APPENDIX I
BIOLOGICAL RESOURCES

I.1 BACKGROUND

Chicago O'Hare International Airport (O'Hare or the airport) began as Orchard Field, a World War II airfield serving a Douglas Aircraft Company manufacturing plant for C-54 military transports. Orchard Field was renamed Chicago O'Hare International Airport in 1949 and opened to commercial traffic in 1955. O'Hare saw rapid growth through the 1960s (with the Rotunda completed in 1963) and 1970s, and from 1963 to 1998 held the distinction of being the world's busiest airport. This growth led to the expansion of terminal facilities in the 1980s (including Terminal 1, completed in 1988), followed by the initiation of the O'Hare Modernization Program (OMP) in 2005. The OMP reconfigured the intersecting runways into a modern, parallel runway layout to enhance airport capacity and efficiency.

The Proposed Action would occur on previously disturbed areas on airport property. These lands include paved and unpaved areas disturbed during grading for the initial construction of Orchard Field, followed by construction projects involving the reconfiguration of runways and taxiways, construction of terminal and cargo facilities, and other support facilities and access roadways. Major site alterations over time include conversion of historic native grasslands and wetland to agricultural uses prior to the construction of Orchard Field and, beginning around 1959, the acquisition and conversion of additional agricultural lands and wetlands to airfield and associated uses.[1] Regular maintenance activities include mowing all vegetated infield areas within the active airfield. Construction of the OMP began in 2005 and is expected to be completed at the end of 2022.

I.2 BOTANICAL RESOURCES

The project area is located primarily in the active airfield at the airport, which is dominated by runway, taxiway, apron, roadway pavement, and other impervious surfaces. Open infield areas are a mix of grasses and forbs that are regularly mowed to minimize potential habitats for hazardous wildlife. The periphery of the active airfield contains major roadways and railroads on all sides of the project area.

Several areas containing stockpiled soils and construction debris are located around the airport property outside of the active airfield. These areas are primarily vegetated with seeded grasses and weedy, early successional species, none of which are state- or federally-listed as threatened or endangered. A list of plant species observed during field work within the project area is presented in **Table I-1**, with common species in bold.

[1] "O'Hare History," Chicago Department of Aviation (accessed December 15, 2021), https://www.flychicago.com/business/CDA/Pages/OHare.aspx.

TABLE I-1
PLANT SPECIES IDENTIFIED IN WETLANDS DURING 2019 O'HARE WETLAND DELINEATION

Scientific Name (bold=common)	Common Name	Habit	Invasive Status
Abutilon theophrasti	Velvetleaf	Forb	
Acer negundo	Ash-leaf maple	Tree	
Achillea millefolium	Common yarrow	Forb	
Ailanthus altissima	Tree of heaven	Tree	Invasive Plant of Concern
Alisma subcordatum	American water plantain	Forb	
Alnus serrulata	Brookside alder	Shrub	
Ambrosia artemisifolia	Annual ragweed	Forb	Invasive Noxious Weed
Apocynum cannabinum	Indian hemp	Forb	
Aristida oligantha	Prairie threeawn	Graminoid	
Asclepias incarnata	Swamp milkweed	Forb	
Asclepias syriaca	Common milkweed	Forb	
Asclepias verticillata	Whorled milkweed	Forb	
Asparagus officinalis	Asparagus	Forb	
Atriplex patula	Halberd-leaf orache	Forb	
Bidens bipinnata	Spanish needles	Forb	
Bouteloua curtipendula	Sideoats grama	Graminoid	
Bouteloua dactyloides	Buffalo grass	Graminoid	
Bromus inermis	Smooth brome	Graminoid	
Carex granularis	Limestone meadow sedge	Graminoid	
Carex stipata	Stalk-grain sedge	Graminoid	
Carex vulpinoidea	Common fox sedge	Graminoid	
Celtis occidentalis	Common hackberry	Tree	
Centaurea stoebe ssp. micranthos	Spotted knapweed	Forb	Invasive Plant of Concern
Centaurium pulchellum	Branched centaury	Forb	
Chenopodium album	Lamb's quarters	Forb	
Cichorium intybus	**Chicory**	Forb	
Cirsium arvense	Canada thistle	Forb	Invasive Noxious Weed
Cirsium vulgare	Bull thistle	Forb	
Convolvulus arvensis	Field bindweed	Vine	
Conyza canadensis	Canada horseweed	Forb	
Coreopsis lanceolata	Lanceleaf tickseed	Forb	
Cornus alba	Red osier	Shrub	
Cuscuta sp.	Dodder	Forb	
Cyperus esculentus	**Chufa**	Graminoid	

Scientific Name (bold=common)	Common Name	Habit	Invasive Status
Daucus carota	**Queen Anne's lace**	Forb	
Desmanthus illinoensis	Prairie bundleflower	Forb	
Dichanthelium oligosanthes	Heller's rosette grass	Graminoid	
Digitaria ciliaris	Southern crab grass	Graminoid	
Digitaria cognata	Fall witch grass	Graminoid	
Diplachne fusca	**Bearded sprangletop**	Graminoid	
Dipsacus fullonum	Fuller's teasel	Forb	Invasive Exotic Weed
Dipsacus laciniatus	Cut-leaf teasel	Forb	Invasive Exotic Weed
Echinacea purpurea	Purple coneflower	Forb	
Echinochloa crus-galli	Large barnyard grass	Graminoid	
Elaeagnus angustifolia	Russian olive	Tree	
Eleocharis obtusa	Blunt spikerush	Graminoid	
Eleocharis palustris	Common spikerush	Graminoid	
Eleocharis tenuis	Slender spikerush	Graminoid	
Elymus virginicus	Virginia wild rye	Graminoid	
Epilobium coloratum	Purple-leaf willow herb	Forb	
Erigeron philadelphicus	Philadelphia fleabane	Forb	
Eupatorium altissimum	Tall boneset	Forb	
Eupatorium serotinum	Late-flowering boneset	Forb	
Euthamia graminifolia	Flat-top goldentop	Forb	
Fragaria virginiana	Wild strawberry	Forb	
Fraxinus americana	White ash	Tree	
Fraxinus pennsylvanica	Green ash	Tree	
Geum canadense	White avens	Forb	
Glechoma hederacea	Ground ivy	Ground cover	
Gleditsia triacanthos	Honey locust	Tree	
Glyceria striata	Fowl manna grass	Graminoid	
Helianthus annuus	Common sunflower	Forb	
Helianthus maximiliani	Maxmilian's sunflower	Forb	
Hieracium gronovii	Queendevil	Forb	
Hordeum jubatum	Foxtail barley	Graminoid	
Iva annua	Annual marsh elder	Forb	
Juglans nigra	Black walnut	Tree	
Juncus canadensis	Canadian rush	Graminoid	
Juncus dudleyi	Dudley's rush	Graminoid	
Juncus nodosus	Knotted rush	Graminoid	
Juncus tenuis	Lesser poverty rush	Graminoid	
Juncus torreyi	Torrey's rush	Graminoid	

Scientific Name (bold=common)	Common Name	Habit	Invasive Status
Juniperus virginiana	Eastern red-cedar	Tree	
Lactuca canadensis	Canadian blue lettuce	Forb	
Lemna minor	Common duckweed	Forb	
Lepidium virginicum	Poorman's-pepperwort	Forb	
Leucanthemum vulgare	Ox-eye daisy	Forb	
Lolium perenne	Perennial rye grass	Graminoid	
Lotus corniculatus	Garden bird's-foot trefoil	Forb	
Lycopus americanus	Cut-leaf water horehound	Forb	
Lythrum salicaria	Purple loosestrife	Forb	Invasive Exotic Weed
Medicago lupulina	Black medick	Forb	
Melilotus officinalis	Yellow sweet-clover	Forb	
Morus alba	White mulberry	Tree	
Morus rubra	Red mulberry	Tree	
Nepeta cataria	Catnip	Forb	
Parthenocissus quinquefolia	Virginia creeper	Vine	
Pastinaca sativa	Wild parsnip	Forb	
Persicaria lapathifolia	Dock-leaved smartweed	Forb	
Persicaria maculosa	Spotted lady's-thumb	Forb	
Persicaria pennsylvanica	Pennsylvania smartweed	Forb	
Phalaris arundinacea	Reed canary grass	Graminoid	Invasive Plant of Concern
Phragmites australis	Common reed	Graminoid	Invasive Plant of Concern
Physalis angulata	Cut-leaf groundcherry	Forb	
Plantago lanceolata	English plantain	Forb	
Plantago major	Common plantain	Forb	
Poa palustris	Fowl blue grass	Graminoid	
Poa pratensis	Kentucky blue grass	Graminoid	
Populus deltoides	Eastern cottonwood	Tree	
Potamogeton sp.	Pondweed	Aquatic	
Prunella vulgaris	Common selfheal	Forb	
Ratibida pinnata	Pinnate prairie coneflower	Forb	
Rhamnus cathartica	European buckthorn	Shrub/tree	Invasive Exotic Weed
Rhus glabra	Smooth sumac	Shrub	
Rhus typhina	Staghorn sumac	Shrub	
Robinia pseudoacacia	Black locust	Tree	Invasive Plant of Concern
Rosa sp.	Rose	Shrub	
Rudbeckia hirta	Black-eyed Susan	Forb	
Rumex crispus	Curly dock	Forb	
Sagittaria cuneata	Arum-leaf arrowhead	Forb	

Scientific Name (bold=common)	Common Name	Habit	Invasive Status
Salix interior	Sandbar willow	Shrub	
Salix nigra	Black willow	Tree	
Sambucus nigra	Black elder	Shrub	
Schedonorus arundinaceus	Tall false rye grass	Graminoid	
Schedonorus pratensis	Meadow false rye grass	Graminoid	
Schizachyrium scoparium	Little bluestem	Graminoid	
Schoenoplectus fluviatilis	River club-rush	Graminoid	
Schoenoplectus pungens	Three-square	Graminoid	
Schoenoplectus tabernaemontani	Soft-stem club-rush	Graminoid	
Scirpus cyperinus	Cottongrass bulrush	Graminoid	
Scirpus pendulus	Rufous bulrush	Graminoid	
Securigera varia	Crown vetch	Forb	Invasive Plant of Concern
Selaginella rupestris	Northern selaginella	Ground cover	
Setaria pumila	Yellow bristle grass	Graminoid	
Silene latifolia ssp. alba	Bladder campion	Forb	
Sisymbrium officinale	Hedge mustard	Forb	
Solanum carolinense	Carolina horsenettle	Forb	
Solanum dulcamara	Climbing nightshade	Forb	
Solidago altissima	Late goldenrod	Forb	
Solidago canadensis	Canadian goldenrod	Forb	
Solidago gigantea	Late goldenrod	Forb	
Solidago nemoralis	Gray goldenrod	Forb	
Solidago rigida	Hard-leaf flat-top goldenrod	Forb	
Solidago sempervirens	Seaside goldenrod	Forb	
Sporobolus vaginiflorus	Poverty dropseed	Graminoid	
Suaeda calceoliformis	Paiuteweed	Forb	
Symphiotrichum ericoides	White heath American-aster	Forb	
Symphyotrichum subulatum	Seaside American-aster	Forb	
Taraxacum officinale	Common dandelion	Forb	
Teucrium canadense	American germander	Forb	
Toxicodendron radicans	Eastern poison ivy	Vine	
Trifolium pratense	Red clover	Forb	
Trifolium repens	White clover	Forb	
Typha angustifolia	Narrow-leaf cattail	Forb	Invasive Plant of Concern
Typha latifolia	Broadleaf cattail	Forb	
Ulmus americana	American elm	Tree	
Ulmus pumila	Siberian elm	Tree	

Scientific Name (bold=common)	Common Name	Habit	Invasive Status
Verbena hastata	Swamp verbena	Forb	
Verbena stricta	Hoary verbena	Forb	
Vitis riparia	Riverbank grape	Vine	

Sources:
Midwest Invasive Plant Network: Illinois Noxious Weed Law; Illinois (525 ILCS 10/) Illinois Exotic Weed Act
Illinois Invasive Species of Concern: https://www.invasive.org/illinois/SpeciesofConcern.html
2021 Wetlands and Waters of the United States: Chicago O'Hare International Airport (2019)
Common Name: National Wetland Plant List, version 3.4. U.S. Army Corps of Engineers, 2020. http://wetland-plants.usace.army.mil/ or PLANTS Database, U.S. Department of Agriculture, 2022https://plants.sc.egov.usda.gov/home

I.2.1 Quality of Upland Plant Communities

The upland plant community at the airport has experienced large-scale alteration—clearing and grading—to facilitate construction of the airport's runways, taxiways, aprons, terminal buildings, and other development. Of course, conversion of the native tall-grass prairie habitat in northeastern Illinois to agriculture preceded the development of the airport and the surrounding residential and commercial areas.

Upland plant communities within the airfield are highly managed to minimize potential habitat for hazardous wildlife. Vegetation is mowed regularly; plant communities consist primarily of seeded grasses and a mix of common forbs. Grasses are dominated by cool season species such as Kentucky blue grass (*Poa pratensis*), tall false rye grass (*Schedonorus arundinaceus*), yellow bristle grass (*Setaria pumila*), and fox-tail barley (*Hordeum jubatum*). Common forbs such as Queen Anne's lace (*Daucus carota*), red and white clover (*Trifolium pratense* and *T. repens*), and chicory (*Cichorium intybus*) were present. More disturbed areas are dominated by invasives such as teasel (*Dipsacus fullonum* and *D. laciniatus*) and crown vetch (*Securigera varia*).

Invasive plants of concern, including noxious and exotic weeds, are found on airport property. These include annual ragweed (*Ambrosia artemisifolia*), Canadian thistle (*Cirsium arvense*), European buckthorn (*Rhamnus cathartica*), and black locust (*Robinia pseudoacacia*).

I.2.2 Quality of Wetland Plant Communities

Wetland plant communities at the airport have been disturbed by historical land conversion from a rural to an urbanized environment, ongoing airfield construction activities, invasion of non-native species, and altered hydrology due to management of stormwater runoff.

A floristic quality assessment conducted during the 2019 wetland delineation fieldwork has determined that wetland plant communities in general have low vegetative diversity. Many wetlands were observed to be dominated by invasive and/or introduced species such as cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), seaside goldenrod (*Solidago sempervirens*), buckthorn (*Rhamnus cathartica*), and reed canary grass (*Phalaris arundinacea*).

A total of 146 wetlands were identified during fieldwork. The majority (95.2 percent) are shallow depressional emergent wetlands (PEM) with the remainder including five forested (PFO) wetlands (3.4 percent) and two scrub/shrub (PSS) wetlands (1.3 percent). Wetlands on the airfield are generally small, isolated areas with relatively low water quality and limited runoff storage function due to their size. The average size of these wetlands is 0.19 acres.

No fens, sedge meadows, or high-quality wetlands were identified during fieldwork. The most diverse and concentrated area of wetlands is located east of Manheim Road and north of the Kennedy Expressway (I-190). Willow Creek bounds the northern extent of this area. No projects are proposed for this area.

I.3 WILDLIFE RESOURCES

Small areas of trees and undeveloped open areas within residential land uses exist around the periphery of airport property. Less than two miles to the east lies the Des Plaines Trail system, which runs through the river's floodplain and provides a nearly contiguous mature wooded floodplain habitat. Within this trail system are Chippewa Woods, Catherine Chevalier Woods, Schiller Woods (East and West), and Robinson Woods South. The 3,500-acre Ned Brown Preserve (also known as Busse Woods) is located approximately five miles northwest of the airport. This preserve contains varied upland and open water habitats.[2] To the west, several preserves in DuPage County including Salt Creek Marsh, Songbird Slough, Cricket Creek, Fullerton Park, Wood Dale Grove, and Fischer Woods Forest Preserves are within five miles of the airport.[3]

The airport and its surrounding environs are largely urbanized. Over the last 20 years, much of the airport has undergone construction related to the OMP. These disturbances, historical and ongoing, limit suitable habitat to those wildlife species that have adapted to urban environments.

Common wildlife observed at the airport (**Table I-2**) are described in the Chicago O'Hare International Airport Wildlife Hazard Management Plan (USDA-APHIS, 2018). Management focus is to reduce or eliminate the impact of wildlife on aviation operations; tactics include removing habitat that can attract wildlife and using wildlife control measures.

TABLE I-2
COMMON WILDLIFE SPECIES OBSERVED AT O'HARE

Species Group
Birds
Raptors: Hawks, Falcons, Owls, Eagles
Gulls: Ring-billed Gulls, Herring Gulls
Blackbirds: European Starlings, Brown-Headed Cowbirds, Common Grackles, Red-Winged Blackbirds
Waterfowl: Canada Geese, Mallards, other migratory waterfowl
Others: Pigeons, English Sparrows (aka House Sparrows)
Canids
Coyotes, Red Fox
Ungulates
White-tailed Deer
Rodents
Voles, Deer Mice, Norway Rats, Woodchucks

[2] Forest Preserves of Cook County, https://map.fpdcc.com/ (accessed October 1, 2021)
[3] "Forest Preserves in DuPage County," Forest Preserve District of DuPage County, https://www.dupageforest.org/places-to-go/forest-preserves (accessed October 1, 2021)

Species Group
Beaver
Other Mammals
Raccoons, Opossum, Striped Skunks, Rabbits
Source: Wildlife Hazard Management Plan at O'Hare International Airport: USDA-APHIS, 2018

I.3.1 Wildlife Attractants

Food or prey sources that wildlife find highly attractive include small mammals, insects, and earthworms. Rodents such as meadow voles and field mice use the extensive open grasslands around the airport to forage for grass and weed seeds and insects. Similarly, rabbits and woodchucks forage on various plants. Norway rats are active in trash and garbage disposal areas.

Small mammals are food sources for many types of raptors and other predators such as coyotes and fox. Insects such as grasshoppers and other invertebrates such as earthworms are prey for birds. Gulls and European starlings are particularly attracted to trash and debris.

Numerous water sources at the airport draw waterfowl and other mammals for resting, foraging, and protection from predators. Several large detention areas are present at the airport in addition to open channel sections of Willow, Higgins, and Crystal Creeks.

I.3.2 Wildlife Control Measures

Wildlife can cause extensive damage to airplanes and jeopardize the safe operation of aircraft. To ensure that aircraft operations are as safe as possible, the airport implements wildlife management procedures. Birds are commonly associated with damage to aircraft; as such, monitoring and management of birds are high priorities. Large mammals such as coyotes and deer are limited in the airport's urban environment and prevented by perimeter fencing from encroaching the airfield.

The most effective long-term measure that reduces wildlife hazards at airports is habitat management. Habitat management takes many forms, including:

- Removal of edge habitat along the airport's periphery that attracts many species,
- Water management in and around the large detention areas on the airport,
- Vegetation management, including regular mowing, seeding, and landscape specifications,
- Structure management, including building design review, perch deterrents including wire coils or porcupine wire, and removal of any structures not pertinent to air operations,
- Management of avian prey, including small mammals and invertebrates, and
- Trash (non-hazardous waste) management.

Other measures that can reduce hazards from wildlife include removal of problem species and dispersal or harassment techniques.

I.3.3 Birds

Raptors such as red-tailed hawks, rough-legged hawks, and American kestrels are attracted to the airport both for the abundant sources of small mammal prey and for the availability of perches. Trees for perches

are limited throughout the airfield but birds can also use necessary airport infrastructure such as lighting structures, antennae, and signage as perches.

Birds attracted by food scraps and garbage and highly adaptable to human disturbance are found at the airport. Gulls are the most numerous birds on the airport from spring until late fall. The European starling is present year-round, while grackles, red-winged blackbirds, and cowbirds are not. The flocking behavior of these birds presents a significant hazard for aircraft.

The airport lies on one of the main north-south migratory routes that crosses North America. Millions of birds fly through each spring, heading as far north as Alaska and coming from places as far south as South America. The primary attraction for waterfowl is the many sources of water found in large detention areas and along creeks. Canada geese and mallards comprise a resident population at the airport throughout the year. Migrating waterfowl, especially during spring and fall migrations, use areas in and around the airport for feeding, resting, and protection from predators.

Suitable nesting habitat for birds subject to the Migratory Bird Treaty Act (MBTA) is limited by wildlife habitat management activities at the airport.

U.S. Department of Agriculture (USDA) wildlife biologists conduct daily avian surveys at each of 15 observation sites spread over the airport. The compilation of bird sightings in 2018 is presented in **Table I-3**.

TABLE I-3
BIRDS OBSERVED DURING WILDLIFE HAZARD SURVEYS IN 2018

Scientific Name	
Aerial Forager	
Hirundo rustica	Barn Swallow
Tachycineta bicolor	Tree Swallow
Blackbird	
Agelaius phoeniceus	Red-winged Blackbird
Molothrus ater	Brown-headed Cowbird
Quiscalus quiscula	Common Grackle
Sturnus vulgaris	European Starling
Columbid	
Zenaida macroura	Mourning Dove
Columba livia	Pigeon
Grassland	
Plectrophenax nivalis	Snow Bunting
Charadrius vociferus	Killdeer
Eremophila alpestris	Horned Lark
Sturnella magna	Eastern Meadowlark
Spizella pusilla	Field Sparrow
Spizella passerina	Chipping Sparrow
Passerculus sandwichensis	Savannah Sparrow

Scientific Name	Common Name
Melospiza melodia	Song Sparrow
Gull/Tern	
Larus argentatus	Herring Gull
Larus delawarensis	Ring-billed Gull
Hydroprogne caspia	Caspian Tern
Sterna hirundo	Common Tern
Raptor	
Falco sparverius	American Kestrel
Falco peregrinus	Peregrine Falcon
Circus hudsonius	Northern Harrier
Buteo jamaicensis	Red-tailed Hawk
Bubo scandiacus	Snowy Owl
Shorebird	
Calidris alba	Sanderling
Wading	
Ardea alba	Great Egret
Ardea herodias	Great Blue Heron
Waterfowl	
Bucephala albeola	Bufflehead
Fulica americana	American Coot
Nannopterum auritum	Double-crested Cormorant
Anas platyrhynchos	Mallard
Branta canadensis	Canada Goose
Mergus merganser	Common Merganser
Aythya affinis	Lesser Scaup
Spatula clypeata	Northern Shoveler
Woodland	
Junco hyemalis	Dark-eyed Junco
Turdus migratorius	American Robin
Passer domesticus	House Sparrow
Source: Wildlife Hazard Management at O'Hare International Airport 2018 Annual Report: USDA-APHIS	

I.3.4 Mammals

As part of wildlife management at the airport, mammal surveys are conducted to track the prey population available to raptors and carnivores and to guide management decisions relating to the small mammal population. Nocturnal surveys and small mammal transect surveys with traps are conducted over the year.

Mammals observed during the 2019 wetland delineation conducted from July through September were also noted. These observations, and those from 2018, are presented in **Table I-4**.

TABLE I-4
MAMMALS OBSERVED DURING 2018 NOCTURAL MAMMAL SURVEYS AND 2019 WETLAND DELINEATION

Scientific Name	Common Name
Mammals Observed during Nocturnal Surveys	
Sylvilagus floridanus	Cottontail Rabbit
Didelphus virginiana	Opossum
Procyon lotor	Raccoon
Mephitis	Striped Skunk
Mammals Observed during Wetland Delineation	
Odocoileus virginianus	White-Tailed Deer
Ondatra zibethicus	Muskrat
Microtus spp.	Vole
Sources: Wildlife Hazard Management at O'Hare International Airport 2018 Annual Report: USDA-APHIS 2021 Wetlands and Waters of the United States: Chicago O'Hare International Airport (2019)	

I.3.5 Reptiles and Amphibians

No state or federally-listed reptiles or amphibians are known to occur within airport boundaries. Suitable amphibian habitat is present at the airport within Willow, Higgins, and Crystal Creeks and Bensenville Ditch. Most wetlands on the airfield are small and are degraded by invasive plant species and nutrients carried by stormwater runoff. It is likely that only common species of frogs, toads, turtles, and snakes would find suitable habitat in these areas.

