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Wetland Mitigation at Airports

November 5, 2020

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#TRBWebinar

Learning Objectives

- Identify challenges of having wetlands near airports
- Describe the considerations and constraints of wetland mitigation on and near airports
- Discuss the process involved in wetland impacts at airports

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ACRP
AIRPORT COOPERATIVE RESEARCH PROGRAM

Janet Kieler
Denver International Airport

- Director of Environmental Programs
- 30 years' experience
- Aviation, regulatory, consulting
- Replacement mitigation wetlands for original airport construction

ACRP Report 198 Oversight Panel

Janet Kieler, Denver International Airport, Denver, CO (Chair)

Niranjan Desai, Oklahoma City, OK

Kristine Lloyd, HDR Inc., Dallas, TX

Thomas D. Long, Kent State University, Kent, OH

Lisa A. Standley, Needham, MA

Sharon M. Stone, St. Louis Lambert International Airport, St. Louis, MO

Michael Lamprecht, FAA Liaison

John Weller, FAA Liaison

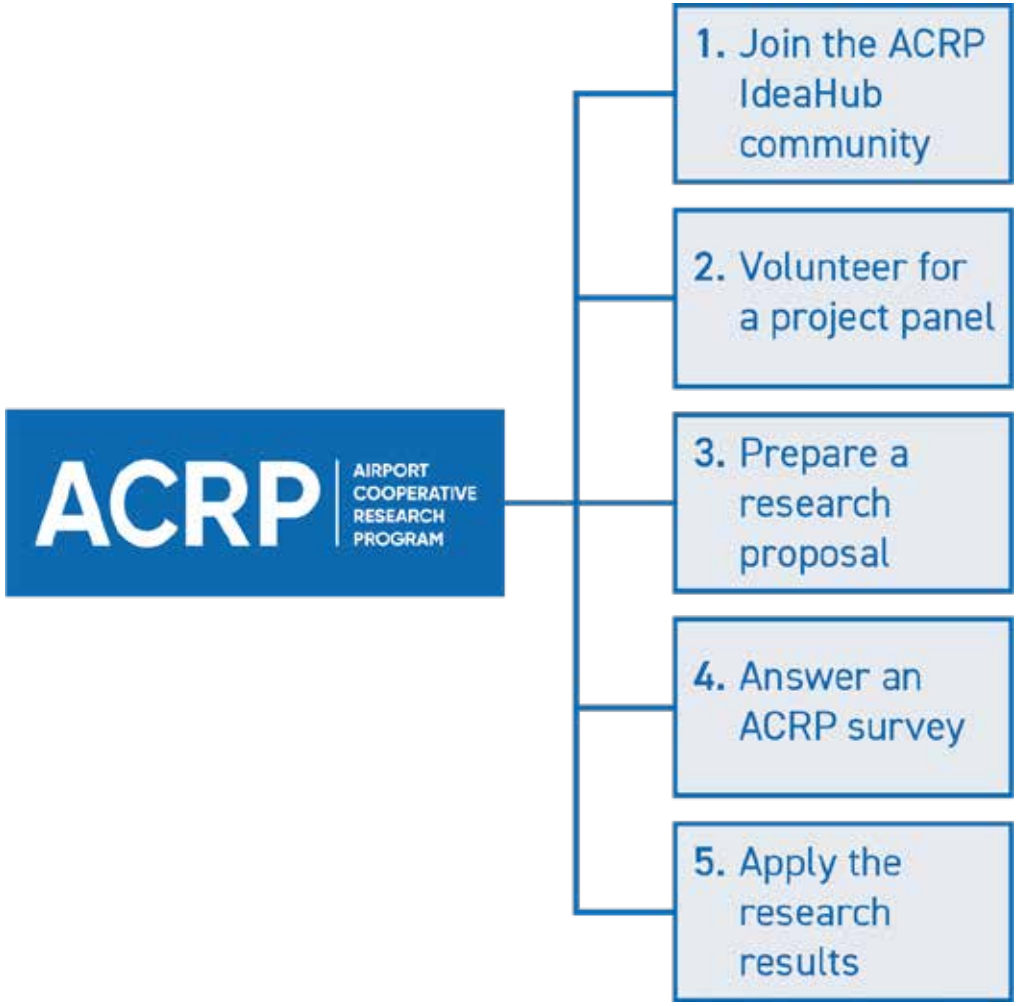
ACRP Research Team

The Smart Associates

Mead & Hunt

Environmental Resources Solutions

Five Ways to Get Involved!



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www.trb.org/ACRP

Today's Speakers

Laura Morland, Mead & Hunt
and
Walt Esser, Environmental Resources Solutions

Presenting

ACRP Report 198
Wetland Mitigation - A Guidebook for Airports

ACRP Report 198

Wetland Mitigation, Volume II: A Guidebook for Airports

Laura Morland, Environmental Practice Leader
Walt Esser, Senior Environmental Scientist

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ACRP AIRPORT COOPERATIVE RESEARCH PROGRAM

Laura Morland, PE
Environmental Practice Leader

- Over 30 years' experience
- National Environmental Policy Act (NEPA) practitioner
- Specializes in aviation environmental issues
- Specializes in Water Resources multi-disciplinary team projects

Walt Esser
Senior Environmental Scientist

- Over 10 years' experience in Florida
- Qualified airport wildlife biologist
- Permitting, wetland delineation, and management and oversight of mitigation banks

Learning objectives

At the end of this webinar, you will able to:

- Have a basic knowledge of the definition of wetlands/waters of the US and regulatory environment.
- Identify challenges of having wetlands on or near airports.
- Describe the considerations and constraints of wetland mitigation on and near airports.
- Discuss the process involved in addressing wetland impacts at airports.

