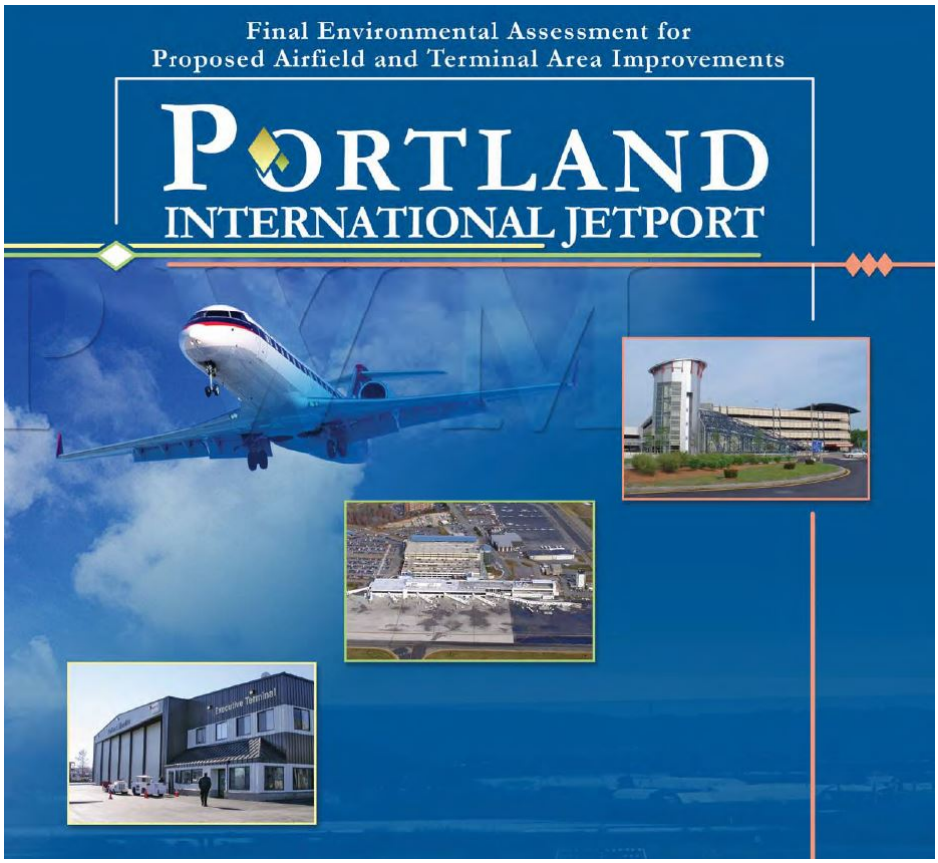

Portland International Jetport: Final Environmental Assessment

Appendices A - K

Appendix A

PROJECT SCOPING MATERIALS

APPENDIX A
PROJECT SCOPING MATERIALS

At the onset of the Environmental Assessment (EA), letters were sent to a number of entities seeking input regarding potential environmental resources which could be impacted by the proposed airport improvements. The following pages contain a list of the entities contacted, a copy of the letter and exhibits sent to them, and responses received.

Written Responses Received **Page**

Portland International Jetport
Agency Coordination List

Federal

Wayne Monroe
District Conservationist
Scarborough Service Center
U.S. Department of Agriculture
Natural Resource Conservation Service
306 U.S. Route 1
Scarborough, ME 04074

Jay Clement
New England District
U.S. Army Corps of Engineers
675 Western Avenue #3
Manchester, Maine 04351

Gordon Russell
Maine Field Office
U.S. Fish and Wildlife Service
1168 Main Street
Old Town, ME 04468

Regional Administrator for Habitat Conservation
Office of Protected Resources (F/PR)
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

State

Roland D. Martin, Commissioner
Maine Department of Inland Fisheries and Wildlife
284 State Street
41 State House Station
Augusta, ME 04333

Tom Hodgman, Wildlife Biologist
Maine Dept. of Inland Fisheries & Wildlife
650 State St.
Bangor, ME 04401-5654

Judy Camuso, Wildlife Biologist
Maine Dept. of Inland Fisheries & Wildlife
RR #1, 328 Shaker Road
Gray, ME 04039

James P. Brooks, Bureau Director
Maine Department of Environmental Protection
Bureau of Air Quality
17 State House Station
Augusta, Maine 04333

Andrew Fisk, Bureau Director

Maine Department of Environmental Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, Maine 04333

Mark Hyland, Bureau Director
Maine Department of Environmental Protection
Bureau of Remediation and Waste Management
17 State House Station
Augusta, Maine 04333

Linda Kokemueller
Maine Department of Environmental Protection
312 Canco Road
Portland, ME 04103

Earle G. Shettleworth, Jr.
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333

Robert G. Marvinney
Director
Department of Conservation
Bureau of Geology and Natural Areas
22 State House Station
Augusta, ME 04333-0022

Director
Department of Conservation
Bureau of Parks and Lands
22 State House Station
Augusta, ME 04333-0022

Martha Freeman
Director
Maine State Planning Office
38 State House Station, 184 State St.
Augusta, ME 04333

Local

Lee Urban, Director
City of Portland
Planning and Development Department
389 Congress Street
Portland, ME 04101

Public Works Department
City of Portland
55 Portland St.
Portland, ME 04101

James Gailey, Acting City Manager
City of South Portland
25 Cottage Road
P.O. Box 9422
South Portland, ME 04106

Ron Owens
Town Manager
Scarborough Town Manager's Office
Scarborough Municipal Building
P.O. Box 360
Scarborough, ME 04070-0360
Jerre Bryant

City Administrator
City of Westbrook
Mayor's Office
2 York Street
Westbrook, ME 04092

Michael K. McGovern
Town Manager
Town of Cape Elizabeth
P.O. Box 6260
Cape Elizabeth, ME 04107

Ms. Bonnie Newsom
Director, Cultural Preservation
Penobscot Indian Nation
Tribal Administration
12 Wabanaki Way
Indian Island, ME 04468

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Coffman Associates
Airport Consultants

October 31, 2007

Mr. Roland D. Martin
Commissioner
Maine Department of Inland Fisheries and Wildlife
284 State Street
41 State House Station
Augusta, ME 04333

*Re: **Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

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Please send any written comments to me by November 23, 2007, at the address on the letterhead. As another option, you may fax or e-mail your comments to:

FAX: 816.524.2575
E-mail: mwaller@coffmanassociates.com

Kansas City • Phoenix
237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063 • Phone: 816.524.3500 • FAX: 816.524.2575

If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Additionally, the project team will give a presentation and answer questions regarding the proposed airport improvements at the Maine Department of Transportation Interagency Meeting on November 13th. Please note, Biologists Hodgman and Walker are also copies with this letter as a result of their previous site visit with TRC biologists relating to Upland Sandpiper.

Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Regional Administrator for Habitat Conservation
National Marine Fisheries Service
Office of Protected Resources (F/PR)
1315 East-West Hgihway
Silver Spring, MD 20910

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Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Mr. Gordon Russell
Maine Field Office
U.S. Fish and Wildlife Service
1168 Main Street
Old Town, ME 04468

Re: ***Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Russell:

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Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Mr. Jay Clement
New England District
U.S. Army Corps of Engineers
675 Western Avenue #3
Manchester, ME 04351

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Clement:

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Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Mr. Michael K. McGovern
Town Manager
Town of Cape Elizabeth
P.O. Box 6260
Cape Elizabeth, ME 04107

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. McGovern:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Mr. Ron Owens
Town Manager
Scarborough Town Manager's Office
Scarborough Municipal Building
P.O. Box 360
Scarborough, ME 04070

*Re: **Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Owens:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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Airport Consultants

October 31, 2007

Mr. James Gailey
Acting City Manager
City of South Portland
25 Cottage Road
P.O. Box 360
South Portland, ME 04106

Re: ***Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Gailey:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Thank you for your consideration and timely response.

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Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
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Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Mr. Jerre Bryant
City Administrator
City of Westbrook
Mayor's Office
2 York Street
Westbrook, ME 04092

Re: ***Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Bryant:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Thank you for your consideration and timely response.

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Airport Consultants

October 31, 2007

Public Works Department
City of Portland
55 Portland Street
Portland, ME 04101

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

To Whom It May Concern:

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If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Thank you for your consideration and timely response.

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Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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Airport Consultants

October 31, 2007

Mr. Lee Urban
Director
City of Portland
Planning and Development Department
389 Congress Street
Portland, ME 04101

*Re: **Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Urban:

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Airport Consultants

October 31, 2007

Ms. Martha Freeman
Director
Maine State Planning Office
38 State House Station
184 State Street
Augusta, ME 04333

Re: ***Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Ms. Freeman:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Airport Consultants

October 31, 2007

Mr. Wayne Monroe
District Conservationist
U.S. Department of Agriculture - NRCS
Scarborough Service Center
306 U.S. Rout 1
Scarborough, ME 04074

*Re: **Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Monroe:

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October 31, 2007

Director
Dept. of Conservation
Bureau of Parks and Lands
22 State House Station
Augusta, ME 04333

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Please send any written comments to me by November 23, 2007, at the address on the letterhead. As another option, you may fax or e-mail your comments to:

FAX: 816.524.2575
E-mail: mwaller@coffmanassociates.com

Kansas City • Phoenix
237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063 • Phone: 816.524.3500 • FAX: 816.524.2575

If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Additionally, the project team will give a presentation and answer questions regarding the proposed airport improvements at the Maine Department of Transportation Interagency Meeting on November 13th.

Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Mr. Robert G. Marvinney
Director
Dept. of Conservation, Bureau of Geology and Natural Areas
22 State House Station
Augusta, ME 04333

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Marvinney:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

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October 31, 2007

Mr. Earle G. Shettleworth, Jr.
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Shettleworth:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

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Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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Airport Consultants

October 31, 2007

Ms. Linda Kokemueller
Maine Dept. of Environment Protection
312 Canco Road
Portland, ME 04103

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Ms. Kokemueller:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Mr. Mark Hyland
Bureau Director
Maine Dept. of Environment Protection
Bureau of Remediation and Waste Management
17 State House Street
Augusta, ME 04333

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Hyland:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Mr. Andrew Fisk
Bureau Director
Maine Department of Environment Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, ME 04333

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Fisk:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

Coffman Associates
Airport Consultants

October 31, 2007

Mr. James P. Brooks
Bureau Director
Maine Department of Environment Protection
Bureau of Air Quality
17 State House Station
Augusta, ME 04333

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Mr. Brooks:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Mr. Tom Hodgman
Wildlife Biologist
Maine Dept. of Inland Fisheries and Wildlife
650 State Street
Bangor, ME 04401

*Re: **Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine***

Dear Mr. Hodgman:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

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October 31, 2007

Ms. Judy Walker
Wildlife Biologist
Maine Dept. of Inland Fisheries and Wildlife
RR #1
328 Shaker Road
Gray, ME 04039

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Ms. Walker:

Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for the project.

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Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman Associates

October 1, 2007

Adam Vashon
Wildlife Biologist
USDA-APHIS-Wildlife Services
79 Leighton Rd., Suite 12
Augusta, ME 04330

Re: Portland International Jetport Wildlife Hazard Management Plan Recommendations

Dear Mr. Vashon:

Coffman Associates has been contracted by the City of Portland, Maine te prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. Within this EA recommendations contained within the Wildlife Hazard Management Plan (WHMP) will be evaluated in accordance with the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969*. We understand that your agency oversaw the preparation of this plan and formulated the recommendations regarding wildlife control at the airport.

Among other projects at the Jetport, the EA is evaluating the environmental impacts of the WHMP recommendation of filling and grading the wetland area at the end of Runway 29. According to the plan, the cattails and other vegetation that grow in this area attract large flocks of blackbirds and European starlings that roost and nest within the wetland. Removing the attractant will be safer for planes which utilize Runway 29.

Due to the impacts to this wetland area, an initial meeting was held with the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection to discuss the proposed improvements at the airport and any initial concerns by these two agencies. During the meeting, questions were raised by the attendees regarding the need and alternatives to filling the wetland area beyond the Runway 29 end. The contents of WHMP assisted us with answering questions regarding the need for the fill; however, as the experts in addressing wildlife hazards at airports, we are requestiog your assistance in answering the question regarding alternatives to filling this area. Specifically, is filling the wetland area beyond the approach to Runway 29 the only alternative for mitigating the wildlife attractant caused by the presence of wetland vegetation in this area? If additional alternatives are available could you please provide us with brief descriptions of the alternatives and reasoning as to why filling the area is the best alternative for the airport.

Your assistance in this matter is greatly appreciated. If you have any questions or need additional information, please feel free to contact either Chris Hugunin or myself at 816.524.3500. Thank you for your consideration and timely response.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Artie Sewall, Director of Operations, Portland International Jetport

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November 29, 2007

Lori H. Nordstrom
Field Supervisor
U.S. Fish and Wildlife Service
Maine Field Office-Ecological Services
1168 Maine Street
Old Town, ME 04468

Re: 53411-2008-FA-0081, Portland International Jetport Environmental Assessment

Dear Ms. Nordstrom:

We are in receipt of your comments regarding the Portland International Jetport Environmental Assessment (EA) dated November 15, 2007. We appreciate your early input into the potential environmental impacts of the proposed airport improvements.

Within your comments, as they pertain to the Fish and Wildlife Coordination Act, you suggested that an interagency site visit be held with both state and federal review agencies. We are more than willing to accommodate such a request and have scheduled such a visit for December 12, 2007 at 9:30 am. We have been in contact with Wende Mahaney of your staff and she is able to attend on behalf of the U.S. Fish and Wildlife Service. Other agencies that will be in attendance include the Federal Aviation Administration, the U.S. Department of Agriculture, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the Maine Department of Environmental Protection, and the Maine Department of Inland Fisheries and Wildlife.

If you have any questions please feel free to contact me at your convenience. We look forward to visiting with Ms. Mahaney in December.

Sincerely,

Molly Waller
Airport/Environmental Planner

Cc: Artie Sewall, Director of Operations, Portland International Jetport
Dwight Anderson, DeLuca Hoffman
Michelle Ricci, FAA

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237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063 • Phone: 816.524.3500 • FAX: 816.524.2575

Molly

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Airport Consultants

January 9, 2008

Ms. Trish Garrigan
US EPA Region 1
1 Congress Street, MC CSP, Suite 100
Boston, MA 02114

RE: Environmental Assessment for Proposed Improvements at the Portland International Jetport

Dear Ms. Garrigan:

As requested during our December 12, 2007 meeting, we are sending you copies of the materials sent to the various local, state, and federal resource agencies seeking input into the ongoing Environmental Assessment (EA) for the Portland International Jetport. We welcome any input you may have regarding potential environmental impacts of the proposed projects.

As discussed at the December meeting, Coffman Associates has been contracted by the City of Portland, Maine to prepare an Environmental Assessment (EA) for proposed improvements at Portland International Jetport. This EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act* (NEPA) *of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures,* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.* The FAA will act as the lead agency for the project.

The proposed improvements at Portland International Jetport are identified within the *Airport's Five-year Capital Improvement Plan* (CIP) and *Wildlife Hazard Management Plan* (WHMP). These projects were evaluated through the recently completed planning processes.

The attached project description and exhibits provide more information regarding the proposed project. If you have any questions or need additional information, please feel free to contact either me or Chris Hugunin at (816) 524-3500. Thank you for your consideration.

Sincerely,

Molly Waller
Airport/Environmental Planner

C: Michelle Ricci, FAA
Artie Sewall, Portland International Jetport
Dwight Anderson, DeLuca-Hoffman

Kansas City • Phoenix
237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063 • Phone: 816.524.3500 • FAX: 816.524.2575

The following sections outline the proposed improvements at the Portland International Jetport (Jetport) which are being evaluated within the Environmental Assessment (EA). Four exhibits are attached to assist with your review of the project. **Exhibit A** depicts the location of the airport in its local and regional setting, **Exhibit B** depicts the potential areas of development, **Exhibit C** depicts the development concept formulated during the 2007 airport master planning process, and **Exhibit D** depicts the existing airport facilities. Through the EA process, additional alternatives may be evaluated; therefore, the precise location of the various airport projects may differ at the conclusion of the environmental analysis and documentation.

Implementation of Wildlife Hazard Management Plan Recommendations

Pursuant to Title 14 of the Code of Federal Regulations (CFR) Part 139.337(e.1), the Jetport recently developed a Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture Wildlife Hazard Group. The plan was finalized in April 2007. Within the plan it is recommended that the wetland that exists on the approach end of Runway 29 be filled and the brush and scrub which exists near this wetland be cleared and graded. The environmental impacts of the implementation of this recommendation are being evaluated within this EA.

According to the WHMP, this wetland area contains cattails and other vegetation which attracts large flocks of blackbirds and European starlings. Starling and blackbird roosts located near airports pose an aircraft safety hazard because of the potential for birds to be ingested into jet engines, resulting in aircraft damage or loss and, at times, human injuries. The location of the wetland and brush/scrub area is depicted with a purple hatch on **Exhibit C**.

Terminal Area Improvements

A long term passenger terminal building study was completed concurrently with the Airport Master Plan in 2006. A primary conclusion of the terminal planning process was that the terminal building has existing capacity and circulation deficiencies that need to be addressed and cannot be resolved without expanding the facility. The terminal building plan extends the departure concourse to the west to add additional aircraft contact gates. A new core structure west of the existing building is planned to accommodate new ticketing and baggage makeup with in-line explosive detection devices. Finally, an expanded second floor would provide larger passenger screening points, secure hold room, and concessions areas. Replacement terminal employee parking is planned north of the existing surface parking areas to accommodate spaces lost due to the terminal building expansion. The location of the various terminal improvements are depicted on **Exhibit C**.

Cargo Facility Improvements

As shown on **Exhibit C**, additional air cargo development to meet forecast short-term demand is continued east of Runway 18-36 along Taxiway G. Air cargo sort buildings, vehicle parking, and related truck courts are planned on the east side of the apron. A new taxiway between Taxiway H and Taxiway A provides access to Runway 29 and is intended to reduce the number of runway crossings and the potential for runway incursions.

Runway 18-36 Improvements

Several improvements are planned for Runway 18-36 to more effectively serve as a back-up to Runway 11-29 when it is closed for maintenance or other reasons. Runway 18-36 now serves a limited role in maintaining the continuity of air service when Runway 11-29 is closed, as Runway 18-36 can accommodate the regional jet and turboprop aircraft that use the airport in scheduled airline and air cargo services. The improvements to Runway 18-36 include upgrading design standards, a 1,100-foot extension to the south, and wider and longer runway safety areas (RSA) behind each end to bring RSA to standard. Fifteen foot snow shoulders are also planned on each side of the runway. Finally, a portion of Taxiway C is planned to be constructed parallel to Runway 18-36 to more efficiently connect Runway 36 to the terminal facilities.

Runway 11-29 Improvements

Analysis during the Master Plan process showed that existing airport users have a need for 7,200 feet of departure and landing distance in each direction on Runway 11-29. Only Runway 29 currently provides 7,200 feet of landing and departure length. Runway 11 is limited to 6,800 feet of landing and departure and landing length to ensure that Federal Aviation Administration (FAA) runway safety area (RSA) standards can be met for aircraft using Runway 11. Improvements are planned to the Runway 11 RSA to eliminate the need to restrict the Runway 11 landing and departure length and provide the needed 7,200 feet of landing and departure length on Runway 11. These improvements include relocating a portion of the perimeter service road, the localizer antenna, and bringing the RSA area to standard.

Improvements to On-Airport Access Roads

As depicted in orange on **Exhibit C**, a number of on-airport access road improvements are planned to accommodate the proposed airport improvements.

07SP05-A-8/22/07

PORTLAND INTERNATIONAL JETPORT

Exhibit A
LOCATION MAP

07SP05-B-10/10/07

PWM
PORTLAND INTERNATIONAL JETPORT

Exhibit B
POTENTIAL DEVELOPMENT AREA

07SP05-B-10/10/07

SUMMARY

1. **Wildlife Hazard Managment Plan (WHMP) Implementation.** Fill the wetland areas east of Runway 29 and grade the brush and scrub areas surrounding the wetland.
2. **Terminal Area Improvements.** Construct additions to the existing terminal building and parking garage. Construct new apron areas adjoining terminal expansion and replacement automobile parking.
3. **Cargo Facility Improvements.** Construct additional cargo facilities east of Runway 18-36. Facilities include additional cargo aircraft apron areas, a sort building, and areas for vehicular parking. Construct a new taxiway between Taxiway H and Taxiway A to provide access to Runway 29.
4. **Runway 18-36 Improvements**. Extend the runway and parallel Taxiway C 1,100 feet to the south. Improve the RSA (outlined in green) and displace the landing thresholds. Rehabilitate runway surface. Add 15 feet snow shoulders each side.
5. **Runway 11-29 Improvements.** Improve RSA (outline in green) by relocating airport access road and localizer antenna and filling to meet required RSA grade.

DECLARED DISTANCES	RUNWAY 18	RUNWAY 36
ASDA	5,600'	5,650'
LDA	5,150'	5,150'

ASDA - Accelerate Stop Distance Available
LDA - Landing Distance Available

DEPARTURE RPZ
APPROACH RPZ
RUNWAY 18 END
RUNWAY 18 DISPLACED THRESHOLD
450'
STROUDWATER
Congress St.
Garrison St.
Westbrook St.
Yellowbird Rd.
FORE RIVER
International Pkwy.
Jetport Blvd.
Taxiway C
Runway 18-36 (5,001' x 150')
SERVICE ROAD
RELOCATED SERVICE ROAD
RELOCATED LOCALIZER
EXISTING LOCALIZER
Taxiway A
Runway 11-29 (7,200' x 150')
Perimeter Service Rd.
Johnson Rd.
I-295
50'
300'
1,100'
RUNWAY 36 DISPLACED LANDING THRESHOLD
RUNWAY 36 END
BY-PASS TAXIWAY
DEPARTURE RPZ
3/4 MILE APPROACH RPZ
SOUTH PORTLAND
Long Creek

LEGEND

- Existing Airport Property Line
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)
- Ultimate Airfield Pavement
- Ultimate Road/Parking
- Ultimate Building
- Wildlife Hazard Area
- Previously Identified Wetland Areas

NORTH

0 1000 2000
SCALE IN FEET

PWM PORTLAND INTERNATIONAL JETPORT

Exhibit C
PROPOSED AIRPORT DEVELOPMENT

07SP05-D-9/13/07

PWM
PORTLAND INTERNATIONAL JETPORT

Exhibit D
EXISTING FACILITIES

USDA

United States Department of Agriculture

Animal and Plant Health Inspection Service

Wildlife Services
79 Leighton Road
Suite 12
Augusta, ME 04330

October 26, 2007

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Re: Portland International Jetport Wildlife Hazard Management Plan Recommendations

Dear Ms. Waller:

Thank you for contacting our office for an explanation of the Wildlife Hazard Management Plan (WHMP) that was prepared for Portland International Jetport (PWM). As you may know, Wildlife Services provides federal leadership to other state, federal and local agencies as well as the general public in managing wildlife conflicts with agriculture, property, human health and safety, and natural resources. As part of our mission, we assist airports across the country by providing wildlife hazard assessments and wildlife management plans to reduce wildlife strikes with aircraft. Each year wildlife strikes in the United States cost civil aviation more than $500 million and more than 160 people have been killed worldwide as a result of wildlife strikes since 1988. As a result, appropriate wildlife management on airport property and adjacent areas is critical. It is my understanding that you are seeking our professional opinion regarding the alternatives for reducing or eliminating the wildlife habitat attractant caused by the wetland at the approach to Runway 29.

As stated in the WHMP, the highest priority development project to be conducted at PWM is to "fill and grade the wetland that exists on the approach to Runway 29 to extend the runway safety area." Furthermore, we found, "the wetland on the approach to Runway 29 must be removed or mitigated. The cattails and other vegetation that grow in this area attract large flocks of blackbirds and European starlings that roost and nest here." To effectively manage wildlife hazards on the approach area, we strongly suggested eliminating this wetland and the associated vegetation found here. The actual methods used to achieve this goal may vary, but it is our opinion that draining and filling would be the most practical and efficient, and likely the most successful method of permanently altering the current habitat features that are attractive to a variety of wildlife, specifically nesting and roosting blackbirds.

The current species of existing vegetation most notably known to attract nesting and roosting blackbirds is phragmites, or common reed (*Phragmites australis*). Although this species is known to be native to North America, a separate genotype of the same species, a non-native, invasive form of the plant also exists, and is causing threats to native ecosystems. As a result, phragmites is known to be difficult to control, and

this species can even persist in upland habitats. By draining and filling this area, routine mowing of the vegetation can be achieved, thus eliminating the current attractive habitat type. Herbicides are another option, but they are not a long term solution because they require repeated application. Additionally, eliminating vegetation within the wetland does not eliminate standing water that is also a wildlife attractant.

Attempting to prevent large flocks of birds from utilizing the area using harassment could prove dangerous given the habitat's close proximity to aircraft movement. Exclusion devices such as grid wires are not known to prevent access to areas by smaller birds, such as European starlings and blackbirds, although they can be effective for certain species of waterfowl. As a result, exclusion is not the most effective tool to manage this wildlife attractant.

In conclusion, it is our opinion that the best alternative for permanently eliminating the existing wetland habitat, its associated vegetation, and thus the attractiveness to roosting and nesting European starlings and blackbirds, is to drain and fill the existing land so that mechanical mowing can be conducted.

If you should have any questions or need further information or explanation please feel free to contact me at (207) 622-8263 or John.Forbes@aphis.usda.gov. Thank you.

Sincerely,

John Forbes
State Director

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Pkwy, Suite 100
Lee's Summit, MO 64063

NOV 13 2007

Re: Environmental Assessment for Proposed Improvements at Portland International Jetport

Dear Ms. Waller,

This is in response to your letter dated October 31, 2007 requesting comments on potential environmental resources located at, or in close proximity to, Portland International Jetport in Portland, Maine. The northeastern portion of the Portland International Jetport is located along the banks of the Fore River. An environmental assessment is being prepared for proposed improvements at the jetport. Improvements will be conducted on the Terminal Area, Cargo Facility, Runway 18-36, Runway 11-29, and wetland areas east of Runway 29 as called for in the Airport's five-year Capital Improvement Plan and Wildlife Hazard Management Plan. These comments are offered by NOAA's National Marine Fisheries Service (NMFS) in regards to federally threatened and endangered species under NMFS jurisdiction in the project area.

The Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon (*Salmo salar*) is listed as endangered under the Endangered Species Act (ESA) of 1973, as amended. The Atlantic salmon DPS encompasses all naturally reproducing remnant populations of Atlantic salmon from the Kennebec River downstream of the former Edwards Dam site, northward to the mouth of the St. Croix River. Since the project is located outside the geographic range of the DPS, NMFS does not expect any effects on Atlantic salmon as a result of the proposed project.

In the State of Maine, populations of the endangered shortnose sturgeon (*Acipenser brevirostrum*) are known to occur in the Penobscot River as well as in the estuarine complex formed by the Sheepscot, Kennebec, and Androscoggin Rivers. Shortnose sturgeon are not known to occur in the Fore River; therefore, NMFS expects that shortnose sturgeon will not be affected by the proposed jetport improvement project.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are distributed along the entire East Coast of the U.S. and have been designated a Species of Concern by NMFS. Many populations, including those found in Maine rivers, have undergone drastic declines in abundance since the late 1800s. Atlantic sturgeon are considered a Candidate Species as NMFS has initiated a status review for this species to determine if listing as threatened or endangered under the ESA is warranted. A status review report was completed by the status review team in February 2007.

NMFS is currently reviewing the report and other available information to determine if listing under the ESA is warranted. A listing determination, and, if listing is warranted, any accompanying proposed rule(s), is expected to be published by NMFS in 2008. If it is determined that listing is warranted, a listing determination and final rule listing the species could be published within a year from the date of publication of the listing determination or proposed rule. At this time, Atlantic sturgeon are not known to occur in the project area.

While several species of listed whales and sea turtles are known to occur seasonally in the coastal waters of Maine, individuals are not likely to occur in the Fore River. Therefore, NMFS expects that no listed whale or sea turtles will be affected by the proposed project.

In summary, no listed species under NMFS jurisdiction are known to occur in the proposed project area. Therefore, no further coordination with the NMFS Protected Resources Division is required. Should project plans change or new information become available that changes the basis for this determination, or a new species be listed or critical habitat designated, coordination with NMFS PRD should be pursued. Should you have any questions about this correspondence in regards to listed marine mammals, sea turtles, and shortnose sturgeon, please contact William Barnhill of my staff at (978) 281-9300 ext. 6510 or by email (William.Barnhill@noaa.gov). Questions regarding Atlantic salmon should be directed to Jeff Murphy at (207) 866-7379.

Sincerely,

Mary A. Colligan
Assistant Regional Administrator for
Protected Resources

cc: Jeff Murphy – F/NER3
Marcy Scott – F/NER4

File Code: Sec 7 no species 2007

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
1168 Main Street
Old Town, ME 04468
(207) 827-5938 Fax: (207) 827-6099

In Reply Refer To: 53411-2008-FA-0081
FWS/Region5/ES/MEFO

November 15, 2007

Ms. Molly Walker
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Dear Ms. Walker:

Thank you for your letter dated October 31, 2007 requesting information or recommendations from the U.S. Fish and Wildlife Service. This form provides the Fish and Wildlife Service's (Service) response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location: Portland International Jetport proposed improvements

Log Number: 53411-2008-FA-0081

Endangered Species Act Comments

Based on the information currently available to us, there are no federally-listed species under the jurisdiction of the Service known to occur in the project area. Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action. Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up-to-date account of state-listed species in the project area.

The New England cottontail rabbit (*Sylvilagus transitionalis*), a candidate for federal listing, has been observed in the vicinity of the Portland Jetport and could occur on airport property. This species uses old field and scrub shrub habitats (both upland and wetland). We encourage you to conduct surveys to determine the presence of this species or its habitat on the project area. The New England cottontail was officially listed as a candidate species for federal listing on September 12, 2006 (Federal Register 71(176):53756-53835). Thus, the New England

cottontail will likely be federally listed in the future. At this time, the New England cottontail is afforded no protection under the Federal ESA. However, we strongly encourage you to consider this species in your project planning. The Service is particularly interested in efforts to minimize adverse impacts to cottontail habitat and to promote the creation and protection of additional habitat, particularly in areas adjacent to known cottontail occurrences. Cooperative efforts at cottontail conservation now could possibly preclude the need for future listing under the ESA.

Fish and Wildlife Coordination Act Comments

Based on the information you provided and our general knowledge of the Portland International Jetport, it appears as though wetlands and streams will likely be impacted by the various airport improvement projects. Although some wetlands and streams at the Jetport are disturbed and degraded from current airport facilities (e.g., the service road) and maintenance activities, these wetlands can still provide valuable fish and wildlife habitat, particularly those that are located adjacent to the Fore River and Long Creek.

To facilitate our review of these projects, we strongly suggest that an interagency site visit be scheduled with both state and federal review agencies. We are particularly interested in visiting the areas off the end of Runway 29, where the Wildlife Hazard Management Plan activities are proposed, and the end of Runway 36 where a runway extension and safety area improvements are proposed. We would like to evaluate the habitat value of the wetlands and other habitats located between the runways and Long Creek and the Fore River. We would also like to visit the wetlands located between the airport access road and the current surface parking areas where terminal area improvements are proposed.

Having first-hand understanding of the specific fish and wildlife habitats in the project areas will help us all to best focus discussions related to impact avoidance and minimization. Furthermore, given the proposed extent of wetland impacts, it seems probable that a wetland compensation plan will be necessary. Development of this plan will benefit greatly if the review agencies are familiar with the specific wetland areas that will be filled or otherwise affected and can make informed recommendations on the approach of the compensation plan.

Based on the proposed timing of these projects, it appears that a site visit will be necessary before the 2008 growing season. While it could be a challenge to schedule, a fail or winter site visit should avoid times when the ground is covered with snow. We will provide more site-specific comments related to fish and wildlife habitat and likely project impacts to these resources after we have done a site visit.

Thank you for the opportunity to provide these comments early in your planning process. If you have any questions or want to schedule a site visit, please call Wende Mahaney at (207) 827-

5938, Ext. 20. Questions specific to the New England cottontail can be directed to Mark McCollough at (207) 827-5938, Ext. 12.

Sincerely,

Lori H. Nordstrom

Lori H. Nordstrom,
Field Supervisor

cc: Jay Clement, ACOE – Manchester, ME
Trish Garrigan, EPA – Boston, MA
Marcy Scott, NMFS – Gloucester, MA
Steve Timpano, MDIFW – Augusta, ME
Reading File

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

November 30, 2007

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

RE: Environmental Assessment for Proposed Expansion at Portland International Jetport, Portland, Maine

Dear Ms. Waller,

The Maine Department of Environmental Protection, Bureau of Air Quality appreciates the opportunity to provide comments for the Environmental Assessment which Coffman Associates will prepare for the Federal Aviation Administration (FAA) for the expansion of Portland's jetport. The Environmental Assessment should include but not be limited to:

a.) Any possible changes to the exisiting air license for stationary sources.
b.) Whether the proposed expansion will trigger General Conformity.
c.) Increased emissions from ground support equipment, take off and landings, construction equipment and increased vehicle traffic to the airport.

The information we request will assist us in determining whether an amendment to the Jetport's existing air emission license is necessary and how the proposed expansion affects the emission inventory as well as tranportation conformity. Enclosed is Chapter 115 *Major and Minor Source Air Emission License Regulations* of the Department's regulations.

We also request that alternatives for mitigation of increased air emissions be considered which may include energy efficiency measures and alternative fuels.

Sincerely,

James P. Brooks

James P. Brooks, Director
Bureau of Air Quality

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

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PORTLAND, MAINE 04103
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1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
306 US Route 1, Suite A1
Scarborough, ME 04074-9774
(207)883-0159, ext. 3; Fax (207)883-1139

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway, Suite 100,
Lee's Summit, MO 64063

Re. Environmental Assessment for Proposed Improvements at Portland International Jetport, Portland, Maine

Dear Ms. Waller,

Thank you for sending the Portland, ME International Jetport Proposed Improvement Plan.

Our findings after preliminary review of the International Jetport Project Site Plan Maps and the Project Description Report it appears there are no adverse impacts to the previously identified wetlands which largely are comprised of Biddeford, Scantic silt loams and Swanton fine sandy Northerly and Westerly of the proposed improvements.

The only adversely impacted wetlands in the proposed project area is at the East end of Runway 29. This area is comprised largely of Scantic silt loams.

A Wildlife Hazard Management Plan finalized in April 2007 recommends the area be cleared and graded. The principal justification for this loss of wildlife habitat is aircraft and passenger safety and we concur that in this instance that would probably take priority.

Please send a copy of the final plan to my office for the official file.

Good Luck.