I.3.6 Fish

No state or federally-listed fish are known to occur within airport boundaries. No in-stream or near-water projects are proposed as part of this project. No survey reports for fish were available for review, and no additional surveys for fish were performed as part of this assessment.

I.3.7 State and Federal Threatened and Endangered Species

Under the Endangered Species Act of 1973 (ESA), all federal agencies are directed to conserve the population of species listed as threatened or endangered. Species listed as threatened are likely to become endangered in the foreseeable future. An endangered species is in danger of extinction throughout all or a significant portion of its range.

This section identifies federally threatened or endangered species that may be present within the project area and describes the habitat requirements and designated critical habitat for each species. The U.S. Fish & Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) tool streamlines the review process and compiles ESA species for the extent of a project area (see **Attachment I-4).**

The Illinois Endangered Species Protection Act, Il. Stat. Section (520 ILCS 10) imposes a variety of restrictions, a permit program, and several exemptions pertaining to species designated as state-endangered or threatened. Federally-listed species are also protected under this act. A person may not possess, take, transport, give, or sell any portion of or product thereof any endangered or threatened

species. The act established the Illinois Endangered Species Protection Board, which updates the Illinois List of Endangered and Threatened Species and advises the Illinois Department of Natural Resources (IDNR) on the protection, conservation, and management of endangered and threatened species.

The IDNR's Ecological Compliance Tool (EcoCAT) assists in natural resource reviews by examining databases and mapping to determine whether a proposed project is in the vicinity of protected natural resources. No state-listed threatened and/or endangered species were identified for the project area (EcoCAT, 2021). Consultation documentation is provided in **Attachment I-4.**

The evaluation of plants and wildlife present at the airport is also based on:

- Wildlife Hazard Management at O'Hare International Airport 2018 Annual Report
- 2019 Wetlands and Water of the United States, Chicago O'Hare International Airport

Table I-5 provides the list of Federal threatened and endangered species identified through the IPaC tool.

TABLE I-5
FEDERALLY-LISTED SPECIES

Scientific Name	Common Name	Status
Mammals		
Myotis septentrionalis	Northern Long-Eared Bat	Threatened
Birds		
Charadrius melodus	Piping Plover	Endangered
Calidris canutus rufa	Red Knot	Threatened
Reptiles		
Sistrurus catenatus	Eastern Massasauga Rattlesnake	Threatened
Insects		
Somatochlora hineana	Hine's Emerald Dragonfly	Endangered
Bombus affinis	Rusty Patched Bumble Bee	Endangered
Flowering Plants		
Platanthera leucophaea	Eastern Prairie Fringed Orchid	Threatened
Dalea foliosa	Leafy Prairie-Clover	Endangered
Lespedeza leptostachya	Prairie Bush-Clover	Threatened
Sources: List of Threatened and Endangered Species: USFWS Consultation Code: 03E13000-2021-SLI-0597, May 26, 2021 Rusty Patched Bumble Bee Fact Sheet: USFWS		

I.3.7.1 Habitat Requirements and Assessment

Northern Long-Eared Bat

The Northern Long-Eared Bat (NLEB) hibernates in winter in caves and mines, preferring their constant temperatures, high humidity, and lack of air currents. Summer finds them roosting singly or in colonies underneath bark and in cavities or crevices of both live trees and snags. Potential roosts can be varied, but suitable roost trees exhibit loose or exfoliating bark and/or dead or dying trees that contain cracks and

crevices. The NLEB seems to be flexible in selecting roost trees, with the suitability of bark or presence of cavities or crevices being important.

The project area is situated in a highly developed urban environment that includes paved areas as well as unpaved areas that have been disturbed during grading for construction of the airport and ongoing, regular maintenance activities. Trees are not present in active airfield areas due to their potential to become safety area obstructions and to act as perches for birds, which may be hazardous to aircraft operations.

The USFWS IPaC NLEB determination key assists users in determining whether proposed project activities are consistent with the USFWS's January 5, 2016, Programmatic Biological Opinion. The determination key, submitted July 12, 2021, resulted in a "may affect" determination for the NLEB. Under ESA Section 7(a)(2) consultation requirements (50 CFR 402), the USFWS is given 30 days from the date of IPaC submission to advise if the project area may affect or jeopardize an ESA species. The USFWS did not respond within 30 days, and the letter provided in **Attachment I-5** indicates that responsibilities for the Proposed Action under the ESA Section 7(a)(2) are satisfied.

No tree removal is anticipated with project construction. However, if trees are removed, removal will be accomplished during recommended time periods appropriate for minimizing impacts to any potential bat populations. If necessary, the timing of any tree removal will be consistent with recommended conservation measures designed to take place outside the summer roosting period (April through September) and optimally during the winter months (October 1 through March 31 when possible).

Piping Plover

The piping plover is a migratory shorebird. Endangered populations of the bird are found in the Great Lakes region, while populations found in the Northern Great Plains and the Atlantic Coast are threatened. In the spring and summer months, they breed in Canada and the northern United States along the shorelines of the Great Lakes. The birds feed on insects, spiders, and crustaceans they find in their preferred habitat of wide, flat, open, sandy beaches. Nesting often occurs along small creeks and wetlands. Plovers migrate south in the fall to overwinter along the Gulf Coast or other southern locations along the Atlantic Coast.[4]

The piping plover uses shoreline areas along Lake Michigan as breeding grounds. Critical habitat is designated along the shoreline of Lake Michigan in Lake County. The project area is not situated on or near shoreline areas of Lake Michigan and does not provide suitable nesting or foraging habitat for the piping plover; therefore, no effect to the piping plover will occur.

Red Knot

This wide-ranging shorebird is in the sandpiper family. It breeds in the tundra in the Canadian Arctic and migrates to its winter range along shorelines around the world, south to Australia, and southern South America. The red knot forages on tidal flats and sandy areas for mollusks, insects, green vegetation, and seeds. In migration and winter, the red knot feeds on small invertebrates, especially small mollusks, marine worms, and crustaceans, which live in mud of intertidal zones. On their breeding grounds, the birds feed mostly on insects and will eat plant material, including shoots, buds, leaves, and seeds, early in breeding season. Each spring, red knots use stopover areas along the Delaware Bay and the coastal islands of Massachusetts, Virginia, South Carolina, and Georgia.[5]

[4] "Piping Plover Fact Sheet," U.S. Fish & Wildlife Service, Midwest Region Endangered Species, May 29, 2019, https://www.fws.gov/midwest/endangered/pipingplover/pipingpl.html

[5] "Rufa Red Know (Calidris canutus rufa)," U.S. Fish & Wildlife Service, Northeast Region, July 16, 2021, https://fws.gov/northeast/red-knot/

The red knot is a migratory shorebird that utilizes the Lake Michigan shoreline in Michigan. Proposed critical habitat is confined to shoreline areas on the eastern seaboard and the Gulf of Mexico. The project area is not situated on or near shoreline areas of Lake Michigan and does not provide suitable habitat for the red knot; therefore, no effect to the red knot will occur.

Eastern Massasauga Rattlesnake

The Eastern Massasauga Rattlesnake historically occupied the Upper and Lower Peninsulas of Michigan and other areas of the Upper Midwest. Populations of the snake in Michigan are known to use a variety of wetland habitats ranging from open wetland and prairie fens in the south to lowland coniferous forests and cedar swamps in the north. Generally, suitable habitat for the snake is characterized by open, sunny areas intermixed with shady areas, presence of a water table near the surface, and variable elevations spanning lowland and upland habitats.[6]

No critical habitat has been established for the snake and no presence has been noted in the airport's long history. Due to the historical land conversion to agriculture and the highly developed airport environment, no suitable habitat for the snake is present in the project area and no effect to the snake will occur.

Hine's Emerald Dragonfly

The Hine's Emerald dragonfly's historic range includes Alabama, Indiana, and Ohio. Today, it can be found in four Midwestern states: Illinois, Michigan, Wisconsin, and Missouri. The dragonfly lives in high calcium carbonate (calcareous) groundwater-fed marshes and sedge meadows. These high-quality habitats are underlain by dolomitic bedrock. Historic collection records from northeast Illinois show the dragonfly's presence in Cook, DuPage, and Will Counties.

Critical habitat for the Hine's Emerald dragonfly is established in the southern portions of Will and Cook Counties along the Des Plaines River, approximately 23 miles south of the airport.[7] During the 2019 wetland delineation, no calcareous marshes or sedge meadows were identified (see **Attachment I-3**). Therefore, no suitable habitat for the dragonfly is present in the project area, and no effect to the dragonfly will occur.

Rusty Patched Bumble Bee

The rusty patched bumble bee (RPBB) historically is associated with grasslands and tallgrass prairies of the Upper Midwest. This type of habitat provides nesting sites, overwintering sites, and nectar and pollen from an abundant array of forbs.

The USFWS adapted a habitat connectivity model that considers RPBB movement based on land use and locations of known observations of the bumble bee. Zones of Low and High Potential defined by the model indicate areas where the RPBB may have a greater likelihood of being present.

Most of the project area is located within the historical range of the RPBB as shown on the USFWS habitat map.[8] An area of Low Potential Zone is identified around the southern and western edges of the airport. Low Potential Zones are defined as areas where the RPBB is not likely to be present. Therefore, Section 7 consultation and incidental take permits are not needed for these areas. No suitable habitat for the bumble bee is present in the project area, and no effect to the bumble bee will occur.

[6] "Eastern Massasauga Rattlesnake," Michigan State University, Michigan Natural Features Inventory, https://mnfi.anr.msu.edu/species/eastern-massasauga-rattlesnake (accessed October 1, 2021)

[7] "Hine's Emerald Dragonfly (Somatochlora hineana)," U.S. Fish & Wildlife Service, Midwest Region Endangered Species, June 25, 202, https://www.fws.gov/midwest/endangered/insects/hed/index.html

[8] "Rusty Patched Bumble Bee Map," U.S. Fish & Wildlife Service, Midwest Region Endangered Species, https://www.fws.gov/midwest/Endangered/insects/rpbb/rpbbmap.html (accessed August 26, 2021)

Eastern Prairie Fringed Orchid

This orchid once extended from as far south as Missouri east to western New York and southern Ontario, encompassing southern Wisconsin, northern and central Illinois, southern Michigan, northern Indiana and Ohio, and parts of western Pennsylvania. Illinois likely contained the largest population of the orchid, which has seen drastic population decline due to land conversion to agriculture.

This threatened orchid occurs in a wide variety of habitats, ranging from wet prairies to wetlands such as sedge meadows, marsh edges, and occasionally bogs. It requires open, sunny conditions with little to no encroachment by woody plants. Natural processes such as fire, consistent groundwater flow, and local disturbance patterns may be important in enabling seedling establishment. A symbiotic relationship with mycorrhizal soil fungi is necessary for establishment of seedlings. The flowers of the orchid are pollinated by night-flying hawkmoths.[9]

No critical habitat has been designated for this species. However, the USFWS provides Section 7 guidance for counties in northeastern Illinois, including Cook and DuPage Counties.[10] To determine whether the orchid may be present in a project area, identification of wet to mesic prairie or wetland communities is necessary. Using the floristic quality assessment conducted during the 2019 wetland delineation at the airport, several wetlands were determined to have a Native Mean C of 3.5 or greater. No wetlands had a Native Floristic Quality Index of 20 or greater, which indicates a wetland community of higher quality.

Following the determination of wetlands with a Native Mean C of 3.5 or greater, a list of plant species known to be associates of the orchid is compared against the plant species in each wetland meeting the Native Mean C threshold. Wetlands that support three or fewer eastern prairie fringed orchid associate plant species are unlikely to support eastern prairie fringed orchids. A summary of the Floristic Quality ratings for each wetland delineated on the airport is presented in **Attachment I-3.1**. No wetlands meeting the Native Mean C threshold contained four or more plant associates of the orchid. Therefore, the orchid is not present in any of the wetlands at the airport, and no further consultation is necessary.

Leafy Prairie-clover

Historical records of the species show a presence in northeast Illinois in Cook, DuPage, and Will Counties. Occurrences of leafy prairie-clover are known currently at only 14 sites in Illinois, Alabama, and Tennessee. Within Illinois, it is found along the Des Plaines River in prairie remnants—areas of natural prairie where limited disturbance from development has occurred.[11]

No critical habitat has been designated for this species. The leafy prairie-clover is likely not present in the project area due to historical land conversion, current vegetation management practices, and lack of suitable habitat.

Prairie Bush-clover

Prairie bush-clover is a native of tallgrass prairies of four upper Midwest states: Iowa, Illinois, Wisconsin, and Minnesota. The largest populations occur in southwestern Minnesota and northwestern Iowa.[12]

[9] Martin L. Bowles, "Eastern Prairie Fringed Orchid Platanthera leucophaea (Nuttall) Lindley Recovery Plan," prepared by Marlin L. Bowles, The Morton Arboretum, Lisle, Ill for the U.S. Fish and Wildlife Service, Fort Snelling, Minn., September 1999

[10] U.S. Fish & Wildlife Service, Chicago Ecological Service Field Office, "Eastern Prairie Fringed Orchid, Species Survey Guidelines," September 10, 2019

[11] U.S. Fish & Wildlife Service, "Threatened and Endangered Species: Leafy Prairie-Clover," https://www.fws.gov/midwest/endangered/plants/pdf/lfy-pclover.pdf (accessed August 26, 2021)

[12] Minnesota Department of Natural Resources, "Prairie Bush Clover," http://files.dnr.state.mn.us/natural_resources/ets/prairie_bush_clover.pdf (accessed August 26, 2021).

Tallgrass prairies covered substantial portions of the Great Plains but have been largely converted to agricultural uses or urbanized environments.

No critical habitat has been designated for this species. The prairie bush-clover is likely not present in the project area due to historical land conversion, current vegetation management practices, and lack of suitable habitat.

ATTACHMENT I-1

WILDLIFE HAZARD MANAGEMENT PLAN (REVISED 2018)

CHICAGO CDA DEPARTMENT OF AVIATION

O'Hare International Airport Wildlife Hazard Management Plan

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

For:
CITY OF CHICAGO
DEPARTMENT OF AVIATION
O'HARE INTERNATIONAL AIRPORT

With input from:
CITY OF CHICAGO
O'HARE MODERNIZATION PROGRAM

CITY OF CHICAGO — INCORPORATED 4th MARCH 1837

Jonathan Leach
Chief Operating Officer
Chicago Department of Aviation

Original Date: December 9, 2004
Revision Date: June 15, 2014

FAA Approval: _____
FAA Approval Date: _____

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Acronyms

AC	Advisory Circular
AGL	Above Ground Level
AAO	Airport Airfield Operations
AOA	Airport Operations Area
AOS	Airport Operations Supervisor
ATCT	Air Traffic Control Tower
ATIS	Automated Terminal Information System
AWC	Airport Wildlife Coordinator
CFR	Code of Federal Regulations
CDA	City of Chicago Department of Aviation
FAA	Federal Aviation Administration

FOD	Foreign Object Debris/Damage
IDNR	Illinois Department of Natural Resources
MA	Methyl Anthranilate
ORD	O'Hare International Airport
OMP	O'Hare Modernization Program
MOU	Memorandum Of Understanding
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NOTAM	Notice To Airmen
USFWS	U. S. Fish and Wildlife Services
WB	Wildlife Biologist
WHMIS	Wildlife Hazard Management Information System
WHMP	Wildlife Hazard Management Plan
WS	Wildlife Services
WUS	Waters of the United States
§139.337	Title 14 Code of Federal Regulations, Part 139.337

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1.1 Overview

A Wildlife Hazard Management Plan (WHMP) addresses the responsibilities, policies, and procedures necessary to reduce wildlife hazards at airports. Recognizing the potential hazard wildlife poses to aircraft and human lives, the Federal Aviation Administration (FAA) requires, in Title 14 Code of Federal Regulations (CFR) Part 139.337(b) (Wildlife Hazard Management) that (see Appendix A):

> *Each certificate holder (holder of the airport operating certificate) shall provide for the conduct of a Wildlife Hazard Assessment, acceptable to the Administrator (FAA), when any of the following events occur on or near the airport:*
>
> *(1) An air carrier aircraft experiences a multiple wildlife strike;*
>
> *(2) An air carrier aircraft experiences substantial damage from striking wildlife;*
>
> *(3) An air carrier aircraft experiences an engine ingestion of wildlife; or*
>
> *(4) Wildlife of a size or in numbers capable of causing an event described in paragraph (1), (2) or (3) of this section is observed to have access to any airport flight pattern or movement area.*

14 CFR 139.337(e) (§139.337) further states that:

> *When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder shall formulate and implement a plan using the Wildlife Hazard Assessment as a basis.*

The WHMP must include seven required components. Each of these components is sequentially represented as a separate chapter in this document. These required categories are as follows:

1) The persons who have the authority and responsibility for implementing the plan.
2) Priorities for needed wildlife population management, habitat modification and changes in land use identified in the Wildlife Hazard Assessment, with target dates for completion.
3) Requirements for and where applicable, copies of local, state, and Federal wildlife control permits.
4) Identification of resources to be provided by the certificate holder for implementation of the plan.
5) Procedures to be followed during air carrier operations, including at least-
   (i) Assignment of personnel responsibilities for implementing the procedures;
   (ii) Conduct of physical inspections of the movement area and other areas critical to wildlife hazard management sufficiently in advance of air carrier operations to allow time for wildlife controls to be effective;
   (iii) Wildlife control measures; and
   (iv) Communication between the wildlife control personnel and any air traffic control tower in operation at the airport.
6) Periodic evaluation and review of the wildlife hazard management plan for-
   (i) Effectiveness in dealing with the wildlife hazard on and in the airport's vicinity; and
   (ii) Indications that the existence of the wildlife hazard, as previously described in the Wildlife Hazard Assessment, should be reevaluated.
7) A training program conducted by a qualified wildlife damage biologist to provide airport personnel with the knowledge and skills needed to carry out the wildlife hazard management plan required by (d) of this section.

In addition to the requirements stated above, §139.337(f) outlines procedures and personnel responsibilities for notification regarding new or immediate hazards and describes the rapid response procedures for addressing new or immediate wildlife hazards. Section (f) is extremely important because it allows the WHMP to be promptly modified and updated to address new situations or changing circumstances. To augment compliance with §139.337(e), the FAA issued Cert-Alert No. 97-09 (see Appendix B: Wildlife Hazard Management Plan Outline) to provide guidance to airports in developing their plans. This Cert-Alert contains a sample outline that was followed in the development of this plan.

1.2 Problem Species

Birds are most commonly associated with this type of damage at O'Hare International Airport (ORD). There are many types of birds which frequent the airport and the surrounding area. The most common groups include: blackbirds, gulls, raptors, and waterfowl.

Large mammals are much less frequent at ORD because the perimeter fence excludes most earthbound species. On occasion, however, individual animals gain entry to the airport through open gates, breaches, or simply by climbing over the fence. Large mammals reported at ORD include coyotes and deer.

1.3 Purpose and Scope

An airport's main objective is to ensure that its facilities provide for the safe and expeditious conduct of all aircraft operations. Left uncontrolled, wildlife at an airport can jeopardize the safe operation of any aircraft.

Wildlife has caused extensive damage to aircraft when struck at high speeds. The most obvious threat is the loss of power due to the ingestion of wildlife into an engine. Along with engine power loss, structural damage can be caused by wildlife striking any portion of a moving aircraft posing threats to human health and safety. The FAA recommends that all certified airports, experiencing wildlife hazards (defined in §139.337), develop and implement a WHMP. In accordance with these regulations, Chicago's O'Hare International Airport (ORD) contracted with USDA-Animal and Plant Health Inspection Service-Wildlife Services (WS), to assist with the development and implementation of this Plan. Wildlife species of concern and their various management/control options will be addressed in general terms, allowing for ORD personnel to make informed decisions on courses of action to alleviate specific wildlife threats identified at the airport. WS may provide more detailed recommendations as wildlife problems are identified on the airfield.

Title 14 CFR Part 139.337(f)(1):
The persons who have authority and responsibility for implementing the WHMP.

2.1 Overview

The Chief Operating Officer at ORD will have ultimate responsibility for the implementation of the WHMP at the airport. Responsibilities for individual sections of the WHMP may be delegated to various departments within the airport system. Clear communication among airport personnel is essential for the WHMP to succeed. Personnel shall inform the Airport Wildlife Coordinator of progress, recommendations, and resource needs of the wildlife hazard management program. The Chief Operating Officer will ensure that the WHMP, and any possible amendments, are approved by the FAA and comply with Federal, State, and local laws and regulations.

Airport departments, which should be involved, include:

Airport Airfield Operations (AAO): Usually the first responders to reported wildlife hazards on the airfield;

Trades: May be asked to provide assistance with building/maintaining equipment and devices used in wildlife control;

Security: Present on the perimeter of the airfield at all times and should be cognizant of potential wildlife hazards and attractants;

Planning: Should coordinate building/construction activities to minimize attractiveness to wildlife;

Design & Construction: Should coordinate building/construction design activities to minimize attractiveness to wildlife;

Finance: Should be familiar with the need for equipment and supplies to most effectively address potential wildlife hazards; and

Airport Tenants: All airport tenants shall coordinate wildlife control activities at their facilities through the Airport Wildlife Coordinator (see Section 2.2.3).

Outside agencies with potential involvement:

USDA/WS: provides technical assistance to airports experiencing wildlife hazards, or may be contracted to provide full time direct control assistance;

US Fish and Wildlife Service (USFWS): responsible for issuing federal depredation permits and resolving issues with threatened or endangered species; and

Illinois Department of Natural Resources (IDNR): issues state nuisance animal removal permits.

2.2 Persons Responsible for Implementing the WHMP

2.2.1 Chief Operating Officer

Responsibilities of the Chief Operating Officer are as follows:

1) Establish a Wildlife Hazard Working Group for ORD;
   a. Wildlife Hazard Working Group will consist of the following representatives
      i. Airport Wildlife Coordinator

ii. CDA Chief Operating Officer or designated representative
iii. USDA-WS Wildlife Biologist
iv. CDA Assistant Commissioner of Design & Construction or designated representative
v. Airline Representative/s as needed

2) Supervise, coordinate, and monitor wildlife control activities as outlined in the WHMP;
3) Update the WHMP as necessary;
4) Disseminate information and assignments through the Wildlife Hazard Working Group;
5) re-approve and coordinate landscape changes, before they are made, with the Wildlife Biologist and Airport Wildlife Coordinator to ensure proposed changes do not present a wildlife attractant; and
6) Provide public relations support for wildlife control activities as necessary.

2.2.2 WS Wildlife Biologist (WB)

While WS is under contract with the City of Chicago to provide assistance at ORD, the role of the WB stationed at ORD will be to:

1) Identify and communicate, with AAO, wildlife attractants that pose a significant safety threat on the aircraft operations area (AOA);
2) Coordinate a runway closure with AAO, if necessary, in order to quickly address an immediate wildlife threat;
3) Request the Air Traffic Control Tower (ATCT) advise pilots on ATIS (Automated Terminal Information System) of increased wildlife activity;
4) Provide public relations support for wildlife control activities as necessary;
5) Monitor airport facilities and tenants to identify potential wildlife-related concerns;
6) Establish and maintain a log of known wildlife strikes and control actions, forwarding appropriate reports to FAA, as necessary;
7) Work with AAO and Trades to implement habitat modifications efforts to reduce wildlife attractants at the airport;
8) Provide a review of plans involving potential land use or structures/facilities changes to proactively identify potential wildlife attractant conflicts and make recommendations to alleviate the potential conflict;
9) Conduct regular physical inspections of the AOA to monitor for potential wildlife activity;
10) Haze wildlife from critical areas when appropriate;
11) Notify the ATCT of eminent wildlife hazards, as able;
12) Obtain and ensure compliance with required permits from appropriate federal or state agencies to manage wildlife on the AOA;
13) Provide the required training to each airport personnel in safe handling and proper use of wildlife dispersal methods and equipment in accordance with Advisory Circular 150/5200-36 (see Appendix C: FAA Advisory Circular 150/5200-36-Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports); and
14) Order wildlife harassment supplies (i.e., pyrotechnics) for airport personnel use, as funds allow.