Topics covered

- Definition of wetlands/waters of the US
- Regulatory environment
- Wetland mitigation and challenges at airports
- Types of mitigation
- Case studies in wetland mitigation for airports

Vernal pool
Hartness State Airport, Vermont

Definition of wetland

What is a wetland?

- US Army Corps of Engineers (USACE) and US Environmental Protection (USEPA) define wetlands as:

> *...areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*

What is a wetland?

Wetlands include, but are not limited to:

- Swamps
- Marshes/salt marshes
- Ponds
- Bogs
- Wet meadows
- Floodplain forests
- Estuaries

Wet meadow

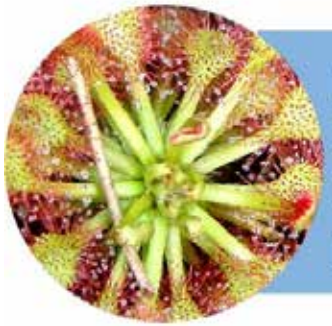
How will you know if you have a wetland?

- A wetland scientist will conduct a wetland delineation to determine the presence of wetlands and identify the boundary.
- Note: Not all delineated wetlands may be jurisdictional. Local, state, and federal regulators decide this.

Forested wetland

USACE wetland criteria

Hydrology
Water saturation and movement through the wetland



Hydrophytes
Plants specially adapted to grow in wetlands due to the prolonged presence of water

Hydric Soils
Characteristic soils that develop in wetlands due to the prolonged presence of water

What are Waters of the United States?

The USACE/USEPA recently issued the "Navigable Waters Protection Rule" defining jurisdictional wetlands as:

- Territorial seas and traditional navigable waters
- Perennial and intermittent tributaries that contribute surface flow to such waters
- Certain lakes, ponds, and impoundments of jurisdictional waters
- Wetlands adjacent to other jurisdictional waters

(April 2020 definition)

Navigable water

Tributary of navigable water

Wetland Mitigation — A Guidebook for Airports

Red maple swamp-floodplain, Manchester-Boston Regional Airport, New Hampshire

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Wetland Challenges at Airports

- Wetlands are not compatible with airport operations!
- The regulatory environment is complex with multiple jurisdictions (federal, state and local agencies).
- Multiple agencies can take jurisdiction.
- Wetland impacts often occur as part of a larger project that can affect multiple resources.

Jurisdictional ditch at Toledo Express Airport, Ohio

Project Goal

Provide a clear, concise, and readable guidebook for airport staff, regulators, and consultants to address wetland mitigation at airports.

Standing water can attract hazardous wildlife and pose risks to the traveling public.

Wetland Challenges at Airports

Potential Wildlife Hazards

- Wetlands provide food, water, and shelter for wildlife that can be hazardous to aviation.
- The Federal Aviation Administration (FAA) identifies separation criteria*:
  - 5,000 feet (piston-powered aircraft)
  - 10,000-feet (turbine-powered aircraft)
  - 5 miles from approach/ departure corridors

More than 207,000 wildlife strikes have been reported to the FAA since 1990.

* Source: FAA AC 150/5200-33B, *Wildlife Hazard Attractants On and Near Airports*

Guidebook contents

- Regulatory environment
- Wetland identification and impacts
- Mitigation types
- Constraints
- Engineering and design issues
- Costs and funding
- Public outreach and stakeholder management
- Case studies

Regulatory Environment

Complex Regulations

Multiple agencies (federal, state, regional and local) govern wetlands including:

- FAA
- USACE
- National Oceanic and Atmospheric Administration (NOAA) Fisheries
- USEPA
- US Fish and Wildlife Service (USF&WS)
- National Congress of American Indians
- US Department of the Interior

Federal Regulations

Federal Clean Water Act (CWA) of 1972

- The CWA established a structure for regulating discharges of pollutants into the Waters of the United States and quality standards for surface waters.
- Wetland issues are addressed in Sections 401, 402 and 404 of the CWA.

Federal Regulations

CWA – Section 404

- Section 404 regulates discharges of dredged and/or fill material into waters of the US, including wetlands.
- USACE has implementation authority.
- USF&WS regulates impacts to fish and wildlife.

Fill requiring 404 permit and mitigation

CWA Section 404

Compensatory Mitigation

- USACE and USEPA *usually* require mitigation for unavoidable adverse impacts to wetlands and waters of the U.S. through:
  - **Restoration** – Re-establishment or rehabilitation
  - **Establishment** – Creation or enhancement
  - **Preservation** – Other wetlands, streams, and aquatic resources

Tributaries of navigable waters are jurisdictional waters of the U.S.

CWA Section 404

Wetland Mitigation types

- Mitigation banks
- In-lieu-fee programs
- Permittee-responsible mitigation

(Top right) Sugar Creek mitigation site before revegetation, La Crosse Regional Airport, Wisconsin

(Bottom right) Sugar Creek mitigation site following revegetation

Federal Regulations: CWA Section 401

A Section 404 permit is not valid without an approved 401 certification.