Sincerely,

Wayne P Munroe

Wayne P. Munroe
District Conservationist
Natural Resources Conservation Service
306 US Route One, Suite A1
Scarborough, ME 04074

Enclosure: Growth Management Soils Report Cumberland County Maine and Soil Survey CD

Appendix B

AVIATION FORECASTS AND FACILITY REQUIREMENTS

APPENDIX B
AVIATION FORECASTS AND FACILITY REQUIREMENTS

This appendix will present the Aviation Demand Forecasts used for analysis in this Environmental Assessment (EA), as well as the airport improvements needed to meet the existing and anticipated future airport users. The following documents are included at the end of this appendix:

AVIATION FORECASTS

The following table summarizes the operational forecasts used for analysis in this EA. The source for the forecasts is the Federal Aviation Administration (FAA) *Terminal Area Forecast* (TAF). The TAF for Portland International Jetport is prepared annually by the FAA. Table A summarizes the TAF forecasts for 2012 and 2017. The 2007/2008 base year was obtained from actual counts maintained by personnel in the FAA-staffed Airport Traffic Control Tower (ATCT) at Portland International Jetport.

AVIATION FACILITY REQUIREMENTS

As discussed within Chapter One, the recent airport master planning process identified a number of improvements that are needed to meet the short term needs of the airport. The following paragraphs provide additional information regarding the need for the various airport improvements.

TABLE A
Forecast Summary

Category	2007/2008[1]	2012	2017
Itinerant			
Air Carrier	14,823	12,925	13,884
Air Taxi	26.233	32,098	35,022
General Aviation	19,649	23,165	23,500
Military	782	1,200	1,200
Subtotal Itinerant	**61,487**	**69,388**	**73,606**
Local			
General Aviation	12,186	8,931	8,931
Military	234	184	184
Subtotal Local	**12,420**	**9,115**	**9,115**
Total Annual Operations	**73,907**	**78,503**	**82,721**

[1] August 2007 to July 2008
Source: Air Traffic Activity Data System (ATADS), FAA 2007 TAF

TERMINAL AREA NEEDS

Through observation and analysis of facility capacities and with the use of 2003 and 2004 summer aircraft schedules, a terminal planning team identified a number of deficiencies and planning considerations with regard to the current terminal building. To address the identified deficiencies, the *Portland International Jetport Terminal Redevelopment Plan* was prepared. This document evaluated a number of alternatives and provides a terminal master plan for accommodating growth within the 20- and 50-year planning horizon. This Environmental Assessment (EA) evaluates those projects proposed to be developed by 2012. The following summarizes the principal items to be addressed by 2012 with new terminal construction:

Aircraft Gates/Apron

- Inadequate apron area causes the number of aircraft that remain overnight to be "double parked" at the gates, which produces safety and level of service concerns.
- There is an inadequate number of gates without "double parking" to serve peak period arrival demand.

Check-in

- Terminal depth is minimal, leaving inadequate space for queuing and lateral circulation.
- The in-lobby explosive detection system (EDS) is labor-intensive, space-consuming, and inefficient.

Passenger Security Processing

- Lack of processing capacity and queue space generates long waits and very long queues.

Holdrooms

- Holdrooms at either end, where there are multiple aircraft boarding positions, are inadequately sized.

Arrivals

- Meeters and greeters at the mezzanine level further congest an area already congested with departing passengers queued for security processing.

Baggage Make-up facilities

- Airlines are generally operating in extremely tight rooms with considerable manual handling of carts and baggage.

General Circulation

- Multiple levels and the curb is raised above check-in generate many circulation complexities.

Retail, Food, and Beverage

- The scattered provision of retail, food, and beverage facilities is not conveniently located for passenger flows and is not likely performing as well as it could.
- Goods and waste movement in the terminal is difficult and also complicated by level changes.

Other Support Facilities

- The limited size of in-terminal maintenance facilities was noted.

RUNWAY LENGTH NEEDS

- **Runway 11-29**

As the primary runway, Runway 11-29 should be able to fully accommodate the mix of commercial airline and air cargo aircraft to existing non-stop destinations. At a length of 7,200 feet, Runway 29 is able to accommodate the existing users; however, Runway 11 is limited to 6,800 feet of landing and departure length. The reduced landing and departure lengths on Runway 11 were implemented by the FAA as a means to meet runway safety area (RSA) standards during landing and departure operations. FAA RSA standards require the RSA beyond the Runway 29 end to extend 1,000 feet beyond the pavement end and 250 feet either side of the extended runway centerline. Presently, only 600 feet of RSA is available beyond the Runway 29 end due to the presence of the airport access road and localizer antennae.

The disparity in length between Runway 11 and Runway 29 can impact an aircraft operator's use of the airport. A number of cargo and commercial service users have indicated that the reduced length on Runway 11 impacts their operations by limiting cargo, passengers, or fuel. As shown by an email from Mr. Grant Story with FedEx, included at the end of this appendix, the additional 400 feet in length, if provided on Runway 11, would increase the Maximum Takeoff Gross Weight (MTOGW) between 300 and 700 pounds depending on engine type. The greatest disparity between Runway 11 and Runway 29 for FedEx is shown by the Maximum Landing Gross Weight (MLGW). A 400-foot increase in length on Runway 11 would increase the MLGW when using Runway 11 by 5,400 pounds, to match the MLGW currently available if operating on Runway 29. Mr. David Fuller with JetBlue Airways notes that a 400-foot increase in pavement length on Runway 11 would increase the maximum takeoff weight for the Airbus A320 by 2,210 pounds and 3,142 pounds for the Embraer E190.

- **Runway 18-36**

Runway 18-36 has evolved as the secondary air carrier runway. In this capacity, Runway 18-36 accommodates limited regional jet air carrier operations, air cargo feeder operations, and most general aviation activity if the primary runway (Runway 11-29) is not operational (e.g., closed for maintenance or repairs). Using Runway 18-36 in this situation allows the airlines to maintain limited scheduled air service, air cargo, and business general aviation activity.

At its present length of 5,001 feet, Runway 18-36 places takeoff and landing weight restrictions on those regional jets that are used to maintain the limited scheduled airline activity. While FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, states that a secondary air carrier runway for regional jet service should be equal in length to the primary runway, existing physical and environmental constraints prevent Runway 18-36 from ever obtaining the same length as Runway 11-29. These constraints include the Stroudwater neighborhood and the Fore River to the north and Long Creek to the south.

Only a limited extension is necessary to increase the payloads of departing regional jets. Increased payload can allow for additional passengers and/or fuel to reach longer stage lengths. **Table B** examines the payload (passengers) and range with an increase in pavement length for the Canadair CRJ200 Regional Jet. As shown in the table, with 5,800 feet of runway length available, the CRJ200 can carry a full load of 50 passengers on flights up to 900 nautical miles (nm) in length. With 5,001 feet of length available, the CRJ200 cannot carry full passengers at any stage length above 300 nm. Incremental increases in passengers or payloads are provided by any increases in pavement length, as shown on the table.

When considering the safety benefits of a longer runway, consideration needs to be given to the benefits of additional pavement during emergency situations. A longer runway helps to ensure aircraft that must abort a takeoff can decelerate to a stop before running off the end of the runway. Similarly, increased runway length provides an additional measure of safety for landings. Many situations such as changing wind conditions or wet/contaminated runway surfaces can unexpectedly increase landing distances from that normally required for operation at the airport

Takeoff runway length requirements for the general aviation aircraft fleet also need to be considered in the runway length analysis for Runway 18-36. Recommended runway lengths for these aircraft are prepared by the FAA and presented in **Table C**. At its current length of 5,001 feet, Runway 18-36 has sufficient length to serve all general aviation aircraft less than 12,500 pounds, as up to 4,100 feet of

runway is needed to serve these aircraft (refer to small airplanes with 10 or more passenger seats). However, larger business jet aircraft can need additional runway length. As shown in the 100 percent of large airplanes (business turboprops and jets) at 60 percent of useful load (fuel and passengers) category, up to 5,500 feet of runway length is needed. Therefore, to meet the demands of general aviation aircraft that use this runway during crosswind conditions, up to 500 feet of additional length should be considered for Runway 18-36.

TABLE B
Canadair CRJ200 Passenger Loading

	Runway Length			
	5,000'	**5,200'**	**5,500'**	**5,800'**
Takeoff Weight	44,000	44,400	46,000	49,000
Operating Empty Weight	30,500	30,500	30,500	30,500
Payload	13,500	13,900	15,500	18,500
300 NM				
Fuel Loading (lbs)	4,800	4,800	4,800	4,800
Passengers and Baggage (lbs)	8,700	9,100	10,700	13,700
No. of Passengers	44	46	50	50
400 NM				
Fuel Loading (lbs)	5,200	5,200	5,200	5,200
Passengers and Baggage (lbs)	8,300	8,700	10,300	13,300
No. of Passengers	42	44	50	50
500 NM				
Fuel Loading (lbs)	5,800	5,800	5,800	5,800
Passengers and Baggage (lbs)	7,700	8,100	9,700	12,700
No. of Passengers	39	41	49	50
600 NM				
Fuel Loading (lbs)	6,400	6,400	6,400	6,400
Passengers and Baggage (lbs)	7,100	7,500	9,100	12,100
No. of Passengers	36	38	46	50
700 NM				
Fuel Loading (lbs)	6,900	6,900	6,900	6,900
Passengers and Baggage (lbs)	6,600	7,000	8,600	11,600
No. of Passengers	33	35	43	50
800 NM				
Fuel Loading (lbs)	7,400	7,400	7,400	7,400
Passengers and Baggage (lbs)	6,100	6,500	8,100	11,100
No. of Passengers	31	33	41	50
900 NM				
Fuel Loading (lbs)	8,000	8,000	8,000	8,000
Passengers and Baggage (lbs)	5,500	5,900	7,500	10,500
No. of Passengers	28	30	38	50
1,000 NM				
Fuel Loading (lbs)	8,700	8,700	8,700	8,700
Passengers and Baggage (lbs)	4,800	5,200	6,800	9,800
No. of Passengers	24	26	34	49

Passengers and Baggage = 200 pounds
Source: Canadair Flight Planning and Cruise Control Manual, Airport Planning Manual

TABLE C
FAA Recommended Runway Length Requirements

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,400 feet
95 percent of these small airplanes	3,000 feet
100 percent of these small airplanes	3,500 feet
Small airplanes with 10 or more passenger seats	4,100 feet
Large airplanes of 60,000 pounds or less	
100 percent of these large airplanes at 60 percent useful load	5,500 feet

Source: FAA Airport Design Computer Program, Version 4.2D.
Small airplanes – aircraft weighing less than 12,500 pounds.

DESIGN AND SAFETY STANDARD REQUIREMENTS

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This airport reference code (ARC) has two components: the first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group and relates to aircraft wingspan and/or tail height (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan/tail height primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan or tail height. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet wingspan or tail height up to but not including 20 feet.
Group II: 49 feet up to but not including 79 feet wingspan or tail height from 20 up to but not including 30 feet.
Group III: 79 feet up to but not including 118 feet wingspan or tail height from 30 up to but not including 45 feet.
Group IV: 118 feet up to but not including 171 feet wingspan or tail height from 45 up to but not including 60 feet.

Group V: 171 feet up to but not including 214 feet wingspan or tail height from 60 up to but not including 66 feet.
Group VI: 214 feet up to but not including 262 feet wingspan or tail height from 66 up to but not including 80 feet.

The critical design aircraft is defined as the most demanding category of aircraft which conducts 500 or more operations per year at the airport. For the Jetport, the critical design aircraft is represented by the Airbus A300-600 (ARC C-IV). This is the largest aircraft in terms of wingspan to regularly operate at the airport. It also shares the same approach speed with the critical design aircraft in the air carrier segment of activity and general aviation segment of activity. For planning purposes, an increase in Approach Category D operations can be expected. The critical design aircraft for long range facility planning should consider ARC D-IV requirements.

For Runway 18-36, a lower design standard can be considered since this runway can only serve a limited number of the aircraft that use the airport. Based solely upon the wind analysis completed previously in this chapter, Runway 18-36 is needed mostly for small aircraft within ARCs A-I, A-II, B-I, and B-II during those periods when there are strong winds from the north or south. While this includes many of the smaller piston-engine general aviation aircraft, these ARCs also include a wide range of commercial airline turboprop aircraft and business aircraft.

Wind coverage requirements are not the only reason for selecting an appropriate ARC for a runway. Other utilization factors must also be considered. For the Jetport, this includes the past and present occasional use of Runway 18-36 by aircraft within ARC C-II when Runway 11-29 was not available for use during maintenance periods. For the Jetport, Runway 18-36 not only ensures the safe operation of small aircraft during strong wind conditions from the north and south, but it also ensures that the airport can remain open in a limited capacity when Runway 11-29 is closed. Essentially, Runway 18-36 has evolved as the back-up to Runway 11-29, accommodating operations by regional jet aircraft and turboprops providing scheduled air service, feeder aircraft for air cargo service, and most of the general aviation aircraft fleet using the airport. To ensure the safe operation of these aircraft, an appropriate design standard that widens and lengthens the safety areas of the airport should be considered. Therefore, Runway 18-36 should consider ARC B-III design requirements in the future. This ARC provides a longer and wider safety area than ARC B-II and encompasses potential cargo feeder aircraft.

This determination was solidified within the FAA's August 2007 Runway Safety Area (RSA) Determination which confirmed the ARC D-IV for Runway 18-36 and ARC B-III for Runway 18-36. RSA requirements for ARC D-IV call for an RSA which extends for 1,000 feet beyond the runway end and 250 feet each side of runway centerline. ARC B-III RSA requirements call for an RSA which extends 600 feet beyond the runway end and 150 feet each side of runway centerline. A copy of the Runway Safety Area Determinations can be found at the end of this appendix.

For Runway 11-29, the FAA requires the Object Free Area (OFA) extend 1,000 feet beyond each runway end and 400 feet each side of the extended runway centerline. For Runway 18-36, the FAA requires the OFA to extend 600 feet beyond each runway end and 400 feet each side of the extended runway centerline. To minimize impacts to wetlands, the relocated service road, which extends around both the Runway 29 end and Runway 36 end, has been located within the limits of the OFA. Copies of the FAA-approved Modification to Design Standard which permits the location of the relocated perimeter service roads within the limits of the OFA can be found at the end of this appendix.

Chris M. Hugunin

From: GRANT STORY [316587@pilot.fedex.com]
Sent: Friday, October 26, 2007 1:29 PM
To: darth1129@aol.com
Cc: Steven Graebner

Attachments: KPWM Allowable max TOGW 79 F.doc

KPWM Allowable max TOGW 79 F....

Artie Sewall
Director of Operations
Portland Int'l Jetport

Sir,

The attached word document contains the performance information pertaining to the B727 that you requested. If you have any questions or require any additional information please feel free to contact our office.

Grant Story
B727 S/O Flight Standards
901-224-5325

Allowable MTOGW 79 F

B727-200 JT8D-15		
RWY 11 (6,800')	175.5	Runway Limited
RWY 29 (7,200')	175.8	Obstacle Limited
B727-200 JT8D-17		
RWY 11 (6,800')	178.9	Runway Limited
RWY 29 (7,200')	179.5	Obstacle Limited
B727-200 JT8D-217/-17		
RWY 11 (6,800')	194.0	Runway Limited
RWY 29 (7,200')	194.7	Obstacle Limited

Allowable MLGW 79 F

All B727-200	
RWY 11 (6,800')	156.0
RWY 29 (7,200')	161.4

The difference in MTOGW at the assumed temperature of 79F is 300 - 700 pounds. However, there is a significant gain in MLGW. The extra runway available will allow an increase in the amount of freight FedEx carries out of the airport and an even greater increase in the amount of freight that can be brought into the airport.

The most important point that the extra 400' of available runway will provide is an additional safety margin in stopping performance. Aircraft departing and arriving in adverse weather conditions, such as icy runways, will have an additional safety margin in available stopping distance. A rejected takeoff or a landing under adverse conditions will have a greater chance of staying on the paved runway. This might avoided and airport closure due to a disabled aircraft on the only available runway.

Chris M. Hugunin

From: darth1129@aol.com
Sent: Monday, December 31, 2007 9:22 PM
To: Chris M. Hugunin
Subject: Fwd: RE: Portland Request for Information
Attachments: B6reply_runwaylengthjustifiationletter.doc

Chris-

Another response to the airline letter....
Happy New Year!

Artie Sewall
PWM Airport Ops
207 233-1733
darth1129@aol.com

-----Original Message-----
From: Fuller, David <David.Fuller@jetblue.com>
To: Darth1129@aol.com
Cc: Wichmann, Scott <Scott.Wichmann@jetblue.com>
Sent: Mon, 31 Dec 2007 6:43 pm
Subject: RE: Portland Request for Information

Hi Artie,

Here is our response to the survey. I hope this helps.

Thank you,
Dave

David Fuller
Director Flight Operations
JetBlue Airways
(718) 709-3047 (o)

From: Darth1129@aol.com [mailto:Darth1129@aol.com]
Sent: Thursday, December 20, 2007 10:32 PM
To: Fuller, David
Cc: Darth1129@aol.com
Subject: Re: Portland Request for Information

David-

Sorry, the file dropped out somehow, please let me know if it does not come attached this time. Thanks

Artie Sewall
Director of Operations
Portland Int'l Jetport
1001 Westbrook St.
Portland, ME 04102
207 233-1733
207 772-0466
207 828-0991 fax
darth1129@aol.com

****

1.) Type of aircraft flown: Airbus A320 and Embraer E190

2.) Allowable maximum takeoff weight on Runway 11 (assume summer temperature of 79 degrees Fahrenheit and 6,800 feet of runway length.)
TORA/TODA/ASDA = 7,200ft → A320 = 171,175lbs / E190 = 114,065lbs
TORA/TODA/ASDA = 6,800ft → A320 = 168,965lbs / E190 = 110,923lbs

Current configuration:
TORA/TODA = 7,200ft / ASDA = 6,800ft → A320 = 169,752lbs / E190 = 112,343lbs

3.) Allowable maximum takeoff weight on Runway 29 (assume summer temperature of 79 degrees Fahrenheit and 7,200 feet of runway length.)
TORA/TODA/ASDA = 7,200ft → A320 = 168,658lbs / E190 = 109,749lbs

4.) Describe existing penalties for operating on Runway 11. This would include specifying the following for the 6,800-foot runway length (assume summer temperature of 79 degrees Fahrenheit.)

a. Weight restrictions. There is a loss of performance margin associated with what is in effect a 400ft reduction to the usable length of the runway. At 7,200ft runway 11 provides nearly enough performance margin at 79F for each aircraft to reach its certified maximum structural takeoff weight (A320 = 171,958lbs / E190 = 114,200lbs). If only 6,800ft of runway is available for use, the result will be a loss of performance margin equivalent to roughly 800lbs for the A320 and 1400lbs for the E190. While not interfering with payload capability, this reduction to performance margin would have a small negative impact on Jetblue Airways in the loss of opportunity to capture engine savings through the application of higher Flex thrust temperatures at PWM.

b. The number of passenger seats that cannot be filled due to the weight restrictions (if applicable). There is no impact to the A320's or E190's ability to carry a full compliment of passengers to either JFK or MCO from PWM.

U.S. Department
of Transportation
Federal Aviation
Administration

Federal Aviation Administration
New England Region

12 New England Executive Park
Burlington, MA 01803

Runway Safety Area Determination
Portland International Jetport
Portland, Maine
August 2007

Portland International Jetport is a small hub primary airport which holds a Part 139 airport operating certificate for operation as a Class 1 airport. The airport has two runways: Runway 11-29, the primary instrument runway and Runway 18-36, the crosswind runway. Operations at this airport, including scheduled commercial service, are in excess of 100,000 annually.

An initial runway safety area (RSA) determination was signed September 20, 2000. This determination concluded that it was practicable to meet standard for Runway 11-29 and that Runway 18-36 needed to further study the feasibility of a runway shift to gain standard safety areas. At that time the design aircraft category for this runway was B-II.

In fiscal year 2005, a master plan update began and was completed in 2007. One of the primary issues was safety areas for Runway 18-36. Also, the study assessed the feasibility of regaining physical safety area for Runway 29, which currently meets RSA standards through the use of declared distances.

Forecast determined the critical aircraft (ARC) for both runways: Runway 11-29 remained D-IV; Runway 18-36 has been changed to a B-III ARC. Operational runway length needs were evaluated and safety areas were studied in accordance with FAA Order 5200.8, *Runway Safety Area Program* (see Appendix B of the AMPU attached).

Based on the operational needs of the airport and evaluation of Engineered Material Arresting System (EMAS) and other alternatives to meet standard, it is determined that both runways can be improved to meet standard.

Runway 11-29 Improvements – Currently meets standards.

This primary runway is 7,200' x 150' with a CAT III ILS approach. The critical design aircraft classification for this runway is determined to be D-IV which requires safety area dimensions of 500'W x 1000'L. This runway is currently in compliance through the use of declared distance operations. Some of the physical issues that led to declared distances are: sub-standard grade; 3.1 acres of wetland impact; service road in RSA; and localizer in RSA. Under declared distance operations, landing distance available and accelerated stop distance available on Runway 11 is reduced to 6,800'.

There are two major concerns with the use of declared distances however. The first concern is operational. Given the disparity between departure and landing distances depending

which runway is in use, airlines are subjected to different operating requirements. Providing a traditional graded runway safety area will allow for standard operating requirements regardless of which runway is in use. This will improve operational safety and reduce the opportunity for pilot error.

The second concern is with respect to the wetlands off the Runway 29 end. Declared distance operations were put in place to meet standard by avoiding impacts to the wetlands. More recently, a wildlife assessment as required by Part 139 was conducted by U.S. Department of Agriculture (USDA). The results of this study recommended that the wetlands be removed to reduce the potential for gathering flocks which could in turn cause bird strikes.

The following three alternatives were analyzed: 1) retain declared distances at $0; 2) create a traditional graded safety area, including relocation of road and localizer as well as wetland impacts at $1.8M; or 3) install EMAS at $7.3M, including maintenance costs.

The ideal alternative with respect solely to aviation safety would be option 2 above. This alternative requires further environmental assessment in order to implement. An environmental assessment will begin in fiscal year 2007. If the EA determines it is not feasible to mitigate for wetland impacts, the second favorable alternative is to retain declared distance operations.

Runway 18-36 Improvements – Practicable to meet standards.

This secondary runway is 5,001' x 150' with a GPS approach to Runway 18 with visibility minimums of 1 mile/500 HAT.

Seven alternatives were assessed for the runway safety areas. Reference Appendix B (attached) for further discussion of these alternatives. Of these seven, the three most feasible were analyzed in the master plan.

The master plan determined the ARC for Runway 18-36 to be B-III based on current and forecasted operations. This runway does have some C and D aircraft operations, but these do not meet the annual operational thresholds for design aircraft.

Three alternatives were identified for safety areas with an ARC of B-III: no build, declared distances and EMAS. The EMAS alternative was requested by FAA outside of the master plan document since it was not analyzed there. Due to geographical constraints at this airport, including wetlands and a river, full build was dismissed and not analyzed further.

The baseline, or no build alternative, was also dismissed since it does not meet safety area standards or operational efficiency.

For the other two alternatives, all assumptions were held equal, meaning, both looked at increased runway length through displaced thresholds, meeting standard safety area requirements and improving approach minima (1 mile for 18; ¾ mile 36) for B-III aircraft.

It is assumed that approach minima will be higher for larger C and D operations given the runway/taxiway separation will meet B-III design standards. However, these operations will be infrequent, if even at all.

Wetland, service road, obstructions (FAA antenna) and community impacts were the same for each alternative. The decisive factors therefore were primarily ability to achieve standards, preparation for future precision capability and finally, cost.

ARC	Alternative	Total Pavement	LDA	Standard RSA	Estimated Costs
B-III	No build	5,001'	5,001'	does not meet	$0.0
B-III	Declared distance	6,100'	5,150'	300' x 600'	$7.8M
B-III	EMAS	5,800'	5,400'	300' x 600' Rwy18 EMAS Rwy 36	$15.3M

The master plan looked not only safety area compliance, but also at maximizing the utilization of this runway. Considerations were: current fleet mix and trends; wind/weather conditions; terrain constraints; and mitigation of noise impacts. Of particular concern is the community of Stroudwater which has been an adversary regarding airport noise.

Utilizing displaced thresholds in lieu of relocated thresholds will allow for longer takeoff distance available. This will increase operational efficiency on the infrequent occasions that regional jets to use this runway when 11-29 is unavailable. This final pavement length of Runway 18-36 does not meet runway length requirements identified for the regional jet operations at Portland; it is forecasted that the runway can only be used by these aircraft under limited operating conditions.

Also, moving the runway operations more to the south allows aircraft to be at a higher altitude when they are over the Stroudwater area. This will abate some of the adverse noise impacts to this community.

Based on all these considerations, the declared distance alternative meets all design standards and operational efficiency needs of the airport. Declared distances are:

	RWY 18	RWY 36
LDA	5,150'	5,150'
ASDA	5,650'	5,650'
TODA	6,100'	6,100'
TORA	6,100'	6,100'

Runway safety area dimensions will be 300' W x 600' L for each runway end, meeting the B-III standard (improved from existing safety area dimensions of 150'W x 300'L).

Based on the findings of the master plan update, it is practicable to meet standard with an ARC of B-III for Runway 18-36. Feasibility of this alternative will require further environmental assessment in order to implement.

Of some concern is that the increase in takeoff distance available under this development will increase the usage of this runway by smaller C design category aircraft. Therefore this safety area determination also recommends that operations on Runway 18-36 are evaluated in approximately 5 years (anticipating construction within 2 years of this determination date). If operations of C aircraft on this runway do in fact increase, a focused master plan should be conducted to update forecast, design aircraft and safety area standards. It is also recommended that on-airport dimensional standards such as runway/taxiway separation and parking limitations are protected at this time in anticipation of future C-II standards. As long as development is consistent with the master plan alternatives, these surfaces, by default, will be protected.

Construction of this B-III alternative support by the master plan findings will not prohibit or constrain the ability to meet C safety area standards in the future if operations indicate a change in design aircraft is warranted.

Recommended by: _____ Date: 8/10/07
Project Manager, Planning

Coordination: Engineering project manager: _____

_____ Date: 8/10/07
Lead Certification & Safety Inspector

_____ Date: 8/10/07
Senior Engineer

Approved: _____ Date: 8/10/07
LaVerne Reid, Division Manager, ANE-600

MODIFICATION OF AIRPORT DESIGN STANDARDS

BACKGROUND

1. AIRPORT:	2. LOCATION (CITY, STATE):	3. LOC ID:
Portland International Jetport	Portland, ME	PWM

4. EFFECTED RUNWAY/TAXIWAY	5. APPROACH (EACH RUNWAY):	6. AIRPORT REF. CODE (ARC)
Runway 11-29	Runway 11 – PIR Runway 29 – PIR	C - III

7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY):
Airbus A300-600

MODIFICATION OF STANDARDS

8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT):
Runway Object Free Area Width and Length Beyond Runway End
(AC 150/5300 – 13, pg. 26-2, Table 3-3)

9. STANDARD/REQUIREMENTS:
800 feet – width
1,000 feet length beyond runway end

10. PROPOSED:
Runway 29 End:
± 600 feet – Permanent (width) at shallowest point - north side of Runway 29 extended runway centerline only
± 289 feet – Permanent (length beyond runway end) - north side of Runway 29 extended runway centerline only
Runway 11 End:
± 775 feet – Permanent (width) at shallowest point
± 775 feet – Permanent (length beyond runway end)

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1F):
Runway 29 End: An existing perimeter service road extends around the Runway 29 end to provide access for Portland International Jetport airfield maintenance and security vehicles as well as FAA maintenance vehicles accessing the approach lighting system, localizer antenna and other navigational aids located at this runway end. As part of the planned improvements to the Runway 29 runway safety area, the perimeter service road will be located to clear the RSA. At its standard length and width, the ROFA extends beyond airport property and into the Fore River. Local shoreline zoning requirements (which limit development to within 75 feet of the normal high water level) and the location of coastal wetlands dictate placement of the service road on the north side of Runway 29 inside the ROFA. This restricts the ROFA width to ± 500 feet and length beyond runway end to ± 289 feet, making full extension to 800 feet by 1,000 feet impractical. The ROFA on the south side of Runway 11-29 is unobstructed. (Refer to Airport Layout Drawing)
Runway 11 End: The existing perimeter service road extends around the Runway 11 end and through the ROFA beyond the Runway 11 end. This service road was relocated during the recently completed runway safety area improvements. The location of Johnson Road dictates placement of the service road on the west side of Runway 11 inside the ROFA. This restricts the ROFA width to ± 775 feet and length beyond runway end to ± 775 feet, making full extension to 800 feet by 1,000 feet impractical. (Refer to Airport Layout Drawing)

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1F):
Runway 29 End: No viable alternatives exist due to the natural location of the Fore River.
Runway 11 End: No viable alternatives exist due to the location of Johnson Road and Interstate 95.

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY (FAA ORDER 5300.1F):
Proposed modification will not impact airport safety as this road is accessed only by driver's who have completed training from airport staff.

MODIFICATION OF AIRPORT DESIGN STANDARDS		
MODIFICATION: Runway (11-29) Object Free Area Width and Length Beyond Runway End	LOCATION: Portland International Jetport Portland, ME	PAGE 2 OF 2
14. SIGNATURE OF ORIGINATOR:	15. ORIGINATOR'S ORGANIZATION: Mr. Paul Bradbury Airport Manager Portland International Jetport	16. TELEPHONE: (207) 772-0690
17. DATE OF LATEST FAA SIGNED ALP:		
18. ADO RECOMMENDATION:	19. SIGNATURE:	20. DATE

21. FAA DIVISIONAL REVIEW (AT, AF, FS):

Coordination completed under 2008-ANE-139-NRA.

ROUTING SYMBOL	SIGNATURE	DATE	CONCUR	NON-CONCUR

COMMENTS: FAA requires contact with ATCT during IFR conditions.

22. AIRPORTS' DIVISION FINAL ACTION:

☐ UNCONDITIONAL APPROVAL ☐ CONDITIONAL APPROVAL ☐ DISAPPROVAL

DATE: 11/26/2008 SIGNATURE: TITLE: Airport Director

CONDITIONS OF APPROVAL:

MODIFICATION OF AIRPORT DESIGN STANDARDS

BACKGROUND

1. AIRPORT:	2. LOCATION (CITY, STATE):	3. LOC ID:
Portland International Jetport	Portland, ME	PWM

4. EFFECTED RUNWAY/TAXIWAY	5. APPROACH (EACH RUNWAY):	6. AIRPORT REF. CODE (ARC)
Runway 18-36	Runway 18 – Nonprecision Runway 36 – Nonprecision	B-III

7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY):
ATR-72

MODIFICATION OF STANDARDS

8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT):
Runway Object Free Area Width and Length Beyond Runway End
(AC 150/5300 – 13, pg. 25, Table 3-1)

9. STANDARD/REQUIREMENTS:
800 feet – width
600 feet length beyond runway end

10. PROPOSED:
Runway 36 End:
± 560 feet – Permanent (width) at shallowest point (± 160 feet east of extended Runway 36 end.)
± 100 feet – Permanent (length beyond runway end)
Runway 18 End:
± 400 feet – Permanent (width) at shallowest point- (0 feet east of Runway 18.)
± 140 feet – Permanent (length beyond runway end)

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1F):
Runway 36 End: An existing perimeter service road extends around the Runway 36 end to provide access for Portland International Jetport airfield maintenance and security vehicles as well as FAA maintenance vehicles. As part of planned improvements, Runway 18-36 is to be extended 1,100 feet south and upgraded from ARC B-II to ARC B-III and the perimeter service road relocated. While the service road can be relocated outside the ROFA east of Runway 36 extension, this results in a greater impact to designated wetlands. To reduce environmental impacts, the service road will be located as close as possible to the limits of the RSA. This restricts the ROFA width to ± 160 feet on the east side of the extended Runway 36 end and length beyond the ultimate runway end to ± 100 feet. The ROFA west of the Runway 36 end is unobstructed and extends 400 feet west of the extended Runway 36 centerline. (Refer to Airport Layout Drawing)
Runway 18 End: East of Runway 18-36, north of the Air Cargo Apron, the existing perimeter security fencing, Yellowbird Road, and a portion of the existing perimeter service road are also located entirely within the limits of the ROFA. The perimeter service road extends north from the Air Cargo Apron to the Runway 18 end. The location of Yellowbird Road prevents the relocation of the perimeter security fencing and in turn the ability to relocate the perimeter service road and fencing The ROFA length beyond the Runway 18 end is ± 140 feet (Refer to Airport Layout Drawing)

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1F):
East of the Runway 36 end, all viable alternatives result in greater wetland impacts.
Near the Runway 18 end, no greater width in the ROFA can be achieved as Yellowbird Road cannot be relocated due to the presence of wetlands, terrain variations, drainage areas, and shoreline limitations to the north of the Runway 18 end.

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY (FAA ORDER 5300.1F):
Proposed modification will not impact airport safety as this road is accessed only by driver's who have completed training from airport staff.

MODIFICATION OF AIRPORT DESIGN STANDARDS		
MODIFICATION: Runway (18-36) Object Free Area Width and Length Beyond Runway End	LOCATION: Portland International Jetport Portland, ME	PAGE 2 OF 2

14. SIGNATURE OF ORIGINATOR:	15. ORIGINATOR'S ORGANIZATION: Mr. Paul Bradbury Airport Manager Portland International Jetport	16. TELEPHONE: (207) 772-0690

17. DATE OF LATEST FAA SIGNED ALP:

18. ADO RECOMMENDATION:	19. SIGNATURE:	20. DATE

21. FAA DIVISIONAL REVIEW (AT, AF, FS):
2008-ANE-139-NRA (comments attached ~~to~~ FAA copy of mod. to std.)

ROUTING SYMBOL	SIGNATURE	DATE	CONCUR	NON-CONCUR

COMMENTS:
ATCT contact is required during IFR conditions.

22. AIRPORTS' DIVISION FINAL ACTION:
LaVerne F. Reid

☐ UNCONDITIONAL APPROVAL	☐ CONDITIONAL APPROVAL	☐ DISAPPROVAL

DATE: 11/26/2008 | SIGNATURE: Paul Bradbury Jr | TITLE: Airport Director

CONDITIONS OF APPROVAL:

Appendix C

ADDITIONAL INFORMATION REGARDING WILDLIFE HAZARD MANAGEMENT PLAN

APPENDIX C
ADDITIONAL INFORMATION REGARDING WILDLIFE HAZARD MANAGEMENT PLAN

This appendix provides information regarding wildlife hazard management at Portland International Jetport and commercial service airports across the country. The following documents are included at the end of this appendix:

WILDLIFE HAZARD MANAGEMENT PLAN

Each year wildlife strikes in the United States cost civil aviation more than $600 million and more than 195 people have been killed worldwide as a result of wildlife strikes since 1988. As a result, appropriate

wildlife management on airport property and adjacent areas is critical. As identified in Chapter One, the USDA has completed a Wildlife Hazard Management Plan (WHMP) which contains recommendations regarding wildlife management at the Jetport. This plan is included at the end of this appendix. Specifically, the WHMP plan calls for the filling of the wetland area beyond the end of Runway 29 to eliminate potential bird strikes.