2.2.3 Airport Wildlife Coordinator (AWC)

The AWC shall be a City employee under the supervision of the Chief Operating Officer. The role of the AWC shall be to:

1) Serve as a liaison between the WS and the Chief Operating Officer on wildlife-related issues;
2) Coordinate the issuance of Notices to Airmen (NOTAMs) concerning eminent wildlife hazards on the airfield;
3) Make wildlife strike report forms, FAA Form 5200-7 (see Appendix D: Bird Strike Incident Reports) readily available to airport personnel, and encourage submission of the forms to the appropriate governmental agencies or to the WB;
4) Assist in the development and maintenance of a database (see section 7.3) to monitor wildlife control efforts at ORD;
5) Maintain an inventory of wildlife control equipment (i.e., pyrotechnics); and
6) Communicate with the WB regarding the issuance and maintenance of wildlife control permits, including providing data requirements for reporting purposes required by the issuing agency for the permit.
7) Work with AAO and Trades to implement habitat modifications efforts to reduce wildlife attractants at the airport;
8) Provide a review of plans involving potential land use or structures/facilities changes to proactively identify potential wildlife attractant conflicts and make recommendations to alleviate the potential conflict;
9) Conduct regular physical inspections of the AOA to monitor for potential wildlife activity;
10) Haze wildlife from critical areas when appropriate;
11) Notify the ATCT of eminent wildlife hazards, as able;

2.2.4 Airport Airfield Operations (AAO)

AAO personnel will serve as the *first line of defense* against wildlife activity as part of the airport's daily self-inspection program. Personnel shall be made clear of the importance of wildlife management and their role at the airport. As the *first line of defense* they shall:

1) Directly assist with wildlife control activities at ORD where possible including:
    a. Monitoring wildlife activity,
    b. Using pyrotechnics and vehicles to harass wildlife from the airfield, and
    c. Informing the AWC and WB of wildlife activity on the airfield;
2) Assist in the maintenance of records within the AAO Wildlife Log database documenting wildlife activity, or lack thereof, and actions taken to remove wildlife;
3) Log all known wildlife strikes on FAA Form 5200-7 (see Appendix D) and forward the forms to the AWC or WB;
4) Notify the AWC, WB and ACTC of known wildlife hazards;
5) Ensure that wildlife-attracting refuse does not accumulate in turf and detention basins on the airfield by coordinating trash and debris removal through the proper channels; and
6) Monitor the perimeter fence for potential access points by wildlife, particularly mammals (i.e., coyotes and white-tailed deer).

The role of Planning and Trades shall be to:

1) Review designs of new structures/facilities with the WB during the planning stages for input on designs that may minimize wildlife attractants;
2) Provide assistance with building/maintaining equipment and devices that may be used in wildlife control;
3) Involve the WB with land use planning and mitigation efforts;
4) Maintain tarmac, turf and detention basins to ensure that water flows, minimizing ponding effects and the accumulation of refuse on the airfield;
5) Assist with habitat modifications addressed in the WHMP, such as vegetation and perimeter fence maintenance; and
6) Provide rodent-proofing of buildings, dumpsters and other refuse containers to the extent feasible.

2.2.6 Aviation Security (AVSEC)

Aviation Security personnel should be informed of the importance of managing wildlife in and around airports. Their presence on the AOA can extend the management efforts at ORD. The role of Aviation Security shall be to:

1) Inform the AWC and/or WB of wildlife, including birds, mammals and rodents, found in or around buildings; and
2) Monitor security and access gate areas prior to opening insuring that no wildlife may gain access to the AOA. In the event an animal does pass through an access gate, Airfield Operations will be notified immediately.

2.2.7 Federal Aviation Administration (FAA)

Responsibilities of the FAA under this WHMP, shall be to:

1) Assist ORD in reviewing proposed land use changes, construction plans and mitigation projects for potential wildlife hazards to aircraft; and
2) Review changes to the WHMP.

Title 14 CFR Part 139.337(f)(2):
A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion:

(i) Wildlife population management
(ii) Habitat modifications; and
(iii) Land use changes.

3.1 Overview

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

Table 1
Management priorities for projects to reduce wildlife hazards at Chicago O'Hare International Airport are listed, along with the target dates for completion and date that each project was completed. Note that some of the projects may have already been implemented or completed, but because they require a continued effort (e.g., sediment/vegetation removal from detention basins), they are listed as "ongoing".

ORD Wildlife Management Projects	Date Completed
Maintain a zero-tolerance wildlife control program on airfield (Population Management)	Ongoing
Maintain a Wildlife Hazard Management Plan	Ongoing Reviewed Annually
Train employees in the safe and effective application wildlife dispersal measures in accordance with Advisory Circular 150/5200-36	Annually
Stock and maintain wildlife control supplies	Ongoing
Continue red-tail hawk research projects	Ongoing
Monitor/Maintain wildlife-proof fencing around airfield as needed	Ongoing

Clear and maintain detention basins throughout airfield to enhance drainage	Ongoing
Evaluate potential wildlife hazards associated with new construction	Ongoing
Grade, fill or report to AAO tire ruts on infield caused by vehicles or construction equipment	Daily
Evaluate potential ground covers that are unattractive to wildlife	Ongoing
Maintain updated migratory bird depredation permits	Annually
Maintain a computerized record keeping system for wildlife strikes, hazing efforts, and wildlife activity	Ongoing
Avian Detection Radar Research	Ongoing
Evaluating the effectiveness of grazing animals adjacent to airfields	Ongoing
Replacement of existing AOA fence lines, not being replaced by the OMP, to be compliant with current AC's requiring buried fence skirt for a wildlife barrier. • Areas Remaining: 1) Irving Park Road fence line (AMC parking lot to 4R APCH) 2) 22R APCH fence line 3) Western Perimeter (Areas not being replaced by OMP once completed)	Areas 1 & 2 Planned Completion 11/2018 Area 3 After OMP Completion
Installation of wildlife deterrent concrete thresholds at all existing AOA Security Gates	11/2019

3.2 Construction Activities

The WB should participate in the initial phases of all airport construction projects to avoid an inadvertent increase in wildlife hazards resulting from architectural or landscape changes. Airport construction activities include Capital Improvement Projects (CIP), O'Hare Modernization Program (OMP) projects, and CDA maintenance construction activities with term contractors, as defined in Section 341 of the Airport Certification Manual (ACM) for ORD. Airport expansion plans will be reviewed by the ORD Wildlife Hazard Working Group to ensure that new developments will not inadvertently result in increased wildlife hazards to aircraft operations. If appropriate, they will coordinate designs with the FAA.

Capital Improvement Projects (CIP)

The Chicago Department of Aviation (CDA) may have various Capital Improvement Projects (CIP) going throughout the year. Capital Improvement Projects include both landside and airside projects to upgrade or rehabilitate existing airport systems, buildings, and infrastructure. All CIP projects with the potential to affect wildlife activity at O'Hare are reviewed by the WB to ensure compliance with this plan and add any mitigation needed to reduce any wildlife attractants the projects may cause. All CIP projects are required to be in compliance with this plan and it's appendices.

O'Hare Modernization Program (OMP)

The O'Hare Modernization Program (OMP) is currently underway, with construction throughout much of the airport property lasting through the next several years. The displacement of the wetland/Waters of the United States (WUS) areas and forested areas as a result of OMP will take place during the first two to three years of the program (i.e., during site preparation). The site preparation logistics and work sequence has been carefully orchestrated to maintain the balance between efficient construction operations and the maintenance of aircraft operations at ORD. All OMP projects with the potential to affect wildlife activity at O'Hare shall be reviewed by the WB to ensure compliance with this plan and add any mitigation needed to reduce any wildlife attractants the projects may cause. All OMP projects are required to be in compliance with this plan and it's appendices.

3.2.1 Section 404 Permit

Section 404 of the Clean Water Act establishes programs to regulate the discharge of dredged or fill material into WUS, including wetlands. Activities in wetlands/WUS regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and mining projects. A Section 404 Permit is required in advance of the placement of dredge or fill material into wetlands/WUS. The OMP, on behalf of the City of Chicago Department of Aviation (CDA), submitted a Section 404 permit application to the Chicago District of the United States Army Corp of Engineers (USACE Permit application number 200301000) on December 1, 2004. Subsequently, the Section 404 permit was approved on December 5, 2005. Importantly, this permit allows the removal and fill of all wetlands at ORD, as well as changes or removal of many areas of WUS with mitigation and replacement of these resources elsewhere within the Chicagoland region.

3.2.1.1 Requirements and Allowances of Section 404 Permit

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Mitigation is one way available to accomplish that objective. The main goal is the re-creation of a diverse native plant and/or animal community found on or near the site.

The OMP has provided mitigation for the displacement of wetlands/WUS (both USACE jurisdictional and isolated wetlands) associated with the OMP. Mitigation locations and

Development and Planning, and the FAA in consultation with the U.S. Environmental Protection Agency, USFWS, and other relevant regulatory agencies.

The wetland mitigation plan includes mitigating the federally regulated wetland impacts located in Cook County and WUS impacts through an agreement with CorLands at off-site locations within the Des Plaines River Watershed. Impacts to isolated wetlands located in Cook County will be mitigated at City of Chicago sites. All wetland impacts located within DuPage County will be mitigated within DuPage County.

3.2.1.2 Impacted Wetlands and Waters of the U.S.

There are numerous wetlands and other WUS at the airport, much of which has already been impacted or removed as a result of OMP-related construction activity (see Exhibit 1- Current Wetlands/WUS at O'Hare International Airport Pg. 49). Most of the airport's wetlands are less than one acre in size, and they are scattered throughout the site. Wetland areas over two acres in size are generally on the undeveloped west side of the airport. Non-wetland WUS acres at, or very near, the airport consist of stream and drainage ditch channels.

Due to the lack of open space at the airport, the demands of the construction activities require that all of the existing wetlands be filled. Overall, wetlands, on or near the airport, increase the likelihood of aircraft/wildlife collisions as they frequently provide an attractive habitat for many species of wildlife. The decrease in the amount of wetlands and WUS on airport property as a byproduct also actively reduces attractive wildlife habitat.

3.2.1.3 Soil Erosion and Sediment Control Measures

Soil Erosion and Sediment Control (SESC) practices are implemented during construction to prevent sediment from entering into preserved/relocated WUS and to minimize the off-site dispersal of sediments. The structural SESC measures divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Following the completion of grading in an area, all exposed soil will be stabilized to minimize erosion. The sideslopes of the detention basins will be stabilized using structural methods, while all other exposed soil will be seeded according to the project specifications (See Appendix E, ORD Approved Plant List).

3.2.2 Land Use Specifications

The objective of this WHMP is to actively reduce attractive wildlife habitat on property under the control of the City of Chicago, while working cooperatively with adjacent property owners to discourage land-use practices that might increase wildlife hazards. The WB should be included in land-use decisions and landscape changes to avoid inadvertent wildlife hazards to aircraft. FAA Inspectors at the Great Lakes Region Headquarters in Des Plaines, IL (see Chapter 9) will provide technical guidance to ORD in addressing land-use compatibility issues. WS, as per a Memorandum of Understanding between FAA and Wildlife Services (see Appendix F: Relationship between FAA and WS), will provide technical and/or operational assistance in addressing issues or concerns associated with the proposed project or land-use change. Proposed projects that will likely increase bird numbers (see Appendix M: FAA Advisory Circular 150/5200-33B-Hazardous Wildlife Attractants on or near Airports) within flight zones will be discouraged. Mitigation measures will be identified to maintain wildlife populations at safe levels. Incompatible

land uses may include reservoirs, parks, wetlands, landfill/trash transfer stations, (see Appendix N: Memorandum of Understanding between CDA and Groot Industries) and wildlife refuges/sanctuaries. Land-use changes will be monitored for compatibility by working with the local planning authorities.

3.2.2.1 Changes in Airside/Landside Use Designations

The OMP has required the acquisition of 457 acres, including residential and commercial property in the airport area. Although a large amount of acreage is to be annexed onto airport property by the time of OMP's completion, due to the functionality of the land area, this additional acreage will not significantly add to Wildlife Habitat at O'Hare.

3.2.2.1.1 Permanent Perimeter Fencing

Throughout the duration of the current construction activities, the OMP will bring in temporary fencing changes to assist in SESC measures and active construction areas. Upon completion there will be permanent changes to the fencing surrounding O'Hare to reflect the incorporation of new property boundaries.

It is understood that with the OMP in its initial phases, permanent perimeter fencing changes at the airport are still in development. However, a fence skirt will be installed by the OMP on any new permanent perimeter fencing as recommended by Certalert 04-16 (Appendix H, Deer Hazard to Aircraft and Deer Fencing, Appendix K, Methods of Control and Appendix L Standards for Specifying Construction of Airports). In compliance with agreements between CDA, OMP, and FAA, all permanent perimeter fencing installed for the OMP, including fencing previously installed, must comply with these CertAlerts and Advisory Circulars. USDA WS will be informed of fencing modifications by the OMP as they are completed so that the appropriate modifications can be made to the inspection schedules and WS can refocus their efforts on certain areas of the airport, as necessary.

For already existing permanent perimeter fencing, that is not part of upcoming OMP and/or capital improvement projects, an alternative wildlife deterrent/ fence skirt installation has been approved by USDA-APHIS-WS and the FAA, (see Appendices K and L).

3.2.2.2 Removal of Wildlife Habitat

As a result of the construction activity, an additional loss of native vegetation and habitat has further reduced limited natural resources in the vicinity of the airport. Vegetation communities affected include managed grassland, shrub, and wetlands. Fragmentation of habitat, wildlife disturbance caused primarily by vehicular traffic, airport operations and other activities associated with urbanization have diminished wildlife use of the area. Continuing development in the vicinity would contribute to additional loss of wildlife habitat, vegetation and further reduce the wildlife resources in the area.

3.2.3 Wildlife Encountered During Construction Activities

Anyone who is performing work at ORD and who encounters wildlife through the course of that work is instructed to contact AAO at (773) 686-2255, who will then assess the situation and determine the appropriate course of action, in compliance with any and all applicable permits in place at ORD.

3.3 Attractants

3.3.1 General Zone and Critical Zone

The General Zone for ORD is defined as the area within a five-mile radius from the runway centerline or nearest part of the AOA. Wildlife attractants in this area could potentially impact air traffic safety operating out of ORD, particularly those attractants that lie within the approach and departure patterns. The objective of this WHMP is to actively reduce attractive wildlife habitat on property under the control of the City of Chicago, while working cooperatively with adjacent property owners to discourage land-use practices that might increase wildlife hazards.

The area within a 10,000-foot radius of the runway centerline is delineated as the Critical Zone. Control efforts will be primarily concentrated within this area where arriving and departing aircraft are typically operating at or below 500 feet above ground level (AGL), an altitude that also corresponds with the most bird activity. Approximately 75% of all civil bird-aircraft strikes occur within the Critical Zone.

3.3.2 Edge Removal

Edges are places where different habitats meet and are often most attractive to wildlife because biological needs can typically be met in these relatively small areas. ORD has minimized this habitat by removing all tall vegetation and maintaining a uniform grass height.

3.3.3 Non-airport Land-use Projects

The WB should be included in land-use decisions and landscape changes to avoid inadvertent wildlife hazards to aircraft. FAA Inspectors at the Great Lakes Region Headquarters in Des Plaines, IL (see Chapter 9) will provide technical guidance to ORD in addressing land-use compatibility issues. WS, as per a Memorandum of Understanding between FAA and Wildlife Services (see Appendix F), will provide technical and/or operational assistance in addressing issues or concerns associated with the proposed project or land-use change. Proposed projects that will likely increase bird numbers (see Appendix M) within flight zones will be discouraged. Mitigation measures will be identified to maintain wildlife populations at safe levels. Incompatible land uses may include reservoirs, parks, wetlands, landfills/trash transfer stations and wildlife refuges/sanctuaries. Land-use changes will be monitored for compatibility by working with the local planning authorities.

3.4 Water Management

3.4.1 Overview

ORD has several detention basins and drainage ditches that attract a moderate number of birds and mammals throughout the year, especially during the spring/winter when migratory waterfowl pass through the area. Wherever feasible, open water on ORD will be covered with

wire grid, drained wherever possible, and monitored closely to ensure hazardous species are not drawn to these sites. Ephemeral water (i.e., temporary basins) will be monitored by the AWC and WB with actions taken if they begin to attract wildlife. Water sources outside of ORD property, but within the critical area, will be monitored. Local agencies and landowners will be contacted for the purpose of requesting their assistance and cooperation to help deter hazardous wildlife from the airport.

3.4.2 Water Discharge Procedures

Construction activities may include such things as clearing of vegetation, various demolitions, re-grading the existing ground surface, installing drainage, installing additional pavement and buildings and handling construction materials. Such activities generally change pervious surfaces to impervious surfaces and could change the rate of infiltration. Development of impervious areas would create additional storm water runoff and compensatory measures for storm water runoff control would be provided through construction of detention basins. Temporary and permanent sediment basins will be constructed in conjunction with the site preparation activities to control site runoff and to trap storm water prior to discharge (see Appendix I: Basin Operating Procedures and Exhibit 3- CDA Basin Map). Temporary and/or permanent local drainage facilities will be installed to prevent on-site flooding and nuisance conditions during the site preparation activities. It is understood that all temporary standing water and run off within all basins should be dewatered in the timeliest manner possible to limit wildlife attractants on the AOA. If changes in land use practices on the airfield are the cause of temporary standing water, the responsible party will mitigate the standing water in accordance to all environmental standards.

3.4.2.1 Permanent Detention Basins

Detention basins are the primary water sources at ORD. Basins are appropriately sloped and lined so that water does not pool and instead leaves the airfield in a reasonably short amount of time.

3.4.2.2 Temporary Detention Basins

Temporary drainage facilities are utilized to address storm water drainage issues until permanent facilities are constructed, stabilized and ready for operation.

Also, during the wetter winter and spring months, small depressions (tire ruts) created by vehicles operating within the infield areas fill up with water for short periods of time and can attract waterfowl and gulls. Where ruts are found, ORD maintenance should fill and/or grade the damaged area. In areas where there are larger pools, the land should be dewatered, filled and/or graded such that water consistently drains to detention basins.

3.5 Vegetation Management

3.5.1 Overview

the greatest numbers of wildlife, while being aesthetically pleasing to the flying public. In most cases a monotypic grass environment will be unattractive to the greatest number of species. However, certain modifications may result in unwittingly attracting some species, e.g., short grass is attractive to flocking birds such as blackbirds, Canada geese, and gulls while deterring coyotes, raccoons, and upland birds. All manipulations will be monitored to verify that all vegetation management results with the desired effects.

The ground cover at ORD has changed significantly over the past few years with the commencement of the OMP (see Section 3.2, Construction Activities). Most notably, the number of forested acres within the Airport Boundary has decreased from over 200 acres in 2009 to 48.8 acres today. The ground cover at ORD within the Airport Boundary consists of the following types and approximate acreages (see also Exhibit 2 – Pg. 51):

Type	Acres[1]	Percentage
Pavement/Buildings	2979.6	41.03%
Dirt/Construction	1268.8	17.47%
Mowed	2617.2	36.04%
Unmowed	288.2	3.97%
Shrub	59.5	0.82%
Forested	48.8	0.67%
TOTAL	**7262.1**	**100.00%**

[1] Approximate acreage determined in collaboration with OMP and Landrum & Brown, Inc.as of September 2018

3.5.2 Grass Management

Other than paved areas, grass is the primary cover inside the perimeter security fence. FAA Certalert No. 98-05 advises that "airport operators should ensure that grass species and other varieties of plants attractive to hazardous wildlife are not used on the airport". In addition, grasses that produce large seeds and are known to be attractive to wildlife will be avoided when planting new areas.

3.5.2.1 Grass Type

The type of grass used within the perimeter fence and between the runways should produce small or no seeds, but still be able to generate new growth or re-seed itself to provide a thick, monotypic stand and prevent erosion. The selected ground cover should withstand drought, flooding and other normal climatic conditions, and be somewhat unpalatable to grazing animals, such as Canada geese and ducks. The grasses should also harbor relatively few insects and rodents that may attract hawks, owls, starlings and other hazardous wildlife species.

3.5.2.2 Grass Height

For vegetation management, CDA relies on the contracted USDA Wildlife Biologists and Appendix "O" of the FAA's "Managing Wildlife on Airports," which recommends that grass be maintained at approximately 8 inches or less in height. CDA will attempt to maintain these heights with scheduled mowing activities conducted when weather permits, surfaces are firm

For vegetation management, CDA relies on the contracted USDA Wildlife Biologists and Appendix "O" of the FAA's "Managing Wildlife on Airports," which recommends that grass be maintained at approximately 8 inches or less in height. CDA will attempt to maintain these heights with scheduled mowing activities conducted when weather permits, surfaces are firm enough to allow heavy duty mowers access without creating ruts, and the grass is of sufficient length to merit cutting. See Appendix G.

3.5.2.3 Mowing

Mowing attracts several species of birds and mammals because it exposes food sources, such as rodents, insects, and seeds. To the extent feasible, mowing operations shall be conducted at night. If cutting is being conducted during the day and birds are attracted to the activity, the motor truck driver foreman or AAO will haze the birds from the area and WB's will be made aware of the wildlife activity. Any harassment/hazing activities will be recorded in the wildlife log maintained by AAO. There are approximately 3291.5 acres of mowed areas within the AOA at ORD. (See Exhibit 2 – Pg. 51)

3.5.2.4 OMP Master Seeding and Landscape Specifications

The OMP has developed master seeding and landscape specifications (Appendix E, ORD Approved Plant List), which are incorporated into all related airport construction contracts. The specifications are designed to reduce the amount of seeding and landscape wildlife attractants to the greatest extent possible. These specifications implemented by the OMP are mandatory for all OMP Projects, CIP Projects, and Airport Maintenance Term Contractors and contribute to the overall goal of maintaining plant communities that are least likely to attract the greatest numbers of wildlife.

3.5.2.5 Green Roofs

One goal of the CDA is to incorporate green roofs wherever possible to reduce the heat island effect while providing energy savings and storm water benefits. As of the date of this report, the following green roofs have been installed at ORD; the Enterprise Rental Car Facility Customer Service Center, Enterprise Rental Car Facility Maintenance Building, Aircraft Rescue and Firefighting Facility #3 (ARFF #3), Guard Post #1 Canopy, South Airfield Lighting Control Vault (SALCV), North Air Traffic Control Tower Base Building, North Air Traffic Control Tower Com Ed Building, FedEx Sort Building, FedEx World Services Center, FedEx Vehicle Maintenance Building, United Airlines Cargo Building, Building 819 Booster Pump Station, and the North East Cargo Facility buildings. Green roofs constructed on CDA owned facilities are added to the CDA Comprehensive Landscape Services contract. Green roofs that are not owned by the CDA are excluded from the landscape services contract but still maintain the vegetation in accordance with the OMP Master Seeding and Landscape Specifications in efforts to deter any wildlife to the greatest extent possible (see Appendix E).