- Q States and Tribes may review and approve, conditionally approve, or deny 401 Water Quality Certifications for activities that may result in a discharge to waters of the US including wetlands.
- Q Early coordination is recommended.

Federal Regulations: CWA Section 402

A framework to permit the discharge of pollutants through point sources to waters of the US through Individual or General Permits.

- Most states implement/manage the Section 402 permit process.
  - Projects that modify stormwater infrastructure may require Stormwater Pollution Prevention Plan revisions.
- Actions that disturb more than 1 acre of ground surface will require coverage under a construction stormwater discharge permit.

National Environmental Policy Act of 1969 (NEPA)

- Primary federal regulation for environmental protection
- A process to comply with federal laws and regulations
- Applies to all federal actions

Sample of policies:

- USDOT Section 4(f) Act
- Clean Air Act
- Clean Water Act
- Farmland Protection Policy Act
- Pollution Prevention Act
- Title VI of Civil Rights Act
- E.O.12898-Environmental Justice
- National Historic Preservation Act
- Aviation Safety and Noise Abatement Act
- Public Hearing Requirements
- Endangered Species Act
- Coastal Zone Management Act

NEPA and FAA

FAA is the federal lead agency for most airport-related wetland mitigation projects.

- FAA NEPA guidance:
  - FAA Order 1050.1 - *Environmental Impacts: Policies and Procedures*
  - FAA Order 5050.4 - *National Environmental Policy Act Implementing Instructions for Airport Actions*

Airport sponsors must work closely with FAA environmental staff throughout the NEPA and mitigation planning process.

