by local agencies.

Additional harassment techniques such as networks of remotely triggered gas cannons, as observed, radio-controlled model aircraft, or others can be considered as effective supplements to other dispersal techniques. See also ANNEX M, M-4 for maps of the "Scare Wars" gas canon system. ATC personnel in the tower are equipped with triggers for the gas cannons in addition to, Airfield Management, and pest management staff for proper operation of the system. Ensure canons are only fired when birds are present near the specific targeted zone and move the individual canons periodically to avoid habituation problems. Creativity and intensity of such programs will make the overall effort much more successful and delay habituation to the combination of techniques.

It will also be important to conduct active harassment, primarily by use of pyrotechnic devices, during off-duty hours. Airfield Management staff should have the equipment available to conduct bird dispersal operations outside normal duty hours. Such activity will ensure birds remain off the airfield and prevent habituation problems that complicate efforts during regular operations.

b. Waterfowl Control in Surrounding Areas. The rivers, lakes, ponds, and wetlands near the base and the on-site golf course attract significant numbers of waterfowl such as resident and migratory Mute Swans, Canada Geese, and Mallards, as well as other species such as Ring-billed Gulls, Double-crested Cormorants, and blackbirds as observed during the NGB visits. These birds pose very significant threats to safe flying operations and should be managed to reduce the hazards. Standard dispersal techniques should be employed to reduce these attractants. Waterfowl are very easily dispersed through the use of standard frightening devices. Pyrotechnics are most effective. During times when geese are molting and thus flightless (summer breeding season), they may be rounded up and relocated if necessary. Alternately, they may be removed by shooting individual birds or flocks. USDA, Wildlife Services can assist and has assisted in these areas and should be used in this capacity under the pending contract with the base. Control measures should be conducted in the surrounding community with approval and access granted by local property owners and such measures must be incorporated into the Extended Use Lease agreements for any areas on the base property including and especially on the Golf Course. Notices, signs, and press releases may be

used to ensure public awareness of the on-going efforts to reduce local wildlife hazards.

c. Rodent Control. Rodents such as voles (*Microtus sp*.), mice (*Peromyscus sp.)*, Woodchucks *(Marmota monax)*, Muskrats (*Odatra zibethicus*), and Beavers (*Castor canadensis*) are abundant throughout the region and have established populations in the immediate surrounding areas and on the airfield itself. Small rodents attract a variety of raptors such as Red-tailed Hawks and Kestrels that feed on them. Rodents may also damage wiring and undermine the integrity of pavements and overruns. Aquatic rodents can compromise drainage systems and even the infrastructure itself. Removal by trapping or poisoning in accordance with Michigan law may be conducted by Pest Management personnel or under contract with USDA, Wildlife Services. USDA has successfully removed beavers and their structures from areas immediately adjacent to the airfield in the past and such measures have served to reduce potential wildlife hazards on the airfield. Habitat management is best to limit rodent populations, but rodenticides such as phostoxin may be used if necessary.

d. Invertebrate Control. Various invertebrates and especially earthworms are abundant on the airfield and attract a wide variety of birds including gulls and raptors. Insecticides and vermicides can be applied on a limited basis as necessary and in compliance with state and federal law. Alternately, be prepared to sweep the operating surfaces any time heavy rains force worms or other invertebrates onto the tarmac. Additional bird dispersal techniques must be available during those times as well.

e. Methyl Anthraylate. Methyl anthranylate (MA) is a chemical repellent based on the synthetic additive used to flavor grape drinks. It is also a taste deterrent used for birds such as geese that feed on grass and other vegetative matter. It can be effective in limited areas for such situations. MA is not very effective for birds feeding on seeds and insects on the airfield. Birds such as Mourning Doves, meadowlarks, blackbirds, and starlings may not be deterred by such deterrents. Application of MA is costly and labor intensive and the chemicals are short-lived, especially following precipitation. Its use may be considered on limited areas and in severe situations, but is otherwise not a preferred method of bird deterrence.

f. Nesting Swallows. There are a number of Barn Swallows and Cliff Swallows that nest under structures that might cause a minor BASH problem. These birds frequently follow airfield mowers during operations. It should be noted however, that swallows are frequently struck by AF and ANG aircraft, despite causing little damage. Swallows can be discouraged through persistent harassment that must be initiated at the moment they begin to build mud nests under the eaves of buildings or under structures such as bridges and culverts. Primarily this can be accomplished by hosing the surfaces with

a high pressure water stream, such as from a fire hose. This should be backed up by harassment of the birds themselves using standard frightening techniques such as pyrotechnics. Ensure proper federal and state permits are followed. Chains hung under the large culverts can be installed to great effect. Alternately, and for aesthetic concerns on buildings, clear plastic sheets can be screwed or glued to the perpendicular surfaces where they join to prevent the birds from gaining purchase to begin nest building. Strips should be extended a minimum of twelve inches on each of the adjoining surfaces preferably to the shade line at which sunlight reaches the highest point on the wall. Swallows will not place nests in locations with direct exposed sunlight during the heat of the day. NOTE: swallow nests may not be disturbed after eggs have been laid without proper depredation permits. The Migratory Bird Treaty Act protects swallows and swallow nests with eggs. See ANNEX C for additional guidance for keeping birds out of structures such as hangars.

g. Depredation. Removal of nuisance birds and other wildlife may be conducted with appropriate Federal and State permits by ANG Pest Management, airport, or contracted USDA personnel. Trapping, poisoning, and shooting of individuals or flocks of birds such as Canada Geese, gulls, doves, and blackbirds, or other wildlife such as deer, foxes, coyotes, beavers, and even domestic dogs may be required on a periodic basis. Depredation is a last resort measure that may reinforce other habitat management or active control efforts and is recommended when a severe hazard persists for several days. Depredation must be coordinated with Air Traffic Control staff. Such an effort must be carefully controlled and conducted in full compliance with conditions of state and federal permits. Dead birds must not be placed near the operating surfaces or at ground level as they may attract scavengers and increase the hazard. See Air Force and USFWS Policy Letters in APPENDIX 3, Attachments 2 and 3 for additional guidance in this area. The ANG must maintain its depredation permits to conduct these efforts and may be supplemented by USDA or other contracted efforts as necessary.

5. Bird Avoidance Away from the Airfield. Operational planning to avoid birds in time and space is paramount in areas where active control of birds is not possible. Aircrews operating in remote areas, drop zones, or on other low-level and range missions, if applicable, must plan to minimize exposure to potentially hazardous bird concentrations. Mission planning using the Bird Avoidance Model (BAM) for scheduling purposes, or the Avian Hazard Advisory System (AHAS) in near-real time, is critical. Training of aircrews, base operations personnel, schedulers, SOFs, and other users of these systems should occur on an as-needed basis to ensure the latest information is available and properly employed.

The BAM provides a detailed depiction of bird concentrations from a historical perspective. It consolidates data on bird abundance and distribution from the previous three decades and graphically depicts the relative level of bird mass for

every one square kilometer block of the continental US and Alaska for each two week period of the year and four daily time periods. It also depicts a wide array of environmental features and human infrastructure for reference.