3.5.3 Ornamental Landscaping

It is recognized that landscaping at the airport can affect tourism, business, and the overall impression of the ORD vicinity to visitors; therefore, landscaping needs to be aesthetically pleasing. It must, however, coincide with the airport's greater responsibility of air safety. The planting of trees and bushes that offer hunting perches, roosting and loafing sites, nesting cover,

and food for birds and other wildlife will be avoided. Ornamental trees and bushes used to enhance airport aesthetics will be kept to a minimum, selecting varieties that are less attractive to wildlife. Species that produce edible fruits and/or nuts shall not be used on ORD property. ORD personnel will monitor ornamental trees to prevent communal roosting by birds, removing, thinning, topping or netting the trees, if necessary.

3.5.4 Woodland/Shrub

There are roughly 71 acres of forested habitat and 60 acres of shrub habitat within the Airport Boundary at ORD (See Exhibit 2 – Pg. 51). While the woodland/shrub areas may serve as a buffer between the airport and adjacent business areas, it is a potential attractant for wildlife species and should be removed whenever possible. As such, these areas shall be maintained with a buffer of short grass between it and the aircraft movement areas. This open buffer will serve to deter mammal movement along its interior, thereby minimizing small mammal presence near aircraft movement areas, as well as allowing easy monitoring of the area. Many species of birds and mammals utilize this area, though the groups of primary concern are coyotes, blackbirds and raptors. The area shall be monitored on a regular basis and proper management actions be enacted when these groups are observed. Nests should be identified during spring months and either destroyed or made nonviable.

3.6 Structure Management

3.6.1 Overview

Structures provide cover and hunting perches for wildlife. If wildlife is considered when a building is being designed, costly control measures can be avoided. Buildings should not provide nesting, perching, or roosting sites for birds and should inhibit access by mammals, such as rodents and raccoons.

3.6.2 Airfield Structures

Airfield structures, such as runway lights, ramp/taxiway signs, ILS towers, and light poles, are used as hunting and loafing perches for birds. Structures found to routinely attract wildlife in a hazardous manner may be fitted with wire coils or porcupine wire (e.g., Nixalite).

3.6.3 Abandoned Structures

Structures not pertinent to air operations, and/or no longer in use, should be removed (e.g., abandoned houses, sheds, machinery, and light poles). Such structures may harbor rodents, small birds or other wildlife that may attract hawks, owls, and other predators that become significant aviation hazards.

3.7 Food/Prey-base Management

3.7.1 Overview

Small mammals and invertebrates, such as voles, rabbits, insects, and earthworms, are highly attractive prey species for predators and should be controlled where feasible. Handouts, trash, and scattered debris also provide food sources for wildlife. The modification and/or

management of attractive habitats such as vegetation and abandoned structures will limit shelter and prey availability for potentially hazardous wildlife.

3.7.2 Rodents

Meadow voles and deer mice are the primary attractants of raptors and other predators, such as coyotes at ORD. Historically, rodent populations have been relatively high and a resulting small mammal monitoring program has been initiated at ORD. Populations of small rodents can be managed by the use of pesticides and habitat modifications.

3.7.3 Insects and Other Invertebrates

Insects and other invertebrates (e.g., earthworms, grasshoppers, etc.) may attract many species of wildlife at ORD, particularly kestrels, crows, and gulls. Insect populations will be monitored to determine if they are present in sufficient numbers to attract wildlife. Vegetation management will keep much of this prey population in check, but airport personnel will continue to monitor these populations for problems.

3.7.4 Trash, Debris, and Handouts

Trash and debris are often responsible for attracting species, such as gulls and European starlings. ORD personnel will continue to conduct trash and FOD (foreign object debris/damage) collection inspections on the airfield, especially after high winds. The public or airport employees should not be allowed to feed birds or mammals around the airport. If necessary, ORD Security will be contacted to stop specific incidents of people feeding wildlife on airport property. Signs will be posted where appropriate to educate the general public.

Title 14 CFR Part 139.337(f)(3):
Requirements for and, where applicable, copies of local, state, and Federal wildlife control permits.

4.1 Overview

Federal, state and local governments administer laws and regulations that protect wildlife and their habitat affecting wildlife control at airports. Personnel involved with wildlife management should be educated about these regulations to ensure compliance. In general, the taking (i.e., capturing or lethal removal) of wildlife is regulated through a permit process overseen by federal and/or state agencies. Permits are necessary for a successful control program and will be obtained, as required, by the AWC and/or WB.

4.2 Illinois Wildlife Regulations

Several Illinois State agencies have regulations that affect wildlife management at airports. State wildlife laws administered by the Illinois Department of Natural Resources (IDNR) include jurisdiction over resident and migratory birds, mammals, reptiles, amphibians, and State threatened or endangered species. IDNR issues Nuisance Wildlife Control Permits for the taking of problematic species under their control, which USDA WS has obtained for use at ORD (see Appendix J, Federal and State Depredation Permits). The Illinois Department of Agriculture regulates the product labels of pesticides used to control wildlife. The Illinois Department of Public Health regulates pesticide applicator licenses for individuals permitted to apply restricted-use pesticides.

4.3 Federal Regulations

Several federal regulations, including the Migratory Bird Treaty Act, the Endangered Species Act, Bald and Golden Eagle Protection Act, the National Environmental Policy Act and the Federal Insecticide, Fungicide, and Rodenticide Act regulate various aspects of ORD's wildlife management activities. Additional regulations that may affect wildlife control activities at ORD are found in the Code of Federal Regulations (CFR), with several federal agencies potentially responsible for their implementation. Federal wildlife laws are typically administered by the U.S. Fish and Wildlife Service (USFWS) and involve primarily migratory birds and threatened and endangered species.

4.4 Wildlife Categories

For the purposes of this document, feral and free roaming dogs, cats and other domestic animals are considered "wildlife" because of the hazards they may pose to aircraft. They are offered no specific federal or state protection, but are generally regulated under municipal laws. General wildlife categories potentially found at ORD are listed in Table 2 and include migratory and resident game and non-game species, along with threatened and endangered species. Wildlife control personnel should know the category for the species that they intend to control so that they can determine the relevant laws and whether permits are necessary.

Table 2
Wildlife Categories at ORD, permits necessary for control as required by federal and state wildlife agencies, and whether permits have been obtained. Not all categories of wildlife may be present at ORD.

Category	Species	State Permit Required	State Permit Obtained	Federal Permit Required	Federal Permit Obtained
Resident Game Birds	Ringneck Pheasant	Yes	No	No	N/A
Resident Nongame Birds	Pigeons, starlings, house sparrows	No	N/A	No	N/A
Migratory Game Birds	Ducks, geese, snipe, and mourning doves	Yes	Yes	Yes	Yes
Migratory Nongame Birds	All species except game birds, resident nongame birds, and domestic and exotic birds	Yes	Yes	Yes	Yes
Depredation Order Birds[1]	Crows, blackbirds, and cowbirds	No	N/A	No	N/A
Game Mammals	White-tailed deer, Rabbits, woodchucks,	Yes	Yes	No	N/A
Furbearers	Fox, raccoon, opossum, coyote, striped skunk	Yes	Yes	No	N/A
Nongame Mammals	None at ORD	Yes	N/A	No	N/A
Feral Domestic Mammals	Dogs, cats, livestock	No - Call local animal control	N/A	No	N/A
Reptiles And Amphibians	None at ORD	Yes	No	No	N/A
Fully Protected Wildlife	Threatened and Endangered species listed in Table 3	Yes	Yes	Yes	No

[1] May be taken without permits "when concentrated in such numbers and manner as to constitute a health hazard or other nuisance" (50 CFR §21.43).

4.5 General Regulations for Wildlife Control

Several regulations and permits apply to wildlife management activities at airports in the City of Chicago. Many of these regulations relate to safety, methods, and special considerations or restrictions which are usually specified on the depredation permits.

4.5.1 Birds

4.5.1.1 Resident nongame birds

European starlings, pigeons, and house sparrows are non-game birds that are classified as non-migratory, or resident, and no permit is required to take them. All other non-game birds at ORD are classified as migratory.

4.5.1.2 Migratory birds

Migratory birds are regulated under federal law by USFWS. These regulations permit hazing of migratory birds when the birds are damaging property, but a permit is required to take birds (i.e., capture or lethal removal). On behalf of the airport, USDA WS has obtained a Federal Depredation permit which is necessary to remove these animals (see Appendix J). Migratory bird permits are not valid for eagles or threatened and endangered species, which require separate permits for take and harassment. Although states may impose more restrictive regulations than federal law on migratory birds, Illinois typically issues permits that mirror the federal permits for non-protected migratory birds issued to the airport by USFWS.

In addition to the migratory bird permit described above, USDA WS has also obtained a Federal Fish and Wildlife Permit issued by the USFWS to allow for the harassment of Bald Eagles. This permit authorizes permittees and sub-permittees to use non-lethal scare devises, scare tactics or frightening devises to move or disperse bald eagles endangering human safety due to a high risk of a serious bird strike to landing and departing aircraft. (see appendix J).

Note: A USFWS depredation permit (see Appendix J) allows control of migratory non-game birds, provided the species are not listed as federally or state threatened or endangered (Table 3) and must be included on the depredation permit.

4.5.1.3 Reporting requirements of the USFWS

The USFWS requires that any action taken under the authority of their depredation permit be reported annually. The WB shall submit a report of the animals taken each calendar year to the USFWS to fulfill the requirements of this section. The report will be generated from a computerized database containing all control actions at ORD.

4.5.2 Mammals

4.5.2.1 Game mammals

Game mammals are defined primarily as those species that are hunted for sport, recreation, or meat. A Nuisance Animal Removal Permit from the IDNR is required before these animals may be controlled. ORD has a small population of rabbits, generally associated with buildings or structures, and woodlands throughout the airfield and adjacent facilities. These

animals burrow under structures for shelter and may cause deterioration of the foundation of these structures. Further, they provide a prey base for predatory birds and mammals which pose a direct threat to aviation.

Woodchucks have also been found on the airfield at ORD. Burrowing activities by these animals may cause the same foundation erosion as mentioned with rabbits. The WB will conduct control activities to address any identified concerns with these animals.

White-tailed deer, even though there is not a population on the airfield, are a great threat to aviation safety if they access the AOA. Deer populations have increased throughout the United States and the Chicago metro area and are adapting to urban and suburban landscapes. 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. Deer access the AOA though gaps under fences or through gates left open or not shut completely. Airport Airfield Operations should be contacted at (773) 686-2255 immediately if deer are seen on the AOA.

4.5.2.2 Furbearers

Furbearers are offered state protection and require a Nuisance Animal Removal Permit from the IDNR before control actions can be used to take these animals. Coyotes, foxes, raccoons and opossums have been identified on the airfield at ORD. In the event that these animals do gain access to the airfield, the WB should be notified to coordinate their removal.

4.5.3 Federal and State Listed Threatened and Endangered Species

The Federal Endangered Species Act (Sec. 2 [16 U.S.C. 1531]) and Illinois Endangered Species Act both protect animal and plant species potentially threatened with extinction. These acts classify species as endangered or threatened. An Endangered Species is defined as "any species or subspecies which is in danger of extinction throughout all or a significant portion of its range." A Threatened Species is defined as "any species or subspecies which is in danger of becoming an endangered species within the foreseeable future throughout or over a significant portion of its range." Once listed, a threatened or endangered species cannot be taken or harassed without a special permit. Eagles are afforded additional protection under the Bald and Golden Eagle Protection Act whether or not they are listed. Similarly, they cannot be taken or harassed without the proper permit from the USFWS. USDA has obtained a Harass Permit (see Appendix J).

TABLE 3.
Species found in the region listed federal and/or state as threatened or endangered. Those species that have been observed at or near ORD are checked (✓).

Birds

Common Name	Scientific Name	State-Listed (Status T/E)	Federal-Listed (Status T/E)	ORD (11)
American Bittern	*Botarus lentiginosus*	E		✓
Barn Owl	*Tyto alba*	E		✓
Bewick's Wren	*Thryomanes bewickii*	E		
Black Rail	*Laterallus jamaicensis*	E		
Black Tern	*Chlidonias niger*	E		
Black-billed Cuckoo	*Coccyzus erythropthalmus*	T		
Black-crowned Night-heron	*Nycticorax nycticorax*	E		✓
Cerulean Warbler	*Dendroica cerulea*	T		
Chuck-will's-widow	*Caprimulgus carolinensis*	T		
Common Gallinule	*Gallinula galeata*	E		
Common Moorhen	*Gallinula chloropus*	E		
Common Tern	*Sterna hirundo*	E		✓
Greater Prairie Chicken	*Tympanuchus cupido*	E		
Forster's Tern	*Sterna forsteri*	E		
King Rail	*Rallus elgens*	E		
Least Tern	*Sterna antillarum*	E	E	
Least Bittern	*Ixobrychus exilis*	T		
Little Blue Heron	*Egretta caerulea*	E		✓
Loggerhead Shrike	*Lanius ludovicianus*	E		✓
Mississippi Kite	*Ictinia mississippiensis*	E		
Northern Harrier	*Circus cyaneus*	E		✓
Osprey	*Pandion haliaetus*	E		✓
Piping Plover	*Charadrius melodus*	E	E	
Rufa Red Knot	*Calidris canutus rufa*	T	T	
Short-Eared Owl	*Asio flammeus*	E		✓
Snowy Egret	*Egretta thula*	E		
Swainson's Hawk	*Buteo swainsoni*	E		
Swainson's Warbler	*Limnothlypis swainsonii*	E		
Upland Sandpiper	*Bartramia longicauda*	E		✓
Wilson's Phalarope	*Phalaropus tricolor*	E		
Yellow-crowned Night Heron	*Nyctanassa violacea*	E		

Common Name	Scientific Name	State-Listed (Status T/E)	Federal-Listed (Status T/E)	ORD (11)
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	E		

Mammals

Common Name	Scientific Name	State-Listed (Status T/E)	Federal-Listed (Status T/E)	ORD (O)
Rafinesque Big-Eared Bat	*Corynorhinus rafinesquii*	E		
Eastern Small-footed Bat	*Myotis leibii*	T		
Eastern Wood Rat	*Neotoma floridana*	E		
Franklin's Ground Squirrel	*Spermophilus franklinii*	T		
Golden Mouse	*Ochrotomys nuttalli*	T		
Gray Bat	*Myotis grisescens*	E	E	
Gray/Timber Wolf	*Canis Lupus*	T		
Indiana Bat	*Myotis sodalis*	E	E	
Marsh Rice Rat	*Oryzomys palustris*	T		
Northern Long-eared Bat	*Myotis septentrionalis*	T	T	
Southeastern Myotis	*Myotis austroriparius*	E		

4.6 Pesticide Applicator's License

Authorization to use restricted-use pesticides for the removal of hazardous wildlife or prey-base (e.g., blackbirds, starlings, rodents, rabbits, insects, earthworms, and weeds) should be limited to Certified Pesticide Applicators or persons under their direct supervision. To obtain the necessary license to apply restricted-use pesticides, a person must pass an exam administered by the Illinois Department of Public Health (see Chapter 9). All ORD personnel that use restricted-use chemicals must first obtain a pesticide applicator's license or be under the direct supervision of an applicator. Use of all pesticides should strictly adhere to the pesticide label and should follow U.S. EPA, Illinois, and Cook County guidelines.

4.7 FAA Regulations, Advisory Circulars, and Cert Alerts

The FAA is the federal agency responsible for developing and enforcing air transportation safety regulations. Many of these regulations are codified in the Code of Federal Regulations (CFRs). The FAA also publishes a series of guidelines for airport operators to follow called Advisory Circulars

(ACs). ACs in the 150-series deal with airport safety issues, including wildlife hazards. In addition to CFRs and ACs, the FAA periodically issues Cert Alerts for internal distribution and to provide recommendations on specific issues for inspectors and airport personnel. As these may be changed or updated, their current status should be verified on a regular basis. This may be accomplished by contacting the FAA directly (see Chapter 9) or by visiting their website at http://wildlife-mitigation.tc.faa.gov/public_html/index.html or http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/ for the most current revision.

Title 14 CFR Part 139.337(f)(4):
Identification of resources to be provided by the certificate holder for implementation of the plan.

5.1 Airport Supplies

Habitat management and wildlife control supplies can be purchased from several companies. ORD will keep an adequate supply of equipment on hand for use by trained personnel. Supplies that will normally be stocked at the airport, by the AWC, include:

- 15 mm pyrotechnic pistol launchers
- Bird bombs/bangers, screamers, and whistlers (with blanks)
- Cleaning kits for all equipment
- Field guide for local bird identification
- Mylar tape
- Snare/catch pole
- Binoculars
- Latex gloves
- Garbage bags
- Gallon-size re-sealable sandwich bags
- Freezer to preserve bird carcasses found on runways

Title 14 CFR Part 139.337(f)(5):
Procedures to be followed during air carrier operations including at least ...

Title 14 CFR Part 139.337(f)(5)(i):
Assignment of personnel responsibilities for implementing the procedures;

Personnel responsibilities are described and delineated in Chapter 2.

Title 14 CFR Part 139.337(f)(5)(ii):
Conduct of Physical inspections of the movement areas and other areas critical to wildlife hazard management sufficiently in advance of air carrier operations to allow time for wildlife controls to be effective;

Airport Operations Supervisors (AOSs) conduct physical inspections of movement areas and other areas critical to wildlife hazard management as part of the daily self inspection program. Observations of wildlife activity should be documented in the ORD Wildlife Log database. The WB should also conduct physical inspections of critical areas and record wildlife activity. During periods of exceptionally heavy wildlife activity (e.g., migratory periods, outbreaks of insects etc.), the AOS should work with the WB to issue a Notice to Airmen (NOTAM).

Title 14 CFR Part 139.337(f)(5)(iii):
Wildlife control measures;

6.1 Overview

Wildlife that is identified as hazardous during and after the completion of the recommended habitat modifications should be controlled using accepted direct control techniques. Wildlife hazards at airports are extremely variable and complex. Therefore, it is essential to adopt a flexible, innovative, and adaptive approach to managing these hazards. Airport personnel should be trained to identify hazardous wildlife at ORD (see Chapter 8), and should select dispersal methods that are appropriate to the type of animal causing the hazard. Wildlife identification guides and handbooks will be available for use by wildlife control personnel at ORD.

6.2 Wildlife Patrol

ORD's wildlife patrol should consist of the WB and AOS's who work on the airfield. The patrol should coordinate their activities with each other to monitor and respond to wildlife hazards on the airfield. They should be trained in wildlife identification, proper control techniques, and safe operations as outlined in Chapter 8 and should always have adequate wildlife control supplies (Chapter 5). The patrol should have radio-equipped vehicles and should maintain clear communications with the tower, in accordance with FAA radio protocols. The OPS patrol should document all observations of wildlife activity in the ORD Wildlife Log database via City Operations and/or the AWC, while the WB will record observations into the Wildlife Hazard Management Information System (WHMIS) database. Routine runway sweeps should be conducted as part of the daily self-inspection program, and the carcasses of any dead animals found from strikes or suspected strikes should be retrieved and recorded on Form 5200-7 (see Appendix D). In cases where no wildlife hazards were observed, it should be documented that an inspection was conducted and that no hazards were observed on the AOA. Other wildlife-related activities (e.g., notable hazards, animals killed or dispersed, unusual wildlife behavior, etc.) should be documented in the ORD Wildlife Log or WHMIS database. All dead wildlife found within 250 feet of the centerline of a runway will be considered the result of a strike unless the death was obviously due to some other cause. Any wildlife remains that are found should be bagged, labeled (e.g., time and date found, location on runway, prevailing wind/weather conditions, person who found remains, etc.), and placed in a freezer for later inspection and identification. Wildlife strikes may be reported directly to the FAA via Internet at http://wildlife-mitigation.tc.faa.gov/public_html/index.html, but a printout of the report must also be immediately submitted to the WB so that the situation can be assessed.

6.3 Species Management: Overview

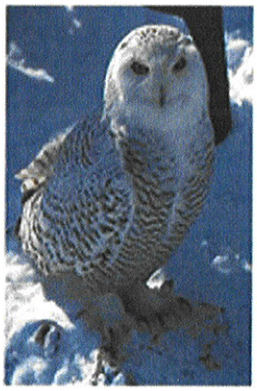
The species of wildlife most commonly observed at ORD are outlined in this Chapter. Their impact to aviation, seasonal changes, attractants, legal status and control methods available at ORD are listed as well. Pyrotechnics are the tool most readily available to AOSs and other airfield personnel. However, all of the tools and techniques listed in this Chapter are readily available to ORD and shall be used by the WB, as needed, to alleviate specific wildlife hazards.

6.4 Species Management: Birds

Birds have the greatest potential for wildlife strikes at ORD, because of their tendency to share airspace with fast moving aircraft. From 1990 to 2007 birds were responsible for 97.5% of all strikes reported nationally (Dolbeer and Wright 2008). During the same period, the six groups of birds most often involved in bird/aircraft strikes nationally were: gulls, pigeons/dove, raptors, waterfowl, sparrows and starlings (Dolbeer and Wright 2008). Species from each of the aforementioned groups are commonly observed at ORD.

6.4.1 Raptors: Hawks, Falcons, Owls, and Eagles

Impact at the airport: The primary species of raptors observed at ORD are red-tailed hawks, rough-legged hawks, and American kestrels, with the occasional appearance of a peregrine falcon or Cooper's hawk. Raptors often perch on structures and lights around the airport to gain a vantage point to watch for prey. These habits bring them into close proximity with runways, taxiway, and aircraft. Due to the larger size of the aforementioned species (except American kestrels), their habit of hunting from the numerous available perches, and the tendency to soar between perching site, they pose a significant threat to aircraft. American kestrels, although smaller, do pose a strike hazard, specifically when increased numbers of these birds are foraging for insects and small rodents on the airport's grassy areas. This usually occurs when young are fledged in late June through July. American kestrels hunt by hovering over grassy areas in search of prey, which can place them in the direct path of aircraft, especially when they are hunting in and around runway approach areas.



Snowy and Short-eared owls are the primary species of owls found at the airport during the winter months, while great-horned owls are commonly found year-round. Owls generally forage in the same manner as the larger raptors (i.e. red-tailed hawks), the difference being that owls are nocturnal, thus foraging at night. Due to the similarities in body structure, size, and foraging behavior, owls pose the same strike hazards that the larger raptors do.

Bald Eagles are the only species of eagle that have been observed at ORD. Eagles are attached to the airfield for the abundant prey, similar to other raptors, and their massive size create a serious strike hazard.

Seasonal changes: Red-tailed hawks are found at the airport year round, but increased numbers have been observed in late summer and throughout the fall due to fledging young and individuals migrating through the area. Rough-legged hawks appear during the winter months as they migrate from the south from the Arctic. In the summer, during late June to early July, American kestrels fledge (leave the nest) and are observed in increased numbers until late summer/early fall when the majority of these birds migrate out of the area. Peregrine falcons are well established in the Chicago area and are seen at ORD throughout the year.
Great horned owls are year round residents which are occasionally observed ORD. Snowy owls are a migrant from the Arctic Circle and can be present at the airport from November through April. Short-eared owls are also a winter migrant and are occasionally observed at the airport during the winter months. Bald Eagles are seasonal residents of the Chicago area, with most sighting at ORD occurring in the spring, with occasional sighting in summer and early fall.

Attractants on the airport to hawks, falcons and owls: The primary draw of raptors to ORD is the numerous rabbits and smaller rodents available as a food source. The numerous antennas, lighting structures, signage, and trees on or near the airport provide perching areas from which these birds can forage.

Legal Status: Raptors are classified as migratory non-game birds. A federal depredation permit and Illinois Nuisance Animal Removal Permit are required to take these birds or their nests/eggs. Bald Eagles have special protections given by the Bald and Golden Eagle Protection Act of 1940. Due to these special protections, the only management options currently permitted under ORD's federal Eagle Depredation permit are habitat management and harassment.