According to United Wildlife Control, birds of all types are drawn to open water for drinking, bathing, feeding, loafing, roosting, and protection. Rainy periods provide temporary water pools at many airports. Many airports have permanent bodies of water near or between runways for landscaping, flood control, or wastewater purposes. These permanent sources of water provide a variety of bird foods, including small fish, tadpoles, frogs, insect larvae, other invertebrates, and edible aquatic plants. Temporary and permanent waters, including ponds, borrow pits, sumps, swamps, and lakes, attract gulls, waterfowl, shorebirds, and marsh birds. Fresh water is especially attractive in coastal areas.

It was found that the cattails and other vegetation in this wetland area attract large flocks of blackbirds and European starlings that roost and nest in this habitat. In order to effectively manage wildlife hazards on the approach to Runway 29, it has been strongly suggested by the USDA to eliminate the wetland and associated vegetation so regular mechanical mowing can occur. Implementation of habitat modification is the most preferred course of action and involves changing the environment to make it less attractive or inaccessible to the problem wildlife. The reduction of food, shelter, and water will result in a proportional reduction of wildlife. Habitat modification is the foundation of every airport's WHMP.

DOCUMENTATION IN
SUPPORT OF THE JETPORT'S WHMP

In a letter dated October 26, 2007 from the USDA, further explanation regarding the recommendations within the WHMP was provided. It was discussed that the current species of existing vegetation most known to attract nesting and roosting blackbirds is phragmites or common reed. This species is difficult to control. By draining and filling this area, routine mowing of the vegetation can be undertaken, thereby eliminating the attractive habitat. The use of herbicides is an option but it is not a long term solution due to the frequency of application that would be required. Additionally, the elimination alone of the vegetation would not eliminate standing water that also plays a major role as a wildlife attractant. Utilization of harassment techniques could prove dangerous given the habitat's close proximity to aircraft movement. Exclusion devises (such as grid wires) that have proven effective for certain waterfowl species are not shown to be effective for smaller birds. It is the opinion of the USDA that the best alternative for permanently eliminating the existing wetland habitat, its associated vegetation, and thus the attractiveness to roosting and nesting European starlings and blackbirds, is to drain and fill the existing land so that mechanical mowing can be conducted.

Implementation of habitat modification has been successful at other airports. In an email dated February 7, 2008, a successful habitat modification plan for Whiteman Air Force Base was outlined. Whiteman AFB, located in Missouri, had a 20-30 acre area which was covered up to 75 percent with habitat for blackbirds (250,000) and waterfowl (2,000). The initial step of their WHMP was to remove the roosting habitat for the blackbirds. The next step involved draining the wetlands to resolve the waterfowl issue. It was crucial in this instance to remove vegetation and drain the wetland in order to resolve the wildlife hazard issues.

An email dated April 30, 2008 summarizes a voice conversation with Mr. Nick Atwell with the Port of Portland. To minimize water attractants at the Portland International Airport, the Port has worked to remove areas of standing water by netting, draining, grading or piping open waterways near the airfield. All wetlands, both jurisdictional and non-jurisdictional, have been removed.

In an email dated May 6, 2008, Ms. Catherine Boyles notes that for wildlife management at Dallas-Fort Worth International Airport, wetlands were removed adjacent to Runway 17L. Other techniques include reduction of the height of grass on the airfield, and the reduction of vegetation in and around the open drainage ditches has proven effective.

EXAMPLES OF SUCCESSFUL
WILDLIFE HAZARD MANAGEMENT PLANS

As part of a Part 139 certificate, airports are required to develop and implement a Wildlife Hazard Management Plan (WHMP) if it is determined that one is needed. Following are examples of airports with similar wildlife hazards to Portland International Jetport and how those hazards have been addressed.

- Tallahassee Regional Airport utilizes habitat alteration occasionally. The clearing of woods adjacent to the airport has been effective.
- Sacramento International Airport commonly uses habitat alteration and has removed blackbird roosting trees from airport property.
- New Orleans International Airport has cleared vegetation including trees from drainage ditches. Habitat alteration is used occasionally and has proven to be effective.
- Augusta Regional Airport has cleared vegetation from the drainage areas. This method has proven effective.

United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Wildlife Services
79 Leighton Road
Suite 12
Augusta, ME 04330

October 26, 2007

Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Re: Portland International Jetport Wildlife Hazard Management Plan Recommendations

Dear Ms. Waller:

Thank you for contacting our office for an explanation of the Wildlife Hazard Management Plan (WHMP) that was prepared for Portland International Jetport (PWM). As you may know, Wildlife Services provides federal leadership to other state, federal and local agencies as well as the general public in managing wildlife conflicts with agriculture, property, human health and safety, and natural resources. As part of our mission, we assist airports across the country by providing wildlife hazard assessments and wildlife management plans to reduce wildlife strikes with aircraft. Each year wildlife strikes in the United States cost civil aviation more than $500 million and more than 160 people have been killed worldwide as a result of wildlife strikes since 1988. As a result, appropriate wildlife management on airport property and adjacent areas is critical. It is my understanding that you are seeking our professional opinion regarding the alternatives for reducing or eliminating the wildlife habitat attractant caused by the wetland at the approach to Runway 29.

As stated in the WHMP, the highest priority development project to be conducted at PWM is to "fill and grade the wetland that exists on the approach to Runway 29 to extend the runway safety area." Furthermore, we found, "the wetland on the approach to Runway 29 must be removed or mitigated. The cattails and other vegetation that grow in this area attract large flocks of blackbirds and European starlings that roost and nest here." To effectively manage wildlife hazards on the approach area, we strongly suggested eliminating this wetland and the associated vegetation found here. The actual methods used to achieve this goal may vary, but it is our opinion that draining and filling would be the most practical and efficient, and likely the most successful method of permanently altering the current habitat features that are attractive to a variety of wildlife, specifically nesting and roosting blackbirds.

The current species of existing vegetation most notably known to attract nesting and roosting blackbirds is phragmites, or common reed (*Phragmites australis*). Although this species is known to be native to North America, a separate genotype of the same species, a non-native, invasive form of the plant also exists, and is causing threats to native ecosystems. As a result, phragmites is known to be difficult to control, and

this species can even persist in upland habitats. By draining and filling this area, routine mowing of the vegetation can be achieved, thus eliminating the current attractive habitat type. Herbicides are another option, but they are not a long term solution because they require repeated application. Additionally, eliminating vegetation within the wetland does not eliminate standing water that is also a wildlife attractant.

Attempting to prevent large flocks of birds from utilizing the area using harassment could prove dangerous given the habitat's close proximity to aircraft movement. Exclusion devices such as grid wires are not known to prevent access to areas by smaller birds, such as European starlings and blackbirds, although they can be effective for certain species of waterfowl. As a result, exclusion is not the most effective tool to manage this wildlife attractant.

In conclusion, it is our opinion that the best alternative for permanently eliminating the existing wetland habitat, its associated vegetation, and thus the attractiveness to roosting and nesting European starlings and blackbirds, is to drain and fill the existing land so that mechanical mowing can be conducted.

If you should have any questions or need further information or explanation please feel free to contact me at (207) 622-8263 or John.Forbes@aphis.usda.gov. Thank you.

Sincerely,

John Forbes
State Director

Molly A. Waller

From: Adam.D.Vashon@aphis.usda.gov
Sent: Thursday, February 07, 2008 10:16 AM
To: Molly A. Waller
Cc: John.Forbes@aphis.usda.gov
Subject: RE: Portland International Jetport Environmental Assessment

Molly,

From my requests, I found the most pertinent example of habitat modification was from Whiteman Air Force Base (MO). This example is described as follows:

"Here at Whiteman AFB we have had a huge success in our habitat modification efforts. To speak specifically as too your requested issues; yes we have modified out waste water treatment facility's wetlands. The area was roughly 20-30 acres in size located 1 mile west of our runway. Of that acreage up to 75% of the area had cattails on it and was acting as a magnet to black birds (250,000+) and waterfowl(2,0000+). The first step we did was to remove as much of the cattails as possible but had to leave some for the plant to operate correctly. The remain cattails were then cut at the end of the growing season which is when we started to see our build start. The reduced our blackbird problem to nearly 100% as the roost dispersed and did not reform any where near the base. The waterfowl problem was address as well a few years later as the plant ran into operation issues and ended up not needing the wetlands except for emergency cases. The Air Force then drained the wetland resolving our waterfowl issues."

As you can see, they did "cut" the cattails initially to remove the roosting habitat, but that did not address the waterfowl problem (also they required this wetland for their sewage treatment operations). If you may recall our recommendation and subsequent discussion identified that the water alone is an attractant, therefore, that is why we recommend draining just as they had to eventually do at Whiteman AFB.

Please let me know if this information is suitable or if you will need other specifics.

****
Adam D. Vashon
Wildlife Biologist
USDA-APHIS-Wildlife Services
79 Leighton Road, Suite 12
Augusta, ME 04330
phone: (207) 622-8263
cell: (207) 458-5852
fax: (207) 622-5760
adam.d.vashon@aphis.usda.gov

"Molly A. Waller" <mwaller@coffmanassociates.com>

02/04/2008 12:22 PM

To <Adam.D.Vashon@aphis.usda.gov>
cc
Subject RE: Portland International Jetport Environmental Assessment

Thanks for the update Adam!!

From: Adam.D.Vashon@aphis.usda.gov [mailto:Adam.D.Vashon@aphis.usda.gov]

Chris M. Hugunin

From: Kory A. Lewis
Sent: Wednesday, November 12, 2008 3:36 PM
To: Chris M. Hugunin
Subject: FW: Portland International Airport Bird/Water Fowl Mitigation

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From: Kory A. Lewis
Sent: Wednesday, April 30, 2008 12:58 PM
To: Atwell, Nick
Subject: Portland International Airport Bird/Water Fowl Mitigation

Nick:

My project manager has requested that I document our phone call from April 22, 2008 regarding Portland International Airport's (PDX) starling and water fowl mitigation strategies. I have included a summary of our conversation. Please respond to confirm.

1. Has there ever been a blackbird or starling problem at PDX? If so, what mitigation actions were taken to address the problem?

Response: PDX has an ongoing starling problem within aircraft operating areas. PDX mitigation plan is to bait and trap the birds and then euthanize them with carbon dioxide. On average, PDX traps and euthanizes 9,000 starlings annually.

2. Did filling in the wetlands at PDX prove to be a successful mitigation strategy for limiting water fowl problems given the proximity of other bodies of water, specifically, the Columbia River?

Response: Filling the wetlands has been a successful mitigation strategy for limiting water fowl problems at the airport, but requires ongoing observation. The program is in its eighth year, recent settling in the wetland areas has allowed water to pool. The pooling has resulted in a return of water fowl to the airport. The current plan is to add more fill to the former wetland areas.

Let me know if you have any questions about my request.

Thanks for all of your help.

Kory

Kory A. Lewis
Airport Planner
Coffman Associates, Inc.
816-524-3500
www.coffmanassociates.com

Chris M. Hugunin

From: Kory A. Lewis
Sent: Tuesday, May 06, 2008 3:35 PM
To: Chris M. Hugunin
Subject: FW: Wildlife Management Questions

See her responses below.

From: Boyles, Catherine [mailto:cboyles@dfwairport.com]
Sent: Tuesday, May 06, 2008 3:25 PM
To: Kory A. Lewis
Subject: RE: Wildlife Management Questions

I have answered your questions to the best of my ability, below.

Cathy Boyles
DFW Airport Wildlife Administrator
Operations, P.O. Box 619428
DFW Airport, TX 75261
p. 972.973.3122
c. 972.948.7089
f. 972.973.3196

-----Original Message-----
From: Kory A. Lewis [mailto:klewis@coffmanassociates.com]
Sent: Tuesday, May 06, 2008 12:58 PM
To: Boyles, Catherine
Subject: RE: Wildlife Management Questions

Cathy,

Thanks for your response. I have some additional questions related to this issue. We are trying to determine whether managing the vegetation alone greatly reduces bird populations or would any on-airport wetlands need to be removed as well. Try to remove if possible- see AC 150-5200-33b, Hazardous wildlife attractants on or near airports.
I understand that a wetland near Runway 17L at DFW was eliminated. What was the rationale used for removing the wetland? It attracted wildlife- and was located in an area between two runways and near a third. . Also, have your grass management practices resulted in increased blackbird populations at other on-airport wetlands? Not that I am aware of- the only other airport water feature we have is the Trigg Lake area, well south of the AOA- all blackbird activity I have seen has been associated with night time roosting. They apparently moved to this location after we utilized a night time falconry project to rid our Terminals of blackbirds roosting in the trees there. And finally, in the case of the Runway 17L wetland, was the area left in a state that it could be mowed to prevent future habitat growth? Absolutely!

I appreciate your help with this matter.

Thanks,

Kory

From: Boyles, Catherine [mailto:cboyles@dfwairport.com]

Sent: Tuesday, May 06, 2008 12:35 PM
To: Kory A. Lewis
Cc: Tobey, Steven
Subject: RE: Wildlife Management Questions

Kory, Curt has it pretty much wrapped up.
I will add to his information: if you do decide to allow a longer grass height, be aware of what else is growing other than the grass- if weeds are mixed in with grass they are more likely to mature and produce seeds in a tall-grass scenario. This will produce food and cover for rodents (the dinner bell for raptors), and also some birds (meadowlarks for example) prefer the taller grasses. No matter what you do, in other words, some species or another will utilize it for food or cover. Just be aware of this, and how you might work around it if you can.

Don't hesitate to contact me at any time.

Cathy Boyles
DFW Airport Wildlife Administrator
Operations, P.O. Box 619428
DFW Airport, TX 75261
p. 972.973.3122
c. 972.948.7089
f. 972.973.3196

-----Original Message-----
From: Kuehner, Curtis
Sent: Tuesday, May 06, 2008 7:47 AM
To: 'Kory A. Lewis'
Cc: Boyles, Catherine; Tobey, Steven
Subject: RE: Wildlife Management Questions

Kory,

We have found these measures to be effective in conjunction with an aggressive harassment program, eliminating or reducing any source of concealment and shelter will have a positive affect on reducing Blackbird populations. We have in the past experimented with letting our grass grow to 8" to 10" inches as a deterrent to birds but we discovered that the grass was not growing to a uniform height (as well as having some areas that were near bare) which allowed the birds to congregate without being seen because of the tall grass around them. Because of this, we adopted a policy where we mow the grass shorter (around 6") allowing our people to see any birds that may happen to land and disperse them. I am not sure if Portland has a Wildlife Biologist on staff or even personnel that do wildlife management but if staffing is an issue I might recommend that they let the grass grow longer as long as it grows uniformly with no bare areas, this will deter Blackbirds as they can not see predators coming at them and they will be unwilling to land there or if they do they won't stay long. I have copied in Ms. Cathy Boyles who is our Wildlife Administrator and resident expert on controlling Blackbirds and I am sure she would be happy to answer any further questions you may have, her email address and phone number is;

cboyles@dfwairport.com

972-973-3122

If I can help you any further please let me know.

Curt Kuehner
Airfield Officer
DFW Airport Operations
972-973-3121
972-948-7214 (cell #)

-----Original Message-----
From: Kory A. Lewis [mailto:klewis@coffmanassociates.com]
Sent: Monday, May 05, 2008 11:42 AM
To: Kuehner, Curtis
Subject: Wildlife Management Questions

Mr. Kuehner:

Our firm, Coffman Associates, is preparing environmental documentation for airfield improvements at Portland International Jetport. The Jetport presently has a problem with blackbirds and starlings related to the presence of phragmites near the end of the runway. The U.S. Army Corps of Engineers has requested that we communicate with airports that have had similar problems to evaluate the effectiveness of their mitigation efforts. It is my understanding that in the past DFW has removed wetlands near Runway 17L, reduced the height of grass on the airfield, and reduced vegetation in and around open drainage ditches to minimize bird populations in the airport operating areas. Have these measures proven to be effective? We are particularly interested in the reduction of grass height and vegetation approaches.

Thank you for your assistance. Please contact me if you have any questions about the information I am seeking.

Kory Lewis

Kory A. Lewis
Airport Planner
Coffman Associates, Inc.
816-524-3500
www.coffmanassociates.com

WILDLIFE HAZARD MANAGEMENT PLAN
CFR Title 14 FAR Part 139.337

PORTLAND INTERNATIONAL JETPORT
(PWM)

Table of Contents

CHAPTER 9
AGENCY DIRECTORY

APPENDICES

EXECUTIVE SUMMARY

Pursuant to Code of Federal Regulations (CFR) Title 14 FAR Part 139.337(e.1) Portland International Jetport (PWM) developed this Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture Wildlife Services (WS) Program. This plan will be reviewed periodically by PWM's Wildlife Hazard Group (WHG) and will be updated as changing circumstances merit. All changes made to the WHMP will be sent to the Federal Aviation Administration (FAA) for approval, and shall be documented in the Table of Revisions of this document.

PWM will take immediate measures to identify and mitigate wildlife hazards whenever they are detected or whenever airport management has been advised that hazardous conditions exist. The WHMP outlines steps for monitoring, documenting, and reporting potential wildlife hazards and strikes at PWM. Protocols for responding to hazardous wildlife situations are presented, including roles and responsibilities of airport personnel. Wildlife control procedures for birds and mammals are also included.

Habitat on and around the airfield will be managed in a manner that reduces or eliminates the area's attractiveness to wildlife. The Plan outlines priorities for habitat management, including target dates for completion. The legal status of wildlife is described, including laws and regulations pertaining to permits needed for control actions, such as harassment and take of animals. PWM's wildlife-related permits are included in Appendices. Management of wildlife hazards requires application of control techniques and monitoring conducted in a coordinated and accountable manner. Supplies and equipment for these activities will be obtained and maintained responsibly within PWM's Airport Maintenance Division. These materials include, but are not limited to, frightening devices (e.g., pyrotechnics, propane exploders, mylar tape), wildlife restraint equipment (e.g., traps), and firearms. PWM personnel will be trained to properly identify wildlife and apply wildlife control techniques in a safe, effective and efficient manner, as outlined in this document.

Identification, management, and monitoring of wildlife-related hazards at PWM will be coordinated within the Operations Unit. PWM's WHG, chaired by the Wildlife Coordinator (Director of Operations Unit) will meet annually, and will evaluate the need to update and modify the WHMP at annually. Modifications will be documented, and communicated to the FAA, the various PWM Divisions, and to Federal/State agencies.

Phil Bozenhard viewed end of Runway 29 w/ A Scurlock
in 1997 - "don't want utilds & end of runway"

PREFACE

This Wildlife Hazard Management Plan was written to fulfill the requirement of CFR Title 14 FAR part 139.337 (e1) for PWM. This plan is intended specifically for the PWM's use to monitor and reduce wildlife hazards.

TABLE OF REVISIONS

This Wildlife Hazard Management Plan is incorporated into the PWM Airport Certification Manual. The bottom of each page contains a date in the footer, which is the date that the particular page was printed. The latest dated page will be the most current. The master document is contained in the offices of the PWM Wildlife Coordinator. Revisions to this plan will be recorded in the log on ACM and on this page in the table below.

DATE	PAGE	REVISION

LIST OF ACRONYMS

ACM	Airport Certification Manual
AGL	Above Ground Level
ATCT	Air Traffic Control Tower
ATIS	Automatic Terminal Information Service
CAL	Computerized Airport Log
CFR	Code of Federal Regulations
FAA	Federal Aviation Administration (New England Region)
FAR	Federal Aviation Regulations
FONSI	Finding of No Significant Impact
MBPC	Maine Board of Pesticides Control
MDIFW	Maine Department of Inland Fisheries and Wildlife
NEPA	National Environmental Policy Act
NOTAM	Notice to Airmen
PWM	Portland International Jetport
SIDA	Security Identification Display Area
USFWS	United States Fish and Wildlife Service
WHA	Wildlife Hazard Assessment
WHMP	Wildlife Hazard Management Plan
WHWG	Wildlife Hazard Working Group
WS	Wildlife Services

CHAPTER 1.0
INTRODUCTION

1.1 OVERVIEW

In accordance with its Airport Certification Manual (ACM) and the requirements of Code of Federal Regulations (CFR) Title 14 Federal Regulations (FAR) Part 139.337 each certificate holder must take immediate action to alleviate wildlife hazards whenever they are detected. Wildlife hazard assessments are conducted when any of the following events occurs on or near the airport:

1) An air carrier aircraft experiences multiple wildlife strikes;
2) An air carrier aircraft experiences substantial damage from striking wildlife. Such damage means structural damage, structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;
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 above to have access to any airport flight pattern or aircraft movement area.

According to CFR Title 14 FAR Part 139.337(e), "When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis. The plan must-

1. Provide measures to alleviate or eliminate wildlife hazards to air carrier operations;
2. Be submitted to, and approved by the Administrator prior to implementation; and
3. As authorized by the Administrator, become part of the Airport Certification Manual.

FAR Part 139.337(f): The plan must include at least the following:

1) A list of the individuals having authority and responsibility for implementing each aspect of the plan (Chapter 2, Authorities and Responsibilities)
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 modification; and
   iii) Land use changes.
   (Chapter 3, Habitat Management)
3) Requirements for and, where applicable, copies of local, State and Federal wildlife control permits. (Chapter 4, Permits and Regulations)
4) Identification of resources that the certificate holder will provide to implement the plan. (Chapter 5, Resources)
5) Procedures to be followed during air carrier operations that a minimum includes-
   i) Designation of personnel responsible for implementing the procedures;
   ii) Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;
   iii) Wildlife hazard control measures; and

iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

(Chapter 6, Wildlife Hazard Management Procedures)

6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months for
   i) The plan's effectiveness in dealing with known wildlife hazards on and in the airport's vicinity and
   ii) Aspects of the wildlife hazards described in the wildlife hazard assessment that should be reevaluated

   (Chapter 7, Evaluation)
7) A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the wildlife hazard management plan (Chapter 8, Training)

1.2 PROBLEM SPECIES

The wildlife species generally considered to present the greatest threats to aviation are birds with flocking tendencies or are of relatively large size, such as waterfowl, gulls, pigeons, starlings, and raptors. Juvenile animals and migratory species may also pose higher risks for aviation because of their general unfamiliarity with the airport environment. The species which pose the greatest potential safety hazards at PWM at this time are herring gulls, ring-billed gulls, great black-backed gulls, and European starlings (WHA 2004).

1.3 PURPOSE AND SCOPE

Enhancing safe air carrier operations is a primary objective of PWM. Accomplishing this objective entails careful monitoring of arriving and departing aircraft in the vicinity of PWM, including potential wildlife hazards on and around the airport. As part of its safety efforts, PWM will implement and maintain a WHMP according to CFR Title 14 FAR Part 139.337(e) to address potential wildlife hazards at PWM. In addition to addressing general wildlife hazards, this plan will present specific protocols for monitoring and responding to unforeseen wildlife hazards that may arise.

It is important to note that Part 139.337(e) underscores the need for a flexible plan that can be quickly adapted to changing circumstances. In rare cases immediate actions may be necessary that are not addressed in this plan to ensure the safety of airport patrons. This plan provides PWM with the discretion and capability to respond to these situations, while providing guidance for compliance with applicable Federal, State, and municipal laws and regulations. The latitude afforded PWM management when administering this plan is discussed in CFR 14 Part 139.113, which states:

> ***"In emergency conditions requiring immediate action for the protection of life or property, the certificate holder may deviate from any requirement of Subpart D of this part to the extent required to meet that emergency. Each certificate holder who deviates from a requirement under this section must, within 14 days after the emergency, notify the Regional Airports Division Manger of the***

nature, extent, and duration of the deviation. When requested by the Regional Airports Division Manager, the certificate holder must provide this notification in writing."

PWM's Federal permit (Appendix C) includes an emergency clause:

"In case of bona fide emergencies, you are authorized to kill any migratory bird*within runway and safety areas, using shotguns not larger than 10 gauge. You may take additional numbers of the species identified above (in permit), and other species listed in 50 CFR 10.13 under this Condition. However, if you kill birds under this Condition, you must submit a written report to the Federal issuing office within seven (7) days. Information required includes the date taken, and the species and numbers of each. *Exception: You may not take Federally endangered or threatened species listed in 50 CFR 17.11."

CHAPTER 2.0
AUTHORITIES AND RESPONSIBILITIES

FAR 139.337(f)(1) The plan must include at least the following:
A list of the individuals having authority and responsibility for implementing each aspect of the plan.

2.1 OVERVIEW

PWM's Airport Manager has the authority and responsibility of designating a Wildlife Coordinator to implement the WHMP. Each department has responsibilities outlined in the WHMP and will incorporate them into their programs. Clear communication among airport personnel is essential for the WHMP to succeed. Personnel working at the airport will communicate the needs, recommendations, and progress to the designated Wildlife Coordinator. The Director of Operations will ensure that the WHMP is approved by the FAA and that the WHMP and amendments comply with Federal, State, and local laws and regulations.

2.2 PERSONS WITH AUTHORITY AND RESPONSIBILITY FOR PLAN IMPLEMENTATIONS

2.2.1 Director of Operations. The Director of Operations will:

- Establish a committee, the Wildlife Hazard Group (WHG), that will oversee, monitor and/or implement the WHMP.
- Chair the WHG, conduct WHG meetings twice per year, and update and revise the WHMP in accordance with FAR 139.337(f)(6).
- Become or designate a Wildlife Coordinator to monitor all wildlife related activities that occur at PWM as described by WHMP.
- Ensure that the WHMP and its amendments, adhere to current laws and regulations, and is approved by the FAA.
- Supervise the "Wildlife hazard Management Supervisors" (listed in Section 2.2.5)

2.2.2 Wildlife Coordinator (Director of Operations or Designee). The Wildlife Coordinator will:

- Oversee the implementation and monitoring of activities described in the WHMP.
- Disseminate information and assignments through the WHG. Report annual meeting results to the Airport Manager.
- Designate personnel within Maintenance who will be trained and equipped to respond to wildlife hazards on the airfield.
- Obtain Federal and State of Maine permits that authorize control of wildlife pursuant to the WHMP.
- Ensure the availability of supplies necessary for conducting wildlife control activities.
- Oversee coordination and communication with off-airport entities if/when wildlife hazards are identified at these locations.

- Require Maintenance staff to document wildlife activity and control actions on PWM's Wildlife Incident Report and input data into a computerized airport log (Appendix D).
- Require Operations staff to document wildlife strikes through completion and submission to the FAA of the FAA Form 5200-7 (Appendix C).
- Communicate the importance of wildlife strike reporting to air traffic control personnel, pilots, maintenance staff, and others, and inform them of the procedures to report wildlife strikes to the FAA and Operations.
- Review proposals involving landscaping, airside developments, security, landside developments, mowing, insect management, building construction, maintenance, and other activities to ensure that wildlife attractants are not created.
- Coordinate the issuance of NOTAMS concerning eminent wildlife hazards on the airport.

2.2.3 **Maintenance.** Maintenance staff will:

- Conduct operational wildlife hazard management activities (listed in Section 2.2.2.4) as necessary.
- Participate in WHG meetings, upon request.
- Conduct insect control, mowing, landscaping, and housekeeping operations on the airport in order to reduce wildlife habitat and discourage wildlife use/presence, as described in the WHA and the WHMP, and as discussed and agreed to at WHG meetings.
- Ensures that the Director of Operations is provided the opportunity to review and comment on Maintenance plans and programs to identify potential wildlife hazards and attractants, and suggest changes, as appropriate.
- Conduct inspection and maintenance of airport buildings to eliminate wildlife such as nesting birds, bats, and other wildlife, as described in the WHA and the WHMP, and as discussed and agreed to at WHG meetings.

2.2.4 **Assistant Manager of Operations and Maintenance Supervisor.** The assistant Manager of Operations and Maintenance Supervisor's working title is Wildlife Hazard Management Supervisors, and their focus is to maintain aircraft and public safety at PWM through field implementation of wildlife hazard management activities. PWM's Wildlife Hazard Management Supervisors will:

- Conduct operational wildlife hazard management activities during duty hours.
- Record all wildlife strikes on FAA form 5200-7, and submit the form to the FAA, the PWM Wildlife Coordinator, and the MDIFW Wildlife Biologist. Confer with a Wildlife Biologist and/or the Smithsonian Institution to determine wildlife species identification prior to submission of the form to the FAA.
- Maintain wildlife patrols, and conduct wildlife control activities, including, but not necessarily limited to, harassment (pyrotechnics, vehicles, lasers, propane cannons), wildlife reduction control (elimination of nesting birds, destruction of bird nests in buildings, etc.), population reduction (shooting, trapping use of toxicants), exclusion (installation of netting, fencing, and other barriers), and monitoring of wildlife attractants.
- If wildlife attractants are identified, communicate the nature, location, and recommended mitigation to the PWM Wildlife Coordinator.

- Maintain records of patrols, wildlife, and wildlife hazards/attractants, control actions, and other pertinent information, through completion of PWM's Wildlife Incident Report (Appendix D) and other formats and enter records in the airport's computerized airport log.
- Communicate wildlife-related emergency situations and the hazardous presence of wildlife to the Wildlife Coordinator, the air traffic control tower, airport tenants, airlines, and others as appropriate.
- Inspect airport properties for wildlife food attractants, such as refuse associated with dumpsters, airport tenants (i.e. food services, caterers, etc.), trash containers, construction sites and taxicab staging areas. When attractants are identified, communicate wildlife hazard management needs to the source of the problem (i.d. airport tenant) and issue a Notice of Breach of Rules as necessary.
- Implement and/or recommend to the appropriate PWM department habitat management actions identified in the PWM WHA and as described in Chapter 3 of this WHMP, including maintenance of the mowing schedule, implementation of grasshopper and other insect control measures, elimination of pooling of water on airport surfaces, elimination of dirt mounds, and maintenance of a No Feeding Policy on all airport properties.
- Monitor and recommend improvements in the airport's perimeter fence to eliminate incursion of wildlife, especially mammals such as coyotes, fox, rabbits, woodchucks, and feral dogs and cats into PWM properties.
- Monitor and reduce wildlife attractants and presence of wildlife in and around PWM buildings and structures. This includes, but is not limited to, elimination of bird nesting in eves and overhangs, birds roosting on rooftops, poles, and other structures, and wildlife presence in/on airport equipment and vehicles.
- Maintain necessary licenses, permits, and certifications necessary to implement wildlife control actions.
- Complete wildlife hazard management training and safety courses annually regarding bird and wildlife identification, wildlife hazard management techniques, reporting, etc.
- Maintain shooting proficiency through annual training provided by a National Rifle Association's certified trainer or other certified trainer.
- Maintain records of animals taken in pursuant to Federal and State permits and provide this information to the Wildlife Coordinator for inclusion in annual permit renewals.
- Maintain safety and efficiency of wildlife management equipment and supplies through regular maintenance and cleaning, proper storage, and limitation of access to other persons. This includes, but is not limited to cleaning of firearms and pyrotechnic equipment.
- Maintain wildlife hazard management supplies and resources in the vehicles used for wildlife hazard management activities, including bird identification field guides, binoculars, pyrotechnics, and other wildlife control equipment such as firearms, ammunition, etc.

2.2.5 Security. Security will:

- Participate in PWM's WHG meetings, upon request.
- Communicate wildlife hazards, attractants, and presence to PWM Wildlife Coordinator and the Wildlife Hazard Management Supervisors. This includes

observations of wildlife entering the airport through gates, the perimeter fence, and culverts.

- Inform the Wildlife Hazard Management Supervisors of wildlife in or around buildings.

2.2.6 MDIFW Wildlife Biologist.

- Provide advice and technical recommendations, upon request, to PWM's Wildlife Hazard Management Supervisors, especially regarding wildlife species identification and reporting.
- Notify PWM Wildlife Coordinator of wildlife-related training opportunities and invite participation of PWM personnel.
- Upon request, review and submit recommendations pertaining o wildlife hazard-related documents and processes at PWM.
- Upon request, join PWM's Operations personnel on airport patrols and conduct periodic field visits regarding specific issues.

2.2.7 FAA New England Region.

- Review and provide recommendations during periodic reviews of the PWM WHMP.
- Assist PWM in reviewing proposed land use changes, construction plans, and mitigation projects for potential wildlife hazards to aircraft.

2.2.8 USDA APHIS, Wildlife Services. WS biologists may assist PWM by providing technical assistance (i.e. advice, training, etc.) and direct wildlife management assistance (i.e. conduct operational wildlife management activities) pursuant to funded contracts with PWM. The nature of WS involvement will depend on the airport's need and resources but may consist of the following:

- Participate in PWM's WHG meetings.
- Provide advice, recommendations, and training regarding identification and management of wildlife hazards at PWM.
- Upon request, conduct wildlife hazard management activities at PWM to implement recommendations of the WHA and the WHMP.
- Upon request, review airport documents, plans, and programs to identify potential wildlife attractants or other circumstances which could create or exacerbate wildlife hazards.

2.3 WILDLIFE HAZARD GROUP (WHG)

The Wildlife Hazard Group will meet twice a year or more frequently as needs arise. The WHG will review the WHMP at least once every 12 consecutive calendar months or following any of the events described in FAR 139.337(b) (1-4). In addition, the group will monitor activities, status, and make recommendations to the Wildlife Coordinator.

The Wildlife Hazard Group will be represented by:

- Director of Operations or Designee (Wildlife Coordinator)
- Assistant Operations Manager and Airport Maintenance Supervisors (Wildlife Hazard Management Supervisors)
- Security Manager
- Maintenance representative(s)

- Wildlife Biologist(s) from MDIFW and/or WS

CHAPTER 3.0
HABITAT MANAGEMENT

FAR 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 modification; 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 hazard to aviation. Habitat modifications will be monitored carefully to ensure that they reduce wildlife hazards and do not create new attractions for different wildlife species. PWM will take guidance from FAA Advisory Circular No. 150/5200-33A. "Hazardous Wildlife Attractants on or Near Airports" (Appendix F).

3.2 WILDLIFE ATTRACTANTS AND THE AIRPORT ENVIRONMENT

Wildlife attractants within a 5 miles radius of the airport could potentially impact air traffic safety operating out of PWM, 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 PWM 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 considered a critical zone. Control effort will be primarily concentrated within this area because within 10,000 feet of the runway centerline is the area where arriving and departing aircraft are typically operating at or below 500 feet Above Ground Level (AGL), an altitude that corresponds with the most bird activity.

3.2.1 Non-Airport/Adjacent Land-use Projects

The FAA New England Region will provide technical guidance to PWM in addressing land-use compatibility issues. If PWM or the FAA requests assistance from Wildlife Services (as per the Memorandum of Understanding between FAA and Wildlife Services, Appendix E), then Wildlife Services 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 within flight zones will be identified and the recommendation will be to not support the development or to pursue mitigation. Incompatible land uses near the airport may include developments such as water reservoirs, parks with artificial ponds, wetlands, waste handling facilities, and wildlife refuges/sanctuaries.

As a result of the Wildlife Hazard Assessment, areas of concern were identified. These areas of concern are written into the Wildlife Hazard Management Plan as Recommended Habitat Management Projects. WS, FAA, and PWM recognize that these recommended projects may have environmental impacts and the airport operator must ensure that these Recommended Habitat Management Projects are studied further to comply with the National Environmental Policy Act (NEPA).