The BAM should be consulted for long-range mission planning purposes and to assess relative risks of bird strikes to operations in time and space whenever flying low-level missions. AHAS is a dynamic version of the BAM and can give forecasted bird hazard advisories within a 24-hour time frame. It should be consulted in the short term to assess bird hazards within 24 hours of a planned operation. Both systems can be accessed through the internet at www.usahas.com. BAM and AHAS are continually updated as conditions and bird populations change. These conditions will be updated in the models as new bird data becomes available. It is important that schedulers, planners, and aircrews continue to check the models for the most current conditions. A sample of the graphic output from the BAM is contained in ANNEX M. AHAS and BAM are not currently available outside the continental United States and Alaska. Specific evaluation of potential hazards in deployed areas outside the United States is not possible in the context of this plan without firsthand knowledge of these areas.

APPENDIX 2. BIRDS OBSERVED IN THE VICINITY OF SELFRIDGE AIR NATIONAL GUARD BASE:

These lists are compiled as a combination of observations made by ANG/CEVP on February 22-23, 2005, those observed during the revisits on January 8-9, 2008, and April 23-24, 2013, as well as those birds listed in the United States Geological Survey, Northern Prairie Wildlife Research Center report entitled "*Bird Checklists of the United States, Shiawassee National Wildlife Refuge.*" This report contains much useful data and may be found at http://www.npwrc.usgs.gov/resource/othrdata/chekbird/r3/shiawa.htm. Rare and erratic bird species were eliminated from the following list for brevity. The lists may be supplemented with local observations as needed.

List 1 contains bird species considered potentially hazardous to 127 WG operations because of large size, abundance, flocking behavior, formation of large roost sites, habit of occupying airfields, or negative secondary effects due to their presence on the field. Such species are indicated in RED text. These species should be addressed by management measures implemented through this plan.

List 2 contains bird species known to occur in the vicinity of Selfridge ANGB and the 127 WG operating areas that are considered less hazardous or minimally so because they are not common, small sized, or their behaviors limit their exposure to aircraft operations. These species are listed as they may be recorded in bird strike reports and may be identified by the Smithsonian Institution in local strike reports.

List 1. Order and Species of Most Hazardous Birds Identified in the Vicinity of Selfridge Air National Guard Base and Local MI ANG Operating Areas:

Pelecaniformes – Pelicans and Allies

Double-crested Cormorant	*Phalacrocorax auritus*

Anseriformes – Waterfowl

Mute Swan	*Cygnus olor*
Tundra Swan	*Cygnus columbianus*
Canada Goose	*Branta canadensis*
Snow Goose	*Chen caerulescens*
Mallard	*Anas platyrhynchos*
American Black Duck	*Anas rubripes*
Blue-winged Teal	*Anas discors*
Green-winged Teal	*Anas crecca*
American Wigeon	*Anas americana*
Northern Pintail	*Anas acuta*
Gadwall	*Anas strepera*
Northern Shoveler	*Anas clypeata*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*

Falconiformes – Vultures, Hawks, and Falcons

Turkey Vulture	*Cathartes aura*
Red-tailed Hawk	*Buteo jamaicensis*
American Kestrel	*Falco sparverius*
Peregrine Falcon	*Falco peregrinus*

Galliformes – Gallinaceous Birds

Wild Turkey	*Meleagris gallopavo*

Ciconiiformes – Herons and Egrets

Great Blue Heron	*Ardea herodias*

Charadriiformes – Shorebirds and Gulls

Killdeer	*Charadrius vociferus*
Herring Gull	*Larus argentatus*
Ring-billed Gull	*Larus delawarensis*

Columbiformes – Pigeons and Doves

Rock Pigeon	*Columba livia*
Mourning Dove	*Zenaida macroura*

Strigiformes – Owls

Great Horned Owl	*Bubo virginianus*
Short Eared Owl	*Asio flammeus*

Passeriformes – Perching Birds

Horned Lark	*Eremophila alpestris*
American Crow	*Corvus brachyrhynchos*
American Robin	*Turdus migratorius*
European Starling	*Sturnus vulgaris*
Eastern Meadowlark	*Sturnella magna*
Red-winged Blackbird	*Agelaius phoeniceus*
Common Grackle	*Quiscalus quiscula*
Brown-headed Cowbird	*Molothrus ater*
Snow Bunting	*Plectrophenax nivalis*

List 2. Order and Species of Other Birds Identified in the Vicinity of Selfridge ANGB and Local MI ANG Operating Areas:

Podicipediformes – Grebes

Pied-billed Grebe	*Podilymbus podiceps*

Anseriformes – Waterfowl

Wood Duck	*Aix sponsa*
Bufflehead	*Bucephala albeola*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Ruddy Duck	*Oxyura jamaicensis*

Falconiformes – Vultures, Hawks, and Falcons

Northern Harrier	*Circus cyaneus*
Rough-legged Hawk	*Buteo lagupus*
Bald Eagle	*Haliaeetus leucocephalus*

Galliformes – Gallinaceous Birds

Ring-necked Pheasant	*Phasianus colchicus*

Ciconiiformes – Herons and Egrets

Great Egret	*Casmerodius albus*
Green-backed Heron	*Butorides striatus*
Black-crowned Night Heron	*Nycticorax nycticorax*

Gruiformes – Cranes and Allies

Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica americana*

Charadriiformes – Shorebirds and Gulls

Semipalmated Plover	*Charadrius semipalmatus*
Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Spotted Sandpiper	*Actitis macularia*
Short-billed Dowitcher	*Limnodromus griseus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Common Snipe	*Gallinago gallinago*
Stilt Sandpiper	*Calidris himantopus*
Pectoral Sandpiper	*Calidris melanotos*
Dunlin	*Calidris alpina*
Least Sandpiper	*Calidris minutilla*
Semipalmated Sandpiper	*Calidris pusilla*
Bonaparte's Gull	*Larus philadelphia*
Common Tern	*Sterna hirundo*
Caspian Tern	*Sterna caspia*