Control methods available:
Habitat Modification

1. Non-lethal
   - Pole traps
   - Bal-Chatri
   - Pigeon harnesses
   - Goshawk traps
   - Bow nets
2. Lethal
   - Shooting
   - Nest/egg destruction

6.4.2 Gulls: Ring-billed Gull, Herring Gull

Impact at the airport: Gulls have historically been one of the most numerous birds on ORD from spring until late fall. They present a significant strike threat due to their soaring habits and persistence at the airport. These birds are large enough to significantly damage a turbojet engine if ingested.

Seasonal changes: Gulls are present most of the year, with fewer observed in the winter. Concentrations increase significantly in early spring, and decrease by late fall/early winter when large numbers of gulls migrate out of the area.

Attractants on the airport to gulls: The primary attractant for gulls at ORD is food availability, such as food scraps and garbage discarded or stored on and around the airport. Gulls are especially attracted to runways and taxiways after rainfall events, when insects and earthworms abandon the saturated soil and concentrate on the concrete areas of the airport. Significant increases in gull activity have also been observed during mowing operations, as mowing increases the availability of insects and small rodents. On colder days, gulls are commonly observed warming themselves on the asphalt areas of the airport.

Legal status: Gulls are classified as migratory non-game birds. A federal depredation permit and Illinois Nuisance Animal Removal Permit are required to take these birds or their nests/eggs.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Harassment

1. Non-chemical
   - Electronic distress sounds
   - Gas exploders
   - Pyrotechnics
   - Effigies/Scarecrows
2. Chemical
   - Methyl anthranilate

Population Management

1. Non-chemical
   - Shooting
   - Trapping
2. Chemical
   - DRC-1339

6.4.3 Blackbirds: European Starling, Brown-Headed Cowbird, Common Grackle, Red-Winged Blackbird

Impact at the airport: Most blackbirds are relatively small, and therefore individually present little threat to aircraft safety. However, due to the flocking behavior and dense body structure of these birds, they can cause significant damage to aircraft.

Seasonal changes: European starlings are present at ORD year round, while the other species in this group are present only in the spring, summer and fall. These birds (excluding starlings) are migratory, and concentrate into large flocks in the spring and fall as they arrive from or prepare for migration. Starling numbers increase in mid-summer as young birds fledge from nests, and then again in early fall when starlings form large wintering flocks. The increased number of juvenile European starlings foraging in grassy areas near runways and taxiways pose an increased strike

risk during the summer months, while the large winter flocks pose an increased risk in the fall and winter months.

Attractants on the airport to blackbirds: There are many factors that may attract blackbirds to the airport. Birds in this group are highly adaptable, evident by their prolific success in many environments, and can readily find their three basic needs for survival at the airport. These include: (1) food, available in the form of grass/weed seeds, insects, and garbage; (2) water, available throughout the airport; and (3) shelter, found in the surrounding trees and buildings, in which to hide from predators and to build nests.

Legal status: The European starling is not a protected species and may be controlled at any time with approved techniques. The remaining blackbirds are classified as migratory non-game birds, but are categorized under a general depredation order which allows for their control when they are present in sufficient numbers to pose a threat to human health and safety.

Control methods available:

Habitat Modification

- Physical barriers on perching/nesting structures
- Habitat management

Harassment

- Electronic distress sounds
- Gas exploders
- Pyrotechnics
- Effigies/Scarecrows
- -Lights/Lasers

Population Management

1. Nonchemical
   - Trapping
   - Shooting
   - Nest destruction
2. Chemical
   - Avitrol®
   - Starlicide
   - DRC-1339

6.4.4 Waterfowl: Canada goose, Mallard and other migratory waterfowl

Impact at the airport: Waterfowl, as a group, have relatively large body size, dense body structure, and are gregarious by nature. These factors together pose a serious threat to aviation safety, as species in this group could cause serious damage to aircraft if struck. The two primary species of concern at ORD are Canada geese and mallards.

Seasonal changes: Waterfowl, especially Canada geese and mallards, are present on and around the airport throughout the year. This is due to resident populations of these species that thrive in the urban environment. Numbers of waterfowl observed on and around the airport peak during the spring and fall when large flocks of waterfowl are migrating through the area.

Attractants on the airport to waterfowl: The primary attractant to waterfowl are water resources, which include detention basins, temporary standing water that develops in low lying areas with poor drainage, and creeks found on the airport. Waterfowl may use these areas for feeding, resting, protection from predators or as a stopover during migration. Many of the waterfowl species are attracted to open grassland areas, especially newly established grass, which is found throughout the airport.

Legal Status: The Migratory Bird Treaty Act protects all migratory waterfowl under federal law. Legal hunting seasons have been established in which they may be hunted for recreation. A USFWS Federal Depredation Permit and a Nuisance Wildlife Control Permit from IDNR, which have been obtained by the airport and WS (see Appendix E), are required to take these birds or their nests/eggs.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Harassment

1. Non-chemical
   - Electronic distress sounds
   - Gas exploders

- Pyrotechnics
- Effigies/Scarecrows

2. Chemical
   - Methyl anthranilate

Population Management

- Shooting
- Nest/egg destruction

6.4.5 Non-regulated birds: Pigeons and English/House sparrows

Impact at the airport: Pigeons may significantly impact operations at the airport. These birds exhibit flocking behavior, and have dense body structures, which could cause serious threats to aviation safety. Pigeons frequent structures (concourses and hangars) where they are in close proximity to operating aircraft. English sparrows, due to their small size, do not individually pose a significant threat to aircraft if ingested. However, if a flock of sparrows is ingested, the engine may be damaged. Pigeons and sparrows additionally pose a nuisance and human health risk at the airport through their nesting and loafing behaviors. Accumulations of droppings under nesting and loafing areas are unsightly, and may create a vector for histoplasmosis, which is a serious threat to human health and safety.

Seasonal changes: Populations of these birds are present year-round, and fluctuate throughout the year.

Attractants on the airport to pigeons and sparrows: The airport offers quality feeding, loafing, and nesting habitat for these birds. Pigeons and sparrows are attracted to grassy areas to forage and to areas where other food sources (i.e., garbage and handouts) are available. Quality habitat is present throughout the airport, as they will utilize structures (i.e., buildings, overpasses/bridges, machinery, etc.) to roost and build nests.

Legal status: These bird species are not protected by federal or state laws. They may be controlled at any time with all legal and approved methods.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Harassment

1. Non-chemical
   - Electronic distress sounds
   - Gas exploders
   - Pyrotechnics
   - Effigies/Scarecrows
2. Chemical
   - Chemical repellents
   - Tactile
   - Avitrol®

Population Management

Lethal

1. Non-chemical
   - Trapping
   - Shooting
   - Nest and egg destruction
2. Chemical
   - Avitrol
   - DRC-1339

6.5 Species Management: Mammals

Large mammals are far less common than birds at ORD. Their presence, however, is occasionally documented and efforts are made to remove them, as soon as practicable, from the airport. Maintaining fences and gates at the airport are the most efficient way to keep large mammals off of the airport. Large mammals, such as white-tailed deer, coyotes, dogs, and raccoons have the potential to cause significant damage to aircraft in critical phases of flight.

6.5.1 Canids: Coyotes and red fox

Impact at the airport: Coyotes and red fox have been involved in strikes and near misses with aircraft at ORD. These animals are large enough to significantly damage engines if they are ingested and seriously damage landing gear if they are struck during a take-off or landing roll. These predators will commonly hunt close to active runways/taxiways increasing their likelihood of being involved in a strike.

Seasonal changes: Higher numbers of coyotes have been observed on the airport during the late winter and early spring, but all species in this group are year round residents.

Attractants on the airport to canids: The airport holds a diversity of prey for predators, including rabbits, voles, field mice, and small birds. These predators find the grassy open areas preferred habitat for hunting.

Legal status: The coyote and red fox are classified as fur-bearing mammals in Illinois. A Nuisance Wildlife Control Permit from the IDNR is necessary to remove these animals. Dogs are offered no federal or state protection.

Control methods available:

Habitat Modification

- Physical barriers (fencing)
- Habitat management

Harassment

- Gas exploders
- Pyrotechnics

Population Management

1. Non-chemical
   - Leghold traps
   - Snares
   - Shooting
2. Chemical

- Gas cartridge

6.5.2 Ungulates: White-tailed deer

Impact at the airport: The greatest threat of deer at ORD involves strikes and near misses with airplanes. Their large body mass causes serious damage to aircraft when struck or ingested. The foraging behavior of deer brings them into close proximity to active runways and taxiways, which they occasionally cross. When deer are startled or pursued they are extremely unpredictable, which increases the likelihood that they could cross active taxiways or runways.

Seasonal changes: There are currently no deer populating the AOA at ORD. However there is a large population of deer populating the areas surrounding the airport which can lead to them occasionally gaining access to the airport through unsecured gates or fencing.

Attractants on the airport to ungulates: The airport offers a large open space of land with good foraging habitat and cover in a completely urban or otherwise developed environment.

Legal status: White-tailed deer are game animals in Illinois. A Population Control Permit from IDNR is required for a large scale deer population control program; however occasional deer are removed from the airport with notification going to the IDNR Urban Deer Biologist. The IDNR maintains an Urban Deer Project office in the Chicago area to assist with urban deer problems and to issue deer population control and nuisance permits.

Control methods available:

Habitat Modification

- Physical barriers (fencing)
- Habitat management

Harassment

- Gas exploders
- Pyrotechnics

Population Management

1. Non-chemical
   - Shooting

6.5.3 Rodents: Meadow voles, deer mice, Norway rats, rabbits and woodchucks

Impact at the airport: These rodents have little direct effect on airport operations. Their primary hazard is providing a prey base for a host of predators, including raptors and canids. Rabbits and woodchucks will burrow under structures (blast fences and buildings) weakening the foundation integrity of these structures. Some rodents may gnaw on buried cables and cause power shortages to runway lights. This has not been documented at ORD, but the potential exists.

Seasonal changes: Normal fluctuations of a dynamic rodent population exist at ORD (i.e., increasing populations in the spring through summer due to reproduction, decreasing populations afterwards due to mortalities caused by predations and other natural causes). Periods of activity and dormancy may be weather-related.

Attractants on the airport to rodents: Meadow voles and field mice thrive in the open grasslands found throughout the airport and forage on grass/weed seeds and insects. Woodchucks have been documented foraging on the grassland habitats of the airport. Cottontail rabbits den under structures on the airfield and feed on the various plant materials. Norway rats are commensal rodents (they survive off of the activities of humans) usually concentrating around garbage disposal areas.

Legal status: The woodchuck and cottontail rabbit are classified as game animals in Illinois. A Nuisance Wildlife Control Permit from the IDNR is necessary to remove these animals. All other rodents listed are not protected and may be controlled at any time.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Population Management

1. Non-lethal
   - Cage traps
2. Lethal
   a. Non-chemical
      - Quick-kill traps (e.g., snap traps)

- Cage traps

b. Chemical
   - Toxicants
   - Zinc phosphide
   - Gas cartridge

6.5.4 Beaver

Impact at the airport: Beaver are in the rodent family, but are discussed separately because of the difference in control methods available. Beaver may pose significant problems at ORD from their practice of damming waterways and drainages to construct basins in which to live. Although this activity does not directly impact air carrier operations at the airport, it can impede water flow from the airfield. The creation of basins may additionally threaten the integrity of the foundation of the runways, taxiways, and roads by restraining the drainage of moisture from the grounds. Wetland sites may be created by beavers, which are highly attractive to all waterfowl.

Seasonal changes: Populations of beaver at the airport are very low. No data has been collected that demonstrates seasonal fluctuation of populations at ORD.

Attractants on the airport: Beaver are common throughout northern Illinois and are found in most waterways. Four main watersheds found on the airport property provide ample beaver habitat, and as surrounding populations expand, they may be forced into ORD to establish new home ranges.

Legal status: Beaver are classified as fur-bearing mammals in Illinois. A Nuisance Wildlife Control Permit from the IDNR is necessary to remove these animals. WS has the needed permit and will conduct control of these animals.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Population Management

1. Non-lethal
   - Leghold traps
   - Cage traps
   - Snares (i.e., foot/leg or body gripping)
   - Suitcase traps
2. Lethal
   - Leghold traps
   - Cage traps
   - Snares (i.e., foot/leg or body gripping)
   - Quick-kill traps (i.e., Conibear-type traps)
   - Shooting

6.5.5 Other mammals: Raccoon, Opossum and Striped skunk

Impact at the airport: Raccoons, opossums, and striped skunks have caused direct impacts on airport operations, as they have foraged along the edge of runways and taxiways posing a threat to aircraft safety. These mammals can pose a direct threat to human health and safety as they are potential carriers of zoonotic diseases (i.e., rabies) and, if infected, could expose humans to these diseases. They often build their dens in or near buildings, causing extensive damage.

Seasonal changes: No data has been collected on population changes throughout the year of these mammals at ORD.

Attractants on the airport to raccoons, opossums, and striped skunks: Usable habitat for these mammals may be found throughout ORD, including the underground network of pipes and basins, antenna/blast fence structures and buildings. These animals are considered scavengers and can forage on plant material, small rodents, insects or garbage. Burrows may be built under structures on the airfield or in buildings.

Legal status: Raccoons, opossums and striped skunks are classified as fur-bearing mammals in Illinois. A Nuisance Wildlife Control Permit from the IDNR is necessary to remove these animals.

Control methods available:

Habitat Modification

- Physical barriers
- Habitat management

Population Management

1. Non-lethal
   - Leghold traps
   - Cage traps
   - Snares (i.e., foot/leg or body gripping)
2. Lethal
   - Leghold traps
   - Quick-kill traps (i.e., Conibear-type traps)
   - Cage traps
   - Snares (i.e., foot/leg, neck, or body gripping)
   - Shooting

6.6 Communications

Title 14 CFR Part 139.337(e)(5)(iv):
Ways to communicate effectively between wildlife control personnel and ATCT in operations at the airport;

All wildlife control personnel should be equipped with radios and have proper training to contact the ATCT. If an immediate hazard exists that might compromise the safety of air traffic at ORD, an AOS should coordinate with the ATCT, and if necessary, detain arriving or departing air traffic until the hazard is eliminated. In extreme cases, the runway may need to be closed temporarily, at the discretion of the AOS or ATCT. In most cases, wildlife control personnel should be given priority when responding to a wildlife hazard on the AOA.

The ATCT provides an ideal vantage from which to view any wildlife movements on the airfield. Although the ATCT cannot be expected to monitor all wildlife hazards on the airfield and still direct air traffic, tower personnel should notify AAO immediately if pilots report hazards or if any such hazards are observed from the tower.

Title 14 CFR Part 139.337(f)(6):
Periodic evaluation and review of the WHMP for-
(i) Effectiveness in dealing with the wildlife hazard on and in the airport's vicinity; and
(ii) Indications that the existence of the wildlife hazard should be reevaluated.

7.1 Overview

The WHMP will be reviewed annually. The Wildlife Hazard Working Group will evaluate the effectiveness of the WHMP at reducing wildlife strikes at ORD and monitor the status of hazard reduction projects, including their completion dates. As referenced in the Section 404 Permit, the WHMP will be updated as necessary to reflect developments of the OMP.

7.2 Meetings

The Wildlife Hazard Working Group will meet at least once per year, or more often as needed, but the group may convene more regularly if situations warrant, as determined by any member of the group.

7.3 Wildlife Strike Database

The AWC will maintain a database of wildlife strikes and populations on or surrounding the airfield. Information from this database will be used to identify trends and to monitor any increases in wildlife hazards on the airfield. If unacceptable increases in wildlife populations are observed, the cause should be determined and the WHMP modified to address the problem. The records should be entered weekly into a computerized database by the AWC. WS has developed the WHMIS program specifically for tracking wildlife control activities at airports and can assist the airport in setting up this computerized record system. WS has coordinated with City operations to integrate information from the WHMIS into the Wildlife Database log. USDA will coordinate and provide data to City Ops from the WHMIS as needed.

7.4 Airport Expansion

Airport expansion plans will be reviewed by the ORD Wildlife Hazard Working Group to ensure that new developments will not inadvertently result in increased wildlife hazards to aircraft operations and will comply with AC # 150/5200-33B, Hazardous Wildlife Attractants on or near Airports (Appendix M). If appropriate, they will submit for review designs with the FAA. See Section 3.2, Construction Activities, of this document for additional information.

7.5 FAA Involvement

FAA Regional Certification Inspectors and personnel from the Great Lakes Regional Office should be invited to make comments on the WHMP and to attend annual meetings on plan modifications

Title 14 CFR Part 139.337(f)(7):
A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to carry out the WHMP required by (d) of this section.

8.1 Overview

Training is essential for those personnel involved in the WHMP. The AWC should ensure that all airport operations personnel that might be working in a wildlife deterrence capacity are trained in the proper selection and application of control methods, including species identification and reporting procedures.

8.2 Standard Training

Wildlife control personnel should receive training in mitigating wildlife hazards at airports, including an overview of the need for wildlife control, techniques used for prey-base reductions, pyrotechnic safety, and wildlife identification. Airport communication and airfield driver training should also be provided to all employees involved in wildlife control operations that may require them to operate on the AOA. Training should be conducted in accordance with Advisory Circular 150/5200-36 (see Appendix C).

8.3 USDA-Wildlife Services Training

The Department of Aviation and WS comply with specific training requirements for personnel involved with implementation of the WHMP. The purpose of the course is to familiarize personnel involved with airport operations in basic bird and mammal identification and dispersal techniques. It includes a brief overview of the laws regulating wildlife control, both state and federal. The course also involves hands-on training using pyrotechnics, techniques used for prey-base reductions, and other deterrent equipment, with an emphasis on safety. This training is provided for all personnel responsible for dispersing wildlife at ORD and is customized to fit the needs of individual recipients or situations. This training is conducted in accordance with Advisory Circular 150/5200-36 (see Appendix C).

Regulatory and Enforcement

Federal Aviation Administration (FAA)
Safety Certification Inspector (Tricia Halpin)
Great Lakes Region
2300 E. Devon Avenue
Des Plaines, IL 60018

Federal Aviation Administration (FAA)
Staff Wildlife Biologist (John Weller)
FAA Airport Safety and Compliance
FAA-AA5-317
800 Independence Ave., SW
Washington, DC 20591
(202) 267-3389

Illinois Dept. of Agriculture
Agricultural Pesticide Applicator Testing
P.O. Box 19281
State Fairgrounds
Springfield, IL 62794

Illinois Dept. of Natural Resources
Nuisance Wildlife Permitting
524 S. 2nd Street
Springfield, IL 62794
Tel. (217) 782-6384

Illinois Dept. of Public Health
Structural Pesticides Applicator Testing
525 W. Jefferson Street
Springfield, IL 62761

U.S. Fish and Wildlife Service
Migratory Bird Permit Office, Region 3
Bishop Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, MN 55111-4056
Tel. (612) 713-5436
Fax (612) 713-5286

U.S. Fish and Wildlife Service
Chicago Field Office
1000 Hart Road, Ste. 180
Barrington, IL 60010
Tel. (847) 381-2253

U.S. Fish and Wildlife Service (Law Enforcement)
10600 Higgins Road, Ste. 200
Rosemont, IL 60018
Tel. (312) 353-0550

Municipal Agencies

Chicago Commission on Animal Care and Control
2741 S. Western Avenue
Chicago, IL
Tel. (312) 744-5000

O'Hare Airport Operations
City Atrium
P.O. Box 66142
Chicago, IL 60666
Tel. (773) 686-2255

Chicago Department of Aviation (CDA) Police
O'Hare Command Center
Building 850
Chicago, IL 60666
Tel. (773)894-5000

Cook County Sheriff's Police
1401 Maybrook Drive
Maywood, IL
Tel. (708) 865-4876

Technical Assistance

Chicago Academy of Sciences
2001 North Clark Street
Chicago, IL 60614
Tel.(312)549-0607

Chicago Poison Control Center
1753 West Congress Parkway
Chicago, IL
Tel. (312) 942-5969

Field Museum of Natural History
Bird Division
Roosevelt Road at Lake Shore Drive
Chicago, IL 60605

Smithsonian Institution- Feather ID Lab
Dr. Carla Dove
Division of Birds
NHB E 610, MRC 116
Washington, DC 20560
Tel. (202)357-2334

Trailside Nature Center
River Forest, IL
(708) 366-6530S

USDA- Wildlife Services
Midway International Airport
5160 63rd St. AMC Bldg.
Chicago, IL 60638
Tel. (773)838-0611
Fax (312)745-1518

USDA- Wildlife Services
Illinois State Office
3430 Constitution Dr.
Springfield IL 62711-9411
Tel. (217)241-6700
Fax (217)241-6702

USDA- Wildlife Services
O'Hare International Airport
AMC Bldg., Rm. 241
Chicago, IL 60666
Tel. (773) 686-6742
FAX (773) 894-2419

Internet Sites of Interest

Federal Aviation Administration (FAA)
http://wildlife-mitigation.tc.faa.gov/public_html/index.html
http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/

Prevention and Control of Wildlife Damage
http://www.ces.ncsu.edu/nreos/wild/wildlife/prevent.htm

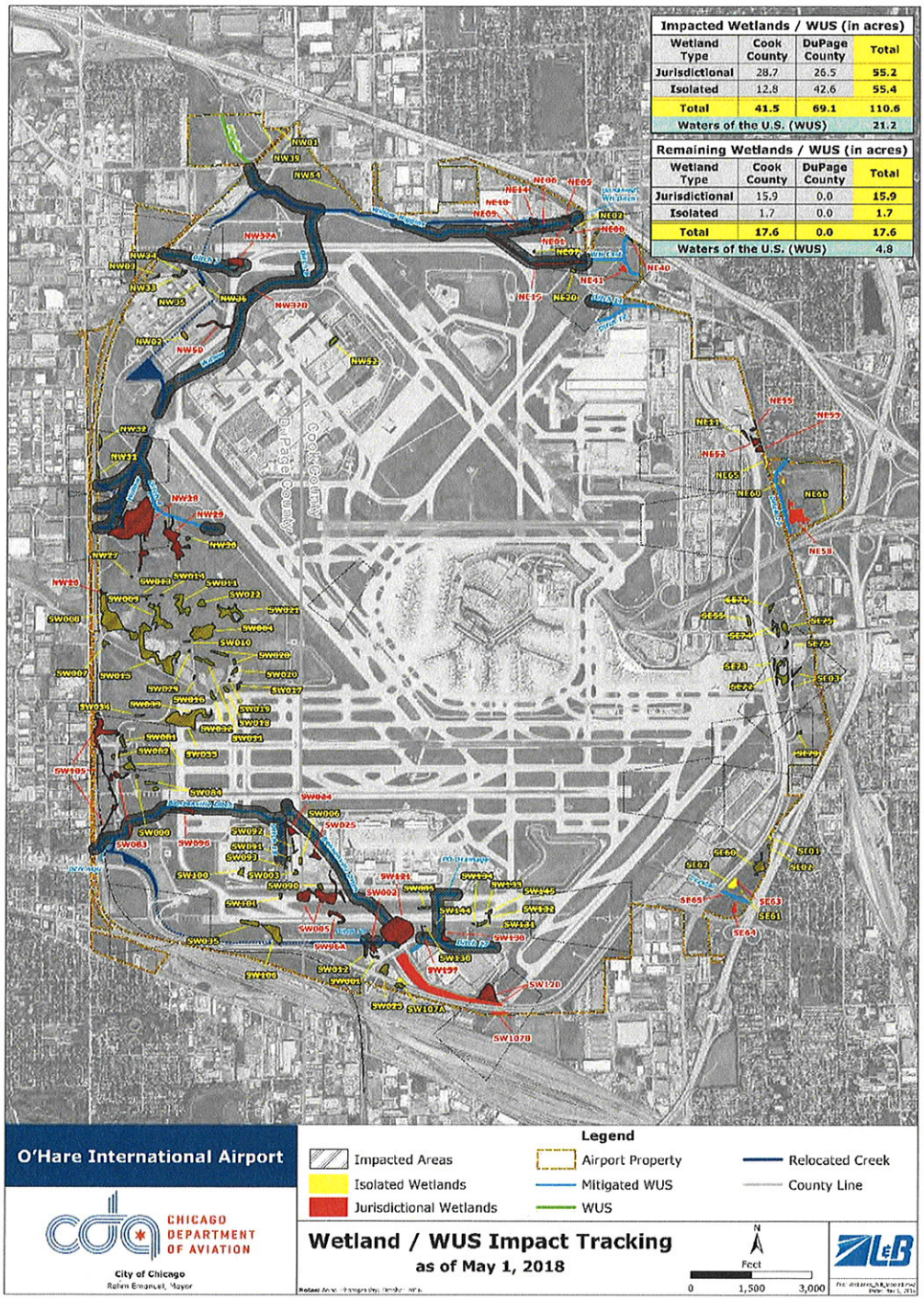
Transport Canada - Wildlife Control Techniques
http://www.tc.gc.ca/aviation/aerodrme/birdstke/manual/index.htm

U.S. Department of Agriculture-Wildlife Services
http://www.aphis.usda.gov/ws/

Literature Cited – Section 10

Dolbeer, R.A. and S.E. Wright 2008. Wildlife strikes to civil aircraft in the United States, 1990-2007. U.S. Department of Transportation, Federal Aviation Administration, Serial Report No. 14 DOT/FAA/AS/00-6(AAS-310). Washington D.C. USA. 56 pages.