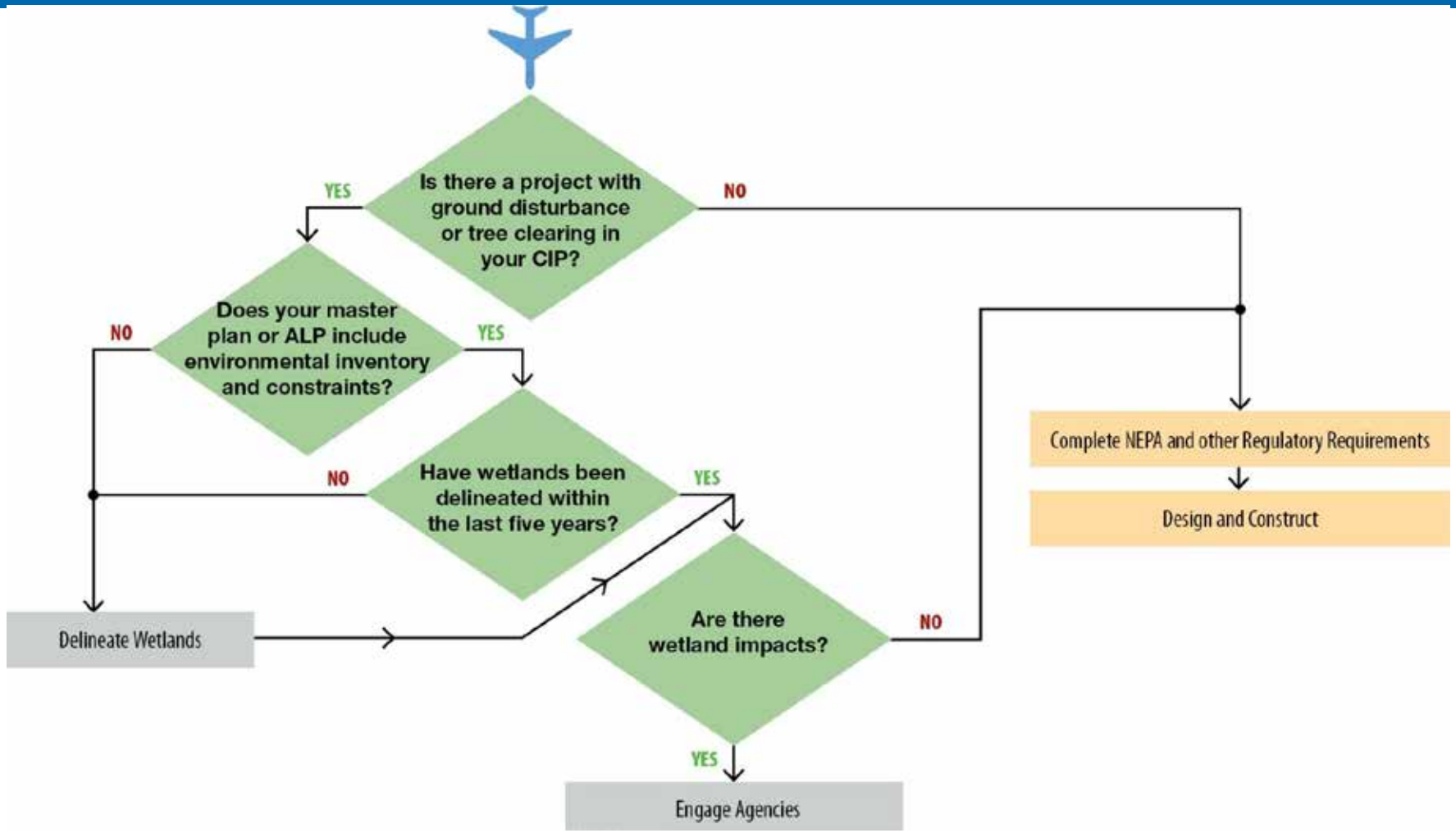
NEPA Documentation

Image: US Department of Interior

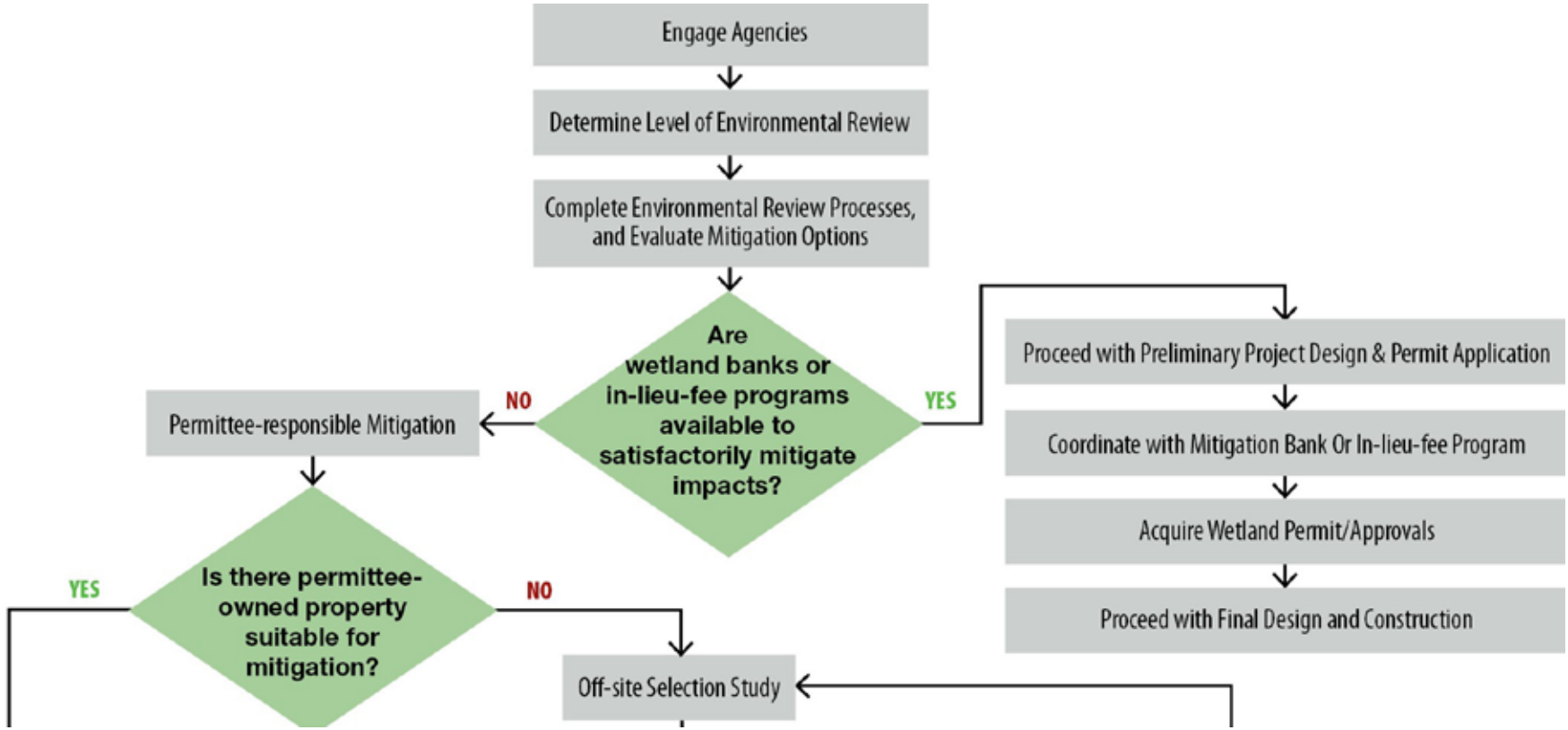
- Federal agencies prepare a NEPA document prior to decision making.
- NEPA facilitates concurrence from agencies associated with potentially affected resources.
- One of three NEPA documents may apply: Categorical Exclusion (Cat Ex), Environmental Assessment (EA), or Environmental Impact Statement (EIS).

NEPA documents identify resources, potential impacts, and necessary mitigation.