Strigiformes – Owls

Eastern Screech Owl	*Otus asio*
Barred Owl	*Strix varia*

Apodiformes – Swifts and Hummingbirds	
Ruby-throated Hummingbird	*Archilochus colubris*
Coraciiformes – Kingfishers	
Belted Kingfisher	*Ceryle alcyon*
Piciformes – Woodpeckers	
Common Flicker	*Colaptes auratus*
Red-bellied Woodpecker	*Melanerpes carolinus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Hairy Woodpecker	*Picoides villosus*
Downy Woodpecker	*Picoides pubescens*
Passeriformes – Perching Birds	
Eastern Kingbird	*Tyrannus tyrannus*
Great Crested Flycatcher	*Myiarchus crinitus*
Eastern Phoebe	*Sayornis phoebe*
Willow Flycatcher	*Empidonax traillii*
Least Flycatcher	*Empidonax minimus*
Eastern Wood Pewee	*Contopus virens*
Barn Swallow	*Hirundo rustica*
Tree Swallow	*Tachycineta bicolor*
Bank Swallow	*Riparia riparia*
Cliff Swallow	*Petrochelidon pyrrhonota*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Blue Jay	*Cyanocitta cristata*
Black-capped Chickadee	*Parus atricapillus*
Tufted Titmouse	*Parus bicolor*
White-breasted Nuthatch	*Sitta carolinensis*
Brown Creeper	*Certhia americana*
House Wren	*Troglodytes aedon*
Marsh Wren	*Cistothorus palustris*
Gray Catbird	*Dumatella carolinensis*
Wood Thrush	*Hylocichla mustelina*
Hermit Thrush	*Catharus guttatus*
Swainson's Thrush	*Catharus ustulatus*
Eastern Bluebird	*Sialia sialis*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*
Cedar Waxwing	*Bombycilla cedrorum*
Loggerhead Shrike	*Lanius ludovicianus*
Red-eyed Vireo	*Vireo olivaceus*
Warbling Vireo	*Vireo gilvus*

Black-and-White Warbler	*Mniotilta varia*
Prothonotary Wabler	*Prothonotaria citrea*
Tennessee Warbler	*Vermivora peregrina*
Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Magnolia Warbler	*Dendroica magnolia*
Cape May Warbler	*Dendroica tigrina*
Yellow-rumped Warbler	*Dendroica coronata*
Black-throated Green Warbler	*Dendroica virens*
Black-throated Blue Warbler	*Dendroica caerulescens*
Blackburnian Warbler	*Dendroica fusca*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Bay-breasted Warbler	*Dendroica castenea*
Blackpoll Warbler	*Dendroica striata*
Palm Warbler	*Dendroica palmarum*
Ovenbird	*Seiurus aurocapillus*
Northern Waterthrush	*Seiurus noveboracensis*
Common Yellowthroat	*Geothlypis trichas*
Mourning Warbler	*Oporornis philadelphia*
Wilson's Warbler	*Wilsonia pusilla*
Canada Warbler	*Wilsonia canadensis*
American Redstart	*Setophaga ruticilla*
House Sparrow	*Passer domesticus*
Bobolink	*Dolichonyx oryzivorus*
Rusty Blackbird	*Euphagus carolinus*
Northern Oriole	*Icterus galbula*
Scarlet Tanager	*Piranga olivacea*
Northern Cardinal	*Cardinalis cardinalis*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Indigo Bunting	*Passerina cyanea*
House Finch	*Carpodacus mexicanus*
American Goldfinch	*Carduelis tristis*
Savannah Sparrow	*Passerculus sandwichensis*
Vesper Sparrow	*Pooecetes gramineus*
Dark-eyed Junco	*Junco hyemalis*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow	*Spizella passerina*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-throated Sparrow	*Zonotrichia albicollis*
Song Sparrow	*Melospiza melodia*

APPENDIX 3. LIST OF BASH REFERENCES

1. General. This appendix includes sources of information and points of contact for BASH related issues.

2. Technical Points of Contact. The following are available to discuss specific bird and wildlife hazard issues:

a. Air Force Civil Engineer Center - East
AFCEC/COSC
Mr. Donald Teig, Entomologist
129 Barnes Dr. Suite 1
Tyndall AFB, FL 32405
DSN 523-6465
(850) 283-6465
donald.teig.1@us.af.mil

b. Air National Guard Safety Office:
HQ NGB/SEF
Lt Col David Paulsgrove
ANGRC, JB Andrews, MD 20762
DSN 278-8628
(301) 836-8628
David.Paulsgrove@ang.af.mil

c. USAF BASH Team:
HQ AFSC/SEFW
Mr. Daniel Sullivan
9700 Ave G., SE
Building 24499
Kirtland AFB, NM 87117-5671
DSN 246-5679
(505) 846-5679
Daniel.Sullivan@kirtland.af.mil

d. FAA:
FAA – Airports
Mr. John Weller
800 Independence Ave, SW, Rm 615
Washington D.C. 20591
(202) 267-3778
John.Weller@faa.gov

e. **USDA/APHIS/WS:**
US Department of Agriculture, Wildlife Services (Michigan):
Michigan Wildlife Services State Director
2803 Jolly Road
Suite 160
Okemos, MI 48864
(517) 336-1928, (517) 336-1934 (FAX)
http://www.aphis.usda.gov/wildlife_damage/

f. **Consultant:**
BASH Incorporated
Dr. Russell DeFusco
5010 Lanagan Street
Colorado Springs, CO 80919
(719) 264-8420
BirdmanRuss@aol.com

3. **Literature.** The following provide excellent text references for bird/wildlife hazards:

a. Blokpoel, H. 1976. Bird Hazards to Aircraft. Clarke, Irwin and Co. Ltd., Toronto.

b. Brough, T. 1968. Recent developments in bird scaring on airfields. Pp. 29-38. In Murton, R.K. and E.N. Wirht (eds.). The Problems of Birds as Pests. Institute of Biology Symposium No. 17, Academic Press, New York.

c. Brough, T. and C.J. Bridgman. 1980. An evaluation of long grass as a bird deterrent on British airfields. J. Appl. Biol. 17:243-253.

d. Bruun, B. B., C.S. Robbins and H. Zim. 1983. Birds of North America. Golden Press, New York.

e. Cleary, E.C. and R.A. Dolbeer. 2005. Wildlife Hazard Management at Airports: A Manual for Airport Operators. United States Department of Transportation, Federal Aviation Administration, Office of Safety and Standards. Washington DC.

f. Jarman, P. 1993. A Manual of Airfield Bird Control. British Crown Copyright 1992/DRA. United Kingdom.

g. MacKinnon, B., R. Sowden and S. Dudley. 2001. Sharing the Skies An Aviation Industry Guide to the Management of Wildlife Hazards. Transport Canada.

4. Distress and Alarm Calls. The following lists vendors/sources for distress and alarm call tapes:*

*Note: Lists are not inclusive and do not imply endorsement of specific vendors.

a. Laboratory of Ornithology
Cornell University
159 Sapsucker Woods Road
Ithaca, NY 14850
(607) 255-5056
http://www.birds.cornell.edu/BRP

b. Borror Laboratory of Bioacoustics
Ohio State University
1735 Neil Avenue
Columbus, OH 43210-1293
(614) 292-2176
http://blb.osu.edu/

c. Neville Recordings
760 Walker's Hook Road
Salt Spring Island, B.C.
V8K 1N4 Canada
(250) 537-4121
http://www.nevillerecording.com/

5. Pyrotechnics (reference AFI 21-201, Chapter 32 for authorized munitions and AFI 64-117 for use of IMPAC card to purchase BASH munitions). The following lists vendors for pyrotechnic devices:*

a. Reed-Joseph International Company
232 Main Street
P.O. Box 894
Greenville, MS 38702
(800) 647-5554
http://www.reedjoseph.com/

b. Margo Suppliers, Ltd.
Suite 20, Box 11, RR 6
Calgary, Alberta T2M4L5
(403) 285-9731
http://margosupplies.com/public/american1/index.html