3.2.2 Recommended Wildlife Population Management, Habitat Modification, and Land Use Projects and Their Target Dates for Initiation and Completion:

As a result of the Wildlife Hazard Assessment, areas of concern were identified. These areas of concern are written into the Wildlife Hazard Management Plan as Recommended Habitat Management Projects. WS, FAA, and PWM recognize that the development projects may have environmental impacts and that PWM must ensure that these Recommended Habitat Management Projects are studied further to comply with the National Environmental Policy Act (NEPA). They are numbered in accordance with their level of importance in removing wildlife hazards at PWM:

1) **Development Projects: These projects will be subject to NEPA and if a Finding of No Significance (FONSI) results, work should begin one year from FONSI:**
   A. Fill and grade the wetland that exists on the approach to Runway 29 to extend the runway safety area.
   B. Clear and re-grade brush/shrub that exists near the wetland to make it mowable.

2) **Repair and Installation Projects: Begin October 1, 2005 and completed by August 1, 2006.**
   A. Repair the perimeter fence so there are no spaces between the ground and the bottom of the fence.
   B. Install a grid system over the pond outside the perimeter fence.
   C. Install kites, and/or effigies, and/or mylar flags in hangars and parking garages to deter nesting and perching activity.
3) **Projects that will be ongoing:**
   A. Sweep temporary puddles after rain storms.
   B. Mow grass once in the Spring and once in the Fall maintaining it between 10"-14". This recommendation is a result of PWM's WHA (2004) where gulls were identified as the species which pose the greatest potential safety hazards at PWM. Maintaining grass height between 10"-14" will reduce loafing gulls on the airfield. (Appendix H)
   C. Plant fescue seed mix.
   D. Enforce a No Feeding Policy on all airport properties.

3.3 WETLAND/WATER MANAGEMENT

Temporary open water areas on the airport will be monitored by the Wildlife Hazard Management Supervisors and covered or removed as appropriate. Pools of water that develop after periods of precipitation or melting will be dispersed, and chronic problem areas will be identified and graded or drained.

Landscaping and development projects will be reviewed in the early planning stages to ensure that the likelihood of pooling is minimized and that ponds are not created.

The wetland on the approach to Runway 29 must be removed or mitigated (mitigation will be determined by the Army Corps of Engineers). The cattails and other vegetation that grow in this area attract large flocks of blackbirds and European starlings that roost and nest here. Removing this attractant will be safer for planes using Runway 29.

Ideally, these and any other such wetlands inside the perimeter fences should be filled and established in turf as described above. Ensure alteration of any potential wetland habitat complies with Federal and State regulations. Any potential wetlands mitigation efforts should never occur in the airport operating area (AOA) and cooperation between federal agencies, especially the Corps of Engineers, must be sought so as not to compromise flight safety for the objectives of wetlands mitigation programs. Consult the Memorandum of Agreement between the FAA, USAF, US Army, EPA, USFWS, and USDA for guidance in wetlands mitigation measures on or near airports (Appendix G).

To prevent waterfowl from using the pond that is outside the fence (in the approach to Runway36), install an overhead wire grid system across it. The design of the grid system should focus on the exclusion of waterfowl. Stainless steel wire is recommended over twine or rope, as it requires less maintenance. The wire should be suspended three - four feet off the ground and spaced four feet apart parallel to each other.

3.4 VEGETATION MANAGEMENT

The Wildlife Coordinator will ensure that all new plantings on PWM property do not include those species that produce edible fruits, nuts, or berries because these plants create an attraction to hazardous wildlife. New plantings and current vegetation will be managed or eliminated if they create roosting habitat for starlings, blackbirds, and other birds. Trees such as evergreens, which produce dense roosting cover, will be reduced, eliminated, or removed from landscaping plans. The Wildlife Coordinator will participate in the initial and early phases of all airport building projects to avoid any inadvertent increase in wildlife hazards resulting from landscape changes. The FAA reviews proposed construction activities for potential wildlife attractions when the FAA Form 7460-1 application is submitted and may also solicit input from Wildlife Services.

The existence of dirt mounds will be monitored, and mounds will be eliminated as soon as possible to reduce wildlife habitat for hawks, starlings, blackbirds, kestrels, red fox, and other wildlife.

3.4.1 Grass Management

Other than paved areas, grass will be the primary ground cover inside the perimeter security fence. In addition, grasses that produce large seeds and are known to be attractive to wildlife will be avoided when planting new areas. Fescue is an ideal grass species as it grows in a dense, sod-forming manner that can eliminate bare spots and out-compete weeds. It also grows to substantial heights before going to seed. Such grass is also generally indigestible to the majority of bird species. The endophytic (symbiotic intercellular fungal association) varieties deter foraging by birds and especially herbivorous insects that in turn, attract gulls which were identified as the greatest potential safety hazard at PWM. Ideally, the airfield should be maintained in such grass and kept between 10 and 14 inches over the entire area to limit gull numbers and reduce maintenance costs.

Mowing is managed by PWM's Maintenance personnel. When possible, grass will be mowed at night when birds are less active and air traffic is reduced. Mowing is attractive to several species of birds and mammals because it exposes food sources such as rodents, insects, worms, and seeds. If cutting is being conducted during the day and birds are attracted to activity, the mowing will stop until the birds have been successfully hazed from the area. Mowing activities will he coordinated in advance with the Director of Operations and Wildlife Hazard Management Supervisors. PWM's should schedule mowing in late summer/autumn mowing. The last mowing of the growing season should be to top grass off at 10 inches where it will dry and stand through the winter. Tall grass, once established, will out-compete and thus reduce broad-leaved weed species. This will enable a reduction in the amount of broad-leaved herbicide applied to the field.

3.4.3 Ditch Vegetation

Wetland vegetation should be routinely removed from drainage ditch areas and flow of drainage water maintained to prevent recurrence of aquatic vegetation. Wetland vegetation must be removed whenever it develops in any of the airfield ditches through the use of gang or hoom mowers to reduce the attractiveness to birds and to prevent heavy vegetative growth from complicating maintenance.

To minimize wetland vegetation from growing along these ditches, plant fescue. Manage it at a height no less than 12" but no more than 24" so that it grows in confluence with the vegetation on the flat surfaces. This height is recommended so visibility of standing water and runoff in these ditches is minimized to gull, duck, and glossy ibis flocks. During the WHA, these species were observed loafing in these ditches when water in these ditches was visible.

3.4.4 Ornamental Landscaping

Landscaping at the airport can enhance tourism, business, and the overall impression of the PWM vicinity to visitors, but it cannot compromise the airport's central mission of public safety. Ornamental trees and bushes used to enhance airport aesthetics will be kept to a minimum, and varieties that are unattractive to wildlife will be selected. Species that produce edible fruits, nuts, or berries will not he used on PWM property because they will attract hazardous wildlife. Wildlife Hazard Management Supervisors will monitor ornamental trees to identify roosting by starlings, blackbirds, and crows and thin or remove the trees if necessary (Appendix I).

3.5 STRUCTURE MANAGEMENT

Structures provide cover and hunting perches for wildlife. Buildings should not provide nesting, perching, or roosting sites for birds and should prohibit access by mammals such as rodents and cats.

3.5.1 Airfield Structures

Airfield structures such as runway lights, ramp and taxiway signs, ILS towers, and light poles could be used as hunting and loafing perches for birds such as hawks and gulls. Lights may attract insects at night and, in turn attract bats and nighthawks. Structures found to routinely attract birds in a hazardous manner may be fitted with wire coils or porcupine wire (e.g., Nixalite).

All towers will be monitored for nesting birds in the spring. Towers provide ample opportunity for osprey to build nests. Remove all nesting materials immediately. Install devices such as kites, dome-like structures, or mylar tape to deter birds from re-nesting.

Bird-proofing Buildings and Hangars. If pigeons, sparrows, and starlings begin to frequently occur in buildings and hangars exclusion should be implemented. Denying access by screening windows, closing doors, and blocking entry holes is most effective. When necessary, consider:

(a) Pellet Guns. Shoot birds for a short-term solution. Permits from the US Fish and Wildlife Service and state wildlife agency are required to kill most birds. (Permits are not required for Rock Doves, European Starlings, or House Sparrows). Experience has shown that all birds cannot be removed using this technique. Proper safety equipment and skilled personnel are necessary.

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

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

(d) Trapping/Removal. Use large cages with food, water, and other birds to trap pest birds. Birds can either be released away from the hangar or killed.

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

3.5.2 Abandoned Structures

Structures not pertinent to air operations and no longer in use will be removed if they are found to provide habitat for wildlife. This includes abandoned houses, sheds, machinery, and light poles. Such structures are attractive to rodents, small birds, and rabbits and, consequently attract hawks, owls, and other predators that can become a significant air hazard.

3.6 FOOD/PREY-BASE MANAGEMENT

Rodents, rabbits, insects, earthworms, and other invertebrates are highly attractive to many species of birds and mammals and should be controlled where feasible. Handouts, trash, and scattered debris also provide food for wildlife. The modification or management of a wide variety of habitats such as wildlife-attracting vegetation and removal of abandoned structures will reduce populations of potentially hazardous wildlife by limiting shelter, food, and prey availability.

3.6.1 Rodents

Rodent populations at PWM were found to be relatively low. PWM will conduct control activities if rodent abundance increases to a level where wildlife is attracted. Field mice may provide a prey base for red-tailed hawks, coyotes, red fox, rough-legged hawks, Northern harriers, and other wildlife at PWM.

3.6.2 Insects and Other Invertebrates

Insects and other invertebrates may attract wildlife to PWM, particularly gulls, starlings, kestrels, and crows. Insect control procedures are implemented by a contractor. Insect populations will be monitored periodically by PWM to determine if they are present in sufficient numbers to attract wildlife. University of Maine Cooperative Extension can provide advice regarding the best pesticide or control method. Habitat management will keep much of the prey population in check, but the airport will continue to monitor these populations for outbreaks. A written insect control plan is/will be maintained at PWM.

3.6.3 Trash, Debris, and Handouts

Trash and debris can attract gulls, crows, and pigeons. PWM will continue to conduct trash and Foreign Object Debris (FOD) collection sweeps on the airfield, especially after high winds. PWM's Operations and Maintenance will conduct trash and debris removal activities to reduce wildlife attractants. The public or airport employees will not be allowed to feed birds or mammals anywhere on the airport. Operations will monitor incidents of feeding of wildlife, unclean practices of caterers and other tenants and shall issue Notice of Breach of Rules violations as appropriate.

3.6.4 Animal Carcasses

Carcasses of animals, such as those that were involved in collisions with vehicles or aircraft or that were taken pursuant to permits, should be immediately collected and disposed of by PWM personnel. All carcasses will be buried or incinerated. No carcasses will be buried or dumped in tall grassy or woody areas on airport property. This is important because it will avoid attracting scavenging birds to the airport by the presence of carrion. All carcasses collected should be recorded on the Wildlife Incident Report and input into a computerized airport log.

CHAPTER 4.0
PERMITS AND REGULATIONS

FAR 139.337(f)(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits.

4.1 OVERVIEW

Most forms of wildlife and their habitat are protected by one or more Federal, State and/or municipal laws. Prior to implementing control actions involving wildlife, the legal status and permit requirements of the target species are determined. PWM is responsible for adhering to the current regulations regarding wildlife management and for obtaining the appropriate permits to take wildlife. PWM's Wildlife Coordinator is responsible for maintaining current and appropriate wildlife permits, and may be assisted in this process by the Wildlife Hazard Management Supervisors or other Operations personnel. Permits to take wildlife in Maine are issued by the U.S. Fish and Wildlife Service (USFWS) and the Maine Department of Inland Fisheries and Wildlife (MDIFW).

4.2 MAINE WILDLIFE REGULATIONS

Maine wildlife laws involving birds, mammals, reptiles, and amphibians, as well as State threatened and endangered species, are administered by MDIFW. The use of pesticides in Maine is conducted pursuant to the MBPC. Use of products, such as avicides, to kill birds is regulated by MBPC.

4.3 FEDERAL REGULATIONS

Several Federal regulations, including the Migratory Bird Treaty Act (MBTA), the Lacey Act, the Endangered Species Act, Eagle Protection Act, the National Environmental Policy Act, and the Federal Insecticide, Fungicide, and Rodenticide Act regulate various aspects of PWM's wildlife management activities. Additional regulations that may affect wildlife control activities at PWM are found in the CFR, and several Federal agencies may be responsible for their implementation. Federal wildlife laws are typically administered by the USFWS and involve primarily migratory birds and threatened and endangered species.

4.4 WILDLIFE CATEGORIES

Federal (CFR Title 50) and State laws define the categories of wildlife and regulations related to their management. Feral and free ranging dogs, cats, and other domestic animals are included in this Plan because of the hazards they may pose to aircraft but they are mostly regulated under municipal laws. Wildlife control personnel should know the category for the species they intend to control so they can determine the relevant laws and necessary permits.

4.4.1 Species of Concern on PWM

The WHA identified mean abundances of species commonly observed on PWM property during surveys. The following list identifies those species and permits needed to control them:

- Herring gull (Federal)
- Great black-backed gull (Federal)
- Ring-billed gull (Federal)
- Blackbird: European starling, red-winged black bird (no permit)
- American crow (State)
- English sparrow or house sparrow (no permit)
- All other sparrows (Federal)
- Glossy ibis (Federal)
- Rock dove or pigeon (no permit)
- Mallard (Federal)
- American black duck (Federal)
- Canada geese (Federal)
- Coyote (no permit)
- Red fox (State)
- Woodchuck (no permit)
- Striped skunk (State)
- Raccoon (State)

4.5 GENERAL REGULATIONS FOR WILDLIFE CONTROL

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

4.6 BIRDS

4.6.1 Resident Game Birds

Resident game birds are non-migratory. They are protected by State law and a State depredation permit is required prior to taking the problem animal(s). Permits to take resident game birds at airports in Maine are obtained from the MDIFW Wildlife Biologist in Gray, ME.

4.6.2 Migratory Game Birds

Migratory game birds (i.e., ducks, geese) are regulated by the USFWS pursuant to the MBTA and State laws. These regulations allow harassment of migratory birds when they are damaging property or human health and safety; however a Federal permit is required for lethal take. Migratory bird permits are not issued for eagles or threatened and endangered species (these species require separate permits for harassment and/or take). In Maine, MDIFW co-signs the Federal permit for migratory game birds. PWM possesses a Federal permit for some migratory game birds (i.e., herring gulls, great black-backed gulls, ring-billed gulls, mallards, American black ducks, Canada geese and snow geese) that is cosigned by MDIFW.

4.6.2.1 Migratory Bird Depredation Permit (CFR 50, Part 13)

A depredation permit to take Federally protected migratory birds can be obtained by completing a Federal Fish and Wildlife License/Permit Application and submitting it to the USFWS. PWM has a

current federal permit (Appendix B) to take Canada geese, snow geese, American black ducks, mallards, common ravens, herring gulls, ring-billed gulls, and great black-backed gulls. MDIFW co-signs the Federal permit so that no State permit is required. The Wildlife Coordinator is responsible for the required annual renewal of the depredation permit, and will submit a report to the USFWS as required. Migratory bird permits are not issued for eagles and threatened and endangered species, which require separate permits for lethal take and harassment.

4.6.3 Depredation Order for Blackbirds, Cowbirds, Grackles, Crows, and Magpies

A Depredation Order is a Federal regulation which authorizes the take of certain bird species involved in damage situations without a Federal permit. Under CFR 50 Part 21.43, Depredation Order for Blackbirds, Cowbirds, Grackles, Crows, and Magpies states that these species may be taken without a Federal permit when they are concentrated in such numbers and manner as to constitute a health hazard or other nuisance. MDIFW recognizes the Federal Depredation Order and does not require a State permit under these conditions. Therefore, PWM personnel can take these species without a Federal or State permit through use of legal methods (i.e., shooting, avicides, trap and euthanize, etc.). Proper licenses and permits for firearms and toxicants will be obtained.

4.6.4 Birds that are Exempt from Federal/Maine Protection

Starlings, pigeons, and house sparrows are exotic (non-native) bird species that are not afforded Federal or State protection.

4.7 MAMMALS

In Maine, mammals are all regulated by MDIFW. A permit *is* required to control the following mammals that can occur on PWM:

- White-tailed deer
- Moose
- Bear
- Snowshoe hare
- Red fox
- Beaver
- Striped skunk
- Raccoon
- Weasel
- Mink
- Muskrat
- Otter

4.7.1 Game Mammals

PWM has a small population of woodchucks, raccoons, coyotes, and red fox. At any given time, these may pose a hazard to passenger safety and should be controlled. New England cottontails are present on PWM. Although the Maine white-tailed deer population is estimated to be between 160,000 and 300,000 animals, deer are rarely observed on the airport. All observations of deer during spotlight surveys occurred while they were outside the perimeter fence. Although there does not appear to be a need at this time to implement control of deer at PWM, if and when this occurs, a state permit is necessary.

4.7.3 Feral Domestic Mammals

In Maine, the take of feral mammals, such as dogs and cats, is regulated by State law.

4.8 REPTILES & AMPHIBIANS

In Maine, all reptiles and amphibians are protected and their take would require a State permit. At their current abundance, these species do not present hazards at PWM.

4.9 WILDLIFE/HABITAT ISSUES OF SPECIAL CONCERN

4.9.1 Federal/State Threatened and Endangered (T&E) Species

The Federal Endangered Species Act (Sec. 2 [16 U.S.C. 1531]) and Maine Endangered Species Act of 1975 (12 MRSA Part 10 Subsection 7753) both protect plants and animals which may be threatened with extinction. These acts also protect wildlife habitat. An Endangered Species is defined as any species or subspecies which is in danger of extinction througbout all or a significant portion of its range. A Threatened Species is a species or subspecies which is in danger of becoming an endangered species within the foreseeable future throughout or over a significant portion of its range. Once listed, a threatened or endangered species cannot be taken or harassed without a special permit. Eagles are also afforded protection under the U.S. Eagle Protection Act. In Maine, additional species are given special protection by being listed as state threatened or endangered species (Table 3 and Appendix H). If a significant hazard exists with a listed species that jeopardizes air safety, either the USFWS or MDIFW, depending on the protective status of the species involved, should be contacted for assistance.

The USFWS and Maine Department of Inland Fisheries and Wildlife maintain updated lists of endangered and threatened species. Wildlife control personnel at PWM will familiarize themselves with listed species and their potential occurrence at the airport (Table 1). Updated lists of federal and Maine threatened and endangered species will be obtained from the USFW and MDIFW websites prior to the annual WHG meeting. When these lists change, the current lists will be inserted into this document. Some of these species may present bazards to air traffic at PWM and permits are required to harass them. In most cases, permits will not be granted to take threatened and endangered species. Habitat critical to listed species is regulated by the USFWS and MDIFW, and these regulations should be reviewed to determine their potential effect on PWM's habitat modification plans to reduce wildlife hazards.

4.9.2 Avoiding Impacts to Threatened and Endangered Species

The WHMP identifies actions and procedures to detect and alleviate wildlife hazards that threaten human health and safety or aircraft operations operating out of PWM. Management of wildlife hazards includes application of techniques to barass wildlife away from the airport, implementation of landscape/habitat management, and other activities, and the take of wildlife species. Management actions described in the WHMP include the most appropriate, effective, and biologically sound wildlife control methods available. This approach is known as Integrated Wildlife Damage Management and includes both habitat management and direct control. Wildlife control and dispersal procedures employed at PWM are discussed in Chapter 6 of the WHMP and include pyrotechnic hazing, mylar flash tape, recorded distress calls, vehicular harassment, nest removal, selective trapping, and shooting with air rifles or shotguns.

In compliance with Federal and State laws, wildlife hazard management procedures would be conducted in such a manner as to not negatively affect T&E species. If T&E species pose safety hazards at PWM, federal and state agencies will be consulted and necessary permits and procedures will he pursued to allow PWM to maintain public safety.
Collisions between birds and aircraft nearly always result in the death of the bird in addition to threatening human safety. Consequently, potential nesting habitat on and around the airfield will be eliminated to the extent possible, thus preventing birds from being drawn to the area where they may be struck.

Table 3. Federal and State listed threatened and endangered species relative to PWM

FEDERALLY LISTED, PROPOSED, AND SPECIES OF FEDERAL CONCERN
(revised April, 2003)

Common Name		Scientific Name	Distribution	Status
Reptiles:	Atlantic ridley turtle*	*Lepidochelys kempii*	Pelagic, summer resident	E
	Leatherback turtle*	*Dermochelys coriacea*	Pelagic, summer resident	E
	Loggerhead turtle*	*Caretta caretta*	Pelagic, summer resident	T
	Blanding's turtle	*Emydoidea blandingii*	York and Cumberland Counties	FSC
Birds:	American peregrine falcon	*Falco peregrinus anatum*	statewide	D
	Bald eagle	*Haliaeetus leucocephalus*	statewide	T
	Harlequin duck	*Histrionicus histrionicus*	Coastal, Eastport to Cape Neddick, York County	FSC
	Loggerhead shrike	*Lanius ludovicianus*	Possibly statewide	FSC
	Northern goshawk	*Accipiter gentilis*	statewide	FSC
	Piping plover	*Charadrius melodus*	Coastal Sagadahoc, Cumberland, and York Co.	T
	Roseate tern	*Sterna dougallii dougallii*	Coastal statewide	E
Mammals:	Eastern cougar	*Felis concolor cougar*	Possibly statewide	E
	Eastern small-footed bat	*Myotis leibii*	statewide	FSC
	New England cottontail rabbit	*Sylvilagus transitionalis*	York, Androscoggin, Kennebec, Sagadahoc, Lincoln Counties	FSC
Invertebrates:	Brook floater	*Alasmidonta varicosa*	Coastal drainages York to Washington Counties	FSC
	Extra-striped snaketail dragonfly	*Ophiogomphus anomalus*	Saco, Androscoggin, Kennebec, Penobscot, Aroostook, St. Croix, and Downeast coastal Rivers	FSC
	Lateral bluet damselfly	*Enallagma laterale*	Coastal ponds from Penobscot Bay to York	FSC

Common Name		Scientific Name	County Distribution	Status
Plants:	Small whorled pogonia	*Isotria medeoloides*	York, Kennebec, Cumberland, and Oxford Co.	T
	Orono sedge	*Carex oronensis*		FSC
	Variable sedge	*Carex polymorpha*		FSC
	Hawkweed	*Hieracium robinsonii*		FSC
	Blazingstar	*Liatris borealis*		FSC
	Square-stemmed monkeyflower	*Mimulus rigens colpophilus*		FSC
	Pondweed	*Potamogeton confervoides*		FSC
	Boott's rattlesnake root	*Prenanthes boottii*		FSC
	Long's bulrush	*Scirpus longii*		FSC
	Gaspe peninsula arrow-grass	*Triglochin gaspense*		FSC

KEY:

Status	Definition
E	Endangered: A taxon "in danger of extinction throughout all or a significant portion of its range".
T	Threatened: A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range".
P	Proposed: A taxon proposed for official listing as endangered or threatened.
FSC	Federal species of concern: Species which may or may not be listed in the future (formerly C2 candidate species, or species under consideration for listing for which there is insufficient information to support listing).
D	Delisted species, requiring 5 years of population monitoring.

4.9.3 Eagle Permits

Eagles are afforded Federal protection under the Eagle Protection Act, which requires that a Federal permit is necessary in order to harass them away from damage situations. In Maine, the bald eagle's State status is endangered, and its Federal status is threatened. Bald eagles do pose hazards at PWM. During the WHA surveys, bald eagles were commonly observed hunting over the bay and perched on fences, towers, and other structures at PWM. PWM should consider applying for an Eagle Permit. PWM will comply with the following process (excerpt from the Eagle Protection Act):

CFR 50 PART 22.23

EAGLE PERMITS - Permits to take depredating eagles.

The Director may, upon receipt of an application and in accordance with the issuance criteria of this section, issue a permit authorizing the taking of depredating bald or golden eagles.

(a) ***Application procedure.*** Applications for permits to take depredating bald or golden eagles shall be submitted to the appropriate Special Agent in Charge (See: Part 13). Each application must contain the general information and certification required by Part 13.12(a) plus the following additional information:

(1) Species and number of eagles proposed to be taken;
(2) Location and description of property where taking is proposed;
(3) Inclusive dates for which permit is requested;
(4) Method of taking proposed;
(5) Kind and number of livestock or domestic animals owned by the applicant;
(6) Kind and amount of alleged damaged; and
(7) Name, address, age, and business relationship with applicant of any person the applicant proposes to act for him as his agent in the taking of such eagles.

(b) ***Additional permit conditions.*** In addition to the general permits set forth in Part 13, permits to take depredating bald and golden eagles shall be subject to the following conditions:

(1) Bald and golden eagles may be taken under permit by firearms, traps, or other suitable means except by poison or from aircraft;
(2) The taking of eagles under permit may be done only by the permittee or his agents named in the permit;
(3) Any eagle taken under authority of such permit will be promptly turned over to a Service agent or other game law enforcement officer designated in the permit; and
(4) In addition to any reporting requirement set forth in the permit, the permittee shall submit a report of activities conducted under the permit to the Special Agent in Charge within 10 days following the completion of the taking operations or the expiration of the permit whichever occurs first.

(c) ***Issuance criteria.*** The Director sball conduct an investigation and not issue a permit to take depredating bald or golden eagles unless he has determined that such taking is compatible with the preservation of the bald or golden eagle. In making such determination the Director shall consider the following:

(1) The direct or indirect effect which issuing such permit would be likely to have upon the wild population of bald or golden eagles;
(2) Whether there is evidence to show that bald or golden eagles have in fact become seriously injurious to wildlife or to agriculture or other interests in the particular locality to be covered by the permit, and the injury complained of is substantial; and
(3) Whether the only way to abate the damage caused by the bald or golden eagle is to take some or all of the offending birds.

(d) ***Tenure of permits.*** The tenure of any permit to take bald or golden eagles for depredation control purposes shall be that shown on the face thereof, and shall in no case be longer than 90 days from date of issue.

4.9.4 HABITAT CONSERVATION

USFWS and the MDIFW are responsible for species conservation and recovery plans for T&E species. These plans require the identification of critical habitat when it is associated with the

decline of a species. Habitat alterations and developments may be prohibited in areas where critical habitat has been designated or where such changes could result in the inadvertent take of an endangered species. Consultation with USUSFWS or MDIFW biologists will help determine on a case-by-case basis whether critical habitat is affected by airport projects, and if so, the necessary mitigation.

4.9.5 Wetlands Mitigation

Wetland modifications may require permits from various agencies, including the USFWS, U.S. Army Corps of Engineers (USACOE), Maine Department of Environmental Protection (MEDEP) and or County governments. Pre-development mitigation may be required for issuance of a permit. More information regarding wetlands and mitigation on airports is located on the FAA website. Refer to Advisory Circular 150/5200-33A, Section 2-4 (Wetlands)(Appendix F).

An important project described in Chapter 3 of filling and grading the wetland that exists on the approach to Runway 29, may need pre-development mitigation. Consultation with USFWS, USACOE, and MEDEP will be needed prior to completing the project.

4.10 PESTICIDE APPLICATOR LICENSE

The use of restricted-use pesticides for the removal of hazardous wildlife (e.g., blackbirds, starlings) or prey species (rodents, rabbits, insects, earthworms, and weeds) can be conducted only by Certified Pesticide Operators 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 ME Board of Pesticides Control (MBPC). All PWM 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 will adhere to the product label and will follow Environmental Protection Agency (EPA), MEDEP, MBPC, and other guidelines.

4.11 FAA REGULATIONS, ADVISORY CIRCULARS, AND CERTALERTS

The FAA is the Federal agency responsible for developing and enforcing air transportation safety regulations. Many of these regulations are codified in the Federal Aviation Regulations (FARs). The FAA also publishes a series of guidelines for airport operators to follow called Advisory Circulars (ACs). Advisory Circulars in the 150 series deal with airport safety issues, including wildlife hazards. In addition to FARs and ACs, the FAA periodically issues Certalerts for internal distribution and to provide recommendations on specific issues for inspectors and airport personnel. All of the above-mentioned regulations, Advisory Circulars, and Certalerts are frequently changed or updated, and their current status should be verified on a regular basis. This may be accomplished by contacting the FAA directly (Chapter 9).

The manual entitled Wildlife Hazard Management at Airports was developed cooperatively by the FAA and USDA Wildlife Services in 1999. It contains important information on airport wildlife hazard management, and it is consulted by PWM personnel regarding control actions and other wildlife hazard management issues. The manual is retained in PWM's Operations office and is available on-line (www.faa.gov/airports_airtraffic/airport_safety/part139_cert or www.faa.gov/airports_airtraffic/airports/resources/advisory_cirulars).

CHAPTER 5.0
RESOURCES

FAR 139.337(e)(4) ***Identification of resources to be provided by the certificate holder will provide to implement the plan.***

5.1 OVERVIEW

Habitat management and wildlife control supplies and equipment are purchased from commercial sources. An adequate supply of equipment will be maintained at PWM for use by trained personnel.

5.2 AIRPORT SUPPLIES

Supplies that will normally be available at the airport include:

1. Safety gear: eye protection, and ear plugs
2. 15 mm pyrotechnic pistol launchers (i.e., bird bombs/bangers and screamers)
3. 12 gauge break action shotgun for use with pyrotechnics
4. 12 gauge shotgun for use with live rounds
5. Pellet rifle and ammunition
6. Cleaning supplies for all firearms and pyrotechnic pistols
7. Vehicles with radios
8. Hand beld radios
9. Mylar tape
10. Cage trap for dogs (e.g., Tomahawk 110B)
11. Cage trap for cats/raccoons (e.g., Tomahawk 108)
12. Binoculars
13. Latex gloves
14. Garbage bags
15. Gallon-size re-sealable sandwich bags
16. Freezer to preserve bird carcasses
17. Wildlife Strike Forms and PWM Wildlife Incident Sheets

The following resource documents will be maintained in the Wildlife Hazard Supervisor's Office:

1. Field guides to wildlife identification
2. Prevention and Control of Wildlife Damage (2-binder manual)
3. FAA Wildlife Hazard Management at Airports (manual)
4. Wildlife Hazard Assessment for PWM
5. PWM Wildlife Hazard Management Plan
6. Maintained Wildlife Log

AIRPORT SUPERVISORS AND SENIOR RAMP CONTROLLER VEHICLES

All ramp vehicles operated by Operations and Maintenance will contain the supplies listed below to facilitate an immediate response to wildlife hazards. These personnel are responsible for responding to emergency calls from the PWM tower or Operations to disperse animals from the runways. They will maintain radio communications with the tower if there is a potentially bazardous situation within the AOA, and the patrols will operate within the aircraft movement areas according to FAA guidelines. At a minimum, supplies to be maintained in the vehicles should include at least:

1. 15 mm pyrotechnic pistol launchers
2. 15 mm pyrotechnics (i.e., bangers, screamers, starter caps, etc.)
3. Bird identification field guide
4. Binoculars
5. Safety glasses
6. Hearing protection
7. Latex gloves
8. Garbage bags
9. Gallon-size re-sealable sandwich bags
10. Wildlife strike forms
11. PWM Wildlife Incident Sheets

5.3 USDA-WILDLIFE SERVICES ASSISTANCE

Some equipment, such as starling traps, vertebrate pesticides, certain firearms, lasers, and chemical products, may be available through Wildlife Services for conducting specific control operations. The use of some control methods, such as alpha-chloralose for waterfowl and DRC-1339 for European starlings, is restricted to certified Wildlife Services personnel only. PWM may develop a Cooperative Service Agreement with Wildlife Services to assist PWM personnel in deterring or removing birds from the airport.

CHAPTER 6.0
WILDLIFE HAZARD MANAGEMENT PROCEDURES

FAR 139.337(f)(5) Procedures to be followed during air career operations that at a minimum includes-

i. *Designation of personnel responsible for implementing the procedures;*
ii. *Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;*
iii. *Wildlife hazard control measures; and*
iv. *Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.*

PWM Wildlife Hazard Management Supervisors will frequently conduct physical inspections of movement areas and other areas critical to wildlife hazard management as part of the daily protocol. They will document all observed wildlife and record the data on the computerized airport log (CAL) system. The CAL will be retained in the Operations office. If no wildlife is observed, a record indicating that an inspection was conducted and that no animals were observed should be made. During periods of exceptionally heavy wildlife activity (e.g., migratory periods, outbreaks of insects etc.), the Wildlife Hazard Management Supervisors will consult with the Wildlife Coordinator to issue a NOTAM, if and when appropriate.

FAR 139.337(f)(5)(iii) Wildlife hazard control measures;

6.1 OVERVIEW

Wildlife observed on PWM that is determined to pose hazards to aviation will be managed using effective, legal, and environmentally responsible direct control techniques. Wildlife hazards at airports are variable and complex; therefore, it is essential to adopt a flexible, innovative, and adaptive approach to managing such hazards. Wildlife identification guides and handbooks will be available for use by wildlife control personnel at PWM. The manual entitled Prevention and Control of Wildlife Damage (2-volume set available on the internet) details species-specific damage assessment, and includes an in-depth discussion of methods of dispersal for each species. In addition, Transport Canada (Canada's governmental agency responsible for reducing wildlife hazards) has also produced a valuable reference manual and bulletins on wildlife control procedures at airports. The manual and bulletins can be found on-line at http://www.tc.gc.ca/civilaviation/AerodromeAirNav/Standards/WildlifeControl/bulletins.

Additionally, the FAA and WS have jointly developed a manual entitled, Wildlife Hazard Management at Airports. This manual is available in the Wildlife Hazard Management Supervisor's office and on-line at *http://www.wildlife-mitigation.tc.faa.gov.* These documents and wildlife biologists

with WS will be consulted regarding special needs and/or emerging hazards. Airport personnel are/will be trained to identify and manage hazardous wildlife at PWM, and will select and implement wildlife management methods that are appropriate to the type of animal causing the hazard.

6.2 WILDLIFE PATROL

PWM's Wildlife Hazard Management Supervisors will conduct wildlife patrols at PWM. The patrol will monitor and respond to wildlife hazards on the airfield and will coordinate their activities through the Wildlife Coordinator. The WHMS's will be trained in wildlife identification, wildlife management techniques, and safe operations. They will have radio-equipped vehicles and adequate wildlife control supplies. WHMS's will maintain clear communications with Airport Supervisors and the tower, in accordance with FAA radio protocols, and will record all observations of wildlife-related activity (e.g., notable hazards, animals killed or dispersed, unusual wildlife behavior, etc.) on the CAL system. Routine runway sweeps should be conducted at least once per day, and the presence of any dead animals found that were involved in strikes with aircraft will be recorded on FAA Form 5200-7 (Appendix C). All dead birds or mammals found on runways and taxiways, or within 200 feet of the runway centerline will be considered the result of a strike unless the death was obviously due to some other cause. Bird or mammal remains of unknown species will be placed in a zipped plastic bag, labeled (time and date found, location on airport, person who found remains, species group if known), and placed in a freezer for later inspection and identification. In addition to carcasses found on the airport, wildlife strikes will also include:

1. Strikes reported by pilots
2. Evidence of wildlife strikes found and reported by aircraft maintenance personnel
3. Direct observation of a strike by PWM personnel

Wildlife strike forms may be submitted electronically to the FAA at *http://www.wildlife.pr.erau.edu/strike/birdstrikeform.html*. Printouts of FAA strike reports will be retained in the Operations office.