Current Wetlands/Waters of the US at O'Hare International Airport – Exhibit 1

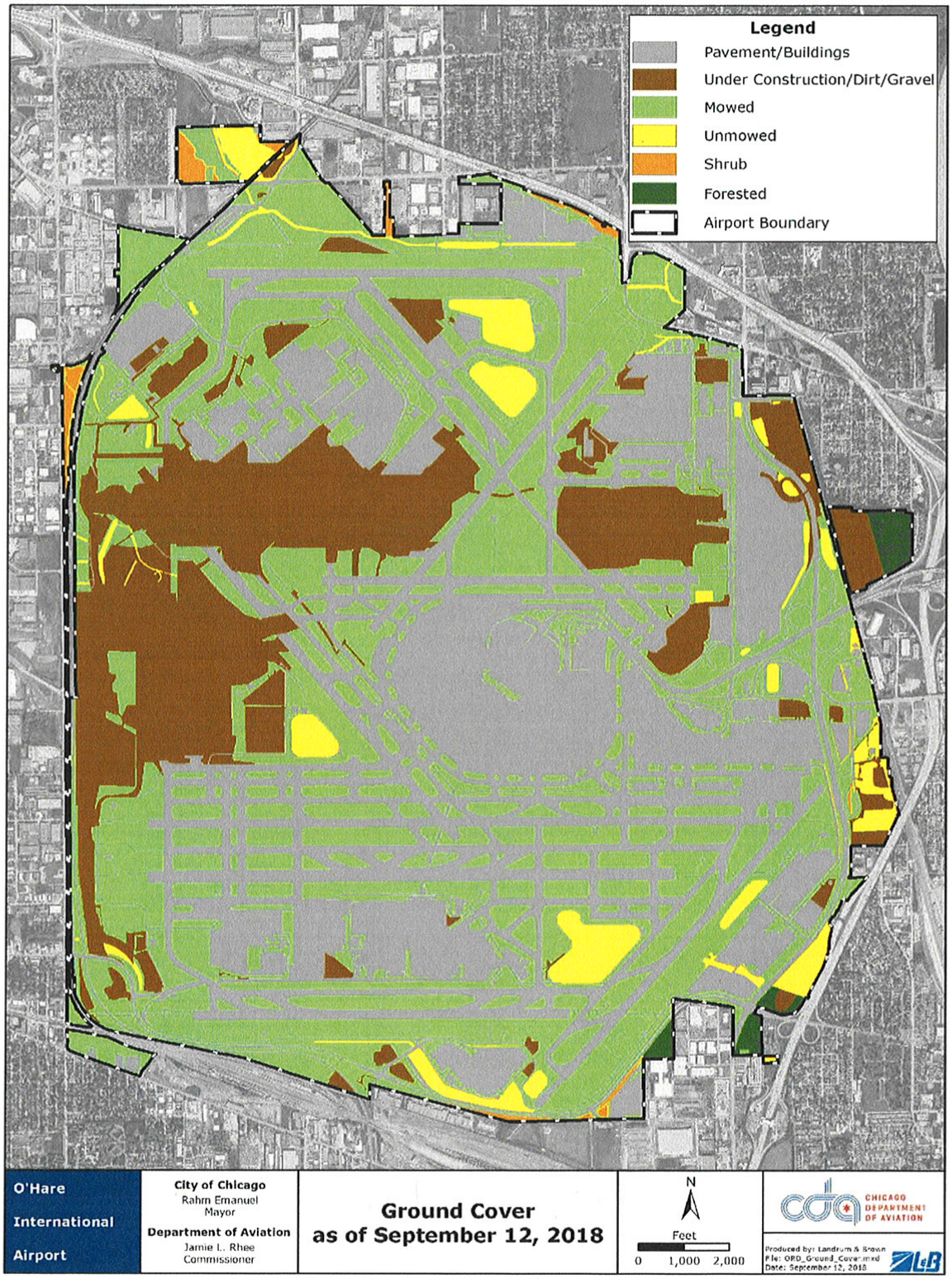


Original Date: December 9, 2004
Revision Date: November 8, 2018

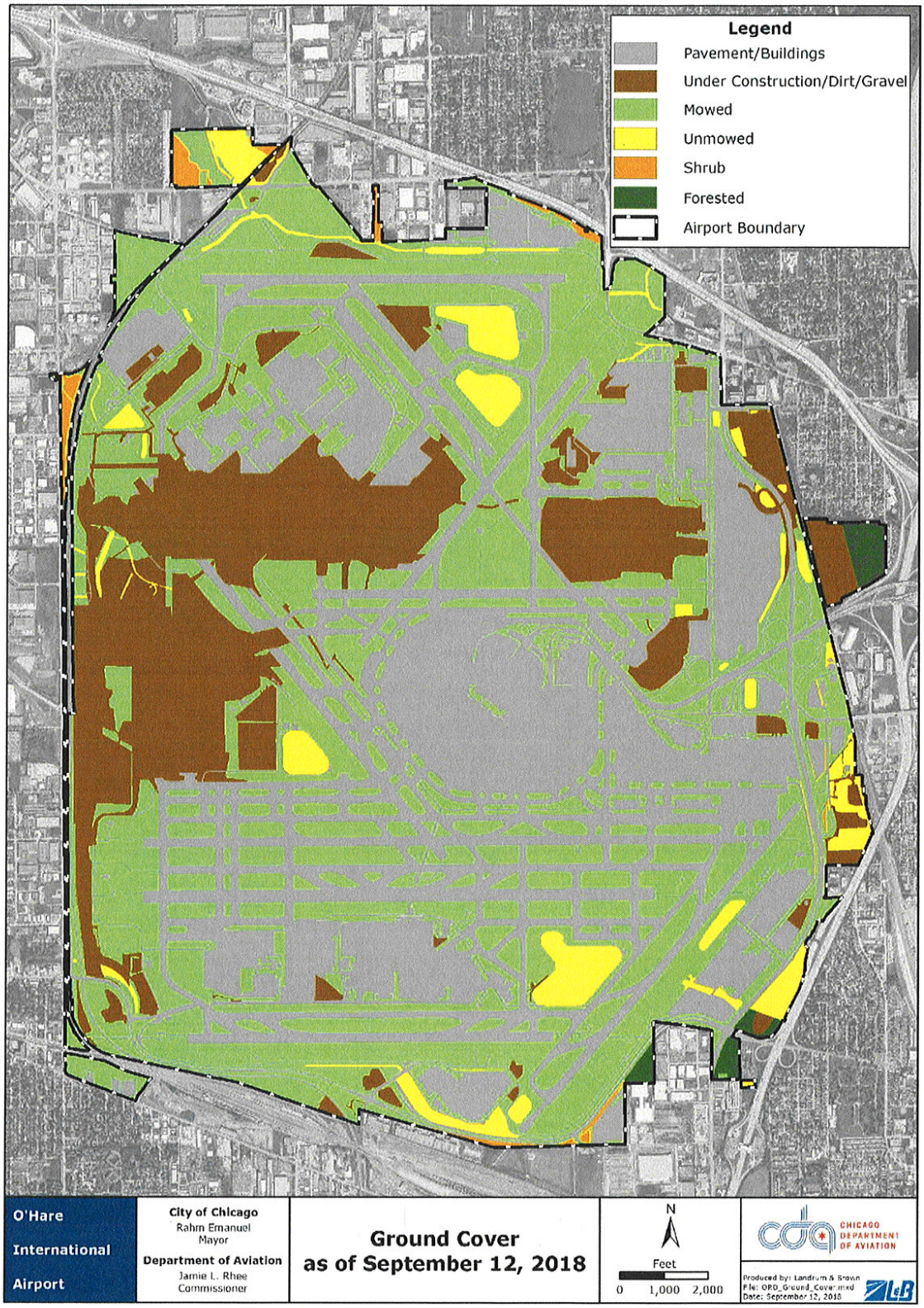
Exhibit 1
Page 1

FAA Approval: Micia Dalpini
FAA Approval Date: 07 NOV 2018

Title 14 Code of Federal Regulations Part 139.337 – Appendix A



Title 14 Code of Federal Regulations Part 139.337 – Appendix A



FAA Cert Alert 97-09 Wildlife Hazard Management Plan Outline – Appendix B

To augment compliance with Title 14 CFR Part 139.337, the FAA issued Certalert No. 97-09 to provide guidance to airports in developing their Wildlife Hazard Management Plans.

Note: Certalerts, Advisory Circulars, and regulations are frequently changed or updated; always verify that the version attached herein is the most current. Contact FAA or Wildlife Services (see directory in Chapter 9) or consult the FAA website for the latest version:

http://wildlife-mitigation.tc.faa.gov/public_html/index.html

Advisory Circular No. 150/5200-36 Current Addition. Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports – Appendix C

This Advisory Circular describes the qualification for wildlife biologists who conduct Wildlife Hazard Assessments for airports under Title 14 CFR Part 139. It also addresses the minimum wildlife hazard management curriculum for the initial and recurrent training of airport personnel involved in implementing a FAA approved Wildlife Hazard Management Plan.

Note: Certalerts, Advisory Circulars, and regulations are frequently changed or updated, always verify that the version attached herein is the most current. Contact FAA or Wildlife Services (see directory in Chapter 9) or consult the FAA website for the latest version:
http://wildlife-mitigation.tc.faa.gov/public_html/index.html

FAA Bird Strike Incident Report, Form 5200-7 – Appendix D

Form Approved OMB NO. 2120-0018

U.S. Department of Transportation
Federal Aviation Administration

BIRD/OTHER WILDLIFE STRIKE REPORT

1. Name of Operator	2. Aircraft Make/Model	3. Engine Make/Model
4. Aircraft Registration	5. Date of Incident ____/____/____ Month Day Year	6. Local Time of Incident ☐ Dawn ☐ Dusk ___ HR ___ MIN ☐ Day ☐ Night ☐ AM ☐ PM
7. Airport Name	8. Runway Used	9. Location if En Route *(Nearest Town/Reference & State)*
10. Height *(AGL)*	11. Speed *(IAS)*	

12. Phase of Flight

- ☐ A. Parked
- ☐ B. Taxi
- ☐ C. Take-off Run
- ☐ D. Climb
- ☐ E. En Route
- ☐ F. Descent
- ☐ G. Approach
- ☐ H. Landing Roll

13. Part(s) of Aircraft Struck or Damaged

	Struck	Damaged		Struck	Damaged
A. Radome	☐	☐	H. Propeller	☐	☐
B. Windshield	☐	☐	I. Wing/Rotor	☐	☐
C. Nose	☐	☐	J. Fuselage	☐	☐
D. Engine No. 1	☐	☐	K. Landing Gear	☐	☐
E. Engine No. 2	☐	☐	L. Tail	☐	☐
F. Engine No. 3	☐	☐	M. Lights	☐	☐
G. Engine No. 4	☐	☐	N. Other:	☐	☐

(Specify, if "N. Other" is checked)

14. Effect on Flight

- ☐ None
- ☐ Aborted Take-Off
- ☐ Precautionary Landing
- ☐ Engines Shut Down
- ☐ Other: *(Specify)*

15. Sky Condition

- ☐ No Cloud
- ☐ Some Cloud
- ☐ Overcast

16. Precipitation

- ☐ Fog
- ☐ Rain
- ☐ Snow
- ☐ None

17. Bird/Other Wildlife Species

18. Number or birds seen and/or struck

Number of Birds	Seen	Struck
1	☐	☐
2-10	☐	☐
11-100	☐	☐
more than 100	☐	☐

19. Size of Bird(s)

- ☐ Small
- ☐ Medium
- ☐ Large

20. Pilot Warned of Birds ☐ Yes ☐ No

21. Remarks *(Describe damage, injuries and other pertinent information)*

DAMAGE / COST INFORMATION

22. Aircraft time out of service:	23. Estimated cost of repairs or replacement *(U.S. $)*:	24. Estimated other cost *(U.S. $) (e.g. loss of revenue, fuel, hotels)*:
____ hours	$	$

Reported by *(Optional)*	Title	Date

Paperwork Reduction Act Statement: The information collected on this form is necessary to allow the Federal Aviation Administration to assess the magnitude and severity of the wildlife-aircraft strike problem in the U.S. The information is used in determining the best management practices for reducing the hazard to aviation safety caused by wildlife-aircraft strikes. We estimate that it will take approximately 5 minutes to complete the form. If you wish to make any comments concerning the accuracy of this burden estimate and any suggestions for reducing this burden, send those comments to the Federal Aviation Administration, Management Staff, ARP-10, 800 Independence Avenue, SW, Washington, DC 20591. The information collected is voluntary. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number associated with this collection is 2120-0045.

FAA Form 5200-7 (3-97) Supersedes Previous Edition ☆ U.S. GPO: 1997-418-084/64203 NSN:0052-00-651-9005

Sustainable Airport Landscaping – Appendix E

{Instruction to Consultants: The Master Specification must only be considered to be general guidelines as it is not prepared for a Specific Project. If the items described in the Master Specification do not match the items actually going to be used in a Specific Project, then the Consultant must add new text or modify the existing text so that the final Specification is fully coordinated and consistent with the Contract Drawings. The Master Specification must not be considered complete. Additions and deletions necessary to make it Project specific are required from the Consultant.

The Consultant may modify the Master Specification Section as required by the scope and nature of the Specific Project. The general format and general statements of the various Sections must remain unchanged. The Consultant must modify and finalize the footer to identify the Specific Project as to name of Project, Project number, and issued for/issue date.}

GENERAL

1.01 SUMMARY

The CDA/O'Hare Modernization Program (OMP) has made sustainable design a major priority. One component of the sustainable design at O'Hare (ORD) includes sustainable landscaping. The key focus of the landscaping design elements is that it is aesthetically pleasing and at the same time, low maintenance, ecologically and financially sustainable yet does not compromise Airport security and aircraft safety.

This Specification supersedes the Chicago Landscape Ordinance (Chapter 17-11). Airport sensitive issues such as aircraft safety, which are not addressed in the Chicago Landscape Ordinance and in some cases contradict aircraft safety concerns, are to be addressed using this Specification Section. These standards are applicable to all ORD property.

CDA/OMP requirements for sustainable landscaping at ORD are based primarily on FAA Advisory Circular No. 150/5200-33 (latest revision) which discusses wildlife issues at or near Airports and the Cleary and Dolbeer document titled "Wildlife Hazard Management at Airports" with additional supporting documentation provided in 1.04 of this Section. This Specification Section is closely related to the sustainability requirements from the sustainable design categories as defined in the Chicago Department of Aviation Sustainable Airport Manual (SAM). These categories include, but may not be limited to, the following sustainable design categories:

Credit 2.1 - Construction Activity Pollution Prevention.

Credit 2.5.1 - Stormwater Design, Quantity Control.

Credit 2.5.2 - Stormwater Design, Quality Control.

Credit 2.6.1 - Landscape & Exterior Design to Reduce Heat Islands, Non-Roof.

Credit 2.6.2 - Landscape & Exterior Design to Reduce Heat Islands, Roof.

Credit 3.3 - Water Efficient Landscaping.

Credit 8.0 - Innovation in Design/Construction.

This Specification applies to all ORD property. All landscaping within ORD property boundaries falls into the following two categories:

Landside – This area includes all public and private roadways and buildings that are not within the Aircraft Operation Area (AOA) which is delineated by the perimeter security fence. This includes but is not limited to the I-190 corridor, Manheim Road, Irving Park Road, York Road, Mt. Prospect Road, Touhy Avenue, Bessie Coleman Drive, Taft Road, Zemke Road and other roadways, private drives that are arterial to these public roads, and all buildings outside the AOA, such as the Post Office, the AMC Buildings, and remote parking areas. Facilities, such as the Airport terminals, that are partially within the AOA are to be considered Airside (see 1.01.D.2) except for the Landside approaches to the terminals and their associated parking structures.

Airside – This encompasses all the areas within the AOA not covered by 1.01.D.1. All buildings and structures within the AOA fall into this category. This includes but is not limited to the terminals, air traffic control towers, cargo facilities, hangar facilities, maintenance facilities and yards, parking lots, and areas adjacent to runways, taxiways, and Airport perimeter areas within the AOA security fence.

Abbreviations

ALP – Airport Layout Plan

AOA – Aircraft Operations Area

CDOT – Chicago Department of Transportation

CDA – Department of Aviation

FAA – Federal Aviation Administration

OMP – O'Hare Modernization Program

ORD – O'Hare International Airport

SAM – Sustainable Airport Manual (latest version)

USDA – United States Department of Agriculture

Definitions

AOA – The AOA includes all areas within the perimeter security fence line as shown on the ALP.

Airside – Airside includes all areas in the AOA.

Landside – Landside includes all areas outside of the AOA (i.e. non-Airside areas). That is all areas outside the perimeter security fence.

1.02 SECTION INCLUDES:

Work under this Section is subject to the requirements of the Contract Documents.

This Section provides the landscaping selection criteria to be applied to the Airport areas as described in 1.01.C. The Chicago Landscape Ordinance (Chapter 17-11) shall be applicable except when superseded by criteria in this Section. CDA/OMP reserves the right to approve or deny any plant species or landscape feature proposed that is not specified herein.

1.03 RELATED WORK:

As specified in the following divisions:

Division 1 - General Requirements

Division 2 – Site Work

Division 2 – Plant Preparation

Division 2 – Exterior Plants

Division 2 – Seeding

Division 2 – Sodding

Division 2 – Top Soil

Division 7 – Green Roof Systems

1.04 REFERENCES:

Cleary, E.C. and R.A. Dolbeer. July 2005. "Wildlife Hazard Management at Airports", FAA and USDA, 2nd ed.

Washburn, B.E. and T.W. Seamans. 2004. "Management of Vegetation to Reduce Wildlife Hazards at Airports." FAA Worldwide Airport Technology Transfer Conference

"Hazardous Wildlife Attractants on or Near Airports." July 27, 2004. FAA Advisory Circular No. 150/5200-33A.

"Airport Landscaping for Noise Control Purposes." January 31, 1978. FAA Advisory Circular No. 150/5320-14.

United States Department of Agriculture (USDA), Natural Resources Conservation Service. Plant Database.

University of Illinois Extension Service.

The Chicago Landscape Ordinance – Applicable Sections or referenced by CDA Landscape Standards.

"List of Native Trees for Use Along Roadsides in Illinois". Illinois Natural History Survey, Center for Biodiversity.

"Trees and Shrubs That Attract Birds". The Morton Arboretum, Lisle Illinois.

Barras, S.C. and T.W. Seamans. 2002. "Habitat Management Approaches for Reducing Wildlife Use at Airports." Proc. 20th Vertebr. Pest Conf. (eds. R.M. Timm and R.H. Schmidt) University of California – Davis, pp. 309-315.

"List of Native Plants for Northeastern Illinois". Conservation@Home Program, The Conservation Foundation, Naperville, Illinois. www.theconservationfoundation.org.

Catalog and Growing Guide, 2005. Prairie Nursery, Westfield, Wisconsin.

Wisconsin Dept. of Transportation. "Standard Specifications for Airport Construction". Specifiers' Guide Phase II, December 22, 1999.

Chicago Department of Transportation, Division of Infrastructure Management. "Roadway Plant List", 5th ed.

CRITERIA

1.05 BASIC REQUIREMENTS:

The three main criteria for sustainable landscaping at ORD for both Airside and Landside areas are:

Minimize Wildlife Hazards – The landscaping criteria at ORD are intended to minimize wildlife hazards with particular emphasis on large birds (e.g. waterfowl, gulls, raptors), small mammals that may attract raptors, and small birds that congregate into large flocks (e.g. blackbirds, starlings). In general, landscape that provides food or shelter to these types of birds and small mammals is to be avoided. A list of plant species that are not to be used at ORD is presented in 2.01B. Note that this list is not inclusive of all unacceptable species. Specific guidelines are as follows:

a. No evergreen trees or shrubs allowed. This includes but is not limited to Junipers (*Juniperus sp.*), Spruces (*Picea sp.*), Pines (*Pinus sp.*), Yews (*Taxus sp.*), and Arborvitae (*Thuja sp.*).

b. Densely branched or densely foliated trees are not allowed. This includes but is not limited to Maples (*Acer sp.*), Linden (*Tilia americana*), and Cypress (*Taxodium sp.*).

c. Trees must be spaced apart at such distances that do not allow their canopies to grow together. The minimum distance between trunk centerlines for trees will be equal to one and a half times the spread/width of the crown of the tree at maturity (i.e. two trees that have a 30' spread at maturity cannot be placed closer than 45' between each trunk centerline). When two different tree species are placed near each other, the tree with the larger canopy width at maturity must be used to calculate the minimum distance.

d. Trees, shrubs, and plants that produce wildlife edible fruit and seeds or provide palatable forage for grazing animals are not

allowed. Non-fruiting or male plants of a given species may be allowed in some cases, subject to approval by the Commissioner.

e. No trees, shrubs, or other woody vegetation is permitted within 600' of the centerline of an active runway or taxiway.

f. No ornamental water features are allowed (e.g. fountains, ponds, pools, etc.).

Increase Landscape Sustainability – In concert with wildlife management, Airport landscaping must be low-maintenance and environmentally sound.

g. Plants that have little or no maintenance requirements are to be used. Plants that minimize or eliminate fertilization, mowing, pest control, and irrigation are to be used whenever possible.

h. Wherever possible, plants native to the Midwest region of the United States are to be used. Exceptions, when noted, are subject to CDA/OMP review for approval.

Safety and Security – All Airport safety and security protocols related to the placement of landscape features must be adhered to in all cases. This may include sight lines for security-sensitive areas (i.e. guard posts) and the line-of-sight for the air traffic control towers and runway approaches.

Plants that will not be allowed for use at ORD include, but are not limited to, the list presented below. The Commissioner reserves the right to approve or reject any proposed species not listed herein.

Table 1.