6. Mechanical Barriers. The following lists vendors for mechanical barriers to perching birds or exclusionary means for buildings and equipment.*

a. Bird Barrier America, Inc.
20925 Chico Street
Carson, CA 90746
(800) 503-8005
www.birdbarrier.com

b. Nixalite of America, Inc.
1025 16th Avenue
P.O. Box 727
East Moline, IL 61244
http://www.nixalite.com/

7. Meetings. Related Scientific and Professional Meetings:

a. Bird Strike Committee – USA (BSCUSA).
This organization was formed in 1991 as a joint effort by the FAA, USAF, and USDA. BSCUSA facilitates the exchange of information, promotes the collection and analysis of accurate wildlife strike data, promotes the development of new technologies for reducing wildlife hazards, promotes professionalism in wildlife management programs on airports through training and advocacy of high standards of conduct for airport biologists and bird patrol personnel, and is a liaison to similar organizations in other countries. The organization is directed by an eight-person steering committee consisting of two members each from the FAA, USDA, Department of Defense, and the aviation industry Wildlife Hazards Working Group. Bird Strike Committee – USA meets annually. For more information visit www.birdstrike.org or call (419) 625-0242.

b. Bird Strike Committee – Canada (BSCC).
This organization is sponsored by Transport Canada and the Department of National Defense and is aimed at providing a mechanism for discussion of matters relating to bird hazard awareness and wildlife control at Canadian airports. The organization includes membership from various government departments including Agriculture Canada, Canadian Museum of Nature, and the Canadian Wildlife Service. Associate members include representatives from all major Canadian airlines, aviation industry members and associations, and others. BSCC meets twice each year. For additional information please call: (613) 990-1402.

c. World Birdstrike Association (WBA).
This long-standing committee, formerly Bird Strike Committee Europe (BSCE) and International Bird Strike Committee (IBSC), is an international forum for the discussion of all topics relating to bird and wildlife hazards to aviation. Meetings are held every two years and include working groups on Aerodrome Bird Hazards, Radar and Remote Sensing, Aircraft Component

Design and Testing, Statistics, and Military Low-level Operations. For additional information please contact: www.worldbirdstrike.com.

8. BASH Information Sheet. An informational sheet on available training videos and other BASH references was prepared by NGB/A7CVP and is attached to this appendix as Attachment 1.

APPENDIX 3, ATTACHMENT 1

BASH INFORMATION SHEET

DVDs/VIDEOTAPES: The Joint Visual Information Services Distribution Activity (JVISDA) is located at the Tobyhanna Army Depot in Northeastern Pennsylvania. DoD customers should use JVISDA to direct order desired Video Information (VI) productions. Orders must be placed online and they will be mailed directly to the customer.

Web Site:
http://www.defenseimagery.mil/

Search for: Bird Strike or BASH

This search will result in four of the five BASH videos listed below. You can add these to your "shopping cart" and then search for "Frightening Techniques for Airfield Bird Control" (if you want that video) and add it to your shopping cart. In addition to the BASH videos cited here, there is an enormous library of videos on various subjects that can be ordered without charge. No more than 10 separate titles may be ordered at one time.

Listed below are PIN numbers and titles of VI productions available through the JVISDA:

- 609163: BASH – Bird/Wildlife Aircraft Strike Hazard
- 609164: BASH Low Level
- 604805: Frightening Techniques for Airfield Bird Control
- 602702: Dangerous Encounters BASH
- 613359: Legacies – There is a Choice (Elmendorf E-3 Mishap)

Customer service representatives can provide assistance and can be reached at:

DSN 795-7438 or (717) 895-7438; or,
DSN 795-7192 or (717) 895-7192

APPENDIX 3, ATTACHMENT 1 (continued)

DISPERSAL EQUIPMENT: Launchers and pyrotechnics, propane cannons, sight and motion scare away products, traps, distress tapes, and other products may be obtained from commercial sources. Several sources are listed below. This list does not constitute endorsement of these sources.

- Reed-Joseph International Company
  P.O. Box 894 – 232 Main Street
  Greenville, MS 38702-0894
  (800) 647-5554/(601) 335-5822

- Ecopic Corporation
  725 South Adams Road, Suite 270
  Birmingham, MI 48009
  (810) 647-0505

- Nixalite of America, Inc.
  1025 16th Avenue
  P.O. Box 727
  East Moline, IL 61244

TECHNICAL ASSISTANCE: The Air National Guard Environmental Division provides and coordinates technical assistance for wildlife hazards to aircraft operations in addition to the agencies listed below. **Please coordinate all requests for technical assistance through NGB/A7AM.**

- NGB/A7AM (Robert Dogan)
  3500 Fetchet Avenue
  JB Andrews, MD 20762-5157
  Robert.Dogan@ang.af.mil
  DSN 278-8859 or (301) 836-8859 (voice)
  DSN 278-8151 or (301) 836-8151 (fax)

- USAF BASH Team (Daniel Sullivan)
  HQ AFSC/SEFW
  9700 Avenue G, SE
  Building 24499
  Kirtland AFB, NM 87117-5671
  DSN 246-5674/5679 or (505) 846-5674/5679 (voice)
  DSN 246-2710 or (505) 846-2710 (fax)
  Daniel.Sullivan@kirtland.af.mil

- USDA APHIS – Wildlife Services
  www.aphis.usda.gov/ws

- Cooperative Extension Service – County Agent

APPENDIX 3, ATTACHMENT 1 (continued)

RECOMMENDED BOOKS:

Bird Hazards to Aircraft. By Hans Blokpoel, ISBN# 0-7720-1087

A Field Guide to the Birds of North America. National Geographic Society, ISBN# 0-87044-692-4

Birds of North America. Robbins et al., Golden Press, ISBN# 0-307-37002

Prevention and Control of Wildlife Damage. ISBN# 0-9613015-0-3 (also available on the USAF BASH Team's website)

Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports. A synthesis of Airport Practice. Belant, J.L. and J.A. Martin. 2011. Airport Cooperative Research Program Synthesis 23. Wash. D.C.

APPENDIX 3, ATTACHMENT 2

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

JUN 10 2002

MEMORANDUM FOR ALMAJCOM/SE/JA/CE

FROM: AF/SE

SUBJECT: Bird/Wildlife Aircraft Strike Hazard (BASH) Depredation Permits

The U.S. Court of Appeals for the District of Columbia, in *Humane Society v. Glickman*, 217 F.3d 882 (DC Cir 2000), affirmed a district court ruling that Federal agencies are not exempt from the Migratory Bird Treaty Act (MBTA). The court concluded "that because the Wildlife Services division of the Department of Agriculture did not obtain a permit from the Department of the Interior, its implementation of the Integrated Goose Management Plan by taking and killing Canada Geese violates §703 of the Migratory Bird Treaty Act." The United States Fish and Wildlife Service (USFWS) now requires Federal agencies to apply for a depredation permit before taking nuisance migratory birds. Under the MBTA a "take" occurs when a Federal agency would "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" a migratory bird. The Code of Federal Regulations guidance on depredation permits (50 CFR Part 21.41, paragraph (a)) states, "No permit is required merely to scare or herd depredating migratory birds other than endangered or threatened species or bald or golden eagles."