6.3 WILDLIFE STRIKE DATABASE

The Wildlife Coordinator is responsible for documentation of wildlife populations, hazards, and strikes at PWM. This is accomplished primarily through requirements placed on Wildlife Hazard Management Supervisors within PWM's Operations Division. The Wildlife Coordinator requires the Wildlife Hazard Management Supervisors to document wildlife strikes through completion of FAA Form 5200-7, submission of the Form to the FAA, and completion of various internal records specific to PWM. Additionally, Wildlife Hazard Management Supervisors conduct periodic checks of the airfield, identify possible wildlife attractants, and monitor wildlife populations.

FAA Form 5200-7 will be completed and submitted electronically. A printed copy of each strike Form will be filed in Operations, and copies of PWM's Wildlife Incident Forms will be retained in the airports computerized log. Prior to each annual WHG meeting, a summary of wildlife strikes will be prepared as directed by the Wildlife Coordinator, and will be reviewed by the WHG at the meeting. The summary will list wildlife species involved in strikes, and will identify trends and strike numbers. This information will be used to identify emerging needs and to contribute to the

evaluation of wildlife hazard management programs at PWM. If unacceptable increases in wildlife strikes and populations are observed, the cause should be determined and the WHMP modified to address the problem.

6.4 GENERAL WILDLIFE CONTROL

Each wildlife hazard that develops will be analyzed by PWM Wildlife Hazard Management Supervisors to determine a practical solution. The initial response for most species will be to harass them away from the airport with frightening devices, followed by lethal methods when necessary. A primary key to successful wildlife control is persistence and innovation. Techniques should be applied based on safety, effectiveness, practicality, and environmental considerations. Most control techniques retain their effectiveness when used judiciously and in conjunction with other methods. Therefore, the methods chosen will depend largely on the situation and the species involved. Finally, personnel involved in direct control will be aware of the potential diseases that wildlife can carry and will take appropriate precautions.

PWM's Wildlife Hazard Management Program will be guided by the following principles:

1. A zero tolerance policy towards hazardous wildlife on the airport;
2. Wildlife will be harassed immediately and consistently;
3. Wildlife reproduction on the airport will be discourage, reduced, or eliminated;
4. Persistent hazardous wildlife will be removed;
5. All laws, regulations, policies, permits, and licenses will be adhered to.

6.5 BIRD HAZARD MANAGEMENT

Several species of birds are present at PWM and represent the most significant potential for causing damaging strikes. The Prevention and Control of Wildlife Damage Manual and WS's species-specific damage management leaflets describe effective and practical methods that will be used to harass birds away from the airport. PWM will maintain current versions of the manual and leaflets, and will request current versions from WS prior to the annual BHG meeting. An integration of multiple methods will be employed for maximum effectiveness. Properly applied, the techniques discussed in these documents and the FAA/USDA manual should reduce most hazards involving species of concern at PWM.

6.5.1 Gull Management at PWM

The following steps will be taken to reduce/eliminate hazards involving gulls at PWM:

1. Institute a zero tolerance policy of gulls for all areas on PWM;
2. Ensure food and water are not available;
3. Enforce a "No Feeding" policy;
4. Proper sanitation must be contained in trash bins and dumpsters with locked covers;
5. All standing water after storms will be monitored and/or eliminated;

6. Disperse water on pavement to facilitate evaporation, maintain grooving on pavement, draining, filling, and use of repellents to render the water unattractive to birds;
7. Continual harassment of gulls (pyrotechnics) throughout the year; removal of gulls through shooting, as deemed to be safe and effective by the WHMS. The USFWS Depredation Permit requires that all carcasses will be immediately collected for burial or incineration. No carcasses should be buried on the airport because they attract other species. However, burying of carcasses can occur on other property owned or managed by PWM that is away from air traffic.

Records of these activities will be maintained by the Wildlife Hazard Management Supervisors through completion of PWM Wildlife Incident Forms, which will be retained in the computerized airport log. Take of gulls will be reported to the USFWS on the Annual Report Form.

6.5.2 Management of Blackbirds and Starlings at PWM

The "blackbird" group consists of red-winged blackbirds, brown-headed cowbirds, common grackles, and others. Although these species are not large birds, their flocking behaviors, local abundance, and habits render them hazardous to aircraft at PWM. Aggressive and persistent harassment and/or population reduction (via shooting or use of toxicants) will be employed to reduce seasonal blackbird and starling abundance and hazards. If nesting of these species is identified on the airport, nests will be destroyed and habitat manipulation will be conducted if/where possible to deter future nesting. A starling roost was identified in the wetland vegetation that exists on the approach to Runway 29. This roost consisted of approximately 3,000 starlings. Habitat management and integrated harassment (i.e., pyrotechnics, distress calls, etc.) are critical techniques needed to remove this roosting site. As recommended in Chapter 3, the habitat should be removed by cutting the vegetation and filling in the wetland. This should be completed in compliance with NEPA and obtaining appropriate permits.

6.5.2 Management of Other Bird Species at PWM

In addition to observing gulls and blackbirds during the WHA, various raptor, waterfowl, seabird, and dove species were identified using PWM's airfield. Management of hazards associated with these species will depend on the nature and extent of the hazard:

Raptors

Raptor management will consist of monitoring, habitat management, harassment, and population control, applied in an integrated fashion, and according to permits and authorizations. Harassment of raptors with pyrotechnics will be employed to direct birds away from the airport, as deemed appropriate by the WHMS's. Unnecessary structures that are used as perch sites for raptors will be removed. Anti-perching devices will be installed to deter perching on essential structures (i.e., lights, antennae, fences, etc.). Habitat management for kestrels will consist primarily of application and monitoring of insect control measures developed in consultation with the University of Maine's Cooperative Extension. If and when snowy owls are present on PWM (typically, during the winter, if at all), the MDIFW biologist and/or WS will be consulted to determine the best course of action. If the abundance of raptors at PWM increases, PWM will consult with the USFWS, WS, MDIFW

biologist to determine if trapping and relocating raptors away from the airport should be implemented. .

Waterfowl

Dabbling duck and waterfowl management will consist of monitoring, habitat management, harassment, and population control, applied in an integrated fashion according to USFWS Depredation Permit. Harassment with pyrotechnics and shooting waterfowl will be employed upon immediate observation on the airfield. Use pyrotechnics and shooting to direct birds away from the airport.

Seabirds

Seabirds are characterized as long-legged wading birds. During migration glossy ibis flocks can be observed using drainage ditches. Seabird management will consist of monitoring, habitat management, harassment, and population control. As discussed in section 3.4.3 of this plan, vegetation management in ditches should be conducted by removing wetland vegetation and replacing it with fescues. Fescues in these ditches should be maintained no less than 12" and no higher than 24" to meet the grass height alongside the ditches.

Rock doves (pigeons) and mourning doves

Pigeons and mourning doves management may consist of harassment with pyrotechnics, habitat management, and population reduction (shooting, trapping, toxicants). Wildlife Hazard Management Supervisors will harass doves to direct birds away from the airport through use of pyrotechnics. Habitat management will consist of grass management to reduce seed production grasses and elimination of standing water, as described above (under gull management) and in Section 3.3. Wildlife Hazard Management Supervisors may shoot doves if/when necessary to maintain airport safety, and will collect and dispose of carcasses pursuant to permits.

Bird management at PWM will be conducted according to the integrated wildlife damage management approach that includes consideration and application of a number of effective, legal, practical, cost-efficient, and environmentally-responsible methods and approaches.

6.6 MAMMAL HAZARD MANAGEMENT

Surveys and analysis conducted by WS to complete PWM's WHA did not indicate significant safety hazards from mammals at PWM. Coyotes, rabbits, a skunk, and one feral/domestic cat were the mammals observed by WS at PWM during the WHA. White-tailed deer were not observed within the perimeter fence by WS during the WHA (2003-2004), and have not been reported at PWM for several years. Small mammals exist on the airfield in low to moderate densities, and may serve as a food resource for raptors, owls, gulls, and other birds. Although red foxes were not observed at PWM by WS during the WHA, observations have since occurred by Maintenance and Operations. Elimination of cover such as the area in the south east corner of the airfield should be eliminated of shrubs. Zero tolerance for mammals within the airfield will be employed by WHMS. All animals should be harassed with pyrotechnics and/or lethally removed.

6.6.1 White-Tailed Deer

PWM will implement a zero tolerance policy for deer on the airport. If deer are observed, immediate steps will be taken by Wildlife Hazard Supervisors to remove the deer through trapping

and removal, or through shooting. Depending on the exact circumstances, and if immobilization and relocation is possible, WS or MDIFW will be contacted immediately to conduct the necessary control actions. If the deer cannot be immobilized, it will be otherwise removed from the airport through use of firearms, trapping, or other legal and effective method(s).

6.6.2 Feral Dogs/Cats

At PWM, all feral dogs, cats, or escaped pets will be herded off the airfield or trapped and removed. The SPCA may be contacted regarding housing and handling of the animals.

6.7 USDA APHIS WILDLIFE SERVICES ASSISTANCE

WS personnel can assist with wildlife control activities including those involving gulls, waterfowl, starlings, raptors, doves, and others. Many of the control techniques for mammals differ from bird hazard control techniques, and require specialized experience and permits. Wildlife Services may be contacted for problems involving mammal or other unique or developing wildlife hazards.

6.8 COMMUNICATION

FAR 139.337(f)(5)(iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

While on the airport, Wildlife Hazard Management Supervisors will be equipped with radios and have proper training to contact the air traffic control tower. If an immediate hazard exists that might compromise the safety of air traffic at PWM, the Wildlife Hazard Management Supervisors will coordinate with the air traffic control tower to modify arriving or departing air traffic until the hazard is eliminated. Although the air traffic control tower cannot be expected to monitor all wildlife hazards on the airfield and still direct air traffic, tower personnel will be asked to notify Operations immediately if pilots report hazards or any such hazards are observed from the tower.

CHAPTER 7.0
EVALUATION

FAR 139.337(F))(6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months or following an event described in paragraphs (b)(1), (b)(2), and (b)(3) of this section including:
(i) The plan's effectiveness in dealing with known wildlife hazards on and in the airport's vicinity and
(ii) Aspects of the wildlife hazards described in the wildlife hazard assessment that should he reevaluated.

7.1 OVERVIEW

The WHMP will be evaluated every 12 consecutive months. The Wildlife Hazard Group will determine the effectiveness of the WHMP at reducing wildlife strikes at PWM and monitor the status of hazard reduction projects, including their completion dates. Whenever an event occurs that is described in FAR 139.337(b) will trigger evaluation of the plan:

1) An air carrier aircraft experiences multiple wildlife strikes;
2) An air carrier aircraft experiences substantial damage from striking wildlife. Such damage means structural damage, structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;
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 above to have access to any airport flight pattern or aircraft movement area.

The WHG will review the circumstances leading up to the event to decide whether the WHMP should be revised. The WHMP should be reviewed by chapter to decide whether authorities and responsibilities, habitat management, permits and regulations, resources, wildlife hazard procedures, or training were associated with causing event. If the WHMP omitted important guidelines in preventing the event, that chapter will be revised upon detection of the oversight.

7.2 MEETINGS

The Wildlife Hazard Working Group will meet every twelve consecutive months, but the group may meet more ftequently if situations warrant, as determined hy the Wildlife Coordinator.

7.3 WILDLIFE STRIKE DATABASE

The Wildlife Coordinator is responsible for documentation of wildlife populations, hazards, and strikes at PWM. This is accomplished primarily through requirements placed on Wildlife Hazard Management Supervisors within PWM's Operations Division. The Wildlife Coordinator requires the Wildlife Hazard Management Supervisors to document wildlife strikes through completion of

FAA Form 5200-7, submission of the Form to the FAA, and completion of various internal records specific to PWM. Additionally, Wildlife Hazard Management Supervisors conduct periodic checks of the airfield, identify possible wildlife attractants, and monitor wildlife populations.

FAA Form 5200-7 will be completed and submitted electronically. A printed copy of each strike Form will be filed in Operations, and copies of PWM's Wildlife Incident Forms will be retained in the airports computerized log. Prior to each annual WHG meeting, a summary of wildlife strikes will be prepared as directed by the Wildlife Coordinator, and will be reviewed by the WHG at the meeting. The summary will list wildlife species involved in strikes, and will identify trends and strike numbers. This information will be used to identify emerging needs and to contribute to the evaluation of wildlife hazard management programs at PWM. If unacceptable increases in wildlife strikes and populations are observed, the cause should be determined and the WHMP modified to address the problem.

7.4 AIRPORT EXPANSION

Airport expansion plans will be reviewed by the Wildlife Coordinator or his designee to ensure that new developments will not inadvertently result in increased wildlife hazards to aircraft operations. If necessary, coordination among Operations and MDIFW Wildlife Biologist will be conducted through the WHG to review potential impacts of airport development of wildlife hazards at PWM, and to modify the proposals and/or the WHMP to reduce or eliminate potential or emerging hazards.

CHAPTER 8.0
TRAINING

FAR 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 successfully carry out the wildlife hazard management plan required by paragragb (d) of this section.

8.1 OVERVIEW

Training is essential for personnel involved in the WHMP. The Wildlife Coordinator will ensure that all personnel who may be working in a wildlife deterrence capacity are initially trained by a qualified wildlife damage management biologist within the first 12 months of working in that position. Recurrent training must be taken once every 24 months. Training will focus on the proper selection and application of control methods as well as wildlife species identification. PWM will access the FAA website (http://wildlife-mitigation.tc.faa.gov/public_html/index.htm) for information regarding upcoming training events and opportunities regarding wildlife hazard management at airports.

8.2 STANDARD TRAINING

Wildlife control personnel will initially receive training within the first 12 months of working in that position. Recurrent training will be every 24 months. The training will include identifying and mitigating wildlife hazards at airports, including an overview of laws associated with wildlife control, techniques used for prey-base reductions, effective use of firearms and pyrotechnics (including hands-on training), and wildlife identification and dispersal techniques. Airport communications and driving training should also be provided to all employees involved in wildlife control operations that may require them to operate on the AOA.

Operations and Maintenance personnel who will use firearms to implement various aspects of the WHMP will be trained by a certified rifle and shotgun instructor.

8.3 USDA APHIS WILDLIFE SERVICES TRAINING

Wildlife Services can provide a one-day training course for Wildlife Hazard Management Supervisors and others who would be involved in operational wildlife hazard management work at PWM. The purpose of the course is to familiarize personnel involved with airport operations in basic wildlife identification and dispersal techniques. The course can also include hands-on training using pyrotechnics, and other deterrent equipment, with an emphasis on safety and effectiveness. This training may be taken by all personnel who have responsibility in dispersing wildlife at PWM. The training is customized to fit the needs of individual recipients and situations, and will incorporate management issues relating directly to PWM wildlife strikes, populations, and physical environment. Instructions are tailored to competence levels and areas of participating personnel. PWM may contract with WS to provide the course for new airport personnel or as a refresher when PWM sees that there is a need.

CHAPTER 9.0
AGENCY DIRECTORY

REGULATORY AND ENFORCEMENT

U.S. Fish and Wildlife Service (Wildlife Permitting)
Migratory Bird Permits
300 Westgate Center Drive
Hadley, MA 01035
(413)253-8698
website: www.USFWS.gov

U.S. Fish and Wildlife Service (T&E Species)
Maine Field Office
1168 Main Street
Old Town, ME 04468
(207)827-5938

U.S. Fish and Wildlife Service (Law Enforcement)
Division of Law Enforcement
Hatchery Road
Orland, ME 04431
(207)827-5938

Maine Dept. of Inland Fisheries and Wildlife
Gray Region
358 Shaker Road
Gray, ME 04039
(207)657-2345

Maine Dept. of Inland Fisheries and Wildlife
Endangered and Nongame Species Program
650 State Street
Bangor, ME 04401-5654
(207)941-4466

Maine Department of Environmental Protection Bureau of Land Management
17 State House Station
Augusta, ME 0433-0017

Maine Department of Agriculture Pesticides Control Borad
State House Station 28
Augusta, ME 04333
(207)287-2731
website:
www.state.me.us/agriculture/pesticides/

Federal Aviation Administration (FAA) New England Region
12 NE Executive Park
Burlington, MA 01803
Lead Inspector: (781)238-7632

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

TECHNICAL ASSISTANCE

U.S. Department of Agriculture, Wildlife Services
79 Leighton Road Suite 12
Augusta, ME 04330
(908)735-5654
website: www.aphis.usda.gov

University of Maine Cooperative Extension Service Cumberland County
PO Box 9300
15 Chamberlain Avenue
Portland, ME 04101-9300
(207)780-4205

Appendix D

WETLAND RESOURCES SUPPORTING INFORMATION

APPENDIX D
WETLAND RESOURCES
SUPPORTING INFORMATION

This appendix provides information regarding the types and functions of wetlands at Portland International Jetport. These are selected sections from the October 31, 2008 *Natural Resources Protection Act* Application for wetland impacts due to the Proposed Action Alternative. The following documents are included at the end of this appendix:

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

Regulatory Division
CENAE-R-51

November 21, 2008

Colen Peters
TRC
400 Southborough Drive
South Portland, Maine 04106

Dear Mr. Peters:

This concerns your clients' application for a Department of the Army permit to fill waterways and wetlands adjacent to the Fore River and Long Creek at Portland and South Portland, Maine in order to implement a number of improvements at the Portland International Jetport. It has been assigned number NAE-2008-00053 to which all future correspondence should refer.

I've reviewed your application package. We require additional information to process your application. (See attached sheet for information required.)

This additional information is necessary so that we can properly evaluate your proposed activity and reach a decision on your application. Hence, no further action will be taken until you have complied with our request. Failure to provide this information within thirty days will result in your application being considered withdrawn.

Please do not begin any work in our jurisdiction without the required Corps of Engineers permit. It is illegal to do so, and will only delay your project and may subject you to civil or criminal liability; fines can be as high as $10,000 or $25,000 per day of violation respectively.

If a permit is to be issued, a $100 fee will be required. Do not send the fee at this time. A separate request will be made after we have made our decision.

If you have any questions, please contact me at our Manchester, Maine Project Office at 207-623-8367. Your reply should be addressed to this office at: US Army Corps of Engineers, 675 Western Avenue #3, Manchester, Maine 04351.

Sincerely,

Jay L. Clement
Senior Project Manager
Maine Project Office

ADDITIONAL INFORMATION REQUIRED
FOR DEPARTMENT OF THE ARMY PERMITS

1. Please provide copies of the application package directly to the Federal resource agencies Trish Garrigan (US EPA), Wende Mahaney (USFWS), and Marcy Scott (NMFS). If you require mailing addresses, please contact our office.

2. I have furnished a copy of the application to our Mitigation staff at our Concord, MA headquarters for review and comment. Please note that we will not issue a public notice for the project until their review has been completed. I will advise you if they require additional information.

3. Please transpose your list of abutters on to sheets of standard size mailing labels. I require two complete sets in order to facilitate the issuance of the public notice.

4. For your future reference. It will undoubtedly speed up the processing time if TRC assists in the drafting of the Corps EA/SOF that becomes the back up for the permit decision. You will be emailed samples for your reference. This is not a requirement but it will certainly assist the Corps project manager. You may begin drafting this document immediately.

5. The normal permit life is 5 years. If a permit is issued in 2009, this would mean it would expire in 2014. Will this be sufficient to complete the work described in the application? If not, please give consideration to an alternative date and we can discuss it.

6. Alternatives analysis. I recommend that the alternatives analysis be updated to incorporate the language of the Section 404(b)(1) Guidelines. Specifically, I suggest that alternatives be dismissed as unavailable, impracticable (after considering cost, logistics, and available technology), or more environmentally damaging. This would be more valuable to our analysis than the "reasonableness" of various alternatives.

7. The no build alternative is broadly addressed but I suggest that it be specifically addressed in the discussions of each project component.

8. Plans.

a. The location map contained in the application is not acceptable. Perhaps a photocopy at the scale of the USGS sheet would be better. If you do use the one in the application, it should be relabeled to reflect each project component rather than labeling them all with the same designation.

b. The project plans as reductions of large scale plans are not acceptable. They are virtually illegible and to cluttered. I suggest a broad key map and then specific detail sheets showing the various components. Before you finalize them, you may wish to email or fax them to me for another review.

9. The Corps must complete a jurisdictional review before issuing our public notice. As you know, there are now 2 options available to us – preliminary and formal. The preliminary determination is faster but it is based on an assumption that all waterways and wetlands on site are jurisdictional. The formal may take longer but it could result in several of the more isolated areas falling out. We started the formal process but did not complete it before the preliminary option became available. Please let me know which way you wish to proceed.

10. I note that the MHPC did not complete their effect determination for the project. What is the status of the additional information they requested and/or any final sign off? Ideally we'd like to see this before issuing a public notice.

NEW ENGLAND DISTRICT
MITIGATION PLAN CHECKLIST

(see New England District Mitigation Guidance document for clarifying information)

Project: Portland International Jetport
File No: NAE-2008-00053
Corps Project Manager: Jay Clement
City: Portland
State: Maine
Plan Title: Natural Resources Protection Act Application, Portland International Airport (PWM)
Plan Preparer: TRC
Plan Date: October 2008

TABLE OF CONTENTS

A. General Information

1. [OK] Mitigation plan and documentation submitted as one complete package.
2. Site location:
   a. [OK] Locus map(s)
   b. [ ] Aerial photo(s)

this was only provided for the Maine Wetlands Bank site

   c. [ ] Latitude/Longitude of mitigation site(s) in decimal format.
   d. [OK] 8-digit Hydrologic Unit Code(s) for impact area(s) and mitigation area(s).

01060001

B. Impact area(s)

1. [OK] Wetland acreage at each impact site.

11.58 acres at five major areas – see Table 9-1

2. [OK] Wetland classes at each impact site.

PEM 2.84a
PEM/PSS 4.89a
PEM/PSS 3.85a – unclear on Table 9-1 if this is PFO

3. [OK] Stream(s) at each impact site.

Apparently only a few small drainageways

4. [OK] Describe both site specific and landscape level wetland and stream functions and values at each impact site.

*Wildlife habitat and sediment/toxicant/pollutant retention are principal functions, plus nutrient removal/retention/ transformation, surface water conveyance, threatened/endangered species habitat (state listed upland sandpiper (*Bartramia longicauda*) and New England cottontail (*Sylvilagus transitionalis*), which is also proposed for federal listing).*

Table 12-1 separates aquatic resources into "Waters of the United States" and "Man-Induced Wetlands" – this is confusing as these terms are not equivalent or mutually exclusive. "Waters of the US" refers to jurisdiction, which may include man-induced wetlands. The latter term merely refers to method of formation of wetlands and that their delineation must be done using the Problem Areas section of the '87 Manual (e.g., lacking hydric soils indicators, they may be identified with hydrophytic vegetation and wetland hydrology indicators alone), but this does not generally affect jurisdiction.

5. [OK] Describe type and purpose of work at each impact site.

Airport safety improvements, including filling wetlands to reduce bird usage, taxiway and runway improvements, and terminal expansion.

6. [OK] Relationship to watershed or regional plans for the area discussed.

C. Mitigation area(s)

1. Background information

a. [OK] Mitigation alternatives.

While the Maine Wetlands Bank and Larrabee Farms sites may be determined to be appropriate compensatory mitigation as each is a pooled mitigation site, they do not meet the definition and requirements of a "mitigation bank" per Corps guidance or the cited Mitigation Rule and therefore, receive no special preference for use.

b. [ ] Existing wildlife use.
c. [ ] Existing soil.
d. [ ] Existing vegetation.
e. [ ] Surrounding land uses.
f. [ ] USFWS and/or NOAA Clearance Letter or Biological Opinion
g. [ ] SHPO Cultural Resource Clearance Letter

2. Mitigation proposed

a. [OK] Wetland acreage and mitigation type proposed at each site.

Maine Wetlands Bank:

2.0 a. restoration within stormwater basin - ???
1.7 a. restoration
2.3 a. enhancement
4.0 a. preservation (beyond above) wetland and upland

Larrabee Farms:

3.53 a. creation
96.48 a. additional preservation

b. [ ] Wetland classes (e.g., Cowardin, et. al. and hydrogeomorphic classification) proposed at each site.

c. [ ] Site specific and landscape level functions and values proposed at each site.

d. [OK] Describe nature of any stream mitigation.
Preservation along the banks of the Nonesuch River at the Larrabee Farms site.
e. [OK] Reference site(s).
f. [ ] Design Constraints
g. [OK] Construction oversight.
h. [OK] Project construction timing.
i. [ ] Responsible parties for all aspects of project.
j. [ ] Appropriate financial assurances.
k. [ ] Potential to attract waterfowl and other bird species that might pose a threat to aircraft?

D. Hydrology

1. [ ] Evidence of adequate hydrology to support the desired wetland or stream.
   a. [ ] "Typical" year water budget
   b. [ ] "Wet" year water budget
   c. [ ] "Dry" year water budget
2. [ ] Water source(s)
3. [N/A] Vernal pool (if any) hydrology is appropriate.

E. Grading Plan

1. Plan View
   a. [ ] Existing and proposed grading plans.
   b. [OK] Microtopography
   c. [ ] Scale is in the range of 1"=20' to 1"=100'.
   d. [ ] All items on the plan are legible. Electronic documents are encouraged (e.g., Portable Document Format); otherwise plans should be on 8 ½ x 11" sheets.
   e. [ ] Plans have a bar scale.
   f. [ ] The drawings show the access for maintenance and monitoring.
2. [ ] Representative cross-sections
3. [ ] Other - Specific staff recommendations related to grading.

F. Topsoil

1. [ ] Proposed source of topsoil.
2. [OK] Twelve or more inches of natural or manmade topsoil in all wetland mitigation areas.
3. [ ] Appropriate organic content of topsoil.

G. Planting Plan

1. [ ] Plans use scientific names.
2. [OK] Plant materials are native and indigenous to the area of the site(s); invasive species, nonnative species, and/or cultivars are not proposed for planting or seeding.
3. [OK] Vegetation community types or zones are classified in accordance with Cowardin, et al. (1979) or other similar classification system.
4. [ ] Plan view drawings show proposed locations of planted stock.
5. [ ] More than 50% of the plantings in each zone are structural determinants for the community type designated for that zone.

6. [ ] Woody stock density is appropriate.
7. [ ] Herbaceous stock density is appropriate.
8. [ ] Seed mix composition is provided.
9. [ ] Representative cross section plans showing vegetative community zones.
10. [ ] Relocation of plantings allowed when appropriate.
11. [ ] Other - Specific staff recommendations related to planting.

H. Coarse Woody Debris and Other Features

[OK] Appropriate amounts and range of decomposition of coarse woody debris are proposed.

I. Erosion Controls

[OK] Erosion control removal deadline is included.

J. Invasive and Noxious Species

1. [ ] Risk – includes evaluation of the potential for unwanted species or varieties
2. [ ] Constraints – regulatory or environmental factors affecting control strategies
3. [ ] Control Plan – addresses a scope commensurate with risk & constraints

K. Off-Road Vehicle Use

1. [ ] No off-road vehicle use in immediate vicinity, or if so, control measures addressed.
2. [ ] Control plan, if appropriate.

L. Preservation

1. [ ] Adequate buffers
2. [N/A] Wetlands within subdivisions are protected along with appropriate buffers.
3. [ ] Required preservation language is included.
4. [ ] Plans of preservation area(s).
5. [ ] Form of legal means of preservation
6. [ ] Documentation of acceptance by receiving agency (if applicable)

M. Monitoring Plan

[ ] Appropriate monitoring is proposed and language included.

Much of the pertinent language is missing, including that regarding success standards. The language in our most recent checklist guidance is recommended.

N. Assessment Plan

[ ] An appropriate assessment plan is proposed and language included.

O. Contingency

[ ] Plan for dealing with unanticipated site conditions or changes.

P. Long-term Stewardship

[ ] Plan for long-term stewardship is included.

Q. Other Comments

It is stated that more detailed information will be submitted in the final mitigation plan so much of the detail noted as lacking above is expected to be submitted then.

Overall, use of the Maine Wetlands Bank and Larrabee Farms for compensatory mitigation for this project appears appropriate. However, the amounts of compensation presently proposed do not seem adequate (using the recommended ratios, total credits for the proposal would be 10.19, versus the 11.58 acres of impact). While the degraded nature of the wetlands to be impacted is recognized and incorporated into the evaluation, so, too, is the nature of the mitigation. Of particular concern is the stormwater management basin at the Maine Wetlands Bank. We do not generally accept compensatory mitigation within stormwater management facilities, due to the periodic maintenance of such facilities, their inability to perform a full suite of wetland functions, and lack of long term sustainability of these functions. In this specific case, an exception may be made to accept some compensation credit from this area, but at a diminished rate (e.g., 0.15 credit instead of 1.0 credit, decreasing total mitigation credits available to 9.34). This leaves a deficit in compensation of 2.24 credits. This deficit can be decreased due to the degraded nature of the wetlands to be impacted to approximately 1.0 credit. This 1.0-credit deficit could be met by additional mitigation at Larrabee Farms, payment into the in-lieu fee program (approximately $165,963.60), or inclusion of an additional mitigation proposal.

ERS Scientist: Paul Minkin Date Plan Reviewed: 12 December 2008

9.0 SITE CONDITIONS AND WETLAND RESOURCES

Freshwater and tidal wetland communities at PWM have been field-delineated based on the 1987 *US Army Corps of Engineers Wetlands Delineation Manual* (*Manual*) during four periods between 1991 and 2007 (Table 9-1). Data forms submitted with earlier permit applications to the MDEP and US Army Corps of Engineers and other documentation are provided in Appendix 9A.

Wetlands in the vicinity of the four general locations where work is to occur at PWM are displayed on Figure 9-1 and if not in an isolated depression, drain to the Fore River. As characterized by the National Wetland Inventory classification system (Cowardin et al., 1979), four general palustrine freshwater wetland types occur in the proposed development area (Table 9-1). Routine scheduled vegetation management for aviation safety requirements, general operations and/or drainage and stormwater management occurs throughout virtually the entire area inside the existing PWM airfield fence. Vegetation management is uncommon or has occurred less frequently in shrubby or undeveloped areas where portions of the Wildlife Hazard Management Plan (WHMP) and new apron areas for Terminal Area Improvements are proposed. Vegetation management and frequency significantly affects wetland vegetative characteristics and related wetland functions.

Within the airfield security fence, regularly mown emergent wetland communities are classified as palustrine non-persistent emergent (PEM2). Shrub thickets, dominated by hydrophytic shrubs such as speckled alder (*Alnus incana*) or arrowwood (*Viburnum dentatum*) are located in portions of the Wildlife Hazard Management Area and where some of the new apron areas are proposed for Terminal Area Improvements. These shrub thickets typify palustrine broad-leaved deciduous scrub-shrub (PSS1) wetland. Palustine broad-leaved deciduous forested wetland (PFO1) is also present where Terminal Area Improvements are to take place. Outside the security fence where crossed by the proposed extension of Runway 36, a marsh community dominated by cattail (*Typha* spp.) is classified as palustrine persistent emergent wetland (PEM1). Wetland communities to be affected by (or in the vicinity of) the Capital Improvement Plan and WHMP are described in more detail below.

9.1 Runway 29

Two periods of significant and extensive earthwork activities undertaken as recently as 35-to-50-years ago are responsible for existing conditions at the east end of Runway 29. Examination of project plans as well as pre and post development aerial photographs from the 1950s through the 1970s document landscape level changes from placement of fill to heights of at least 30 vertical feet over horizontal distances of several hundred feet. These development activities at Runway 29 prior to promulgation of the Clean Water Act in 1972 subsequently resulted in the opportunistic establishment of wetland plant communities in areas where fill was placed. Consequently, based on this origin, such wetland plant communities at Runway 29 exhibit characteristics of "*Man-induced wetlands*" described by the 1987 *US Army Corps of Engineers Wetlands Delineation Manual* (Part IV, Section F 71.c (page 83)).

Construction of Runway 29 began in 1955 with the Portland Municipal Airport's development of *Plans for a new 5000 foot East-West Runway with Taxiways* dated May 4, 1955. Changes in elevation for this nearly mile-long runway ranged from as much as 20 vertical feet of cut at the

NORTH

LEGEND

EXISTING WETLAND F

POTENTIAL WETLAND IMPACT AREAS L

PREVIOUSLY PERMITTED WETLAND IMPACT AC

IMPACT AREA # ACRES

*NOTE: ALL AREAS ARE APPROXIMATE

TOTAL POTENTIAL WETLAND IMPACTS 13.61 ACRES	
NEW PROPOSED	11.58 ACRES
JURISDICTIONAL	6.80 ACRES
JD REQUESTED	4.78 ACRES
PREVIOUSLY PERMITTED AND COMPENSATED	2.03 ACRES

CONGRESS STREET

FORE RIVER

RUNWAY 18-36

CITY OF PORTLAND
CITY OF SOUTH PORTLAND

MAINE TURNPIKE

RUNWAY 11-29

3.85 ACRES (NEW IMPACT)
2.03 ACRES (PREVIOUSLY PERMITTED)

0.64 ACRES

4.89 ACRES

1.66 ACRES

0.54 ACRES

I-295

TO MAINE MALL

WESTERN AVENUE

YOUTH CENTER

BRICK HILL

LONG CREEK

GRAPHIC SCALE
0 400 800 1600
1 inch = 800 ft.