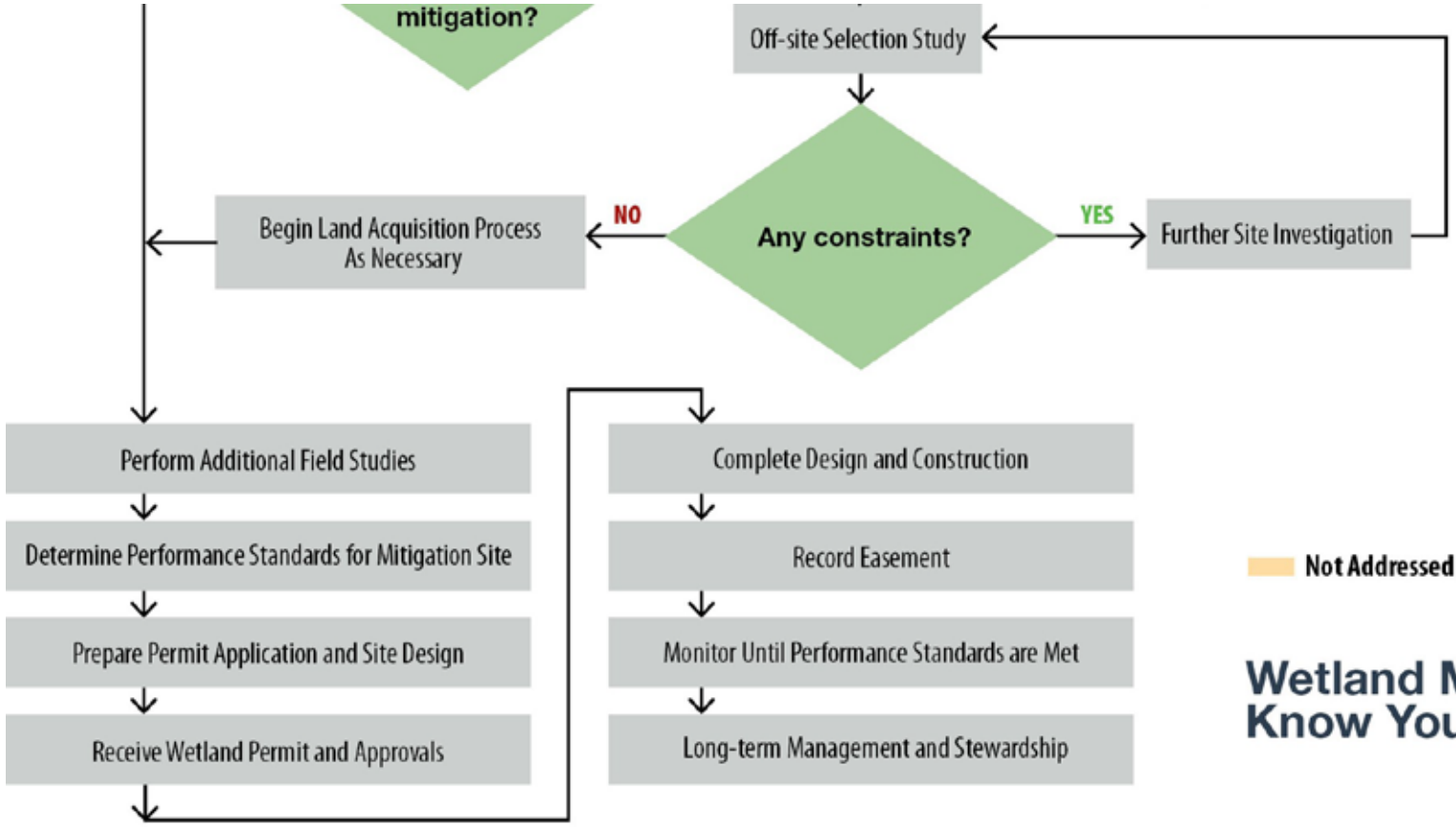
Mitigation Process Flow Chart



Mitigation Process Flow Chart



Mitigation Process Flow Chart



Not Addressed in Guidebook

Wetland Mitigation–Know Your Needs!

Mitigation Types

- Banking (credits)
  - Off-site source of mitigation guaranteed by a third party. The airport operator purchases credits in a mitigation bank to offset wetland impacts.
- Permittee-responsible
  - Airport operator creates, enhances and/or preserves a wetland. *Also responsible for long term maintenance.*
- In-lieu-fee
  - Airport operator provides funds to an in-lieu mitigation sponsor, such as a public agency or not-for-profit organization.

Banking (Credits)

Pros	Cons
• Agency-preferred approach	• Prices are variable and market driven
• Off-site mitigation may alleviate wildlife hazard concerns	• Mitigation banks may not offer the type of mitigation necessary
• Airport operator pays one-time fee	• Credits might not be available
• Mitigation bank is responsible for site success	

Permittee-responsible mitigation

Pros	Cons
• Can be cost effective if airport has sufficient property for mitigation	• Property acquisition may be expensive
• Only option if existing credits or in-lieu-fee programs are unavailable	• Airport operator is responsible for design, construction, monitoring, and long-term management
	• Risky and time-consuming
	• Long-term conservation easement required (not desirable to FAA)

In-Lieu-Fee Mitigation

Pros	Cons
• Off-site mitigation may alleviate wildlife hazard concerns	• Prices may vary
• Low risk: in-lieu-fee sponsor is responsible for success of mitigation	• Programs/opportunities may not be available

Mitigation Planning Considerations

Site-related Constraints

- Sufficient area for mitigation
- Distance from air operations area
- Available water source and water rights
- Potential environmental effects
- Property/easement acquisition

Streaked Horned Lark (threatened species)

Hazardous waste site

Engineering / Design Considerations

- Site selection / investigations
- Hydrologic / hydraulic studies
- Phasing and funding
- Effect on airport operations (construction and operation)
- Long-term monitoring / maintenance and stewardship