Air Force installations located in the United States or its territories must request migratory bird depredation permits before taking any action deemed necessary for health and safety reasons, to include BASH program implementation. Reasonable effort must first be made to use non-lethal means to solve any problems prior to taking lethal action. Compliance with the provisions of the MBTA does not relieve Air Force installations from their responsibilities under the Endangered Species Act. Installations are potentially subject to stringent penalties for the taking of endangered migratory birds.

Any proposal to take, or otherwise impact, migratory birds is subject to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq.*) and 32 CFR Part 989 (Air Force Environmental Impact Analysis Process). Once a permit is issued, installations will maintain records as dictated under the terms of the permit. In addition, a memorandum for record listing other options considered or taken, as well as consultations with federal, state, or local wildlife officials, should be maintained in support of applying for and having the depredation permit.

APPENDIX 3, ATTACHMENT 2 (continued)

This memorandum has been coordinated with HQ AF/ILEVP, and AFLSA/JACE. If you have any other questions concerning this matter, please contact Mr. Eugene A. LeBoeuf, DSN 246-5679 (eugene.leboeuf@kirtland.af.mil) or Maj Peter R. Windler, DSN 246-5674 (pete.windler@kafb.saia.af.mil). POC for AFLSA/JACE is Ms Lauryne Wright, DSN 426-9166 (lauryne.wright@pentagon.af.mil). POC for HQ AF/ILEVP is Maj Alan Holck, DSN 664-0632 (Alan.Holck@pentagon.af.mil).

GREGORY A. ALSTON
Colonel, USAF
Acting Chief of Safety

APPENDIX 3, ATTACHMENT 3

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

1849-1999

In Reply Refer To:
FWS/ARW99-00369

AUG 17 1999

Memorandum

To: Regional Directors, Regions 1-7
Assistant Director - Refuges and Wildlife

From: Acting Director

Subject: Migratory Bird Permits for Intentional Take by Federal Agencies

In response to recent court action (Humane Society v. Glickman), we must update and modify our policies and procedures relative to the issuance of migratory bird permits for intentional take of migratory birds by Federal agencies, including any take by the Fish and Wildlife Service. The attached memorandum from the Acting Assistant Solicitor provides the details on this interim guidance. Please read the third paragraph very carefully and ensure that your permit offices are in compliance. As you can see, it is important that any take under the Migratory Bird Treaty Act conducted by the Fish and Wildlife Service be authorized by a permit. In addition, you should process requests for such permits from other Federal agencies.

Keep in mind this is a dynamic issue and further guidance on this may be forthcoming in the weeks and months ahead.

Attachment

APPENDIX 3, ATTACHMENT 3 (continued)

United States Department of the Interior

OFFICE OF THE SOLICITOR
Washington, D.C. 20240

IN REPLY REFER TO:

AUG 13 1999

Memorandum

To: Director, U.S. Fish and Wildlife Service

From: Acting Assistant Solicitor, Fish, Wildlife and Environmental Protection

Subject: Advice regarding Humane Society v. Glickman

As you know, the District Court for the District of Columbia on July 6, 1999 enjoined the defendants in Humane Society v. Glickman, No. 98-1510 (CKK), from "taking, hunting, capturing, or killing Canada Geese until such time as the Defendants shall obtain valid permits to conduct such activities pursuant to the Migratory Bird Treaty Act [MBTA]." There is, however, significant uncertainty about the scope of the order. On the one hand, the order itself limits to whom it applies ("Defendants," i.e., DOI and USDA) and to what species it applies ("Canada Geese"). In addition, the conclusion of the memorandum opinion accompanying the Court's order suggested that the scope of the order was limited to the particular activities at issue in the suit, i.e., APHIS' goose control program in Virginia. On the other hand, in its opinion, the Court flatly rejected the government's legal theory that the MBTA does not apply to federal agencies. The Court's reasoning would apply equally without regard to distinctions between the federal agency, the species, or the state at issue. To confuse matters further, the analysis of two circuit courts (the decisions of which are binding in their respective circuits) and several district courts in prior cases is diametrically opposed to that of the Court in this case. See Sierra Club v. Martin, 110 F.3d 1551 (11th Cir. 1997); Newton County Wildlife Association v. U.S. Forest Service, 113 F.3d 110 (8th Cir. 1997).

The Department of Justice believes that a reasonable argument can be made that the Court's order should be interpreted as applying only to the taking of geese in Virginia by the USDA or DOI. Plaintiffs, however, are seeking to have the Court find the defendants to be in contempt of court due to the subsequent take of geese by the Air Force at Langley Air Force Base in Virginia. Given the current legal uncertainty, and until such time as that uncertainty is resolved, we believe that the Service should adopt an extremely cautious position with respect to the intentional take of migratory birds by federal agencies. Therefore, we recommend that the Service adopt the following position until the District Court provides clarification itself, or until any appeal is resolved.

APPENDIX 3, ATTACHMENT 3 (continued)

First, the Service itself should not take, hunt, capture, or kill any migratory bird in any location without a permit or regulatory authorization under the MBTA. Second, the Service should not assert in any communication or correspondence that federal agencies are not covered by the prohibitions of the MBTA. If asked, the Service should decline to take a position, and refer those inquiring to the cases cited above. The Service may explain that in those cases the government, with mixed success, argued that the prohibitions of the MBTA do not apply to federal agencies. In addition, the Service should inform those inquiring that if a federal agency applies for a permit under the MBTA to authorize the intentional take of migratory birds, the Service will process the application and, if appropriate under the standards of the MBTA and its implementing regulations, issue a permit. The Service may point out that these positions are temporary, pending clarification or overruling of the decision in Human Society v. Glickman (D.D.C.), or until the case is definitively resolved through appeal or otherwise.

We have coordinated with the Department of Justice in crafting this advice, and we understand that they are in agreement as to its substance. We will provide further advice once we receive clarification from the courts. If you have any questions regarding this case, please contact Alan Palisoul, Ben Jesup, or me at (202) 208-6172.

W. Michael Young

cc: Jean Williams, DOJ

APPENDIX 3, ATTACHMENT 4

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS WARNER ROBINS AIR LOGISTICS CENTER (AFMC)

JUN 19 1996

MEMORANDUM FOR HQ AFSC/SEFW
9700 AVE G SE, BLDG 24499
KIRTLAND AFB NM 87117-5671

FROM: WR-ALC/LKJ
460 SECOND ST, STE 221
ROBINS AFB GA 31098-1640

SUBJECT: 15mm Pyrotechnic Launcher

1. Previous correspondence and conversations stated that subject launcher was considered a firearm. That decision was based on the information available at the time; however, after having seen the launcher, we have determined that it does not fit the definition of a small arm (firearm) contained in Air Force Instructions 31-209 and 31-207. It does not expel a projectile through a barrel by the action of a propellant nor can it be converted to do so. The launcher was not designed to be used as a weapon and does not fit the definition of a weapon, which is "Any instrument or device for attack or defense in a fight".