DeLuca-Hoffman Associates, Inc.	DRAWN:	LECJ	DATE:	MAY 2008
778 MAIN STREET, SUITE 8	DESIGNED:	DDA	SCALE:	1" - 800'
SOUTH PORTLAND, ME 04106	CHECKED:	DDA	JOB NO.	2743
207.775.1121	FILE NAME:	2743-SP		
WWW.DELUCAHOFFMAN.COM				

PORTLAND INTERNATIONAL JETPORT
ENVIRONMENTAL ASSESSMENT AND
REQUIRED ENVIRONMENTAL PERMITS

OVERALL WETLAND FIGURE

FIGURE 9-1

Table 9-1 (updated 3/12/2009)
Summary of Wetland Characteristics and Impacts, Portland International Jetport

Wetland	Photo	Delineation	Wetland Type [1]	Wetland Function/Value(s) [2]	Impact Area/Type
A	1	October 1997 – Smart Associates [3]	E2EM1 (Fore River)	FFA, FSH, PE, SS, WLH, R, A	No Impact
D	8	" " "	Mowed (airfield) PEM2	Surface water conveyance	No Impact
E		" " "	Mowed (airfield) PEM2 (isolated)		No Impact
F		" " "	Mowed (airfield) PEM2 (isolated)	ESH ?	No Impact
H	9	" " "	Drainage ditch PEM1	Surface water conveyance	0.64 acre PEM
L	2	" " "	PEM1 (wildlife hazard) / PSS1	WLH, ESH (PSS portion)	2.58 acres PEM / 2.31acres PSS
N		" " "	PSS1	Surface water conveyance	No Impact
S	7	June 2007 – TRC	Mowed PEM2	WLH	0.54 acre PEM
T (B)		October 2006 – Smart Associates [4]	PEM1	STPR, WLH	No Impact
V (D)	3	" " "	PEM1	STPR, NRRT, WLH	1.61 acres PEM
W (E)	4	" " "	POWh	STPR, NRRT, WLH, A	0.05 acre POW
X (F)	5	" " "	PEM1	STPR, NRRT, WLH, A	No Impact
Y (G)	6	" " "	E2EM1 (Long Creek)	FFA, FSH, PE, SS, WLH, R, A	No Impact
Z (H)		" " "	PSS1 (isolated)	WLH	No Impact
AC	11	October 1991 – Normandeau Associates [5]	PEM1/PSS1	STPR, WLH	2.98 acres PSS [6]
AE	10	" " "	PFO1 (now isolated)	WLH	0.87 acre PFO
				Total Area of New Impact	**11. 58 acres**

D-12

[1] Wetland types from USFWS *Classification of Wetlands and Deepwater Habitats* (Cowardin et al, 1979) with net acreage of impact:
E2EM – Estuarine, inter-tidal, persistent emergent
0.05 acre – POWh – Palustrine, open water, diked/impounded
4.83 acre – PEM1 – Palustrine, persistent emergent
0.54 acre – PEM2 – Palustrine, non-persistent (mown) emergent
5.29 acre – PSS1 – Palustrine, broad-leaved deciduous scrub shrub
0.87 acre – PFO1 – Palustrine, broad-leaved deciduous forested

[2] Based on the September 1999 supplement to the New England Division of the Corps *Descriptive Approach* to assessing wetland functions and values described in *The Highway Methodology Workbook.* Functions and values present in wetlands at PWM include: FFA – floodflow alteration; F/SH – fish/shellfish habitat; STPR – sediment, toxicant, pollutant retention; NRRT – nutrient removal/retention/transformation; PE – production export; SS – sediment/shoreline stabilization; WLH – wildlife habitat; R – recreation; A – Visual quality/ aesthetics; ESH – threatened/endangered species habitat. Wetland functions and values are described in greater detail in Attachment 12 of the NRPA application.

[3] Part of: 1999 *Preferred Facilities Improvement Plan* Applications to the US Army Corps of Engineers and Maine Department of Environmental Protection.

[4] Described in : 2006 *Wetlands Technical Report for Portland International Jetport* by The Smart Associates (Alphabetic wetland label has been changed from original in () to prevent duplicative labeling of previous delineations).

[5] Contained in: 1991*Draft Environmental Assessment/Regulatory Feasibility Study for Airport Access Road, Congress Street Parcel.*

[6] 2.03 acres of impact to this wetland has been previously impacted and compensated for.

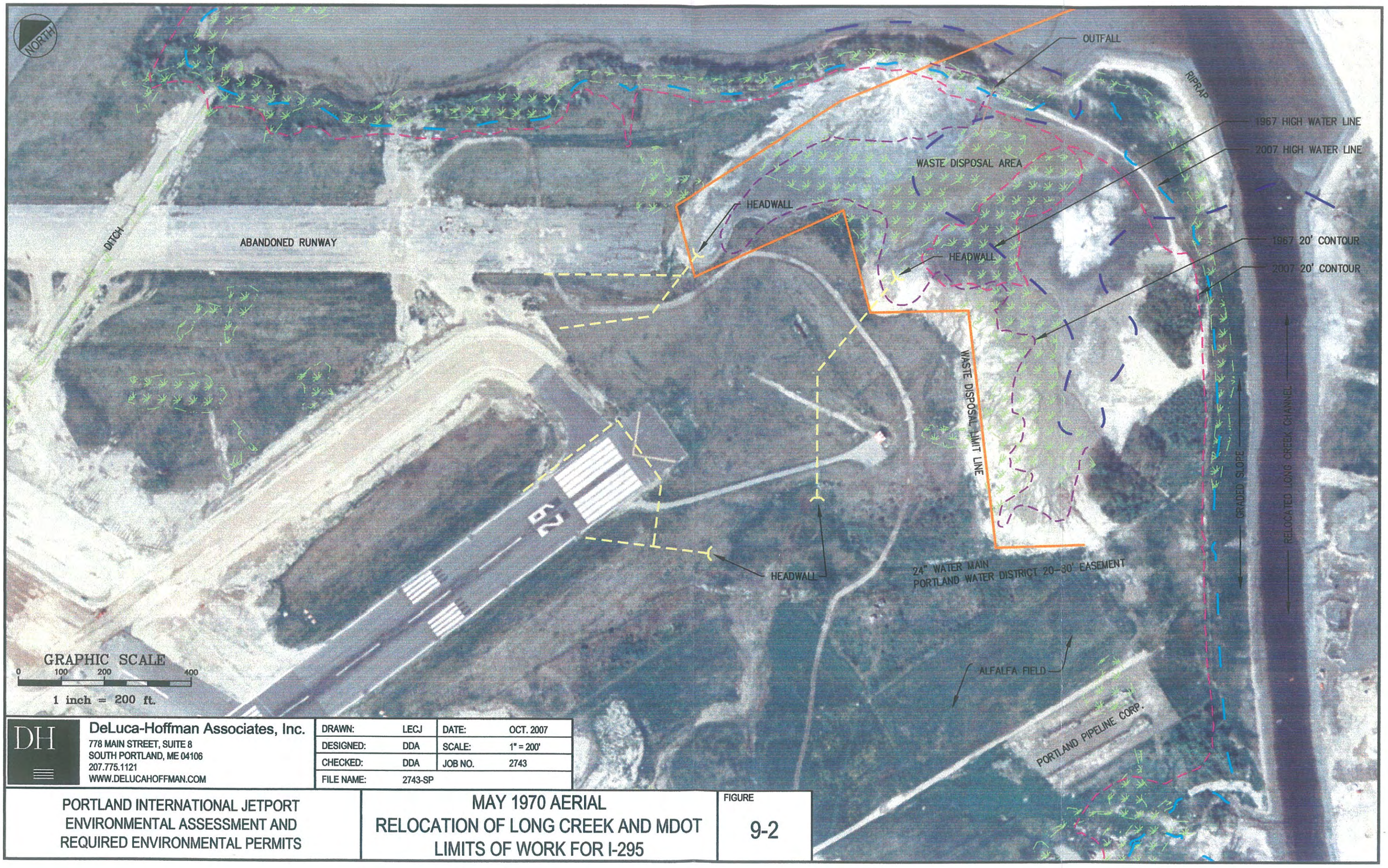
west end (Runway 11) to as much as 30 vertical feet of fill at the opposite, Runway 29 end and extended as much as 100 feet horizontally into mudflats of the tidal Long Creek; west of its confluence with the Fore River. The extent of this work is depicted on project plans dated May 4, 1955 that identify existing and proposed contours, areas to be cleared and grubbed, and grading limits. Similar information is also depicted in longitudinal cross sections aligned along the center-line of the runway. An aerial photograph taken on May 17, 1956, by the US Geological Survey shows that within less than a year of preparing these plans construction of the new runway, including Runway 29, was well underway.

The second period of development commenced a little more than ten years later and had even greater impact on the area to the east of Runway 29. At this time the Maine State Highway Commission developed plans dated February 1967 for construction of the Federal Aid Interstate Highway 295 from the Maine Turnpike and northward across the Fore River near Thompson Point. The project included constructing the four-lane bridge that now crosses the Fore River at this location, construction of I-295 and the interchange to the southeast of the bridge and relocating and straightening more than a mile of the tidal Long Creek, including shifting its confluence with the Fore River to the northwest of I-295 at the terminus of Runway 29. The horizontal extent of this work is also depicted on project plans which identify existing contours, the "*relocated Long Creek Center Line* and *waste disposal limit lines*" that mark where surplus soil would have been disposed to the west and landward of the 1967 high water line (Figure 9-2).

To the east of Runway 29 is an area addressed by the Wildlife Hazard Management Plan (CFR Title 14 FAR Part 139.337) designated as Wetland L that includes a community of wetland plants dominated by shrubs and a stand of *Phragmites* (Figure 9-1). A ten-foot wide gravel road regularly used for operation and maintenance of runway approach lights (Photo 4-1) crosses this area and leads to the airport security fence located atop a berm. The PEM1/PSS1 wetland community (Photo 4-2) lies enclosed behind the 2-to-4 foot high berm at an elevation of approximately 20 ft above mean water of the tidal Long Creek/Fore River. Wetland L occurs within and seaward of the *waste disposal limit lines* depicted on the 1967 I-295 plans and therefore exhibits characteristics of a *man-induced wetland.* The only direct hydrologic connection that exists between this *man-induced wetland* and the traditional navigable waters of Long Creek and the Fore River is from a catch basin in Wetland L that drains through approximately 120 feet of deteriorated CMP culvert buried more than 12 ft below grade. A smaller diameter (approximately 15 inch diameter) plastic pipe was "slip-lined" through the deteriorated CMP culvert during repair of storm damage from Hurricane Bob in 1991. A total of 4.89 acres of wetland impact is proposed in Wetland L for implementation of the WHMP and safety improvements for Runway 29.

9.2 Runway 36

Although presently undeveloped, virtually all the proposed Runway 36 improvements outside the security fence occur on land of the former Carter Farm which became the site of the Maine State Reform School (now Maine Youth Center). For 120 years from ground breaking in 1851 through 1970, vegetables and feed crops were grown here for ancillary farm animals including chickens, horses and oxen, and a dairy farm and piggery operated by the School to train and sustain its occupants (Oulette, L.G., 2000 – *History of Southern Maine Juvenile Facility and Maine Youth Center, 1850 to 1998*). Agricultural use of the property continued through 1967 as



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DRAWN:	LECJ	DATE:	OCT. 2007
DESIGNED:	DDA	SCALE:	1" = 200'
CHECKED:	DDA	JOB NO.	2743
FILE NAME:	2743-SP		

PORTLAND INTERNATIONAL JETPORT
ENVIRONMENTAL ASSESSMENT AND
REQUIRED ENVIRONMENTAL PERMITS

MAY 1970 AERIAL
RELOCATION OF LONG CREEK AND MDOT LIMITS OF WORK FOR I-295

FIGURE
9-2

evidenced by reference to alfalfa fields on the 1967 Maine State Highway Commission I-295 plans and is documented to occur until as recently as 1970 (Ouellete, 2000). Low-angle oblique aerial photos of the Youth Center campus taken in 1972 show a football field and farmed fields in the area to the west of proposed Runway 36 extension.

Evidence of this former land use continues to be evident in the fallow fields and is exhibited by grading and drainage patterns, old-field succession plant communities and roads used into the 1970s for construction of the adjacent Interstate 295 and bridge over the Fore River. The extent of the creation or loss of wetland associated with agricultural activities at the Southern Maine Juvenile Facility/Maine Youth Center is challenging to document but is conspicuously evident today in the form of linear swales dominated by invasive reed canary grass (*Phalaris arundinacea*) and identified as Wetland T (Figure 9-1). The swales drain into two impoundments (Photos 4-3, 4-4) dominated by cattail (PEM1) or open water (POWh) and then downstream into Long Creek (Photos 4-5, 4-6). Roads separate Wetland segments V, W and X and provide access to the area south of Runway 29 including airfield gate 15. Wetland S (Photo 4-7) located near the proposed terminus of Runway 36 is also dominated by reed canary grass and drains by a different route into Long Creek. A total of 2.20 acres of wetland impact (is proposed in Wetlands V, W and S for constructing Runway 36 improvements.

9.3 Cargo Facility

North of Runway 29 and south of the existing Cargo Facility, the man-induced origin of areas labeled as D, H, L and N is discernable on 1970 aerial photography which also illustrates how their respective connections to the Fore River were created. Runways, constructed since the late 1930's to be elevated above adjacent terrain at PWM surround areas D on three sides so that should wetland have even existed here prior to construction of the airfield, any connection to the Fore River now only results from construction of the storm drain system (Photo 4-8). Similarly, areas identified as H (Photo 4-9) are aligned along a ditch through upland that crosses an abandoned runway and is shown to be under construction on the May 21, 1970 photograph (Figure 9-2). The ditch conveys storm water captured by area N on the opposite (west) side of Runway 36 which was also heavily disturbed by construction in 1970 (Figure 9-2). Opportunistic hydrophtyes such as soft rush (*Juncus effusus*) dominate these altered soils and by occurring in a regularly mown part of the airfield are a non-persistent emergent community (PEM2). A total of 0.64 acre of wetland impact is proposed in Wetlands H for constructing and new taxiway to reduce Runway 18 – 36 incursions and improve conditions for the Cargo Facility.

9.4 Terminal Area

Improvements to the Terminal Area are proposed to the south of the intersection of Jetport Boulevard and International Parkway. An isolated forested wetland (PFO1) in this location dominated by red maple trees (*Acer rubrum*) is designated as Wetland AE (Photo 4-10). A nearby wetland that ultimately drains to the north is dominated by a mixture of alder and cattail (PSS1/PEM1) and is designated as Wetland AC (Photo 4-11). A total of 3.85 acres of new wetland impact are proposed in Wetlands AC and AE for constructing Terminal Area improvements and the de-icing pad which will also occur over 2.03 acres of previously approved and compensated impacts in Wetland AC.

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APPENDIX 9-A

WETLAND DELINEATION
DATA FORMS/DOCUMENTATION

OJECT TITLE: Portland Jetport — The Smart Associates — TRANSECT: D series — PLOT: B (up.) ✓

LINEATOR(S): J. Fougere, D. Burt — DATE: 10/15/97

GETATION Stratum	Stratum and Species (Dominants Only)	Dominance Ratio	Percent Dominance	NWI STATUS
Trees	—			
Saplings	—			
Shrubs	—			
Herbs	Plantago · major.	10.5/53.5	20%	FACU
	Trifolium pratense	20.5/53.5	38%	FACU
	Leontodon autumnalis	10.5/53.5	20%	NI
	Ambrosia artemisiifolia	3/53.5		FACU
	Ranunculus acris	3/53.5		FACU
	Fragraria virginiana	3/53.5		FACU

E 1: Use asterisk * to indicate plants with observed adaptations to wetland hydrology. Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.

E 2: Species with NA or NI status are reported, but are not calculated in the tally below.

OBL	FACW	FAC	*OTHER HYDROPHYTES	FAC-	FACU	UPL
					2	

Hydrophytes SUBTOTAL: ____ NON-hydrophytes SUBTOTAL: 2

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-hydrophytes = PERCENT HYDROPHYTES = 100%

YDROLOGY 1. Hydrology is one of the most difficult factors to assess. 2. Impressions must stimulate the validity of the observation in light of the weather, recent seasonal conditions, watershed alterations, etc. 3. Interpretation of hydrology may require repeated observations over more than one season.

☐ RECORDED DATA
Stream, lake or tidal gage — Identification: ____
Aerial Photograph — Identification: ____
Other — Identification: ____

☒ NO RECORDED DATA

☐ OBSERVATIONS:

Depth to Free Water: none noted
Depth to Saturation (including capillary fringe): ____
Describe Altered Hydrology: (2) catch basins provide drainage to this low area

☐ Inundated ☐ Saturated in upper 12 inches ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland

☐ OTHER (explain):

D

SOIL — Sketch Landscape Position

B — wet — up

DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES Color, Abundance, Size & Contrast	USDA Texture; and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
1-0	"O" horizon A?			
0-10	B_1	2.5Y 3/2	10 YR 7/4 oxid. rhizo.	silt loam, friable many fine roots
10-18+	B_2	2.5Y 4/2		silt loam, blocky structure firm

HYDRIC SOIL INDICATOR(S): — REFERENCE: Field Indicators for Identifying Hydric Soils in NE. (NECWPCC).

OPTIONAL SOIL DATA: — REFERENCES:

TAXONOMIC SUBGROUP:

SOIL DRAINAGE CLASS:

DEPTH TO ACTIVE WATER TABLE:

NTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	Yes	No
Greater than 50% Hydrophytes?	☐	☒
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☐	☒

IS THIS DATAPOINT WITHIN A WETLAND? Yes ☐ No ☒

REMARKS: Wetlands generally on sloping land. This area is located adjacent to catch basin in field.

PROJECT TITLE: Portland Jetport — TRANSECT: D Series — PLOT: B (up)

OJECT TITLE: Portland Jetport TRANSECT: E1 PLOT: A (wet)
The Smart Associates
JNEATOR(S): J. Fougere, D. Burt, D. Marceau DATE: 10/2/97

GETATION Stratum and Species (Dominants Only)	Dominance Ratio	Percent Dominance	NWI STATUS
trees —			
saplings —			
shrubs —			
herbs * Phalaris arundinacea	10.5 / 76.5	14%	FACW
* Unidentified Carex spp.	3 / 76.5	4%	—
* Unidentified grasses	63 / 76.5	82%	—
* moved			

1: Use asterisk * to indicate plants with observed adaptations to wetland hydrology. Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.
2: Species with NA or NI status are recorded, but are not calculated in the tally below.

OBL	FACW	FAC	OTHER HYDROPHYTES	FAC-	FACU	UPL
	1					

Hydrophytes SUBTOTAL: 1 NON-hydrophytes SUBTOTAL: —

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-hydrophytes = PERCENT HYDROPHYTES = 100%

YDROLOGY
1. Hydrology is often the most difficult feature to address.
2. Interpretation must assess the validity of the observations in light of the climatic, recent weather conditions, watershed conditions, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

☐ RECORDED DATA
Stream, lake or tidal gage Identification:
Aerial Photograph Identification:
Other Identification:
☒ NO RECORDED DATA
☐ OBSERVATIONS: no water observed, during dry period.
Depth to Free Water:
Depth to Saturation (including capillary fringe): 12-15"
Describe Altered Hydrology:

☐ Inundated ☐ Saturated in upper 12 Inches ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland
☒ OTHER (explain): low point in landscape. Bank on west side of wetland

D-19

SOIL Sketch Landscape Position

(depression) wet up.

DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES Color, Abundance, Size & Contrast	USDA Texture; and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
1-0	O	—		
0-8	A	2.5Y 4/2	10YR 4/4 oxid. rhiz.	silt loam, friable blocky
8-18+	B_{w1}	5Y 4/2	10YR 5/1 >10% 10YR 3/4 >10%	silt loam, blocky firm

HYDRIC SOIL INDICATOR(S): REFERENCE:
Field Indicators for Identifying Hydric Soils in NE (NEIWPCC). III. G. 1.b.

OPTIONAL SOIL DATA: REFERENCES:
TAXONOMIC SUBGROUP:
SOIL DRAINAGE CLASS:
DEPTH TO ACTIVE WATER TABLE:
HTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	Yes	No
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND? Yes ☒ No ☐

REMARKS: Wetland is a low point in landscape with no obvious outlet

PROJECT TITLE: Portland Jetport TRANSECT: PLOT:

PROJECT TITLE: Portland Jetport — The Smart Associates TRANSECT: F series PLOT: A (wet)

DELINEATOR(S): J. Fougere, D. Burt DATE: 10/27/97

VEGETATION	Stratum and Species (Dominants Only)	Dominance Ratio	Percent Dominance	NWI STATUS
trees	—			
Saplings	—			
shrubs	—			
herbs				
	Phalaris arundinacea	10.5 / 77.5	14%	FACW+
	Unidentified Carex spp.	63 / 77.5	86%	—

NOTE 1: Use asterisk * to indicate plants with observed indications to wetland hydrology. Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.

NOTE 2: Species with NA or NI status are recorded, but are not calculated in the tally below.

OBL	FACW	FAC	*OTHER HYDROPHYTES	FAC-	FACU	UPL
	1					

Hydrophytes SUBTOTAL: 1 NON-hydrophytes SUBTOTAL: —

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-hydrophytes = PERCENT HYDROPHYTES = 100%

HYDROLOGY

1. Primary is what the most difficult feature is wetness,
2. Secondary must document the validity of the assessment in light of the season, normal seasonal conditions, hydrophyte alterations, etc.
3. Interpretation of hydrology may require repeated observations over more than one season.

☐ RECORDED DATA
- Stream, lake or tidal gage — Identification:
- Aerial Photograph — Identification:
- Other — Identification:

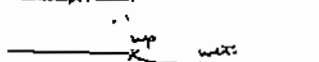
☒ NO RECORDED DATA

☐ OBSERVATIONS:
- Depth to Free Water: none noted
- Depth to Saturation (including capillary fringe):
- Describe Altered Hydrology:

☐ Inundated ☐ Saturated in upper 12 inches ☒ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☒ Drainage Patterns within Wetland

☒ OTHER (explain): small depressions in landscape and narrow drainageway. Areas not connected.

SOIL — Sketch Landscape Position



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES Color, Abundance, Size & Contrast	USDA Texture and nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.
1-0	O	—		grasses & roots
0-13	A	10YR 3/2	many oxid rhizo.	fine sandy loam
13-19+	B1	5Y 5/2	7.5YR 4/6 >10% C.D. 5Y 4/6 F.C.	silt loam

HYDRIC SOIL INDICATOR(S): Field Indicators for Identifying Hydric Soils in NE. (NEIWPCC) REFERENCE: III. G.1.b.

OPTIONAL SOIL DATA: REFERENCES:

TAXONOMIC SUBGROUP:

SOIL DRAINAGE CLASS:

DEPTH TO ACTIVE WATER TABLE:

KTCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	Yes	No
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND? Yes ☒ No ☐

REMARKS: limited vegetation, but low area and soils indicate wetland limit.

PROJECT TITLE: Portland Jetport TRANSECT: F series PLOT: A (wet)

PROJECT TITLE: Portland Jetport — The Smart Growth Corridor — TRANSECT: L1 — PLOT: A (wet)

DELINEATOR(S): J. Fougere D. Burt — DATE: 10/22/97

VEGETATION	Stratum and Species (Dominants Only)	Dominance Ratio	Percent Dominance	NWI STATUS
trees	—			
saplings	—			
shrubs	Populus tremula	20.5/41.5	49%	FACU
	Spiraea latifolia	10.5/41.5	25%	FAC+
	Alnus rugosa	10.5/41.5	25%	FACW+
Herbs	Polygonum pennsylvanicum	10.5/52	20%	FACW
	Solidago rugosa	10.5/52	20%	FAC
	Aster umbellatus	10.5/52	20%	FAC
	Spiraea latifolia	20.5/52	39%	FAC+

NOTE 1: Use asterisk * to indicate plants with observed adaptations to wetland hydrology. Plants recorded with asterisks should be considered as "other hydrophytes" in the tally below.

NOTE 2: Species with NA or NI status are recorded, but are not calculated in the tally below.

OBL	FACW	FAC	*OTHER HYDROPHYTES	FAC-	FACU	UPL
	2	4			1	

Hydrophytes SUBTOTAL: 6 — NON-hydrophytes SUBTOTAL: 1

100 x Subtotal Hydrophytes / Subtotal Hydrophytes + Subtotal Non-hydrophytes = PERCENT HYDROPHYTES = 86%

HYDROLOGY

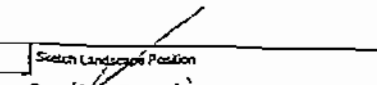
1. Primary is when one event defines feature as wetland.
2. Secondary must consider the validity of the observation in light of the season, recent weather conditions, watershed alterations, etc.
3. Interpretation of hydrology may require repeated observations over years that are variable.

- ☐ RECORDED DATA
  - Stream, lake or tidal gage — Identification:
  - Aerial Photograph — Identification:
  - Other — Identification:
- ☒ NO RECORDED DATA
- ☐ OBSERVATIONS:
  - Depth to Free Water: None noted during delineation; pond portion dangle
  - Depth to Saturation (including capillary fringe): 4" within 10" in other areas of wetland
  - Describe Altered Hydrology: gravel road bisects wetland

☐ Inundated ☒ Saturated in upper 12 inches ☒ Water Marks ☐ Drift Lines ☒ Sediment Deposits ☒ Drainage Patterns within Wetland

☐ OTHER (explain):

SOIL — Sketch Landscape Position



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES Color, Abundance, Size & Contrast	USDA Texture, and nodules, concretions, mineral, pore linings, restrictive layers, root distribution, soil water, etc.
0-5	A	2.5Y 5/2		silt loam, friable
5-19	B_1	2.5Y 4/2	10YR 5/4 many 7/8	silt loam, blocky,
19+	B_2	2.5Y 4/3	10YR 5/4	Sandy loam, loose, friable

HYDRIC SOIL INDICATOR(S) — REFERENCE: Field Indicator for Identifying Hydric Soils in NE (NEIWPCC). III.G.1.b.

OPTIONAL SOIL DATA — REFERENCES:

TAXONOMIC SUBGROUP:

SOIL DRAINAGE CLASS:

DEPTH TO ACTIVE WATER TABLE:

NYCHS HYDRIC SOIL CRITERION:

CONCLUSIONS

	Yes	No
Greater than 50% Hydrophytes?	☒	☐
Hydric Soils Criterion Met?	☒	☐
Wetland Hydrology Met?	☒	☐

IS THIS DATAPOINT WITHIN A WETLAND? Yes ☒ No ☐

REMARKS: Large s/s cattail emergent wetland

PROJECT TITLE: Portland Jetport — TRANSECT: L1 — PLOT: (A) wet

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Wetlands Technical Report
for
Portland International Jetport

South Portland, ME

Note: As described in Footnote 4 of Table 1 of the 2008 TRC Wetland Resources Report, the alphabetic wetland labels of this 2006 report by The Smart Associates have been revised to prevent duplicative labeling of previous wetland delineations at the Jetport. Wetlands referenced in the TRC 2008 Wetland Resource Report are listed below and followed in ( ) by the corresponding labeling from The Smart Associates Report.

2008 vs. 2006
T = (B)
V = (D)
W = (E)
X = (F)
Y = (G)
Z = (H)

Prepared for:

Coffman Associates
237 Northwest Blue Parkway
Lee Summit, MO 64063

Prepared by:

The Smart Associates
Environmental Consultants, Inc.
72 North Main Street
Concord, NH 03301-4983

October 20, 2006

TABLE OF CONTENTS

Wetlands Technical Report for Portland International Jetport

1.0 Introduction

The Smart Associates, Environmental Consultants, Inc. (TSA) was retained by Coffman Associates to perform wetland delineations at Portland International Jetport (the Airport) in support of The Master Plan Update. This study focused on a parcel of land south of Runway 18-36 at the Airport in South Portland, Maine. The following report summarizes TSA's evaluation of the wetlands during site visits.

2.0 Project Description

TSA's activities for this task included on-site wetland delineations of the proposed project area on the Airport, including a wetland function and value assessment, a recorded flag line using a Global Positioning System (GPS), the preparation of a project photographic log, and this report.

3.0 Regulations

3.1 Federal Regulations

Both Federal and Maine regulations address activities conducted in wetlands and waters of the United States. The fundamental intent of these regulations is to minimize the reduction and degradation of these resources, and strive to achieve "no net loss" of these wetlands. The Federal program is based on Section 404 of the Clean Water Act, and the US Army Corp of Engineers (ACOE) implementation regulations (33 CFR, parts 320-330). In addition, Executive Order 11990 directs all Federal agencies to minimize the destruction, loss, and degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands. These regulations define those lands that are considered wetlands and other "waters of the United States", including lakes, ponds, rivers and streams. The regulations may require an ACOE permit for the placement of dredge or fill material in wetlands or other "waters of the United States". Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and hydric soils.

3.2 NEPA Regulation

The Federal Aviation Administration (FAA) Order 5050.4B and Order 1050.1E provide guidelines for environmental impacts in support of airport development projects and requires an evaluation of potential impacts pursuant to applicable sections of the National Environmental Policy Act (NEPA).

3.3 Maine Regulations

Freshwater wetlands are protected by the State of Maine under the Natural Resource Protection Act (Title 38 M.R.S.A. Section 480-A through 480-S) and the Act's Wetland Protection Rules (Chapter 310). The Act regulates dredging, draining, filling, and other alterations within 100 feet of freshwater wetlands. The program is administered by the Maine Department of Environmental Protection (MEDEP).

3.4 South Portland Shoreland Protection Overlay District

The purpose of this overlay district is to prevent and control water pollution, protect wildlife habitat, reduce flooding impacts, and protect freshwater and coastal wetlands, among others. The district includes all areas within a 250-foot horizontal distance of the upland edge of freshwater wetlands, salt marshes and salt meadows, and wetlands associated with the Fore River, among other resources. It also encompasses 100-year floodplain along the river.

4.0 Methodology

4.1 Wetland Boundaries and Delineation

Wetlands associated with the project were delineated in the field utilizing methodology outlined in the *Corps of Engineers Wetland Delineation Manual* (ACOE, 1987). Wetland boundaries were based on the presence of hydrophytic vegetation, hydric soils and indications of wetland hydrology. Descriptions of the wetland characteristics are discussed in this report. All wetland boundaries were flagged in the field and were located using a Trimble® GeoXT™ Global Positioning System (GPS) unit. Federal wetland classifications were assigned according to the criteria published by the USFWS in Cowardin et al (1979), and noted on Figure #2.

4.2 Wetland Functional Assessment

Wetland functions were assessed in accordance with the ACOE "*Highway Methodology Workbook Supplement: Wetland Functions and Values; A Descriptive Approach*" (1995). The thirteen functions and values assessed for this study include the following list:

- Groundwater recharge and discharge
- Flood storage and desynchronization
- Sediment and toxicant retention
- Sediment and shoreline stabilization
- Nutrient retention and transformation
- Nutrient export
- Aquatic diversity/abundance and fish and shellfish habitat
- Wildlife habitat
- Endangered species habitat
- Recreation(consumptive and non-consumptive)
- Uniqueness/heritage
- Educational/scientific
- Visual quality/aesthetics

5.0 Summary of Findings

A total of eight wetlands were identified within the project study area located on the parcel of land south of the Airport. This parcel of land was acquired by the airport and was formerly owned by the Maine Youth Center.

5.1 Description of Wetlands

Wetland A
Wetland A is a 0.45-acre emergent wetland located outside the airport property southwest of Runway 36. This wetland continues beyond the project study area to the airfield side of the Airport, runs east for a short distance, and drains back into the study area as wetland B. This wetland is classified as palustrine emergent, persistent, seasonally flooded/saturated (PEM1E).

Vegetation within this wetland includes emergent species such as sensitive fern (*Onoclea sensibilis*), touch-me-not (*Impatiens capensis*), cat-tail (*Typha latifolia*), common reed (*Phragmites australis*), lanced-leaved goldenrod (*Solidago graminifolia*), bog goldenrod (*Solidago uliginosa*) and arrow leaved tearthumb (*Polygonum sagittatum*).

Principal value functions of wetland A include flood storage and desynchronization, sediment/toxicant retention, and wildlife habitat. The density of emergent vegetation contributes to the sediment/toxicant retention and nutrient retention values. The wildlife habitat is defined by the density and diversity of emergent vegetation as well as the overland access to adjacent wetlands.

Wetland B
Wetland B is a 2.75-acre emergent and scrub-shrub wetland community that is surrounded by open fields and located outside the airfield fence, southwest of Runway 36. Wetland B connects to wetland C, which than drains into wetland E. This wetland is classified as palustrine emergent, persistent, seasonally flooded (PEM1E) and palustrine scrub-shrub, persistent, seasonally flooded/saturated (PSS1E).

Vegetation within the wetland includes emergent species, such as goldenrods (*Solidago spp.*), sedges (*Carex spp.*) and arrow-leaf tearthumb. Shrub species, which occur primarily in the northeast portion of the wetland, include arrowwood (*Viburnum recognitum*) and silky dogwood (*Cornus sericea*).

Principal functions of wetland B include flood storage and desynchronization, nutrient export, and wildlife habitat. The flood storage and desynchronization value is defined by the overall size and topography of the wetland. The combination of emergent and shrub species, along with the diversity of plant species, contributes to the nutrient export and wildlife habitat value of wetland B. (Photos 1, 2, 3 & 4 – Appendix A)

Wetland C
Wetland C is a 0.79-acre emergent and scrub-shrub wetland community located outside the airfield fence, south of Runway 36. Wetland C receives surface water runoff from surrounding uplands and wetland B, which drains from the south towards Wetland C. There are two drainage pipes on the east side of the wetland that cross under an airport access road and drain to wetland E. Wetland C is classified as palustrine scrub/shrub, broad-leaved deciduous, persistent, seasonally flooded (PSS1E), and palustrine emergent, persistent, seasonally flooded/saturated (PEM1E).

Vegetation within the wetland includes emergent species such as broad-leaved cattail (*Typha latifolia*), goldenrods and arrow-leaved tearthumb. Shrub species include speckled alder (*Alnus rugosa*), and arrowwood.

Principal functions of wetland C include flood storage and desynchronization, nutrient export, and wildlife habitat. The flood storage and desynchronization value of wetland C is defined by it's topographical location and restricted outlet. The wetland's diverse plant community also contributes to the nutrient export value and the wildlife habitat values of the wetland. (Photos 5&6 – Appendix A)

Wetland D

Wetland D is a 0.002-acre palustrine emergent wetland located south of Runway 36. There are two drainage pipes that cross under an airport access road to a rock lined swale and to wetland E. This wetland is classified as palustrine emergent, persistent, seasonally flooded/saturated (PEM1E).

Vegetation within this wetland includes emergent species such as soft rush (*Juncus effusus*), wool grass (*Scirpus cyperinus*), lance-leaved goldenrod, and sedges.

Principal functions of wetland D include wildlife habitat. This wetland has dense vegetation and is adjacent to wetlands C and E contributing to the wildlife habitat value. (Photograph 7 – Appendix A)

Wetland E

Wetland E is a 2.30-acre emergent, scrub-shrub and open water wetland located southeast of Runway 36. This wetland is classified as palustrine emergent, persistent, seasonally flooded/saturated (PEM1E), as palustrine scrub/shrub, broad-leaved deciduous, persistent, seasonally flooded/saturated (PSS1E), and as palustrine, open water, permanently flooded (POWH).

Vegetation within this wetland includes emergent species such as broad-leaved cattail and goldenrods (*Solidago spp.*). Shrub species include red osier dogwood (*Cornus sericea*), arrowwood, pussy willow (*Salix spp.*) multiflora rose (*Rosa multiflora*) and speckled alder.

Principal value functions of wetland E include flood storage and desynchronization, production export and wildlife habitat. The flood storage value of the wetland is defined by its overall size and topographical depression. The diversity of the plant species contributes to the nutrient export and wildlife habitat value of the wetland. (Photographs 8, 9, 10 & 11 – Appendix A)

Wetland F

Wetland F is a 0.78-acre emergent and scrub-shrub wetland that is located southeast of Runway 36. Small drainage channels run along the northern portion of the wetland and eventually drain into the Fore River. This wetland is classified as palustrine emergent, persistent, seasonally flooded/saturated (PEM1E) and palustrine shrub-scrub, persistent, seasonally flooded/saturated (PSS1E).