Long-term site monitoring required to determine success

Mitigation Funding

Costs

- Permitting costs (including NEPA compliance)
- Mitigation components (vary by mitigation type)

Funding

- Airport Improvement Program (AIP) eligible if AIP-project related
- AIP Order 5100.38D-Change 1, Airport Improvement Program Handbook, Table S-1

What Can Be Done If Justified	Factors to Consider For Justification and Eligibility	Required Usable Unit of Work and Required Outcome	Work Code*
j. Environmental Mitigation *(Required by an Environmental Determination)*	**(1)** Environmental mitigation projects (such as wetland mitigation) approved in an environmental determination for an AIP eligible project is and allowable cost (or phase) of the AIP eligible project. **(2)** The costs of wetland monitoring for the required period of monitoring that is included in the record of decision, up to a maximum of five years is an allowable cost.	An environmental mitigation measure that meets the requirements of the environmental determination.	The work code of the associated AIP eligible project must be used

Case studies

Refer to Chapter 9 in the guidebook for all case studies.

- Six case studies
- Various mitigation strategies
- Diverse airports nationwide
  - La Crosse Regional Airport
  - Cecil Airport

La Crosse Regional Airport, Wisconsin

La Crosse Regional Airport

La Crosse Regional Airport

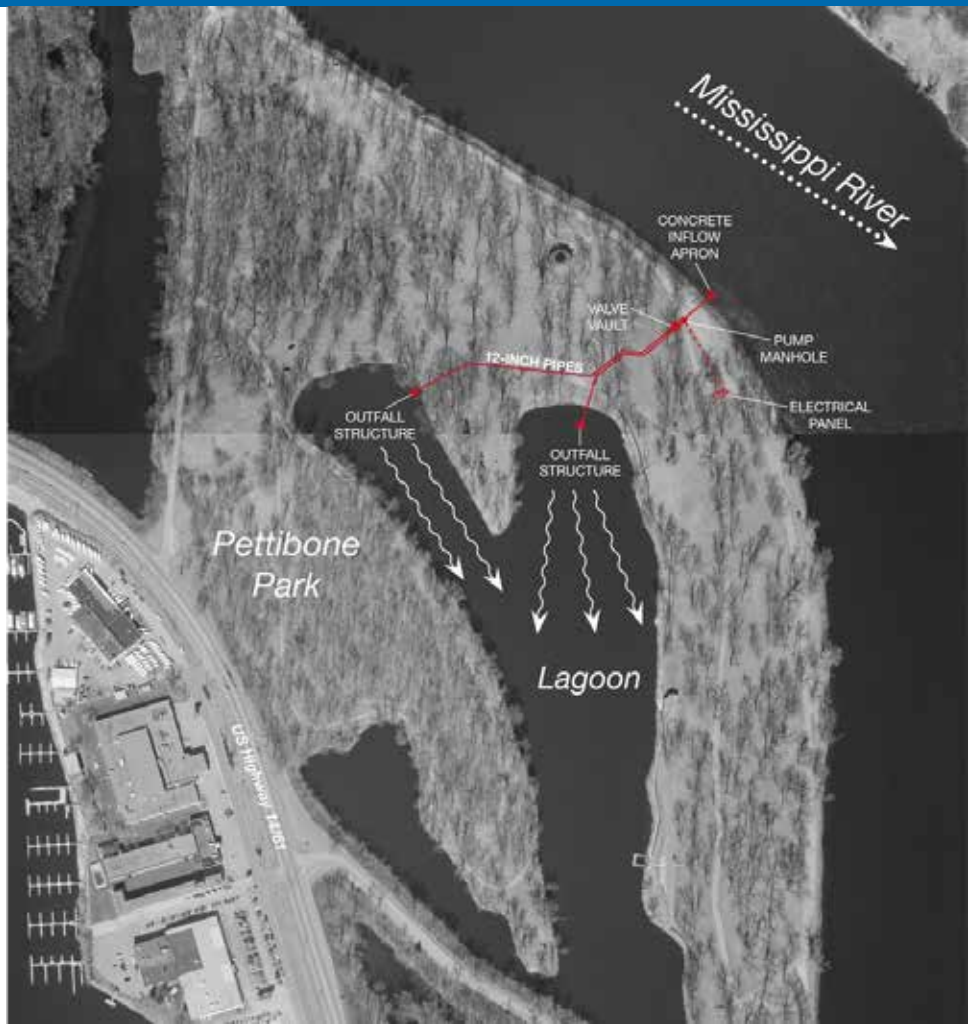
Wetland Mitigation

- Permittee-responsible
- Land acquisition
- Design and construction
- Monitoring
- Non-airport long term stewardship