2. Since this item does not fit the definition of a small arm, it is not subject to laws prohibiting local purchase of weapons. Therefore, we propose cataloging the launcher in the 1055 stock class (pyrotechnic launchers) as a local purchase item. We would assign security code "J" (pilferable); demilitarization code "D" (item must be completely destroyed at disposal); and ERRC code "N" (no repair due to low cost).

3. Please provide all available technical data for the launcher, such as operating instructions and safety precautions, so we can assist in the development of a technical order.

4. Point of contact at WR-ALC/LKJT is Don Maycroft, DSN468-6747.

cc:
OO-ALC/LIWCA

Al Waldrep
AL WALDREP
Chief, Weapons, Commodities, & Computers Div
Space and Special Systems Mgt Dir

Printed on recycled paper

APPENDIX 3, ATTACHMENT 5

CERTALERT

ADVISORY CAUTIONARY NON-DIRECTIVE

FOR INFORMATION, CONTACT AIRPORT WILDLIFE SPECIALIST, AAS-317 (202) 267.3389

DATE: **September 21, 1998** **No. 98-05**

TO: **Airport Operators,**
FAA Airport Certification Safety Inspectors

TOPIC: **Grasses Attractive To Hazardous Wildlife**

Recently, several reports have been received of airport owners or airport contractors planting disturbed areas (construction sites, re-grading projects, etc) with seed mixtures containing brown-top millet. All millets are a major attractant to doves and other seed eating birds.

Doves can be a major threat to aircraft safety. In the United States, between 1991 and 1997, doves were involved in 11% of all reported bird/aircraft strikes, 8% of the reported strikes that resulted in aircraft down time, and 8% of the reported strikes causing aircraft damage or other associated monetary losses.

Airport operators should ensure that grass species and other varieties of plants attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass.

For airport property already planted with seed mixtures containing millet or other large-seed producing grasses, it is recommended that disking, plowing, or other suitable agricultural practice be employed to prevent plant maturation and seed head production.

For specific recommendations on grass management and seed selection, contact the State University Cooperative Extension Service, or the local office of the USDA, Wildlife Services.

Benedict D. Castellano, Manager
Airport Safety and Compliance Branch

September 21, 1998

APPENDIX 3, ATTACHMENT 6

127 WG (MI ANG)
Selfridge ANGB, MI 48045
1 September 2017

C E R T A L E R T

ADVISORY CAUTIONARY NON-DIRECTIVE
AIRPORT SAFETY AND OPERATIONS DIVISION AAS-300
FOR INFORMATION, CONTACT Ed Cleary, (202) 267-3389, AAS-300 (202) 267-3389

Date: **12/13/2004** **No. 04-16**

To: **Airport Operators, FAA Airport Certification Safety Inspectors**

Topic: **Deer Hazard to Aircraft and Deer Fencing**

CANCELLATION:
Certalert 01-01. Deer Aircraft Hazard, dated February 1, 2001; and Certalert 02-09. Alternative Deer Fencing, dated December 12, 2002, are cancelled.

BACKGROUND
Elevated deer populations in the United States represent an increasingly serious threat to both Commercial and General Aviation Aircraft. It is currently estimated that there over 26 million deer in the United States. Because of increasing urbanization and rapidly expanding deer populations, deer are adapting to human environments, especially around airports, where they often find food and shelter. From 1990 to 2004, over 650 deer-aircraft collisions were reported to the Federal Aviation Administration (FAA). Of these reports, over 500 indicated the aircraft was damaged as a result of the collision.
In light of recent incidents where a Learjet landing at an airport in Alabama and a Learjet departing an airport in Oregon were destroyed after colliding with deer or elk, airport operators are reminded of the importance of controlling deer and other wild ungulates on and around airfields.

PURPOSE
Proper fencing is the best way of keeping deer off aircraft movement areas. The FAA recommends a 10-12 foot chain link fence with 3-strand barbed wire outriggers. In some cases an airport may be able to use an 8-foot chain link fence with 3-strand barbed outriggers, depending upon the amount of deer activity in a local area.
All fencing must be properly installed and maintained. A 4-foot skirt of chain-link fence material, attached to the bottom of the fence and buried at a 45^{o} angle on the outside of the fence will prevent animals from digging under the fence and reduce the chance of washouts. This type of fencing also greatly increases airport security and safety. The fence line right-of-way must be kept free of excess vegetation. The fence line should be patrolled at least daily, and any washouts, breaks or other holes in the fence repaired as soon as they are discovered.

APPENDIX 3, ATTACHMENT 6 (continued)

Gates should close with less than 6-inch gaps to prevent entry by deer.

When installation of chain link fencing is not feasible due to cost or environmental impacts, other types of fencing may be installed. (Cost alone is not an acceptable reason for rejecting the use of chain link fencing.) In some cases, electric fencing may offer a suitable alternative. Recent improvements in fencing components and design have greatly increased the effectiveness and ease of installation of electric fences. Tests by the USDA, National Wildlife Research Center have shown that some 4 to 6-foot, 5 to 9-strand electric fences designs can be 99% effective at stopping deer. Installation of some of the newer electric fences requires neither specialized equipment nor training and can be accomplished by airport personnel.

In limited situations, the use of non-conductive, composite, frangible electric fence posts and fence conductors may allow the installation of electric fence closer to the aircraft movement area than would normally be allowed with standard chain link fencing material.

If deer are observed on or near the aircraft movement area, immediate action must be taken to remove them.

Airport operators can contact the nearest USDA, Wildlife Services Office or the State Wildlife Management Agency for assistance with deer problems.

December 13, 2004

Ben Castellano, Manager
Airport Safety & Operations Division

Date

DISTRIBUTION
CERTALERT DISTRIBUTION LIST

APPENDIX 3, ATTACHMENT 7

Safety Precautions for Handling Birdstrike Remains - October 2005

This information is provided to the U.S. military and civil aviation BASH (Bird/Wildlife Aircraft Strike Hazard) community in light of recent concerns over health risks to humans from infectious avian diseases such as Avian Influenza (Bird Flu or H5N1 or HPAI viruses). It is important to check with your respective public health, animal health, and natural resource agencies for up-to-date information on HPAI H5N1. Websites are provided below for additional information.

These guidelines are provided for those who routinely collect bird remains for birdstrike identification and are advisory in nature and intended to provide guidance for field biologists and others working with or handling wild birds with specific reference to highly pathogenic avian influenza. The guidance reflects information available, mainly from the U.S. Geological Survey website, as of October 2005 and may be updated as more information becomes available.