Vegetation within wetland F includes emergent species such as broad-leaved cattail and giant green bulrush (*Scirpus atrovirens*). Shrub species in this wetland include speckled alder and pussy willow.

Principal functions of wetland F include flood storage and desynchronization, production export, and wildlife habitat. The flood storage and desynchronization is defined by the wetland's proximity to the Fore River. The density and diversity of plants along with the wildlife use contribute to the nutrient export and wildlife habitat of this wetland. (Photograph 12 – Appendix A)

Wetland G

Wetland G (Fore River Wetlands) is an intertidal zone, which forms the eastern boundary of the project study area. It connects Long Creek to the south of the Jetport and the Stroudwater River to the north. This wetland is classified as estuarine, intertidal, emergent, persistant, regularly flooded (E2EM1N).

Common vegetation along the boundary edge is primarily coastal plants species such as seaside goldenrod (*Solidago sempervirens*), marsh orach (*Atriplex patula*), salt meadow grass, (*Spartina patens*), and saltwater cordgrass (*Spartina alterniflora*).

Due to its position in the watershed, the area is not considered to provide flood storage values, although it would provide flood protection functions. Due to the wetland's vegetated shoreline and sources of sediments and other pollutants, the area provides principal valuable functions related to water quality (sediment and shoreline stabilization, sediment/toxicant retention, and nutrient retention/transformation). This wetland has valuable fish and wildlife habitat features including excellent waterfowl habitat. (Photograph 13 & 14 – Appendix A)

Wetland H

Wetland H is a 0.24-acre isolated emergent and scrub-shrub wetland located east of Runway 36. This wetland is surrounded by open fields and is located upslope from wetland F. This wetland is classified as palustrine emergent, persistent, seasonally flooded (PEM1C) and as palustrine scrub-shrub, persistent, broad-leaved deciduous, seasonally flooded (PSS1C).

Vegetation within this wetland includes emergent species such as lance-leaved goldenrod, *Juncus bufonius* and creeping red fescue (*Agrostis stolonifera*). Shrub species in this wetland include arrowwood, multiflora rose, American cranberrybush (*Viburnum opulus*) and willow.

Principal value functions of wetland H include wildlife habitat. The diversity of plant species contributes to the wildlife habitat function. (Photograph 15 & 16 – Appendix A)

TECHNICAL REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. Washington, D.C. 1979.

FAA Order 1050.1E – Environmental Impacts: Polices and Procedures. Federal Aviation Administration. June 8, 2004.

FAA Order 5050.4B – National Environmental Policy Act (NEPA) Implementing instructions for Airport Projects. Federal Aviation Administration. 2006.

South Portland Code of Ordinances. Article XXX, Shoreland Area. City of South Portland, Maine. 1975.

U.S. Army Corps of Engineers. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. 1987.

U.S. Army Corps of Engineers. The Highway Methodology Workbook Supplement: Wetland Functions and Values. U.S. Army Corps of Engineers, New England Division. 1995.

U.S. Army Corps of Engineers. Memorandum - Section 404 Mitigation Memorandum of Agreement. Washington, D.C. 1990.

U.S Department of Agriculture. Soil Survey for Cumberland County, Maine. U.S.D.A., Soil Conservation Service in cooperation with the Maine Agricultural Experiment Station. 1974.

U.S.G.S. Topography Maps. Portland, Maine.

APPENDIX A

PHOTOGRAPHS

Note: As described in Footnote 4 of Table 1 of the 2008 TRC Wetland Resources Report, the alphabetic wetland labels of this 2006 report by The Smart Associates have been revised to prevent duplicative labeling of previous wetland delineations at the Jetport. Wetlands referenced in the TRC 2008 Wetland Resource Report are listed below and followed in ( ) by the corresponding labeling from The Smart Associates Report.

2008 vs. 2006
T = (B)
V = (D)
W = (E)
X = (F)
Y = (G)
Z = (H)

Photograph 1 – Wetland B Looking Northwest

Photograph 2 – Wetland B Looking East

Photograph 3 – Wetland B Looking Northeast

Photograph 4 – Wetland B Looking North

Photograph 5 – Wetland C Looking West

Photograph 6 – Wetland C Looking Northwest

Photograph 7 – Wetland D Looking Northwest

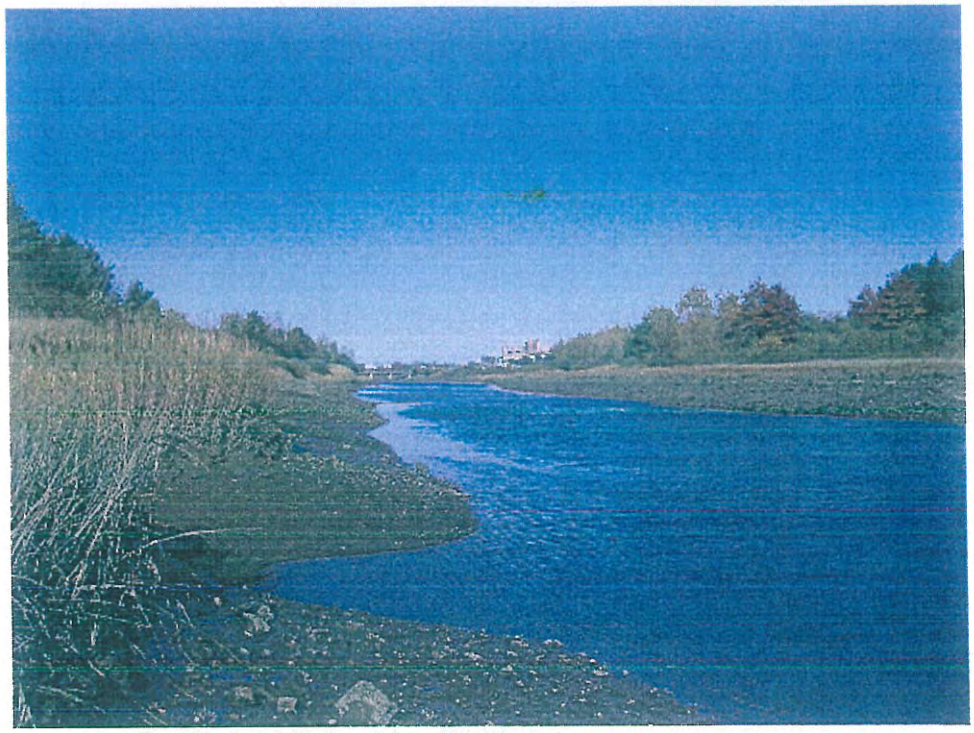
Photograph 8– Wetland E Looking East

Photograph 9 – Wetland E Looking Southeast

Photograph 10 – Wetland E Looking Northwest

Photograph 11 – Wetland E Looking Northeast

Photograph 12 – Wetland F Looking East



Photograph 13 –Wetland G Looking Northeast

Photograph 14 – Wetland G Looking Southeast

Photograph 15 – Wetland H Looking Northwest

Photograph 16 – Wetland H Looking Northeast

LEGEND & AREA SUMMARY

	AREA (SF)
WETLAND IMPACT AREA	65,832
EXISTING PAVEMENT TO BE REMOVED	13,421
EXISTING PAVEMENT TO BE RECONSTRUCTED	52,186
PROPOSED NEW PAVEMENT	438,289
AREA OF DISTURBANCE	1,247,744

EXISTING CHAINLINK FENCE

PROPOSED PERIMETER FENCE

EXISTING WATER ELEVATION= 20.68'

NORTH

LIMIT OF DISTURBANCE

SNOW SHOULDER AREAS RELOCATED OR SHEETS 23-24

SNOW SHOULDER AREAS RELOCATED OR SHEETS 23-24

PROPOSED SNOW SHELTER (TYP.)

NEW 24' WIDE PERIMETER ACCESS ROAD

LIMIT OF DISTURBANCE

PROPOSED PERIMETER FENCE

EXISTING CHAINLINK FENCE

EXISTING TAXIWAY C

EXISTING PERIMETER ACCESS ROAD

GRAPHIC SCALE

(IN FEET)
1 inch = 80 ft.

PRELIMINARY NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	10/31/08	SUBMITTED TO ACOE FOR APPROVAL

REVISIONS

STATE OF MAINE — DWIGHT B. ANDERSON — 10279 — REGISTERED PROFESSIONAL ENGINEER

P.E. DWIGHT B. ANDERSON
LIC. #10279

PROJECT
ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL PERMITTING

SHEET TITLE
RUNWAY 18-36 EXTENSION AND PERIMETER ACCESS ROAD RELOCATION IMPACT AREA SUMMARY

CLIENT
PORTLAND INTERNATIONAL JETPORT

DeLUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
(207) 775-1121
WWW.DELUCAHOFFMAN.COM

DRAWN:	LEC	DATE:	OCT. 2008
DESIGNED:	DDA	SCALE:	1" = 80'
CHECKED:	MJD	JOB NO.:	2745
FILE NAME:	2745-SP-CONTOURS		
SHEET	16		

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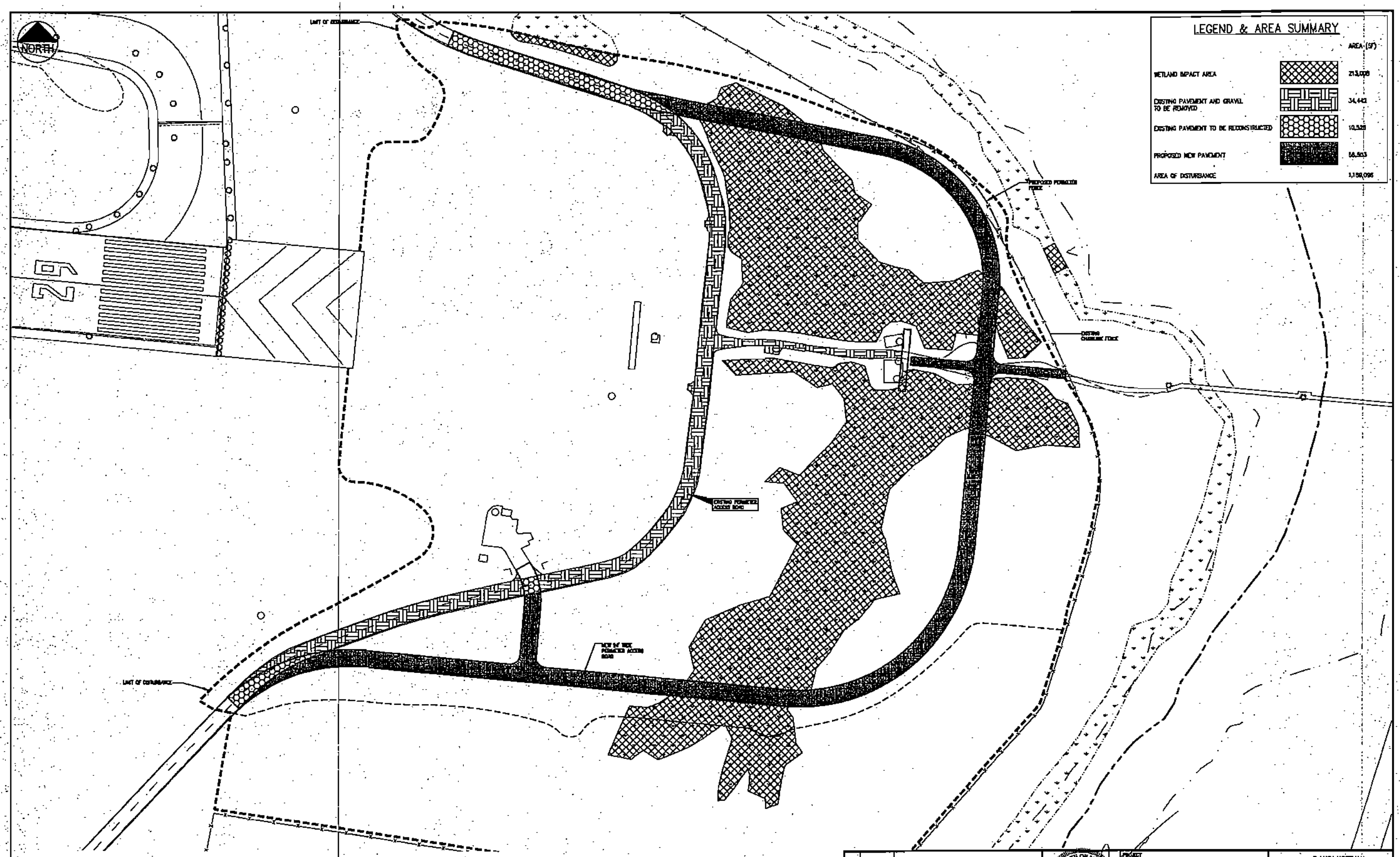


GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

PRELIMINARY NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	10.31.08	SUBMITTED TO MEDEP FOR APPROVAL

REVISIONS

STATE OF MAINE — DWIGHT B. ANDERSON — No. 6275 — REGISTERED PROFESSIONAL ENGINEER

P.E. DWIGHT B. ANDERSON
LIC. #6275

PROJECT
ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL PERMITTING

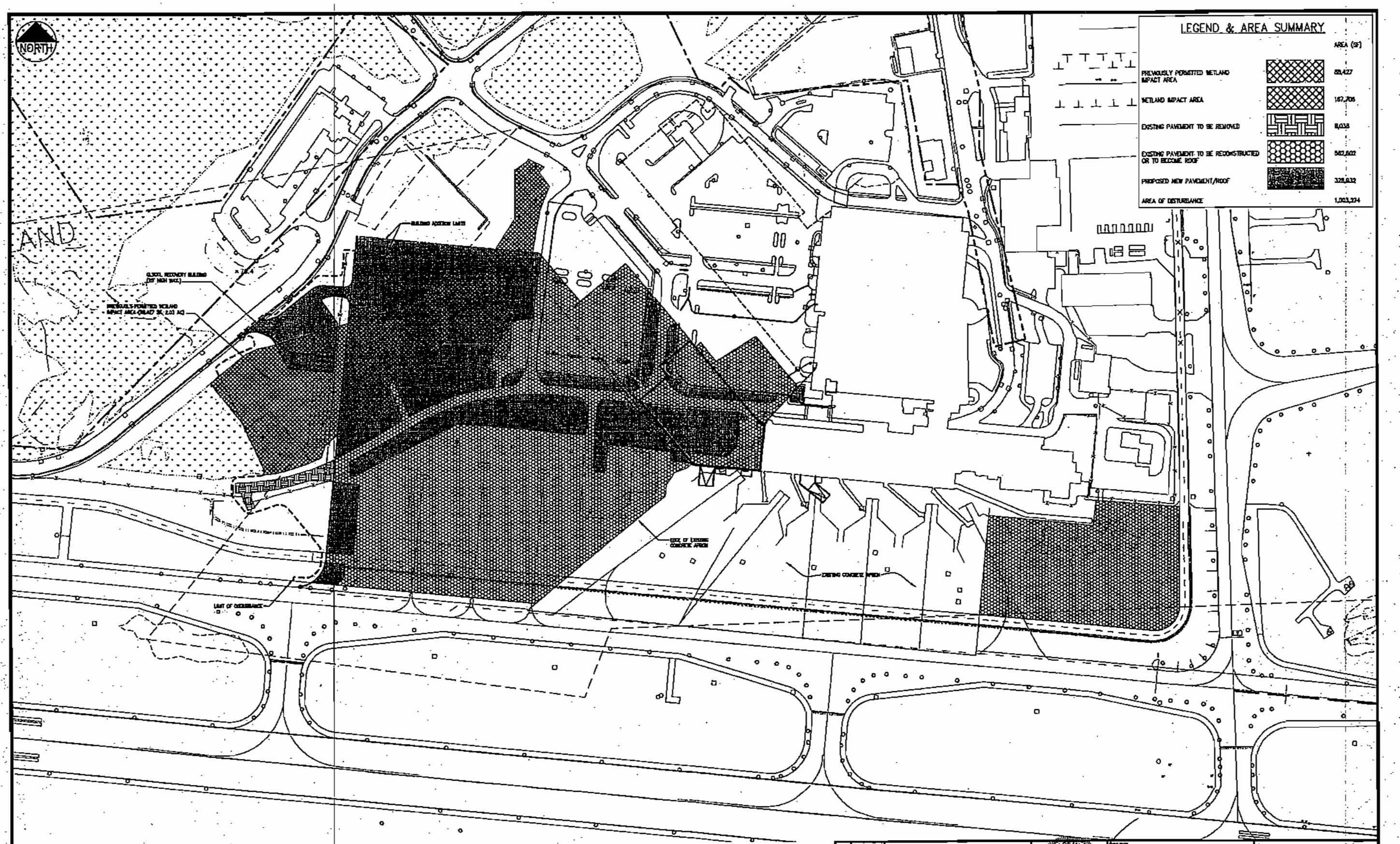
SHEET TITLE
RUNWAY 29 SAFETY AREA IMPROVEMENTS IMPACT AREA SUMMARY

CLIENT
PORTLAND INTERNATIONAL JETPORT

DeLUCA-HOFFMAN ASSOCIATES, INC.
778 main street, suite 8
south portland, me 04106
207.775.1121
www.delucahoffman.com

DRAWN:	LEC/	DATE:	OCT. 2008
DESIGNED:	KDA	SCALE:	1"=60'
CHECKED:	MJD	JOB NO.	2743
FILE NAME:	2743-SP-CONTOURS		

SHEET 23



PRELIMINARY NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	10.30.09	SUBMITTED TO MEDEP FOR APPROVAL

REVISIONS

STATE OF MAINE — DWIGHT D. ANDERSON — REGISTERED PROFESSIONAL ENGINEER

P.E. DWIGHT D. ANDERSON
LIC. #8775

PROJECT
ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL PERMITTING

SHEET TITLE
TERMINAL AREA IMPROVEMENTS IMPACT AREA SUMMARY

CLIENT
PORTLAND INTERNATIONAL JETPORT

DeLUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
(207) 775-1121
WWW.DELUCA-HOFFMAN.COM

DRAWN:	LSC/	DATE:	OCT. 2009
DESIGNED:	DDA	SCALE:	1" = 100'
CHECKED:	MJD	JOB NO.	2743
FILE NAME:	2743-BP-CONTOURS		

SHEET 27

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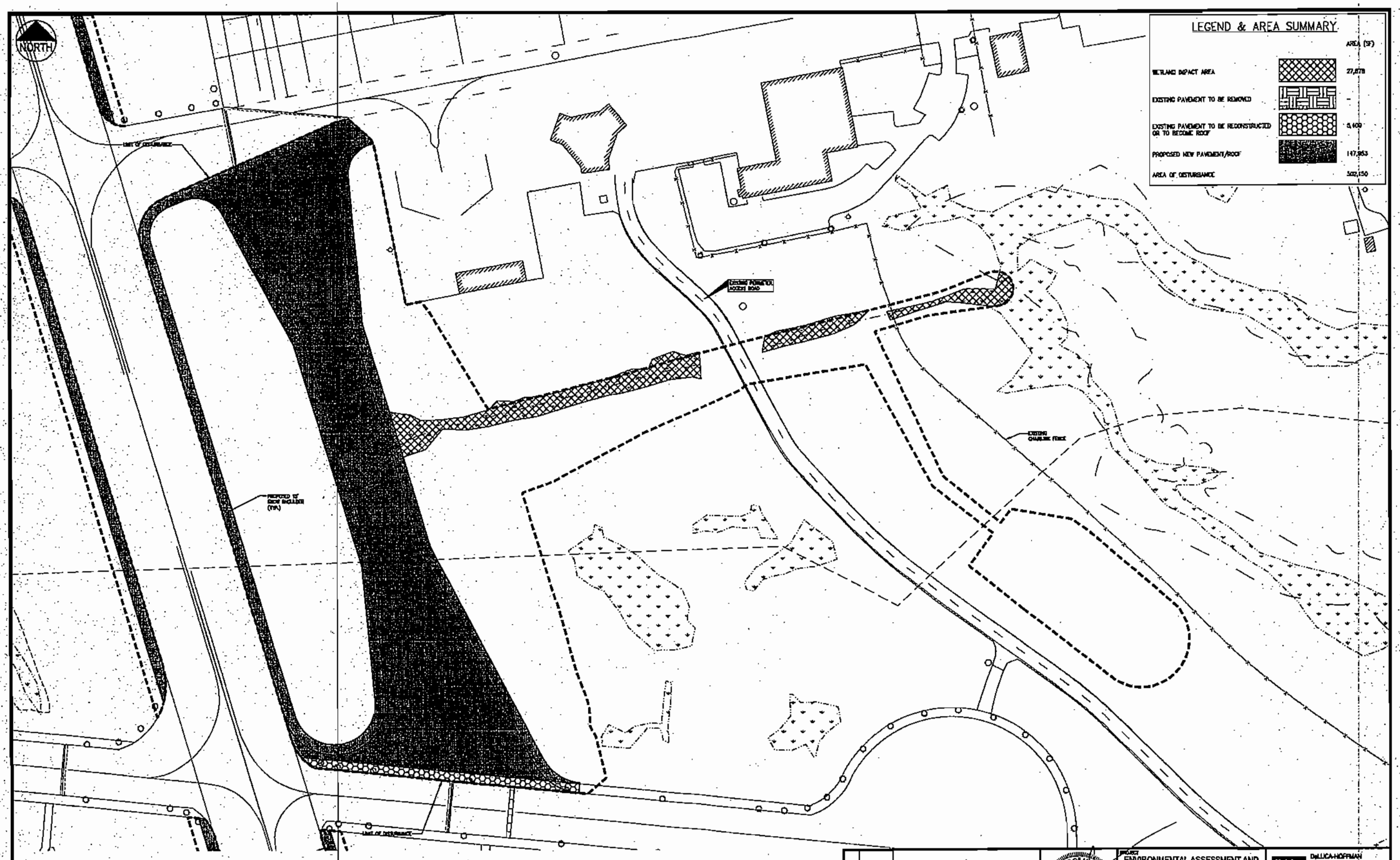

REV	DATE	DESCRIPTION
1	10.31.08	SUBMITTED TO MDEP FOR APPROVAL

REVISIONS

STATE OF MAINE — DWIGHT D. ANDERSON — 10278 — LICENSED PROFESSIONAL ENGINEER

P.E. DWIGHT D. ANDERSON
LIC. #10278

PROJECT
ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL PERMITTING

SHEET TITLE
CARGO TAXIWAY IMPROVEMENTS
IMPACT AREA SUMMARY

CLIENT
PORTLAND INTERNATIONAL JETPORT

DeLUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
(207) 775-1121
WWW.DELUCAHOFFMAN.COM

DRAWN:	LSC/	DATE:	OCT. 2008
DESIGNED:	DDA	SCALE:	1" = 80'
CHECKED:	MJD	JOB NO.	2143
FILE NAME:	2143-SP-CONTOURS		
SHEET	34		

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12.0 WETLAND FUNCTIONAL ASSESSMENT

12.1 Wetland Functional Assessment Method

A Descriptive Approach to assessing wetland functions and values described in a September 1999 supplement (the Supplement) to *The Highway Methodology Workbook* by the New England Division of tbe Corps is the assessment method currently preferred by the Maine Department of Environmental Protection (MDEP). Functions and values of wetlands to be impacted by the Capital Improvement Plan and Wildlife Hazard Management Plan for PWM have been evaluated by this method and are discussed below.

The Supplement indicates "Wetland functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society". Wetland functions relate to the ecological significance of wetland characteristics without regard to subjective values. Wetland functions are generally considered to be the result of biologic, geologic, hydrologic, biogeochemical, and/or physical processes that occur or take place in a wetland. Functions attributed to wetlands include the following:

- Groundwater Recharge/Discharge
- Floodflow Alteration (Storage and De-synchronization)
- Fish and Shellfish Habitat
- Sediment/Toxicant/Pathogen Retention
- Nutrient Removal/Retention/Transformation
- Production (Nutrient) Export
- Sediment/Shoreline Stabilization; and
- Wildlife Habitat

Wetland values are based on society's judgment of the ascribed worth, merit, quality, importance or benefit of wetlands which are derived from either these functions or other characteristics of wetlands (Mitsch and Gosselink 1993). Values attributed to wetlands include the following:

- Recreation
- Education/Scientific Value
- Uniqueness/Heritage
- Visual Quality/Aesthetics; and
- Threatened or Endangered Species Habitat
-

The functions and values identified above may vary slightly in terminology, but encompass all the functions identified in, and addressed by, the NRPA Wetland Protection Rules. As defined in these Rules, "functions" are:

> *The roles wetlands serve which are of value to society or the environment, including but not limited to, flood storage, flood water conveyance, ground water recharge and discharge, erosion control, wave attenuation, water quality protection, scenic and*

aesthetic use, food chain support, fisheries, wetland plant habitat, aquatic habitat and wildlife habitat (Chapter 310 §3J).

A basic concept presented by the Supplement is an identification of "Considerations/Qualifiers" that can be used as indicators or descriptors of the presence of particular functions or values. From as few as three to as many as 32 of these "Considerations/Qualifiers" are identified in Appendix A of the Supplement for each of the respective wetland functions and values. These "Considerations/Qualifiers" therefore become a checklist or outline of indicators of functions and values for wetland scientists to observe, compare against, and structure assessments. The Supplement indicates these "Considerations" are intended to be flexible and are ultimately based on "best professional judgment."

12.2 PWM Wetland Functions and Values

Functions and values of wetlands to be impacted by the Capital Improvement Plan and Wildlife Hazard Management Plan proposed at PWM are dependent on, and influenced hy, various physical characteristics at the site which contribute to and are thereby indicative of relative levels of function and value. These include: size and proximity of wetlands to ongoing development activity, geologic setting, soil characteristics, presence and duration of hydrology, landscape position, and wetland cover type. Consequently, the effects of changes to these physical characteristics are evaluated in assessing whether an activity or project impacts wetland-specific functions and values.

"Considerations/Qualifiers" listed in Appendix A of the Supplement and observed in wetlands at the site have been recorded for individual functions and values on Wetland Function-Value Evaluation Form. The significance of these "Considerations/Qualifiers" to functions and values associated with the wetlands is discussed below.

- **Groundwater Recharge/Discharge** – "This function considers the poetnial for a wetland to serve as a groundwater recharge and/or discharge area (Corps, 1999)". The 1974 medium intensity Soil Survey of Cumberland County, Maine by the US Soil Conservation Service (SCS) indicates soils beneath wetlands at the site are the Scantic Series (Sn) which consists of deep, nearly level, poorly drained silt loams formed from fine-grained marine deposits. The Maine Geological Survey has not designated the unconsolidated deposits at the site as part of a significant sand and gravel aquifer (MGS Open-File Nos. 99-11). Consequently onsite wetlands have a limited role in groundwater recharge or groundwater discharge. The proposed project will not detrimentally affect or diminish the occurrence of this function.

- **Floodflow Alteration (Storage and Desynchronization)** – "This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters (Corps, 1999)". A 100-year floodplain with an elevation of 10 ft MSL is identified along the Fore River and Long Creek by the Federal Emergency Management Agency (FEMA) on the Flood Insurance Rate Map (FIRM - Community Panel Numbers 230051 0012C, 13C dated December 8, 1998 and 230053 0004C, 5C dated August 17, 1981) for this part of

Portland and South Portland. No other 100 year floodplains are shown to exist at PWM on the FEMA maps. Occurring within 1,600 ft of tide water at the mouth of the Fore River, due to this juxtaposition, wetland communities to be impacted by implementation of the Wildlife Hazard Management Plan and improvements to the Cargo Facility and Runways 29 and 36 serve essentially no role in floodflow alteration. Stormwater flow analyses and drainage calculations have been used to design stormwater management and other mitigation so that this wetland function provided by Wetland AC will not be detrimentally affected by Terminal Area Improvements.

- **Fish and Shellfish Habitat** – "This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat (Corps, 1999)". Habitat for fish and shellfish does not occur in the non-riparian PFO1, PSS1, PEM1 and PEM2 wetlands at PWM.

- **Sediment/Toxicant/Pathogen Retention** – "This function reduces or prevents degration of water quality (Corps, 1999)". This form of water quality improvement is considered to be a principal function provided by linked segments of Wetlands T, V, W and X as well as the relatively broad and flat Wetlands N and AC. "The principal factor affecting a wetland's ability to trap sediments is the change in the velocity or energy level of incoming water. Decreased water velocity results in sediment deposition" (Marble 1992). Wetlands have intrinsic abilities to modify or trap a wide spectrum of water-borne substances commonly considered pollutants or contaminents (Hammer 1997). Other wetland areas proposed to be impacted at PWM such as Wetlands L and S play a limited role in sediment/toxicant/pathogen retention due to absence of these pollutant sources in otherwise very small contributory watersheds. This water quality improvement wetland function will also be provided by the stormwater management measures to be constructed as part of the various PWM improvments.

- **Nutrient Removal/Retention/Transformation** – "This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels (Corps, 1999)". Retention time in wetlands at the site is influenced by physical characteristics of the wetland landscape, and by the edaphic (soils), micro topographic, and vegetative conditions within the wetland. Although sources of excess nutrients are not evidently abundant in the upstream watershed, vegetation in Wetlands T, V, W, and X serves as a temporary "sink" to transform nutrients. As is the case for the above form of water quality improvement, this wetland function will also be provided by the stormwater management measures to be constructed as part of the various PWM improvments.

- **Production (Nutrient) Export** – "This function evaluates the effectiveness of a wetland to produce food or usable products for humans or other living organisms (Corps, 1999)". Downstream export of organic detritus originating from areas of wetland impact inside the airfield fence such as Wetlands L and AE is minimal due to regular mowing, the isolated nature of the wetlands or confined connections to downstream habitat. Flow is more evident in Wetland V and W but here too, dams or wiered culverts restrict detritial

export downstream. Detrital export outward from Wetlands AC and S is also limited by intermittent flow, shallow gradients and absence of concentrated flow.

- **Sediment/Shoreline Stabilization** – "This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion (Corps, 1999)". "Shoreline stabilization is the binding of soil at the shoreline or water's edge by wetland plants, and the physical dissipation of erosive energy caused by waves, currents, tides, or ice in a basin or channel" (Marble 1992). This function is localized to shorelines of streams, ponds, lakes or tidal areas which are not present in wetland areas to be impacted by the Capital Improvement Plan and Wildlife Hazard Management Plan proposed at PWM.

- **Wildlife Habitat** – "This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge (Corps, 1999)". Although the site is not identified as "essential" or "significant wildlife habitat" on Beginning with Habitat Maps prepared by the Maine Department of Inland Fisheries and Wildlife (MDIF&W), the linked segments of Wetlands T, V, W and X provide a secluded travel corridor to and from Long Creek for small furbearers. Assorted hawks (kestrel, red-tail, and Coopers), passerines (warblers, sparrows, thrushes and finches) shorebirds and wading birds (killdeer, spotted sandpipers, black crowned night and great blue herons) and puddle ducks (mallards and black ducks) were observed along segments W and X which are generally or entirely avoided by the Runway 36 improvements. Consequently, wildlife habitat is a principal function of these PEM1 and POW wetlands. Elsewhere in Wetlands H, AC, and AE persistent activities on runways, taxiways, terminal aprons, perimeter roads and entrance roads to the Jetport limit the quality of wildlife habitat and at wetland L, habitat is subject to a Wildlife Hazard Management Plan.

- **Recreation** – "This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating fishing, hunting, and other passive or active recreational activities (Corps, 1999)". Wetlands support many types of direct recreation including hunting, trapping, fishing, wildlife watching, nature photography, berry picking, picnicking, hiking, and boating (Hammer, 1997). Safety requirements established and in place for the general public, surrounding residents, employees at PWM, passengers and airline employees prohibit the recreational use of wetlands at PWM. Heightened security requirements now in effect at airports and other transportation centers throughout the United States supersede recreational values of wetlands at these locations.

- **Educational/Scientific Value** – "This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study and research (Corps, 1999)". For reasons similar to those presented above relating to the recreational values of wetlands at PWM, the wetlands to be impacted do not occur in a location or appear to contain characteristics that merit being the topic and destination of school field trips. It is also unlikely that scientific studies or research has taken place in these wetlands.

- **Uniqueness/Heritage** – "This value considers the suitability of the wetland and associated waterbodies to provide certain special values that may include archeological sites, critical habitat for endangered species or relative importance as a typical wetland class for the geographic region (Corps, 1999)". The PFO1, PSS1 and PEM1/2 wetlands at the site typify some of the most abundant wetland types in southern Maine and are not critically imperiled (S1) or imperiled (S2) wetland community identified by the Maine Natural Areas Program.

- **Visual Quality/Aesthetics** – "This value considers the visual and aesthetic quality or usefulness of the wetland (Corps, 1999)". Aesthetics, one of the most subjective values attributed to wetlands, generally is heightened by distant views or vistas with bodies of water. Wetlands to be impacted for Runways 29, and 36 and the Cargo Facility Improvements are not focal points at PWM and instead from most vantage points such as the passenger windows of aircraft are either not perceptible or meld into the background of the airfield. This is also the case when areas of wetland impact are viewed from I-295 or the area near Brick Hill where visual attention is drawn to the Fore River and Long Creek. Wetlands AC and AE are best viewed when approaching the PWM terminal from Jetport Boulevard or International Parkway. Water elements are absent from both AC and AE and from these vantage points the wetlands appear as outliers in conflict with surrounding landscaping that are interruptive of or obscure views of one's intended destination, the Portland International Jetport.

- **Endangered Species Habitat** – "This value considers the suitability of the wetland to support threatened or endangered species (Corps, 1999)". The US Fish and Wildlife Service has concluded no federally-listed species occur in the PWM project area. As determined from the most recent MDIF&W atlas, there are no "essential habitats" for Maine's endangered and threatened species at the site. However, in the area bounded by Runways 18-36, 11-29 and Taxiway Charlie, TRC wildlife biologists have observed upland sandpiper (*Bartramia longicauda*) which is listed as threatened by MDIF&W. Also, near the security fence to the southwest of Runway 29, tracks and droppings have been observed from New England cottontail (*Sylvilagus transitionalis*), a candidate species for federal protection and is listed as endangered by MDIF&W. As suggested by the common name, upland sandpiper is not a wetland-dependent shorebird but instead prefers expansive grasslands provided by the regularly mown airfield. New England cottontail also has rigorous habitat requirements typified by very dense young woody cover. During three surveys following fresh snowfalls in the winter of 2007 – 2008 evidence of New England cottontail was not observed in areas of proposed wetland impact. MDIF&W has been contacted regarding these observations and will continue to be consulted regarding these species.

The relationship between the characteristics of wetlands at the Portland International Jetport and related functions and values is summarized in Table 12-1.