USDA-WS Illinois Prohibited Airport Plant List			
Common Name	**Scientific Name**	**Comments**	**Source**
Trees and Shrubs			
Fir	*Abies sp.*	Shelter, roosting site, nesting site	6
Maples*	*Acer sp.*	Nesting, roosting site due to dense foliage and branching, *Except Japanese Maple (*Acer palmatum*)	1
Buckeye	*Aesculus sp.*	Dense foliage, also prodigious litter producer (twigs, fruit, leaves)	6
Serviceberry	*Amelanchier sp.*	Fruit	1, 6
Black Chokeberry	*Aronia melanocarpa*	Fruit	6
Common	*Celtis occidentalis*	Fruits, roosting	6
American	*Cladrastis kentukea*	Dense crown, Roosting	6

USDA-WS Illinois Prohibited Airport Plant List			
Common Name	**Scientific Name**	**Comments**	**Source**
Dogwoods*	*Cornus sp.*	Fruit * except Red Twig Dogwood (*Cornus sericea*) with limitations	1, 6
Hawthorns	*Crataegus sp.*	Fruit, shelter	1,6
Oleaster or Olive (Russian, Autumn, etc.)	*Elaeagnus sp.*	Fruit, shelter - aggressive invasive	6
Holly*	*Ilex sp.*	Fruit, shelter *except *Inkberry 'Chamzin' (Nordic®)Ilex glabra;* non-fruiting thin-leaved canopy	2, 6
Junipers*	*Juniperus sp.*	Shelter, nesting site, shelter *Limited exceptions for low-growing forms (see IL Preferred Airport Plants list)	1, 6
Sweetgum	*Liquidambar*	Roosting	6
Honeysuckle	*Lonicera sp.*	Fruit, shelter	6
Apples and Crabapples	*Malus sp.*	Fruit, shelter - 'Spring Snow' variety is sterile but still has roosting concern when mature	1, 6
Mulberry	*Morus sp., Broussonetia papyrifera*	Fruit, shelter	6
Black Gum	*Nyssa sylvatica*	Roosting, Autumn friut	6
Spruces	*Picea sp.*	Shelter, roosting site, nesting site	1, 6
Pines	*Pinus sp.*	Shelter, roosting site, nesting site	1, 6
Cherries*	*Prunus sp.*	Fruit *except Purple Leaf Sand Cherry (*Prunus cistena)* with limitations and *Prunus serrulata* "Mt Fuji or Shirotae" varieties only	1, 6
Pear	*Pyrus sp.*	Fruit, shelter -*Pyrus calleryana* has inedible fruits but serious roosting concern	6
Oaks	*Quercus sp,*	Nesting, roosting site due to dense foliage and branching, Acorns	6
Sumac*	*Rhus sp.*	Fruit *except Grow Low Sumac (Rhus aromatica) with limitations	6
Willow	*Salix* sp.	Roosting	6
Bald Cypress	*Taxodium distichum*	Dense foliage, seeds, shelter for waterfowl	1
Yews*	*Taxus sp.*	Shelter, nesting site *except *Taxus x media*	1, 6

USDA-WS Illinois Prohibited Airport Plant List			
Common Name	**Scientific Name**	**Comments**	**Source**
Arborvitae	*Thuja sp.*	Shelter, nesting site	1
Lindens	*Tilia americana, Tilia*	Seeds, shelter due to dense foliage	1
Blueberry	*Vaccinium sp.*	Fruit	2
Viburnum*	*Viburnum* sp.	Fruit *except Arrowwood Viburnum with limitations	10
Forbs, Grasses, and Other			
Creeping Bent	*Agrostis palustris*	Forage	5
Oats	*Avena sativa*	Seeds, forage	4
Side Oats Grama	*Bouteloua*	Seeds	3, 6
Buffalo Grass	*Buchloe dactyloides*	Forage	5
Sedge*	*Carex* sp.	Seeds, browse *Except Bicknell's Sedge (Prairie Sedge)	
Purple Prairie	*Dalea purpurea*	Seeds, forage	3
Coneflowers	*Echinacea sp.*	Seeds	3, 6
Sunflowers	*Helianthus sp.*	Seeds	3, 6
Rice Cut Grass	*Leersia oryziodes*	Seeds, wetland restoration plant	
Millets	*Panicum ramosum,*	Seeds, forage	4
Virginia Creeper	*Parthenocissus*	Fruit,	6
Switchgrass	*Panicum virgatum*	Seeds	6
Penstemon,	*Penstemon sp.*	Seeds	3, 6
Phragmites, common reed	*Phragmites australis*	Forms dense thickets - very attractive roosting habitat	
Kentucky Blue	*Poa pratensis*	Forage	
Bulrush	*Scirpus sp.*	Seeds, browse	6
Cereal Rye	*Secale cereale*	Seeds; not same as ryegrass (*Lolium sp .*)	4
Bristlegrass or Foxtail Grass.	*Setaria sp*	Prodigious seed producer; attracts mourning doves and song birds	7
Cupplant, Prairie	*Silphium sp.*	Seeds	3, 6
Goldenrods	*Solidago sp.*	Seeds	3
Indiangrass	*Sorghastrum nutans*	Seeds	3, 6
Dropseed	*Sporobolus sp.*	Seeds	3, 6
Wheat	*Triticum sp.*	Seeds	4
Grape	*Vitis sp.*	Friut, forage	6,7

USDA-WS Illinois Prohibited Airport Plant List			
Common Name	**Scientific Name**	**Comments**	**Source**

Sources:

1. "Trees and Shrubs That Attract Birds". Morton Arboretum, Lisle, Illinois
2. Washburn, B.E. and T.W. Seamans. 2004. "Management of Vegetation to Reduce Wildlife Hazards at Airports." FAA Worldwide Airport Technology Transfer Conference
3. Catalog and Growing Guide, 2005. Prairie Nursery, Westfield, Wisconsin
4. "Grasses Attractive to Wildlife". FAA CertAlert No. 98-05, September 1998.
5. Alternate Airfield Vegetation Types and Foraging Preference of Captive Canada Geese. FAA Report May 2008
6. Missouri Botanical Garden, Kemper Center for Home Gardening. http://www.mobot.org/gardeninghelp/plantfinder/Alpha.asp
7. Forest Plants of the Southeast and Their Wildlife Uses, 2005

Turf grasses – Low maintenance, drought resistant turf grasses are to be used in place of traditional lawn/turf grass whenever possible at ORD.

Selection Criteria – The list of acceptable turf grasses presented in the Approved Plant List at the end of this Specification Section was based on the following criteria:

1.1_ Low or Slow Growing – Turf grass species are to grow at a rate that does not require excessive mowing, i.e. more than twice a month during the growing season or no more than six times a year or the mature height of the species does not exceed the recommended mow height (See 2.01C.4.a).

1.2_ Drought Tolerant – Turf grass species are to require no additional irrigation except during establishment. The species must be suitable to Chicago's climate (USDA Zone 5) and precipitation ranges. Kentucky Bluegrass (*Poa pratensis*) varieties are not acceptable.

1.3_ Non-Wildlife Attracting – Turf grass species are to be unattractive to wildlife either due to low palatability of the vegetation (e.g. endophyte toxicity) or through low seed production although the latter can be mitigated through mowing. Clover (*Trifolium sp.*) varieties are not acceptable.

Seed Mixes – Readily available proprietary or other agency-specified seed mixtures are to be used whenever possible. It is recommended that seed mixtures consist of a variety of acceptable turf grass species that promote diversity and thereby minimize susceptibility to disease and to promote a longer growing season by utilizing complimentary cool-season and warm-season grass species where possible. An annual nurse crop may be added to the seed mix to aid establishment of the turf.

Installation – Refer to Division 2 – Seeding, Sodding, or Exterior Plants for further details.

Maintenance – A maintenance plan for turf grasses should be devised and implemented that at a minimum addresses the following maintenance issues:

1.4_ Mowing: All turf grass areas must be maintained at a height of 5 to 8 inches (Source: Cleary, E.C. and R.A. Dolbeer. July 2005. "Wildlife Hazard Management at Airports", FAA and USDA, 2nd ed., Appendix O). This recommended mowing height reduces the attraction of geese, gulls, and crows and at the same time does not promote excessive cover for small mammals that may attract large raptors. In addition, the mowing frequency should be reduced as much as possible to limit the disturbance of insect populations that may attract wildlife in the mowed areas.

1.5_ Irrigation: No additional irrigation is to be provided beyond what is required for initial establishment.

1.6_ Fertilization: Beyond initial establishment, fertilizer should be used sparingly on native turf grasses and in some cases eliminated all together as it is detrimental to some species and also because it exacerbates weed problems. Periodic fertilization for native, low-maintenance turf should only occur every other year and at half the recommended application rate for typical commercial lawn fertilizers. The application rates must not exceed 3 pounds of nitrogen (N) per 1000 square feet per year. Depending on the turf species, this rate may be as low as 1 pound N per 1000 square feet per year.

2. Landside Landscaping Criteria

Plant Selection – Landside plant selection criteria were based on the basic requirements as outlined in 2.01. To obtain the list of recommended plants (including trees, shrubs, vines, grasses, sedges, rushes, and forbs), screening criteria were applied to the Conservation Foundation's (Naperville, Illinois) "List of Native Plants for Northeastern Illinois". Two screening criteria were applied to the list: 1) plants that do not attract birds and 2) plants that tolerate dry soil conditions. This plant information was cross-checked with the USDA Natural Resource Conservation Service plant database and with local nursery information (Prairie Nursery, Westfield, Wisconsin). Where there was conflicting information, the plant was removed from the list. The list of plants is not all-inclusive and other plants may be proposed subject to approval by the Commissioner. The recommended plant list is presented at the end of this Specification Section.

Landside Landscape Uses – Areas where aesthetics will play a larger role such as the terminals, roadway approaches to the Airport, landside normally-occupied buildings/facilities, and other areas of high visibility to the public must be designed using low-maintenance plants where possible. Examples of these uses include parking lot islands, roadway medians and/or roadsides, planting beds, large planter containers, building outdoor courtyards or common areas. Some allowances may be made for the use of annuals where appropriate (e.g. hanging planters, small containers, etc.) and subject to approval by the Commissioner.

3. Airside Landscaping Criteria

Plant Selection – Airside plant selection criteria were similar to Landside criteria (Part 2.02) with the following exceptions:

General – In addition to screening out bird-attracting plants in the Conservation Foundation's "List of Native Plants for Northeastern Illinois", mammal-attracting species are also excluded from airside plantings. The species that did not meet these criteria are *Aster sp.* and *Ratibida pinnata.*

Trees – No trees of any kind are to be used anywhere within the AOA (Airside).

Shrubs – The basic landscaping criteria as described in 2.01 apply for selection of acceptable shrub species. In addition:

1.1_ Mass plantings of shrubs or hedge rows are not allowed. The tree spacing criteria provided in 2.01A.1.c are to be used when spacing shrubs.

1.2_ Shrubs may be used only as ornamental specimen plants at any normally occupied airside building site or parking lot. Shrubs are not to be placed in open areas of the airfield.

1.3_ Shrubs must be maintained at a height no greater than 6'. Shrubs that mature at a height less than or equal to 6' are preferable to reduce maintenance.

Forbs and Grasses – Acceptable species as indicated in 2.01C (for grasses) and 2.02 (for forbs with the exception of *Aster sp.* and *Ratibida pinnata* as explained in 2.03A.1).

1.4_ Forbs and ornamental grasses are only to be used in areas as described in 2.03B and are prohibited within 600' of an active runway or taxiway (see 2.01A.1.e).

Airside Landscape Uses –

Airfield Turf Areas – Areas of the airfield that are within 600' of any active runway or taxiway (see also 2.01A.1.e) are to be planted only with turf grasses as described in 2.01C. Mowing heights and frequencies are to be strictly enforced within these areas.

Green Roofs – Green roof plant selection is to follow the guidelines specified in this Section and Division 7 – Green Roof Systems. Green roof species will typically include *Sedum sp.* (Stonecrop) as shown in the Approved Plant List.

Ornamental Airside Landscaping – Areas where aesthetics are a higher priority, which include terminals, normally-occupied airside buildings/facilities, and the like, should include plants as indicated in 2.04. Examples of these uses include parking lot islands, roadway medians and/or roadsides, planting beds, large planter containers, building outdoor courtyards or common areas.

4. Approved Plant List

Plant species approved for use at ORD are summarized in the attached list which includes additional plant information such as physical characteristics and planting requirements. Substitutions or additions to this list are subject to approval by the Commissioner.

5. Other Landscape Elements

Non-living (non-vegetation) landscape elements (hardscapes) that are acceptable for use at ORD are listed below. Any additions or substitutions must be approved by the Commissioner and meet the basic criteria for Airport landscaping:

Minimize Wildlife Hazards – Landscape elements must not provide nesting or roosting habitat for wildlife. When necessary, use bird wire, porcupine wire, or other physical means to deter wildlife from these structures.

Increase Sustainability – Where possible, the use of recycled, salvaged, renewable, and/or locally available materials are to be used. Refer to SAM for opportunities to increase ORD sustainability.

Maintain Safety and Security – Landscape features must not interfere with aircraft operations nor create security issues. Where possible, the use of landscape elements is encouraged to aid in safety and security (e.g. planter boxes for traffic protection/deterrents).

Acceptable landscape elements for use at ORD include but are not limited to the following:

Landscaped earthen berms or terraced flower beds.

Raised planters, planter boxes, and containers.

Hanging baskets.

Free-standing trellises less than six feet above grade.

Decorative stones or pavers.

Benches and seating areas.

Vine-covered retaining or free-standing walls less than four feet above grade.

Ornamental fences.

EXECUTION – NOT USED

O'Hare International Airport Approved Plant List

The following is a list of plants that are approved for use at O'Hare International Airport:
* Additions and substitutions are subject to CDA/OMP approval.

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Trees - Not for Airside Use, Regularly Maintained Ornamental Plantings				
Japanese Maple	*Acer palmatum*	6' - 25'	Many varieties	10
Birch	*Betula sp.*	25' - 70'	Best in moist soil conditions but tolerates some dryness	10
American Hornbeam, Bluebeech, Musclewood	*Carpinus caroliniana*	25' x 25'	Best in moist soil conditions but tolerates some dryness	2, 4, 9
Northern Catalpa	*Catalpa speciosa*	40' - 70' x 20' - 50'	Showy flowers and fruit	10
Eastern Redbud, Redbud	*Cercis canadensis*	20' x 20'	Generally unused by wildlife; attracts butterflies	4, 9, 10
American Smoke Tree	*Cotinus obovatus*	20'-30' x 20'-30'	6-10" yellowish-green flower clusters which bloom in June, best fall color of native American trees and shrubs	10
Gingko, Maidenhair Tree	*Ginkgo biloba*	60' x 40'	Salt and air pollution tolerant; female (fruit-bearing) plants not recommended; e.g. Magyar, Princeton Sentry, Autumn Gold, Emperor Ginkgo	4
Honey Locust	*Gleditsia triacanthos var. inermis*	50' x 35'	Must be non-fruit/seed bearing; e.g. Shademaster, Imperial	2
Kentucky Coffee Tree	*Gymnocladus dioicus*	100' x 50'	Must be non-fruit/seed bearing. Ensure that only male trees are planted.	2, 4, 9
Seven Son Flower	*Heptacodium miconioides*	20' x 10'	Flowers attract butterflies	10
Bean Tree, Vossii Golden Chain	*Laburnum x wateri* Vossii	15' to 30'	Can be trained as a small tree; May require pruning/thinning to reduce roosting potential; All parts considered poisonous	10
Cucumber Tree	*Magnolia acuminata*	40'-70' x 20'-30'	Showy flowers, fragrant, good fall color	10
Dawn Redwood	*Metasequoia glyptostrobo*	70'-700' x 15'-25'	Fast growing, deciduous	10
American Hophornbeam	*Ostrya virginiana*	35' x 25'	Low fruit/seed abundance, medium drought tolerance	2, 4, 9

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
London Plane Tree	*Platanus* x *acerifolia*	75'-100' x 65'-75'	Very large tree when mature: has some potential for roosting, mature trees may require thinning; use as feature tree, not planted in groups	10
Siouxland Cottonwood	*Populus deltoides 'Siouxland'*	50'-80' x 35'-60'	Fast growing	10
Quaking Aspen	*Populus tremuloides*	20'-50' x 10'-30'	Fast growing, better suited to cool climate	10
Mt. Fuji Cherry, Shirotae	*Prunus serrulata* "Shirotae or Mt. Fuji"	15'-20' x 15'-25'	Produces no fruit; Horizontal spreading growth form reduces roosting potential	10
Chicago Blues Black Locust	*Robinia pseudoacacia*	80' x 40'	Must be non-fruit/seed bearing	2, 4
Palibin Lilac	*Syringa meyeri 'Palibin'*	4' - 8'	Attracts hummingbirds and butterflies, not to be used as a hedge	
Japanese Tree Lilac	*Syringa reticulata*	30' x 25'	Adaptable to urban uses; attracts butterflies; e.g. Ivory Silk, Summer Snow	4, 10
Miss Kim Lilac	*Syringa patula 'Miss Kim'*	4'-9' x 5'-7'	Attracts hummingbirds and butterflies, not to be used as a hedge	
Chinese Tree Lilac	*Syringa pekinensis*	20' x 15'	Adaptable to urban uses; e.g. China Snow, Summer Charm, Beijing Gold	2, 4
Lilac	*Syringa vulgaris*	12'-16' x 8'-12'	Attracts hummingbirds and butterflies, not to be used as a hedge	
American Elm	*Ulmus americana*	40-60' x 20-40'	Dutch elm disease resistant; tolerant of urban conditions; susceptible to Asian Longhorn Beetle (ALB); e.g. Princeton or Valley Forge	4, 5, 9, 10
Smooth Leaf Elm, European Field El	*Ulmus carpinifolia*	75' x 45'	Dutch elm disease resistant: tolerant of urban conditions; susceptible to Asian Longhorn Beetle (ALB); e.g. Accolade, Cathedral, Commendation, Danada Charm, Discovery, New Horizon, Patriot, Triumph, Vanguard	4, 5, 9

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Shrubs - Not for Airside Use, Regularly Maintained Ornamental Plantings				
Boxwood	*Buxus sp.*	Variable	Low growing varieties used in regularly maintained ornamental plantings; e.g. Green Velvet, Green Gem, Green Mound, Green Mountain	10
New Jersey Tea	*Ceanothus americanus*	3' x 5'	Used in regularly maintained ornamental plantings	10
Buttonbush	*Cephalanthus occidentalis*	5'-12' x 4'-8'	Attracts butterflies	10
Red Twig Dogwood	*Cornus sericea*		Pruned below 4 feet, remove fruits (if any), and must be used only in regularly maintained ornamental plantings	10
Smoketree	*Cotinus coggygria*	4' - 15'	Many different varieties	10
Dwarf Bush Honeysuckle	*Diervilla lonicera*	3' x 3'	Must be used only in regularly maintained ornamental plantings	10
Forsythia	*Forsythia x intermedia*	Variable	Low growing varieties used in regularly maintained ornamental plantings; e.g. Golden Peep	10
Dwarf Fothergilla	*Fothergilla gardenii*	1.5' - 3'	Several dwarf varieties availalble and preferred; e.g. Blue Mist, Beaver Creek	10
Kalm St. John'swort	*Hypericum kalmianum*	2'-3'	Evergreen, showy yellow flowers	10
Hydrangea	*Hydrangea sp.*	5' x 4'	e.g. Oakleaf, Annabelle, Snow Queen variety is more winter hardy	4, 5
Inkberry	*Ilex glabra (non-fruiting)*	4' x 4'	Male varieties only; evergreen but thin-leaved canopy (not shelter producing); e.g. Chamzin, Nordic	2, 10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Chinese Juniper	*Juniperus chinensis*	Variable	Tree varieties prohibited; Accent and specimen planting recommended, no grouped or hedge plantings; May require pruning to thin or reduce height; dwarf low growing forms preferred, e.g. Bakaurea, San Jose, Shimpaku; **Sargentii not recommended**	10
Creeping Juniper	*Juniperus horizontalis*	3"- 12" x 2' - 10'	Low growing species; Limited roosting and berry potentental due to size	10
Savin Juniper	*Juniperus sabina*	Variable under 3'	Low growing species; Limited roosting and berry potentental due to size; e.g. Arcadia, Broadmoor, Buffalo, Mini Arcade, Monard	10
Singleseed Juniper	*Juniperus squamata*	Variable	Accent and specimen planting recommended, no grouped or hedge plantings; Low growing varieties used in regularly maintained ornamental plantings; e.g. Blue Carpet, Blue Star	10
Mountain Laurel	*Kalmia latifolia*	6' x 4'		2
Ninebark	*Physocarpus opulifolius*	8'x6'	Decidious shrub, many varieties	10
Bush Cinquefoil	*Potentilla fruticosa*	3' x 3'	Several varieties; long bloom time; attracts butterflies	4, 10
Purple Leaf Sand Cherry	*Prunus x cistena*		Pruned below 3 feet used only in a regularly maintained ornamental plantings	10
Pink Azalea	*Rhododendron periclymenoides*	6' x 6' or more	Requires organic soil, attracts hummingbirds and butterflies	2, 10
Grow Low Sumac var.	*Rhus aromatica*	2'x8'	Must be monitored for any fruit production and only when used in a regularly maintained ornamental plantings	10
Alpine Current	*Ribes alpinum*	3'- 6'	Dioecious (most commercially availalbe are male clones), Birds show limited interest in berries, Avoid creating hedges	10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Rugosa Rose	*Rosa rugosa*	4' - 6'	Can spread by suckering to form dense thickets, limited interest by birds for seeds	10
Arctic Willow	*Salix purpurea*	5' x 5'	Attracts butterflies	10
Spirea	*Spiraea sp.*	Variable	Attracts butterflies; Low growing varieties used in regularly maintained ornamental plantings; e.g. Tor, Snowmound	10
Yew, Densiformis variety	*Taxus x media* Densiformis	4' x 7'	Only when used in regularly maintained ornamental plantings	10
Arrrowwood Viburnum*	*Viburnum dentatum*	10' x 10'	Viburnum produces attractive spring flowers but flowers must be removed before producing fruits. Plants must be periodically thinned and are only to be used in regularly maintained ornamental plantings. *Other *Viburnum sp.* prohibited.	10
Weigela	*Weigela x florida*	2' to 10'	Attracts hummingbird and butterflies; preference given to low growing varities used in regularly maintained ornamental plantings.	10
Vines - Not for Airside Use, Regularly Maintained Ornamental Plantings				
Trumpet Vine	*Campsis radicans*	25' - 40'	Agressive form colonies	10
Western White Clematis	*Clematis ligusticifolia*	up to 20'	Western US native; climbing vine	2
Boston Ivy	*Parthenocissus tricuspidata*	30' - 50'	Deciduous,	10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Forbs - Not for Airside Use, Regularly Maintained Ornamental Plantings				
Yarrow	*Achillea sp.*	1' - 4'	Many species; Attracts butterflies;	10
Ornamental Onions	*Allium* var.		Showy flowers	10
Milkweed	*Asclepias sp.*	3' x 3'	Many species; Attracts butterflies	1, 2, 3, 10
Sky Blue Aster	*Aster azureus*	2' to 3'	Partial shade tolerance	1, 2, 3
Smooth Blue Aster	*Aster laevis*	2' to 4'		1, 2, 3
Side-Flower Aster, Calico Aster	*Aster lateriflorus*	2' to 3'	Shade tolerant	1, 2, 3
New England Aster	*Aster novae-angliae*	3' to 6'		1, 2, 3
False Indigo	*Baptisia var.*	1.5' - 5'	Attracts butterflies	10
Rattlesnake Master	*Eryngium yuccifolium*	4' - 5'		10
Flowering Spurge	*Euphorbia corollata*	2' to 4'		1, 2, 3
Blanket Flower, Gaillardia	*Gaillardia* sp.	2' x 2'	Native; low seed production (USDA), attracts butterflies	2, 10
Yellow Gentain	*Gentiana flavida*	6" to 1'		1, 2, 3, 10
Geranium	*Gernium var.*	1' - 2.5'		
False Sunflower, Oxeye Sunflower	*Heliopsis helianthoides*	3' - 6'	Attracts butterflies	10
Daylily	*Hemerocallis sp.*	1.5' to 5'	Attracts butterflies	10
Prairie Alum Root	*Heuchera richardsonii*	2' x 2'	Attractive foliage	1, 2, 3
Stonecrops, Sedum	*Hylotelephium sp.*	1.5' to 2'	Autumn Joy; Attracts butterflies; Sometimes considered *Sedum sp.;*	10
Iris	*Iris sp.*	1' to 4'	Many species and varieties available	10
Blazingstar, Gayfeather	*Liatris sp.*	1.5' to 4'	Attracts butterflies and hummingbirds; minimal interest by songbirds in seed heads; susceptible to forage	10, 11
Virginia Bluebells	*Mertensia virginica*	1.5'-2'		10
Beebalm	*Monarda var.*	1'-4'	Attracts butterflies and hummingbirds	10
Daffodils	*Narcissus sp.*	0.5' - 2'	Many varieties	10
Catmint	*Nepeta var.*	1'-3'	Attracts butterflies	10
Russian Sage	*Perovskia var.*	1'-5'		10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Wild Quinine	*Parthenium integrifolium*	3' to 5'	Disease-, pest-resistant	1, 2, 3
Wood Betony, Canadian Lousewort	*Pedicularis canadensis*	12" to 18"	Partial shade tolerance	1, 2
Foxglove, Beardtongue, Penstemon	*Pensteman sp.*	1' to 5'	Attractive to butterflies nd himmingbirds	10
Woodland Phlox	*Phlox divaricata*	1' to 2'	Partial shade to shade, Attracts butterflies	1, 2, 3, 10
Prairie Phlox	*Phlox pilosa*	12" to 18"	Attracts butterflies and hummingbirds	1, 2, 3, 10
Jacob's Ladder	*Polemonium reptans*	1' to 2'	Shade tolerant	1, 2, 3
Yellow Coneflower; Gray-Headed C	*Ratibida pinnata*	3' to 6'	Attracts butterflies	1, 2, 3, 10
Black-eyed Susan	*Rudbeckia sp.*	1' to 3'	Attracts butterflies	10
Salvia	*Salvia var.*	.5' - 4'		10
False Solomon's Seal, Solomon's Ph	*Smilacina racemosa*	18" to 36"	Partial shade to shade	1, 2, 3
Ohio Spiderwort	*Tradescantia ohiensis*	2' to 4'	Partial shade tolerant	1, 2, 3
Trillium	*Trillium grandiflorum*	12" to 18"	Partial shade to shade	1, 2, 3
Hoary Vervain	*Verbena stricta*	2' to 4'	Attracts butterflies	1, 2, 3, 10
Speedwell	*Veronica var.*	.5' - 4'	Attracts butterflies and hummingbirds	10
Culver's Root	*Veronicastrum virginicum*	3' to 6'	Shade tolerant, attracts butterflies	1, 2, 3, 10
Heart-Leaf Alexander	*Zizia aptera*	1' to 3'	Shade tolerant	1, 2, 3
Golden Alexander	*Zizia aurea*	1' to 3'	Full sun to part shade, Attracts butterflies	10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Green Roof Plants (Sedums)				
Goldmoss Stonecrop	*Sedum acre*	3" x 12"		
Aurcum	*Sedum acre*	3" x 10"		
Aizoon Stonecrop	*Sedum aizoon 'Euphorbiodes'*	15" x 15"		
White Stonecrop	*Sedum album cultivars*	4" x 18"		
Bertram Anderson Sedum	*Sedum cauticola*	4" x 12"		
Weihenstephaner Gold	*Sedum floriferum*	4" x 10"		
Orange Stonecrop	*Sedum kamtschaticum*	5" x 12"	Butterfly attractant	10
Sedum	*Sedum matrona*	2' x 2'	Bee/Butterfly attractant	10
Sedum	*Sedum middendorfianum*	5" x 12"		
Spruce Stonecrop, Jenny's Stonecrop	*Sedum reflexum*	8" x 15"		
Angelina var.	*Sedum rupestre*	6" x 12"-24"		
Blue Spruce var.	*Sedum rupestre*	8" x 24"		
Tasteless Stonecrop	*Sedum sexangulare*	4" x 8"		
Woody Stonecrop	*Sedum sichotense*	6" x 12"		
October Daphne	*Sedum sieboldii*	8" x 12"		
Summer Glory	*Sedum spurium*	6" x 10"		
Coccineum	*Sedum spurium*	(4"-6") x 10"		
Bronze Carpet	*Sedum spurium*	6" x 12"	Attracts butterflies	10
John Creech	*Sedum spurium*	6" x 10"		
Voodoo	*Sedum spurium*	6" x 18"	Attracts butterflies	10
Two-Row Stonecrop, Dragon's Bloo	*Sedum spurium cultivars*	4" x 8"		
Sedum	*Sedum stefco*	(4"-6") x 10"		