The following information was obtained from various sources including: CDC (Centers for Disease Control and Prevention, USA), USGS Wildlife Health Center, CSL (Central Sciences Lab, UK), and the World Health Organization.

Avian Influenza:

The recent reports of avian influenza in Asia and Europe have caused concern that a mutant version of the bird flu could infect the human population. Although avian influenza is potentially fatal, it is very difficult and rare to contract. Only 117 people who have had repeated contact with infected poultry over the last two years have caught Avian Influenza; 60 of those people have died. Until now, most cases of bird to human transmission involved people working in close proximity to large numbers of infected domestic birds. Recently, human cases of avian influenza have been reported from Cambodia, Indonesia, Thailand, Hong Kong and Vietnam. Currently the H5N1 virus has not been found in the United States.

The main routes of transmission are likely through bird droppings or bodily fluids of birds onto your hands and then into your mouth, or by infected airborne particles coming into contact with the nose, eyes or mouth. Simple hygiene precautions can effectively stop the first route of transmission and a single dead bird or a small number of dead birds are unlikely to generate airborne particles. The CDC recommends that travelers to Asian countries with known outbreaks of H5N1 avoid poultry farms, contact with animals in live food markets, and avoid contact with any surfaces that appear to be contaminated with feces from poultry or other animals.

The following guidelines are provided by the USGS Wildlife Health Center for Field Biologists (**Wildlife Health Bulletin #05-03)**
http://www.nwhc.usgs.gov/research/WHB/WHB_05_03.html

APPENDIX 3, ATTACHMENT 7 (continued)

Recommendations:
Thoroughly washing hands with soap and water (or with alcohol-based hand products if the hands are not visibly soiled) is a very effective method for inactivating influenza viruses, including HPAI. These viruses are also inactivated with many common disinfectants such as detergents, 10% household bleach, alcohol other commercial disinfectants. The virus is more difficult to inactivate in organic material such as feces or soil.

Field Biologists handling apparently healthy wild birds in areas where HPAI H5N1 is NOT suspected:
Work in well-ventilated areas if working indoors, and when working outdoors work upwind of animals, to the extent practical, to decrease the risk of inhaling aerosols such as dust, feathers, or dander.

- *When possible, wear rubber or latex gloves that can be disinfected or disposed of and protective eyewear or a face shield while handling animals.*
- *Wash hands often as described above, and disinfect work surfaces and equipment between sites.*
- *Do not eat, drink, or smoke while handling animals.*

Follow the advice above for a birdstrike event where there is no reason to expect that the bird was carrying an infectious disease. If there is any concern about airborne particles, wear a face mask and safety glasses when handling bird remains. Spray the impact area with 70% ethanol (not water) and wipe the area with a paper towel. Place the paper towel in a ziploc bag. If you are involved in removing large numbers of birds in a confined space such as clearing pigeons from a hanger, wear a protective suit and a respirator.

See the following websites for more information:

- US. Geological Survey Wildlife Health Center:
http://www.nwhc.usgs.gov/

- World Health Organization
http://www.who.int/csr/disease/avian_influenza/avian_faqs/en/index.html

- Centers for Disease Control and Prevention
http://www.cdc.gov/flu/avian/gen-info/facts.htm

- United Kingdom Government Health Protection Agency:
http://www.hpa.org.uk/infections/topics_az/avianinfluenza/menu.htm

First and Foremost - Follow all guidance provided by your own agency or military installation. Management and Administration is encouraged to provide supplies and facilities to accommodate these guidelines.

127 WG (MI ANG)
Selfridge ANGB, MI 48045
1 September 2017

Guidance for Cleaning Aircraft Exterior after Collisions with Birds in Areas where Avian Influenza A (H5N1) is Occurring

Airplanes occasionally collide with birds in the air or during take-off or landing resulting in visible residue that must be cleaned from the exterior of the plane after landing. In areas where H5N1 infections are occurring in bird populations such a collision might occur with an infected bird, posing a theoretical risk of contaminating the exterior surface of the plane with blood, feces or other contaminated material (such as feathers). Influenza viruses are unlikely to survive the low humidity and low oxygen environment encountered during flight, but following standard cleaning recommendations (http://www.iata.org/whatwedo/health_safety/aviation_communicable_diseases.htm) and precautions for handling dead poultry in H5N1-affected areas (http://www.cdc.gov/flu/avian/outbreaks/embargo.htm) may reduce any potential risk.

The following recommendations are prudent measures to reduce potential exposure to H5N1 and are based on professional judgment, routes of transmission, and perceived level of risk. Because migratory birds could spread H5N1 to new areas prior to lab detection and reporting, these precautions should be considered any time bird products are cleaned from the exterior of an aircraft:

- Wear non-sterile disposable gloves and, depending on the quantity of bird-related material needing to be cleaned, consider protective eyewear (goggles) (http://www.cdc.gov/niosh/topics/eye/eye-infectious.html) and a surgical mask while cleaning. A surgical mask and goggles will help reduce potential exposure to large particulate that could be spattered during cleaning or handling of bird-related materials.
- Place any bird carcasses or parts removed during cleaning in a bag or container and incinerate; do not dispose of in the trash.
- Use an agent equivalent to household cleaner or detergent to clean the surface and allow to air dry in accordance with the manufacturer's instructions.
- Keep hands away from mouth and face until washed thoroughly. A mask and goggles will reduce the potential for accidental contact between the hands and face.
- Avoid washing surfaces with pressurized water or cleaner (i.e., pressure washing). Pressure washing could theoretically aerosolize H5N1 viral particles that could then be inhaled, even if wearing a surgical mask.
- Remove and discard gloves and wash hands after cleaning is done. Avoid touching your face with gloved or unwashed hands. Do not remove goggles or surgical mask until after gloves have been removed and hands have been washed.

APPENDIX 3, ATTACHMENT 8 (continued)

- Remove eye protection and place in a designated receptacle for subsequent cleaning and disinfection. Remove and discard surgical mask as contaminated material.
- Clean hands with soap and water a second time (or an alcohol-based hand gel when soap and water are not available) immediately after personal protective equipment is removed.

For additional information on avian influenza, please consult the CDC web page at http://www.cdc.gov/flu/avian/facts.htm.

Additional guidance for airline flight, maintenance, and cleaning crews can be found on the CDC Travelers' Health web site at http://www.cdc.gov/travel/other/avian_flu_ig_airlines_021804.htm and http://www.cdc.gov/travel/other/avian_flu_airlines_cleaning_update_120505.htm

The International Airline Transport Association also provides information on air transport and communicable diseases on their web site.