La Crosse Municipal Airport

Fishery Mitigation

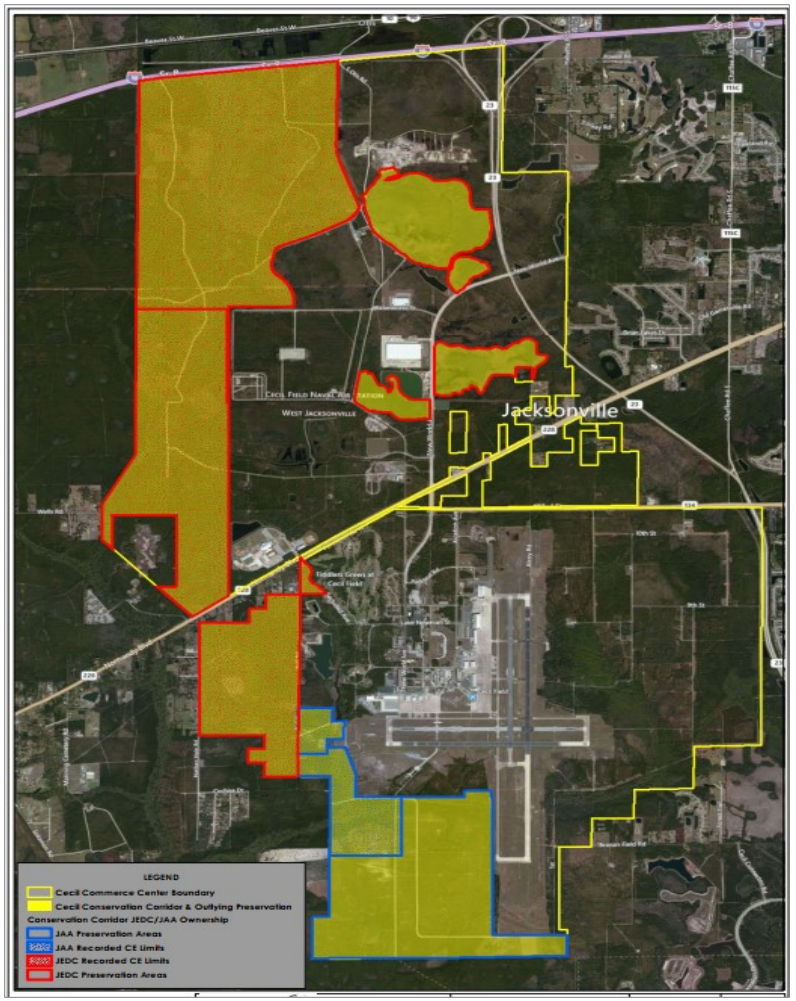
- Pettibone Park
  - Owned by City
  - City maintains system



Cecil Airport/Commerce Center

Cecil Field Naval Air Station

- Closed in 1993
- Still utilized as active General Aviation/Military airfield
- COJ and JAA tasked with redevelopment of 17,000 acres
- Such a large undertaking requires wetland impacts
- Impacts require mitigation
- What to do?



Cecil Airport/Commerce Center

Jacksonville, Florida

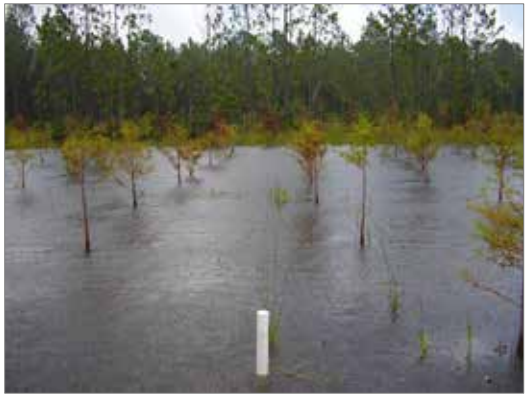
- Master planned development for the new Cecil Airport/Commerce Center
- >500 acres of jurisdictional wetlands (1/3 within airport boundary)
- City worked with federal, state, and local agencies to identify aviation-compatible mitigation through:
  - On-site wetland preservation and creation
  - Contribution to regional conservation efforts

Wetland creation site

Wetland conservation area

Cecil Airport/Commerce Center

- Considerations for Planning
- Location
  - Separation distances
- Planning
  - Type of Wetland
  - How to achieve proper hydrology
- Coordination
  - Regulatory agencies
  - FAA