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Sedum	*Sedum tatarinowii*	(12"-18") x 12"		
Rosy Glow	*Sedum X*	8"x 12"	Attracts butterflies	10
Fame Flower, Rockpink	*Talinum calycinum*	12" x 7"	pink to red, 5-8 petaled flowers in cymes atop leafless stems growing to 8" tall	10
Ornamental Grasses and Sedges - Not for Airside Use, Regularly Maintained Ornamental Plantings as Specimens Only				
Big Bluestem	*Andropogon gerardii*	4'-6' x 2'-3'		10
Broomsedge Bluestem	*Andropogon virginicus*	18" to 36"	Very drought tolerant; keep plants adequately spaced to prevent cover for wildlife (mammals); best as specimen plant	4
Feather Reed Grass	*Calamagrostis x acutiflora*	3' to 5'	Sterile seeds; Accent and specimen planting recommended, not grouped or naturalized; Limited roosting potential; e.g. Karl Foerster	10
Bicknell's Sedge (Prairie Sedge)	*Carex bicknellii*	12" to 24"	Fine leaves; tolerates sandy soils and partial shade	2, 10
Northern Sea Oats	*Chasmanthium latifolium*	2'-5' x 1'-2.5'		10
Purple Love Grass	*Eragrostis spectabilis*	1'-2'		10
Blue Fescue	*Festuca glauca*	6" to 12"	Ornamental fescue groundcover	10
Junegrass	*Koeleria macrantha*	18" to 24"	Used for soil stabilization; may provide forage for wildlife during spring and fall if unmowed	6, 10
Maiden Grass, Miscanthus	*Miscanthus x sinensis*	3' - 8'	Preference given to lower growing varities; Accent and specimen planting recommended, not grouped or naturalized; considered invasive in some areas	10

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
Fountain Grass	*Pennisetum alopecuroides*	1.5' - 5'	Preference given to lower growing varities; Accent and specimen planting recommended, not grouped or naturalized; Limited roosting potential and seed interest; e.g. Little Bunny, Little Honey, Piglet	
Little Blue Stem	*Schizachyrium scoparium*	2'-4' x 1.5'-2'		10
Turf Grasses (Mature Height or Mow Height 5" to 8")				
Inland Saltgrass	*Distichlis spicata*	8"		2, 6
Fescues	*Festuca sp.*	up to 8" to 12"	Many acceptable varieties	5, 6
Tall Fescue (2nd Millennium, Bonsa	*Festuca arundinacea*		Endophyte infection makes this species unattractive to wildlife; target endopypte infection level of >70%; many varieties (Kentucky 31 may be used only at the bottom of Detention Basins or other areas subject to water inundation and as approved; avoid Illinois 96 cultivars).	6, 7
Red Fescue	*Festuca rubra*			2, 6, 10
Creeping Red Fescue	*Festuca rubra sub. trichophylla*			2, 6
Spreading Fescue	*Festuca rubra sub. rubra*			2, 6
Chewings Fescue	*Festuca rubra sub. commutata*			2, 6
Sheep Fescue	*Festuca ovina*			2, 6
Hard Fescue	*Festuca ovina var. duriuscula*		Sometimes called F. longifolia	2, 6

USDA-WS Illinois Preferred Airport Plant List

Common Name	Scientific Name	Size	Comments	Source
"No-Mow" Seed Mix (Prairie Nurser	*Festuca seed mix*	4" to 6"	"No Mow" of Prairie Nurscry contains propriectary blend of SR3100 Hard Fescue, Scaldis Hard Fescue, Dawson Red Fescue, Creeping Red Fescue, SR5100 Chewings Fescue, Sheep Fescue. Requires no mowing.	3
Junegrass (Prairie)	*Koeleria macrantha*	18" to 24"	Tolerates dry, gravelly soil, Minimum mow height 5"; used for soil stabilization; may provide forage for wildlife during spring and fall.	6, 10
Annual Ryegrass, Italian Ryegrass	*Lolium multiflorum*	24" to 36"	Use for temporary seeding only: quick germination needed in active work areas between 14 and 365 days; germination in 14 days.	
Perennial Ryegrass	*Lolium perenne*	up to 18"	Use for temporary seeding only: quick germination needed in active work areas between 14 and 365 days numerous varieties with high endophyte levels; germination in 14 days.	5, 8. 10

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Cert-Alert 04-09 Relationship Between FAA & WS – Appendix F

This Certalert clarifies the roles of, and relationship between the Federal Aviation Administration (FAA) and the United States Department of Agriculture /Animal and Plant Health Inspection Service/Wildlife Services (WS) with regards to wildlife hazards on or near airports.

Note: Certalerts, Advisory Circulars, and regulations are frequently changed or updated; always verify that the version attached herein is the most current. Contact FAA or Wildlife Services (see directory in Chapter 9) or consult the FAA website for the latest version:
http://wildlife-mitigation.tc.faa.gov/public_html/index.html

Summary of Studies on Vegetation Management for North American Airfields – Appendix G

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Habitat management is a critical element in any wildlife hazard management program at an airport. Non-woody or herbaceous vegetation accounts for the majority of wildlife habitat at most airports. If this vegetation is not managed, the site will often become overgrown and attractive to wildlife that are hazardous to aircraft (Barras et al. 2000, Cleary et al. 2003).

Vegetation management on many USA airports consists of mowing the vegetation to some set height. The Federal Aviation Administration has not specified the height that vegetation is to be maintained away from the movement area. One method often suggested for reducing bird numbers on airports is to maintain vegetation at 6-10 inches, as opposed to standard mowing practices that maintain vegetation at 2-4 inches (Transport Canada 1994, US Department of Agriculture 1998, Civil Aviation Authority 2002). Vegetation 6-10 inches high is thought to interfere with visibility and ground movements of flocking birds such as European starlings and gulls (Solman 1966, Blokpoel 1976). However, the scientific support for this height is based on studies done in Great Britain (Brough 1971, Mead and Carter 1973, and Brough and Bridgman 1980), in which bird species of concern in North America were not present. Many other sources recommend tall vegetation but do not present data to support the recommended height (Wright 1968, Creswell 1988, Blokpoel 1976, Burger 1983, Solman 1970, 1973, 1976, Transport Canada 1994, Dekker and van der Zee 1996, US Department of Agriculture 1998). In Great Britain, long-grass management involves a rigorous regime of mowing within a 2-inch window along with thatch and weed removal and the use of fertilizers to maintain an erect, dense stand of grass (Civil Aviation Authority 2002). North American airfields generally do not have similar vegetation management plans. Therefore, observations drawn from long-grass management in Great Britain must be applied cautiously in North America.

Previous studies on tall vegetation management at airports in the United States have produced conflicting results (Buckley and McCarthy 1994, Seamans et al. 1999, Barras et al. 2000). Further, other published views that may not be scientifically defensible (Barras and Seamans 2002) have indicated that "tall vegetation" should not be on airfields (van Tets 1969, Solman 1970). Blokpoel (1976) indicated that vegetation height management should be dependent on the bird species using the airfield.

Mowing has been shown to at least temporarily reduce small mammal populations (Wilkins and Schmidly 1979, Lemen and Clausen 1984, Grimm and Yahner 1988, Edge et al. 1995). Fewer small mammals may reduce the attractiveness of the area to birds of prey (e.g. red-tailed hawks, great-horned owls) and predatory mammals (e.g. coyotes) that pose hazards to aircraft (Phelan and Robertson 1977, Baker and Brooks 1981a, Dolbeer et al. 2000). Should a small mammal population remain after mowing, Airfield Vegetation Management Appendix O 338 predators will be attracted to the area because of improved opportunity to capture prey due to the removal of protective

overhead vegetation (Wakeley 1978, Baker and Brooks 1981b, Bechard 1982, Preston 1990, Sheffield et al. 2001, Fitzpatrick 2003). It is also likely that small mammals in unmowed areas will exploit adjacent mowed areas (Cleary et al. 2003) due to a lack of competition in mowed areas. Therefore, despite the decrease in small mammals caused by mowing, the number or frequency of potential predators in this area could be higher because of the potential for efficient foraging along the edge of the two areas. To avoid this conflict, airports should mow all areas within their control. Additional small mammal control (e. g. using a rodenticide) may be necessary if mowing does not reduce the population to a point that the area becomes unattractive to predators.

Vegetation density, structure, species composition and size of grassy areas have been shown to influence bird use of grasslands (Mead and Carter 1973, Frawley and Best 1991, Delisle and Savidge 1997, Norment et al. 1999, Washburn et al. 2000, Johnson and Igl 2001). Ideally, vegetation found on airports should have low attraction to birds, small mammals and insects; have hardy growth and good survival; and provide good ground coverage without being a fire hazard (Austin-Smith and Lewis 1969). No published studies have been conducted on field evaluations that provide information on vegetation that meets these requirements. Initial pen trial results at the USDA National Wildlife Research Center (NWRC)/Ohio Field Station (OFS) using tall fescue containing the fungal endophyte (*Neotyphodium coenophialum)* indicate that Canada geese do not prefer to feed on the grass (Washburn and Seamans 2004).

Response of vegetation to mowing must also be considered. Some species of vegetation will not live if mowers are set below 4 inches. Drought conditions may also necessitate a change in timing of mowing or height of mowers in order to avoid causing vegetation die offs.

Considering bird, mammal and vegetation limitations, mowing at least monthly at a target of 5 - 8 inches may work in many airport environments as part of a wildlife hazard management program. Most grasses used on airfields in non-arid habitats should be able to survive this mowing height. In addition, vegetation will be short enough to enable observers to see larger birds yet long enough to prevent birds that prefer short vegetation from using the area. However, starlings and meadowlarks will use both tall and short vegetation. Density and species of vegetation may limit both species use but these specifications have not been determined. Any area that has sparse vegetation will allow birds to move through or land. Mowing at 5 - 8 inches should also reduce small mammal abundance. Research at the NWRC/OFS has shown that vegetation height alone does not reduce bird use of grassland areas (Seamans et al. 2005). Species-specific responses may be expected. For example, brown-headed cowbirds and American robins prefer short (<6 in) vegetation, starlings do not differentiate between short (<6 in) and tall (>6 in) vegetation and eastern meadowlarks prefer tall (>6 in) vegetation. Airport managers need to work with airport wildlife biologists to determine what species of concern in regards to aircraft safety are in their area and what the habitat needs are for those species. Appendix O Airfield Vegetation Management 339 A dense, monotypic stand of vegetation that wildlife do not prefer for food or cover would be ideal airfield vegetation.

Researchers will continue to work on this issue to find species that meet airport demands in the various regions of the United States.

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Cert-Alert 04-16, Deer Hazard to Aircraft and Deer Fencing – Appendix H

This Certalert provides guidance on the installation and maintenance of fencing that will help exclude wildlife from entering the AOA, along with greatly increasing airport security and safety.

Note: Certalerts, Advisory Circulars, and regulations are frequently changed or updated; always verify that the version attached herein is the most current. Contact FAA or Wildlife Services (see directory in Chapter 9) or consult the FAA website for the latest version:
http://wildlife-mitigation.tc.faa.gov/public_html/index.html

On April 26, 2006, the O'Hare International Airport received a new NPDES permit that controls wastewater effluent entering the natural streams on the airfield. The following discussion focuses on discharges to Waters-of-the-State for an "upset" condition, "summer" conditions, and special "construction" conditions. It is understood that all temporary standing water and run off within all basins will be dewatered in the timeliest manner possible to limit wildlife attractants on the AOA.

I. North Basin

A) Upset Conditions

The North Detention Basin has one outfall – Outfall 097, which discharges to Structure 140 (Willow-Higgins Flood Control Reservoir) which is classified as a Waters-of-the-State. The current NPDES permit issued in 2005 allows the use of this outfall during the de-icing season for upset conditions and discharge of waters that meet permit effluent limits.

During winter time conditions, the waters stored in the North Detention Basin are contaminated with de-icing chemicals, and therefore are discharged to the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) for treatment. Flow from Outfall 097 to Structure 140 is operationally shut-off during the winter de-icing season by closing the gate to the outfall. Only during upset conditions is the use of Outfall 097 permitted. The operational procedure for Outfall 097 during winter conditions is defined as follows:

- When water quality in the detention basin does not meet permit limits, the effluent is pumped to MWRDGC for treatment.
- During the winter period, water in the basin is stored to elevation 630 (about 2 feet above the opening of the gate which is at 628.6).
- At elevation 630, operator judgment is required to monitor impending weather conditions.
  - If there is a significant storm anticipated, an upset condition exists and the gate is opened to provide sufficient capacity to avoid airport flooding.
  - If there is no significant storm anticipated at elevation 630, continue to store above that elevation, and pump to MWRDGC.
  - Filling may continue based on impending weather. Threatening storm conditions will trigger the need to open the gate when water elevations are above 630.

- When an upset condition exists and the release is co-mingled with creek water in Structure 140, the contents of the flood control structure are pumped to Willow-Higgins Creek.
- When an upset condition exists and the release is to a dry Structure 140, the contents of the flood control structure are re-circulated to the North Detention Basin within 10 days. Under this scenario, no violation has occurred.

B) Summer Conditions

Following the de-icing season, the effluent in the North Detention Basin achieves the prescribed limits specified in the NPDES; therefore, direct discharge to Structure 140 is permitted via Outfall 097.

C) Special Construction Conditions

During the construction period, the existing basin and the pit of the new basin will serve as water retention areas on the North Airfield. The combination of this storage will provide the required capacity for a major rainfall event. This situation, however, will result in the construction area to be inundated by storm water from time to time. The method of dewatering the construction area and corresponding sediment control will be dependent upon the extent of the storm. These methods include:

- When surface water elevations in the construction area are below elevation 628, the construction area is dewatered by pumping to the south winter basin. Sediment transport will be minimized with the use of double aggregate berms installed in the south winter basin.
- When water surface elevations are above elevation 628, but below the 3-foot high aggregate berm, the gate at weir structure No.12 will be opened (the extent of the opening will be field determined as to not overpower the effectiveness of sediment control devices) to allow water to drain to Structure 140.

  During high volume rainfall, when water surface elevations in the basin reach elevations above the top of the aggregate berms, the gate at weir structure No.12 will be opened to allow water draining to Structure 140.

II. South Detention Basin

A) Upset Conditions

All effluent, regardless of the time of year, is always discharged to MWRDGC for treatment.

The basin is equipped with an overflow structure to be used when the basin's capacity is overcome by significant storm inflow. The release to Crystal Creek is controlled by a gate structure with a top elevation of 644.5 feet. The basin has been sized to minimize the occurrence of an overflow, which is calculated to be once in every 78 years.

B) Summer Conditions

Whereas the effluent in South Basin is always being discharged to MWRDGC, no other sampling and testing approaches are warranted.

C) Special Construction Conditions

The South Basin is being totally reconstructed under the OMP to provide about 1,450 acre feet of storage. Throughout the construction process, (scheduled to be over two years), a minimum required volume of 1,300 acre feet will be maintained using the existing basin and construction pit for the new basin. To provide for 1,300 acre feet of storage during the construction of the new South Basin, a spillway is installed from the existing basin to the construction pit. During storm events that overcome the remaining capacity of the existing basin, water will spill to the construction pit for additional storage.

During flood conditions, water can only be discharged to Crystal creek if the overflow elevation is above an elevation of 644.5. Based on the design criteria for the facility, the occurrence of an overflow is once in 78 years.

CDA Reservoirs and Detention Basins – Exhibit 3

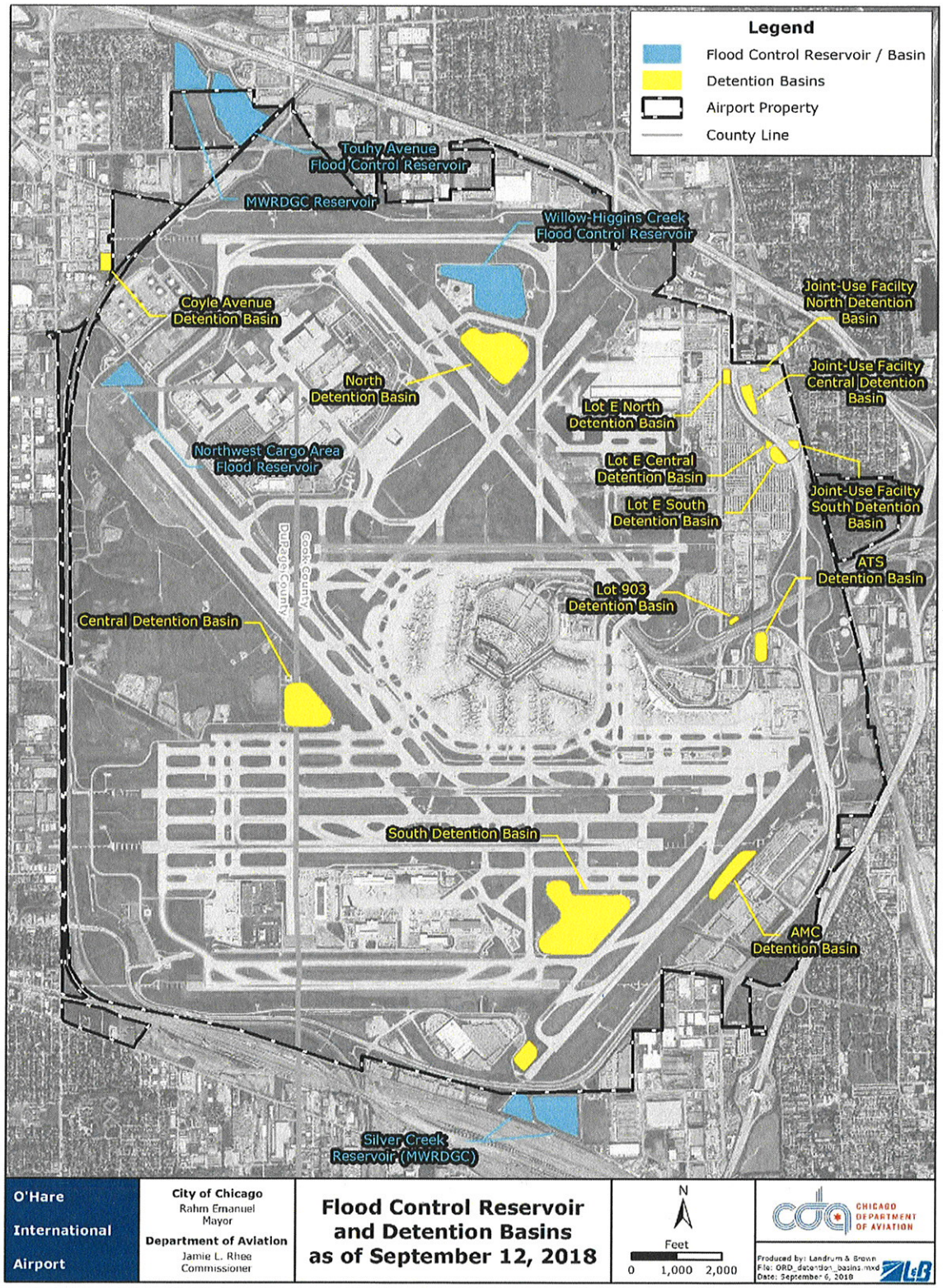

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Exhibit 3
Page 1

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