APPENDIX 3, ATTACHMENT 9

FEATHER IDENTIFICATION LAB - General Information

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SHIPPING

U.S. Postal Service	**Overnight Shipping**
(routine / non-damaging cases)	(priority / damaging cases)
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Feather Identification Lab	Feather Identification Lab
Smithsonian Institution	Smithsonian Institution
NHB, E600, MRC 116	NHB, E600, MRC 116
P.O. Box 37012	10th & Constitution Ave., NW
Washington, DC 20013-7012	Washington, DC 20560-0116

- Include report number or copy of report (AFSAS for military, 5200-7 for civil)
- Include contact information if not on report

Feather Lab contact information: 202-633-0801
dovec@si.edu or heackerm@si.edu

COLLECTING REMAINS

Whole Feather

- Whole bird: Pluck a variety of feathers (breast, back, wing, tail)
- Partial bird: Collect a variety of feathers with obvious color or pattern
- Feathers only: Send all material found
- Do not cut feathers from bird (we need the down at the base); Do not use any Sticky substance (ex. tape)
- Place remains in reclosable bag; If remains are fleshy/moist can fold material in paper (ex. paper towel, coffee filter) and use more than one reclosable bag.

Small Amount of Material

- Wipe area with paper towel; Send all material / entire towel in reclosable bag
- If needed, spray area with alcohol or water to loosen material for collection

WEBSITES

Air Force: http://safety.kirtland.af.mil
Civil Aviation: http://wildlife-mitigation.tc.faa.gov
Birdstrike Committee: www.birdstrike.org

* Basic safety measures and good hygiene when collecting material is encouraged. Use latex gloves, face mask and eye protection; always thoroughly wash hands after handling remains.

Revised 08/10/06
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APPENDIX 3, ATTACHMENT 10

CERTALERT

ADVISORY CAUTIONARY NON-DIRECTIVE
AIRPORT SAFETY AND OPERATIONS DIVISION AAS-300
FOR INFORMATION, CONTACT Ed Cleary, AAS-300, (202) 267-3389

Date: **11/21/2006** **No. 06-07**

To: ***Airport Operators, FAA Airport Certification Safety Inspectors***

Topic: **Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports**

PURPOSE:

This Certalert describes procedures for responding to requests by state wildlife agencies to facilitate and encourage habitats for state-listed threatened and endangered species or species of special concern that occur on airports and may pose a threat to aviation safety. This Certalert does not apply to federally listed threatened and endangered species. Federal Aviation Administration (FAA) guidance on dealing with federally listed threatened and endangered species can be found in FAA Order 1050.1E, *Environmental Impacts - Policies and Procedures,* Appendix A, Section 8.

BACKGROUND:

An airport's air operations area (AOA) is an artificial environment that has been created and maintained for aircraft operations. Because an AOA can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's AOA are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise great caution in adopting new management techniques; new techniques may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.

APPENDIX 3, ATTACHMENT 10 (continued)

DISCUSSION:

Hazardous wildlife are those species of wildlife (50 CFR 10.12), including feral animals and domesticated animals not under control (14 CFR 139.5, Definitions), that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard. (FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on or Near Airports*, July 27, 2004.) Not all state-listed threatened and endangered species or species of concern pose a direct threat to aviation safety. However, these species may pose an indirect threat and be hazardous because they attract other wildlife species or support prey species attractive to other species that are directly hazardous. Also, the habitat management practices that benefit these state-listed threatened and endangered species and species of special concern may attract other hazardous wildlife species. For example, the grassland habitat preferred by grasshopper sparrows, which are listed as threatened in New York[1], also supports a wide variety of insects and small mammals. These insects and small mammals are an indirect threat to aviation safety because they are very attractive to hawks, owls, gulls and other birds. It is these large birds that can pose a direct threat to aviation safety. On-airport habitat and wildlife management practices designed to benefit wildlife that directly or indirectly create safety hazard where none existed before are incompatible with safe airport operations.

Airport operators must decline to adopt habitat management techniques that jeopardize aviation safety. Adopting such techniques could place them in violation of their obligations and subject to an FAA enforcement action and possible civil penalties under 49 U.S.C. §44706, as implemented by 14 CFR § 139.337. In particular, an airport operator that has received federal grant-in-aid assistance is obligated through its grant assurances to maintain compatible land uses. Failure to do so may lead to noncompliance with its grant obligations. Further, airports that serve commercial air carriers are required to be certificated under 49 U.S.C. §44706, as implemented by 14 CFR Part 139. Title 14 CFR § 139.337(a) requires airport operators holding a Part 139 certificate to "take immediate action to alleviate wildlife hazards whenever they are detected." Accordingly, Part 139-certificated airport operators should make state wildlife agencies aware of the airport's FAA-approved Wildlife Hazard Management Plan (WHMP), AC 150/5200-33A, and the joint FAA-Wildlife Services manual, *Wildlife Hazard Management at Airports* (6/05) (joint FAA/WS manual). Before making any changes in land management practices, the airport operator should carefully review the above documents to assure that any changes are consistent with its obligations under federal law to control wildlife hazards and attractants in the AOA. For ease of reference, the key land management practices bearing upon aviation safety are summarized and highlighted

[1] Those species listed by states as threatened, endangered, or species of special concern vary from state to state. For information on state listed species, contact the appropriate state wildlife management Agency.

below:

APPENDIX 3, ATTACHMENT 10 (continued)

RECOMMENDATIONS:

1. Adhere to the turf, landscaping, and habitat management practices described in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual. Do not change these practices specifically to encourage the presence of, or to attract hazardous wildlife species even if the species are state-listed or of special concern.
   a. Do not deliberately preserve or develop on-airport wildlife habitats such as wetlands, forest, brush, or native grasslands having characteristics that attract hazardous wildlife (See the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS Manual.)
   b. Manage the airport's AOA vegetation as recommended in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual.
   c. Do not deliberately preserve or develop on-airport wildlife habitats such as wetlands, forest, brush, or native grasslands having characteristics that attract hazardous wildlife (See the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS Manual.)
   d. Manage the airport's AOA vegetation as recommended in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual.
2. Adhere to the wildlife harassment and repellant techniques described in the airport's WHMP, AC 150/5200-33A, and the joint FAA/WS manual to prevent hazardous wildlife species from becoming established and complicating the ability to adhere to prescribed habitat management practices.
3. Do not allow hazardous state-listed threatened and endangered species or species of special concern to remain on the airport if it requires managing the airport environment contrary to FAA recommendations.
4. Reevaluate existing and evaluate future agreements with federal, state, or local wildlife agencies where the terms of the agreements are or may be contrary to federal obligations concerning hazardous wildlife on or near public-use airports and aviation safety.
5. Whenever practicable, wetland mitigation for state-listed threatened and endangered species or species of special concern should be sited off-airport (see AC 150/5200-33A, §2-4.c (1)).

OSB — 11/21/2006

Ben Castellano, Manager
Airport Safety & Operations Division — Date

DISTRIBUTION
CERTALERT DISTRIBUTION LIST

APPENDIX 4. LIST OF PREPARERS

This plan was prepared for, and under the direction of, the Air National Guard Safety Office (HQ NGB/SE) and Environmental Planning Branch (NGB/A7CVP) by BASH Inc. It updates the previous ANG BASH Plans as last updated in 2011 and follows USAF and ANG Operational Plan guidelines. Members of the professional staff are listed below:

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