Year 2 of wetland monitoring

Year 3 of wetland monitoring

Q&A

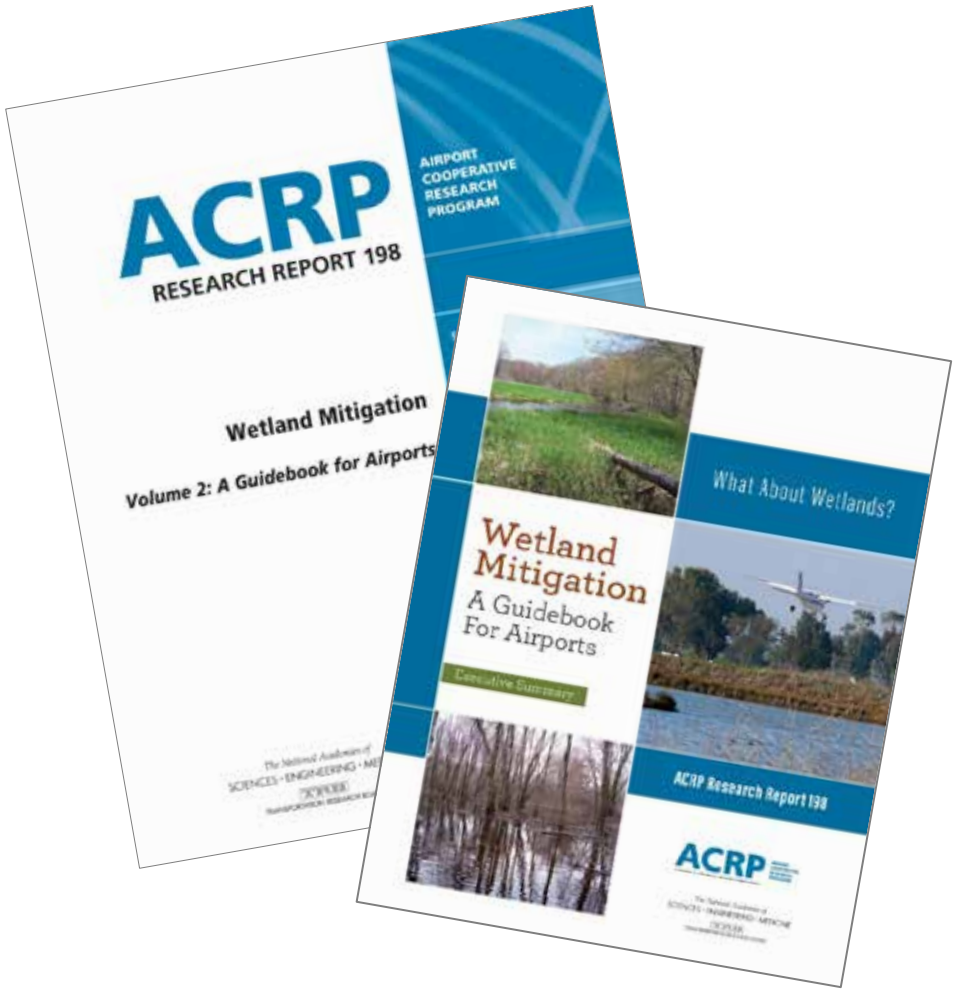
Sugar Creek mitigation site, 2014
La Crosse Regional Airport, Wisconsin

Thank you!

Runway 24 Safety Area Improvement Project – Manchester-Boston Regional Airport, New Hampshire

More Information

More information can be acquired through the Transportation Research Board website (trb.org) by searching for *ACRP Research Report 198*.



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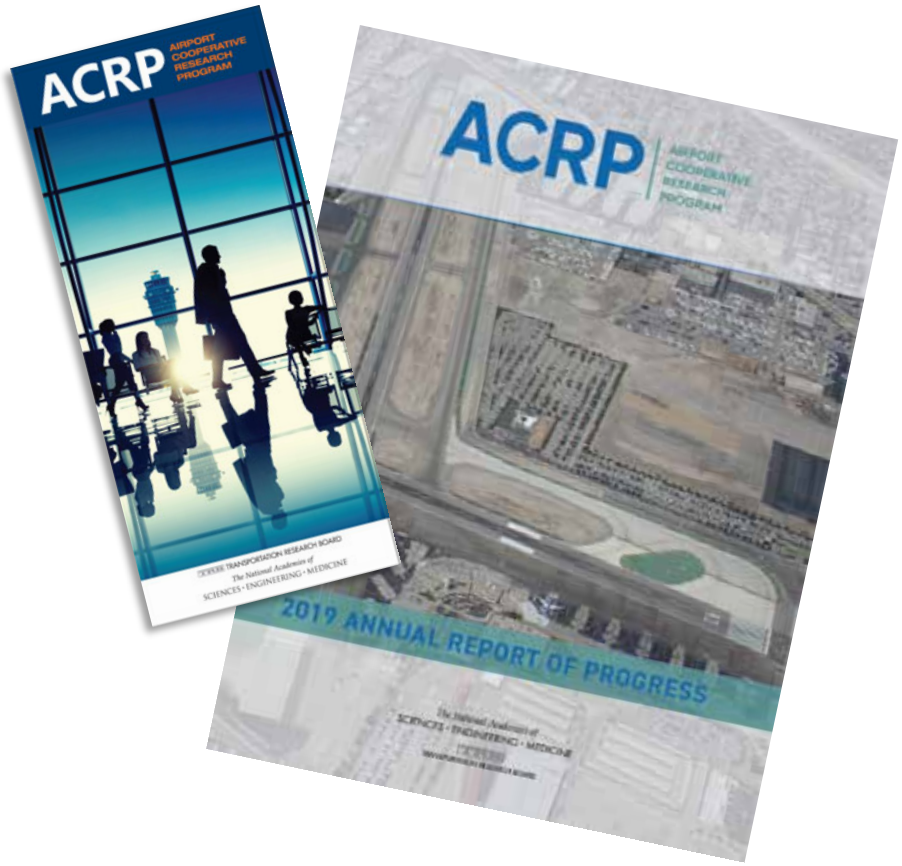
- Managed by TRB and sponsored by the Federal Aviation Administration (FAA).
- Seeks out the latest issues facing the airport industry.
- Conducts research to find solutions.
- Publishes and disseminates research results through free publications and webinars.



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December 8
Planning an Effective Airport Deicing Runoff Management Program

Today's Panelists

#TRBWebinar

Moderator: Janet Kieler, *Denver International Airport*

The Smart Associates
Environmental Consultants, Inc.

Laura Morland

Mead & Hunt

Walt Esser

Environmental Resource Solutions
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