Table 12-1
Wetland Characteristics and Related Functions, Portland International Jetport (PWM)

Characteristics			Functions and Values
Wetlands A, S, V,W, X, Y AC, AE - (*Waters of the United States*)			
Link of natural drainage system (*hydrology*) ▶	} Ecologic Synergy	▶ {	Flood flow alteration
			Sediment Shoreline Stabilization
			Sediment Toxicant Retention
Natural substrates (*soils*) ▶			Nutrient Removal
			Production Export
Diverse plant species/structure (*vegetation*) ▶	}		Wildlife Habitat
			Fish & Shellfish Habitat
			Visual Quality/Aesthetics
Characteristics			**Function**
Areas E, F, H, L, N (*Man-Induced Wetlands*)			
Formed since mid-1950's from airfield and 1970's highway construction			Water conveyance
Part of Storm Drain System with piped connections to Fore River (*hydrology*)			
Located where soil profile has been altered from cut or fills and Waste Soil Disposal Area on 20 ft of fill (*soils*)			
Mowed homogenous plant community/Invasive Species (*vegetation*)			Limited Habitat and Wildlife Hazard

12.3 Summary

Implementation of a Wildlife Hazard Management Plan (CFR Title 14 FAA Part 139.337) and Capital Improvement Plan at the Portland International Jetport are anticipated to require approximately 13.07 acres of new wetland impacts over the course of five years. Areas of wetland impact and related elements of the Wildlife Hazard Management Plan and Capital Improvement Plan include:

- 4.89 acres – Implementation of Wildlife Hazard Management Plan and Runway 29 improvements;
- 2.20 acres – Runway 18 – 36 Improvements chiefly comprised of an 1,110 ft southward extension of the runway and parallel Taxiway C
- 0.64 acres – Cargo Facility Improvements; and
- 3.85 acres – Terminal Area Improvements including construction of new aprons in areas that also includes 2.03 acres of formerly approved and compensated wetland impacts.

Of the 13 functions and values commonly attributed to wetlands, sediment/toxicant retention, and wildlife habitat are considered to be the principal functions associated with certain specific wetlands where impacts are not avoidable at the PWM. Where other impacts cannot be avoided, which chiefly occur in man-induced wetlands, all other wetland functions and values are either

absent, or are of less than high or moderate value as justified by the absence of site-specific "Considerations/Qualifiers" indicative of wetland functions and values. A combination of offsite compensation opportunities are available and can be expected to offset any impacts to wetland functions that may be attributed to implementation of a Wildlife Hazard Management Plan and Capital Improvement Plan over the course of five years at the Portland International Jetport.

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APPENDIX 12-A

WETLAND FUNCTIONAL ASSESSMENT DATA FORMS

Wetland Function-Value Evaluation Form

Total area of wetland ±7Ac Human made? yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Portland International Jetport Distance to nearest roadway or other development Casco Bay

Dominant wetland systems present PEM1 Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes (Wetlands) If not, where does the wetland lie in the drainage basin? Mouth

How many tributaries contribute to the wetland? None Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. H-1

Latitude 43°38'N Longitude 70°18'W

Prepared by: C.H.P. Date June 2006

Wetland Impact: Type PEM1/PF[illegible] Area 4.79 acres

Evaluation based on: Office yes Field yes

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		N			Drainage Hill/Seal[illegible] ... Not MS4 Area
Floodflow Alteration		N			Undeveloped, low no effect, Not FEMA Flood[illegible]
Fish and Shellfish Habitat		N			Not connected Hydrologically to[illegible]
Sediment/Toxicant Retention		N			limited source and watershed (H = stormwaters
Nutrient Removal		N			No source and limited watershed (H = conveyance
Production Export		N			Nothing produced, Export restricted by culverts
Sediment/Shoreline Stabilization		N			NA - Not adjacent to tidal body/waterway
Wildlife Habitat		N			H = Drainage Ditch, L = FAA Wildlife Hazard[illegible]
Recreation		N			Incompatible w/ Jetport, not[illegible] anyone
Educational/Scientific Value		N			Incompatible w/ Jetport security/operations
Uniqueness/Heritage		N			Drainage Ditch, Wetland formed on Fill
Visual Quality/Aesthetics		N			Not visible to general public/perceived as wetland.
ES Endangered Species Habitat		N			Not known to be present/used by endangered species
Other					

Notes:

*Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland ~15 Ac Human made? Vonly Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Portland International Jetport Distance to nearest roadway or other development Crossed By

Dominant wetland systems present PEM, PFO, Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? Lower

How many tributaries contribute to the wetland? None Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. S, V AC, AE

Latitude 43°38'N Longitude 70° 19' W

Prepared by: CRP Date June 2007

Wetland Impact:
Type PEM1/PFO1 Area 4.31 Acres

Evaluation based on:
Office Yes Field Yes

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		N			Underlain by Scantic soil, Not MGS Aq. Lay.
Floodflow Alteration		N			S,V directly above tidewater, AE isolated → No effect Limited H2O stkd → AC offset by stormwater mgmt.
Fish and Shellfish Habitat		N			No persistent H2O / suitable substrate
Sediment/Toxicant Retention	Y		3,5,9,11,16		Enhanced by V, AC but limited source/watershed
Nutrient Removal	Y		3,8,9,11,12,13		Limited source and limited watershed
Production Export		N			Limited detrital production &/or restricted absence of export
Sediment/Shoreline Stabilization		N			NA – Not adjacent to a waterbody/watercourse
Wildlife Habitat	Y		6,8,11,13,17,19		Present to various degrees that are greatly constrained by
Recreation		N			Incompatible w/ Jetport operations / security
Educational/Scientific Value		N			" " " "
Uniqueness/Heritage		N			Common wetland types in southern ME
Visual Quality/Aesthetics		N			Lack water views
ES Endangered Species Habitat		N			Not known to be present / no habitat for endangered species
Other					

Notes:

*Refer to backup list of numbered considerations.

PUBLIC NOTICE

US Army Corps of Engineers
New England District
Maine Project Office
675 Western Avenue #3
Manchester, Maine 04351

Date: March 31, 2009
Comment Period Ends: April 30, 2009
File Number: NAE-2008-00053
In Reply Refer To: Jay L. Clement
Or by e-mail: jay.l.clement@usace.army.mil

The District Engineer has received a permit application from the applicant below to **conduct work in waters of the United States** as described below. The Corps is soliciting comments on both the project itself and the range of issues to be addressed in the environmental documentation.

APPLICANT: CITY OF PORTLAND, PORTLAND INTERNATIONAL JETPORT, 1001 WESTBROOK STREET, PORTLAND, MAINE 04102

ACTIVITY: Fill approximately 11.58 acres of freshwater wetlands adjacent to the Fore River, Long Creek, and a tributary to Long Creek at Portland and South Portland, Maine in order to implement a number of improvements at the Portland International Jetport as shown on the attached plans and described as follows:

Regulated activities include the construction of a new taxiway adjacent to Runway 18-36; construction of an 1,100' extension of Runway 18-36; expansion of the terminal area west of the existing terminal facility; a designated aircraft de-icing pad and de-icing fluid recovery facility; a number of safety improvements to Runway 11-29; various drainage improvements; and the elimination of a wildlife hazard area on the east end of Runway 11-29.

As compensation for the project's unavoidable impacts to aquatic resources, the applicant proposes a number of measures off site as shown on the attached plans. The sites are located off County Road at Westbrook in the vicinity of the Glassworld Industrial Park; and off Route 114 and Beech Ridge Road at Scarborough, Maine, both within established wetland mitigation sites known as "Maine Wetlands Bank" and "Larrabee Farms" respectively. Work will include approximately 10.04 acres of wetland restoration, enhancement, and preservation at Maine Wetlands Bank; and approximately 100.01 acres of wetland creation and preservation at Larrabee Farms.

The applicant is proposing these measures seeking to lessen the project's impact on aquatic resources. This notice solicits comments on these proposed measures from the interested or affected public as well as those agencies that speak to the public interest. It also solicits recommendations for alternative sites or measures not yet identified by the applicant. After receipt of the comments, the Corps of Engineers will obtain any necessary additional information from the applicant and determine whether the proposed measures are practicable and serve to help mitigate this project's unavoidable impacts.

ESSENTIAL FISH HABITAT (EFH): The transmission line construction may impact Essential Fish Habitat (EFH) for Atlantic salmon. This habitat consists of stream and river bottom composed of silt, sand, and gravel mixed with stones. Impact to this species is expected to be minimal with appropriate erosion control measures, in stream work windows, and other best management practices such as maintenance of existing vegetative

adverse effect will be minimal. Further consultation with the National Marine Fisheries Service regarding EFH conservation recommendations is being conducted and will be concluded prior to the final decision. Similarly, consultation will be initiated regarding the presence of salmon as they are a Federally listed endangered species.

WATERWAY AND LOCATION OF THE PROPOSED WORK: This work is proposed in freshwater wetlands adjacent to the Fore River, Long Creek, and a tributary to Long Creek at South Portland, Maine. The airport site is located on the USGS PORTLAND WEST, ME quadrangle sheet at latitude 43.6465774°N; and longitude 70.3098803°W.

AUTHORITY

Permits are required pursuant to:

_____Section 10 of the Rivers and Harbors Act of 1899
__X__ Section 404 of the Clean Water Act
_____Section 103 of the Marine Protection, Research and Sanctuaries Act).

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 as amended.

SECTION 106 COORDINATION

Based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. Therefore, no further consideration of the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, is necessary. This determination is based upon one or more of the following:

a. The permit area has been extensively modified by previous work.
b. The permit area has been recently created.
c. The proposed activity is of limited nature and scope.

d. Review of the latest published version of the National Register shows that no presence of registered properties listed as being eligible for inclusion therein are in the permit area or general vicinity.

e. Coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s)

Pursuant to the **Endangered Species Act**, the District Engineer is hereby requesting that the appropriate Federal Agency provide comments regarding the presence of and potential impacts to listed species or its critical habitat.

The following authorizations have been applied for, or have been, or will be obtained:

(X) Permit, License or Assent from State.
(X) Permit from Local Wetland Agency or Conservation Commission.
(X) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. **Comments should be submitted in writing by the above date.** If you have any questions, please contact Jay Clement at 207-623-8367 at our Manchester, Maine Project Office.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

For more information on the New England District Corps of Engineers programs, visit our website at http://www.nae.usace.army.mil.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

Frank J. Del Giudice
Chief, Permits and Enforcement Branch
Regulatory Division

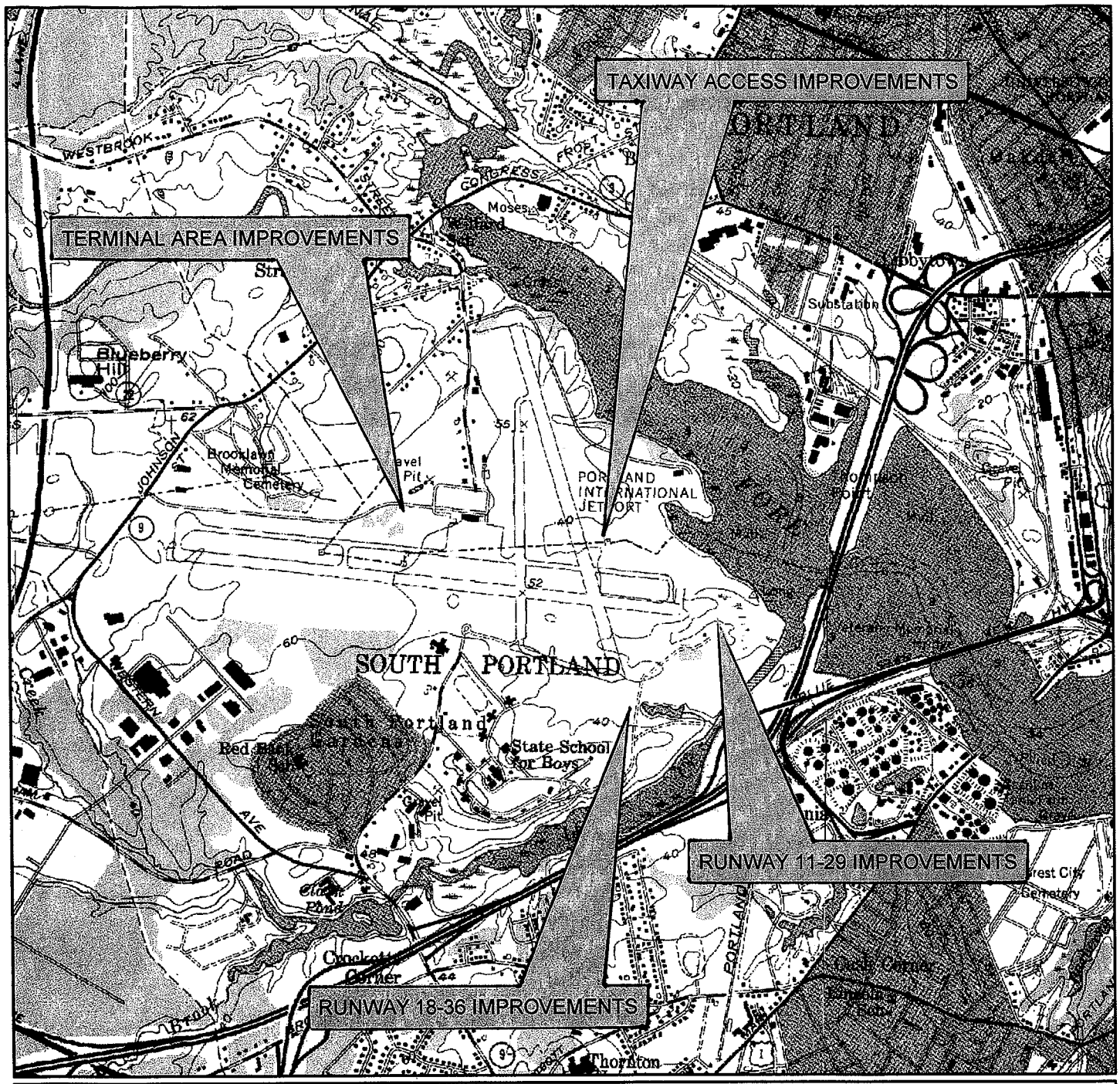
If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at bettina.m.chaisson@usace.army.mil. You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: _____
ADDRESS: _____

PROPOSED WORK AND PURPOSE

Fill approximately 11.58 acres of freshwater wetlands adjacent to the Fore River, Long Creek, and a tributary to Long Creek at Portland and South Portland, Maine in order to implement a number of improvements at the Portland International Jetport. Regulated activities include the construction of a new taxiway adjacent to Runway 18-36; construction of an 1,100' extension of Runway 18-36; expansion of the terminal area west of the existing terminal facility; a designated aircraft de-icing pad and de-icing fluid recovery facility; a number of safety improvements to Runway 11-29; various drainage improvements; and the elimination of a wildlife hazard area on the east end of Runway 11-29.

The work is described on the enclosed plans entitled "AIRPORT IMPROVEMENTS" on 17 sheets dated "12-12-08



N
W E
S

USGS MAP
PORTLAND INTERNATIONAL JETPORT
PORTLAND - SOUTH PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

BOOK: PAGE: REFER TO EXHIBIT A IN SLDA APPLICATION	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: AIRPORT IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND	
LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=1200' DATUM: NGVD29 DATE: 12.12.08	Deluca-Hoffman Associates, Inc.

FIGURE

3-1

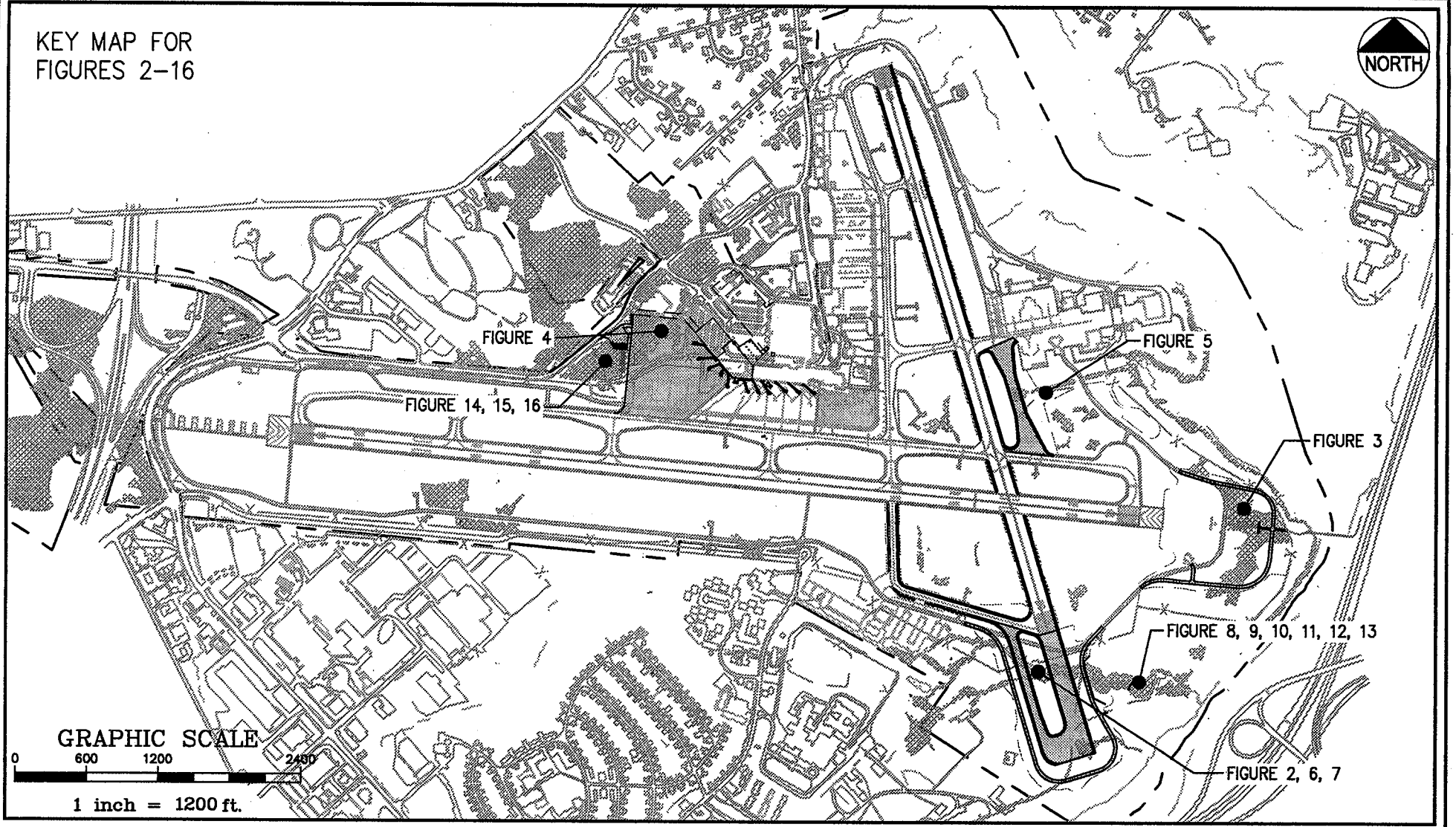


FIGURE: **1**	BOOK: PAGE: REFER TO EXHIBIT A IN SLDA APPLICATION	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: AIRPORT IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=1200' DATUM: NGVD29 DATE: 12.12.08

Deluca-Hoffman Associates, Inc.

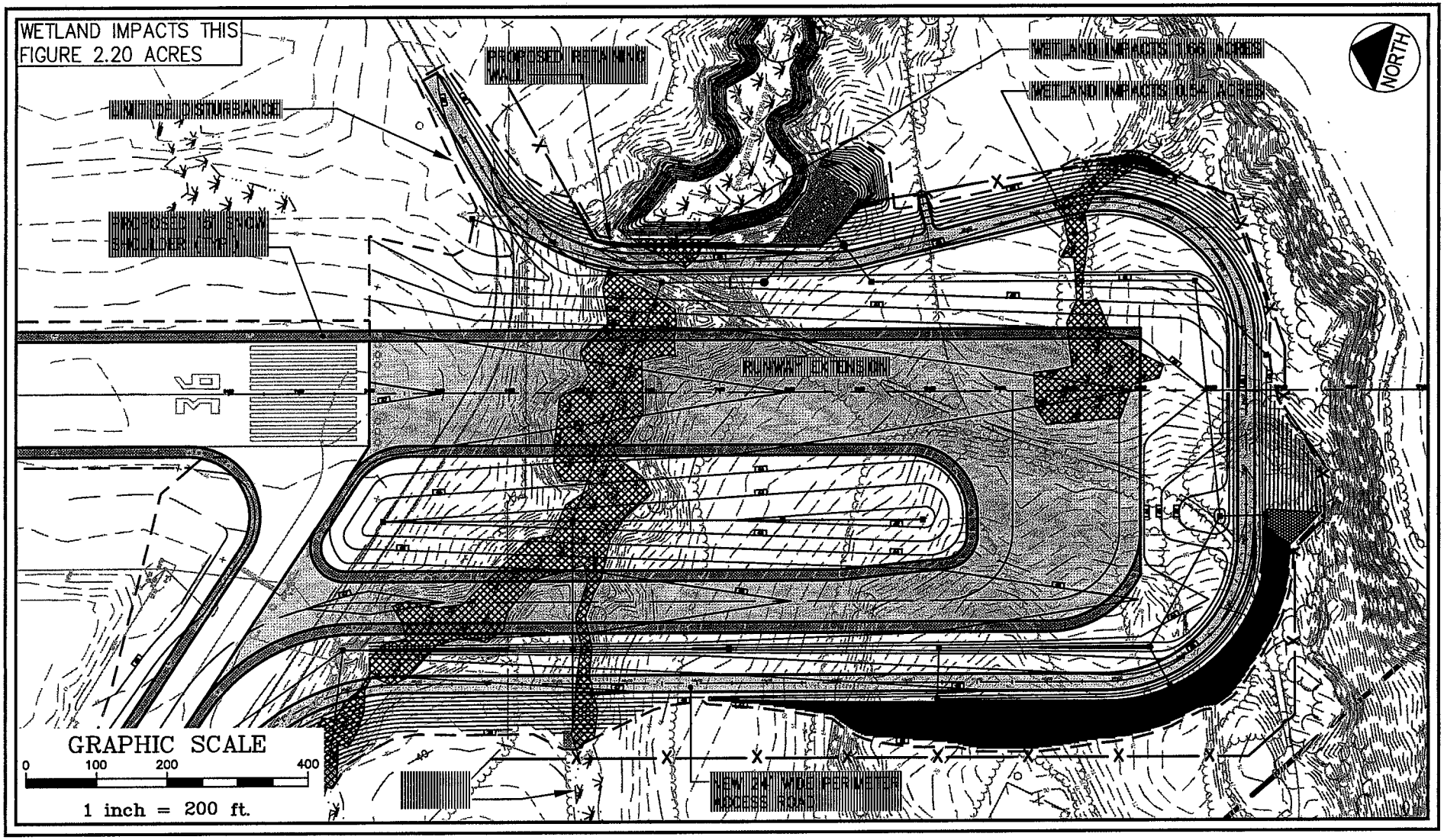


FIGURE:	BOOK: PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:	
2	REFER TO EXHIBIT A IN SLDA APPLICATION	PORTLAND AND SOUTH PORTLAND, MAINE	RUNWAY 18-36 EXTENSION	CITY OF PORTLAND	
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=200' DATUM: NGVD29 DATE: 12.12.08	Deluca-Hoffman Associates, Inc.

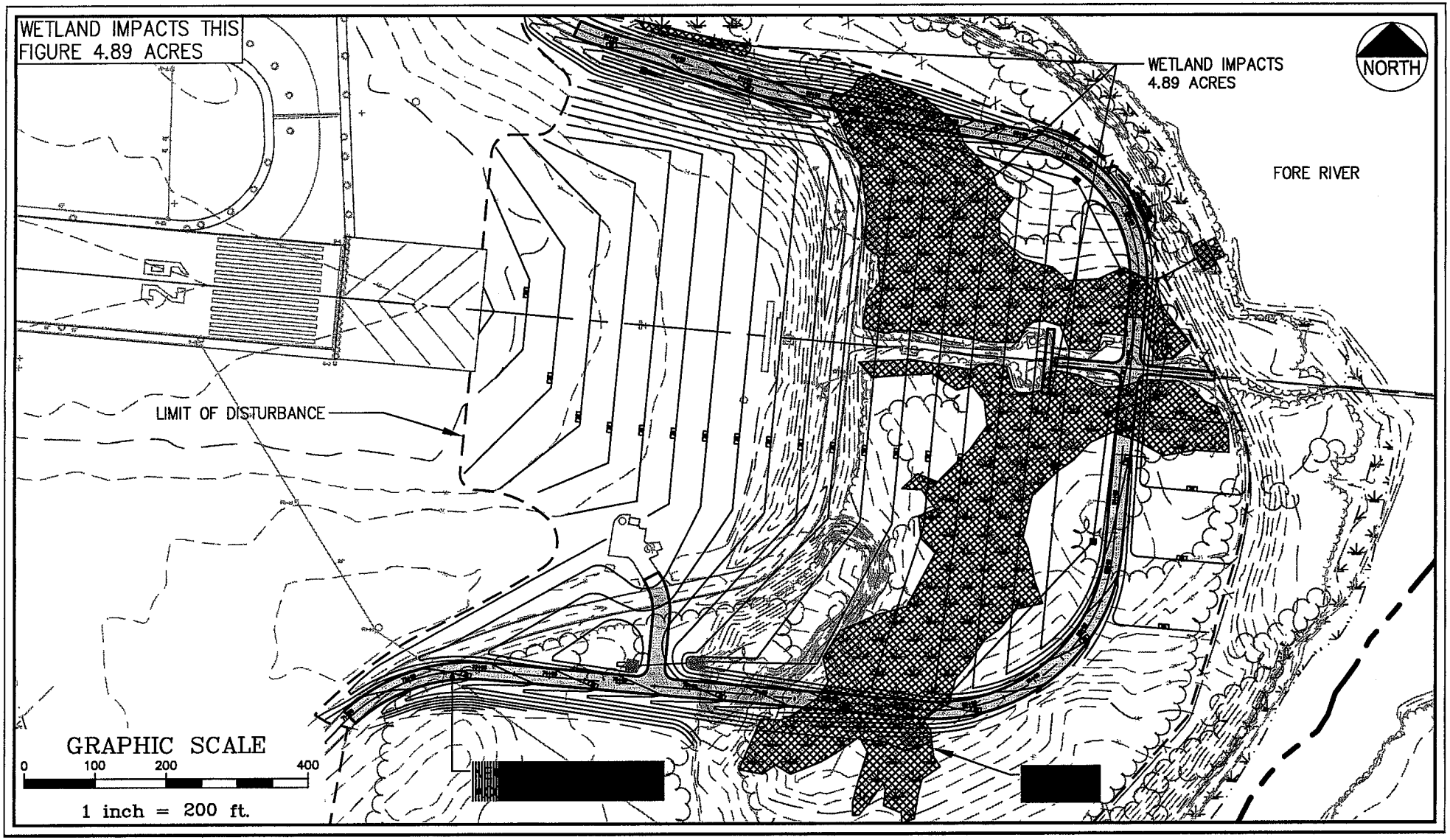


FIGURE: 3	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: RUNWAY 11-29 SAFETY AREA	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=200' DATUM: NGVD29 DATE: 12.12.08
				Deluca-Hoffman Associates, Inc.

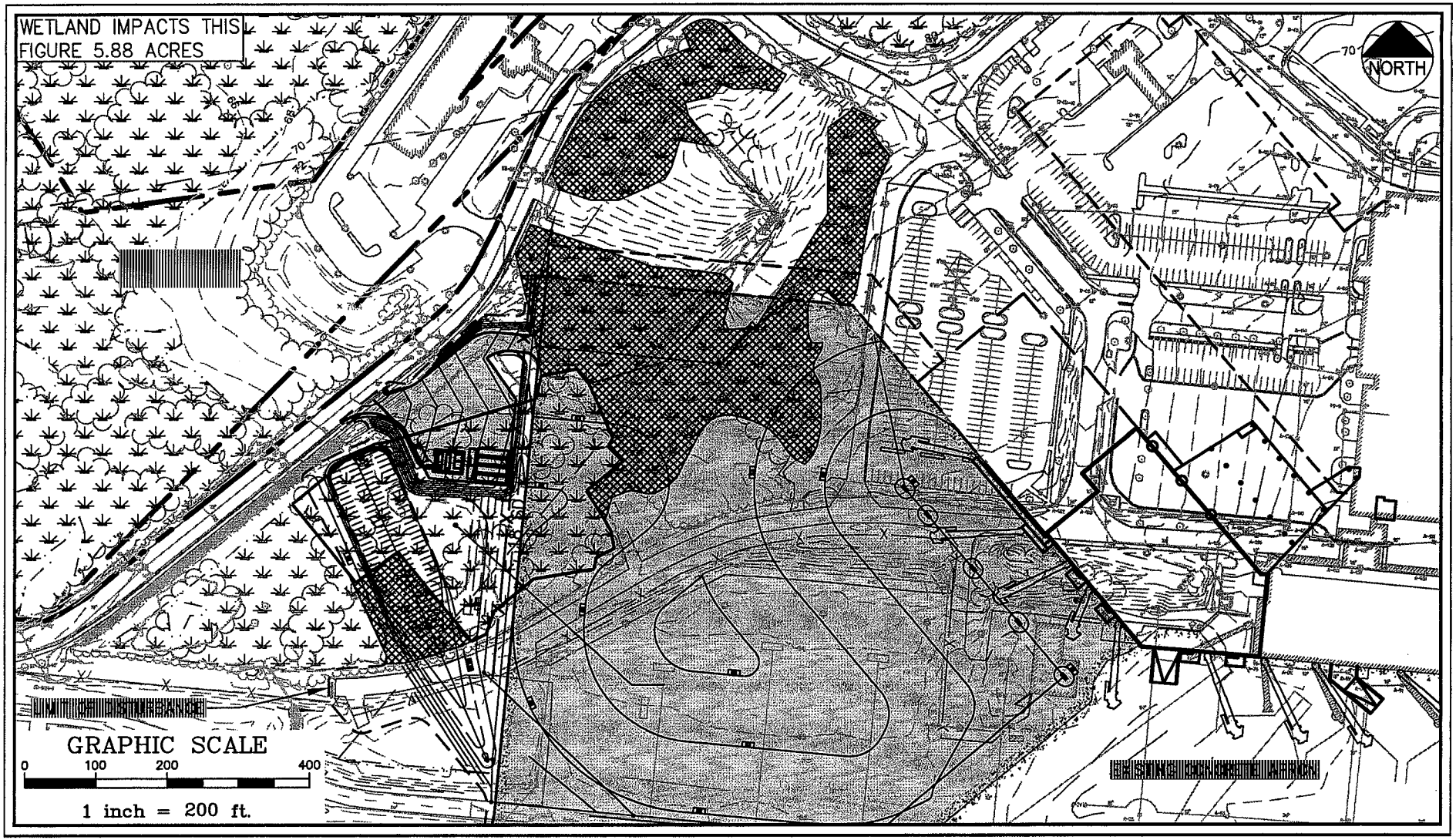
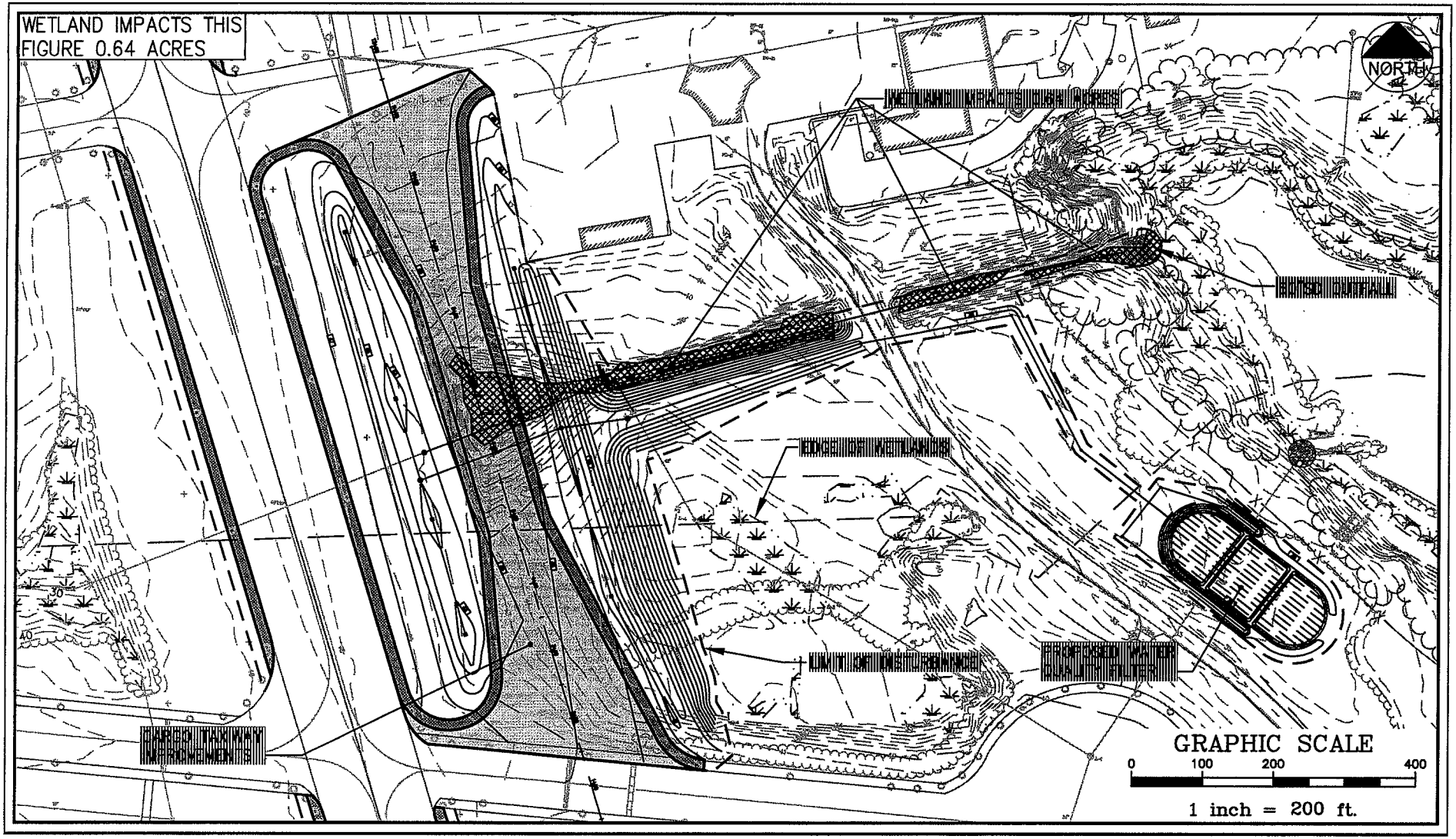


FIGURE: 4	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: TERMINAL AREA IMPACTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=200' DATUM: NGVD29 DATE: 12.12.08
				Deluca-Hoffman Associates, Inc.



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5	REFER TO EXHIBIT A IN SLDA APPLICATION	PORTLAND AND SOUTH PORTLAND, MAINE	CARGO AREA TAXIWAY AND STORM DRAIN OUTFALL	CITY OF PORTLAND	
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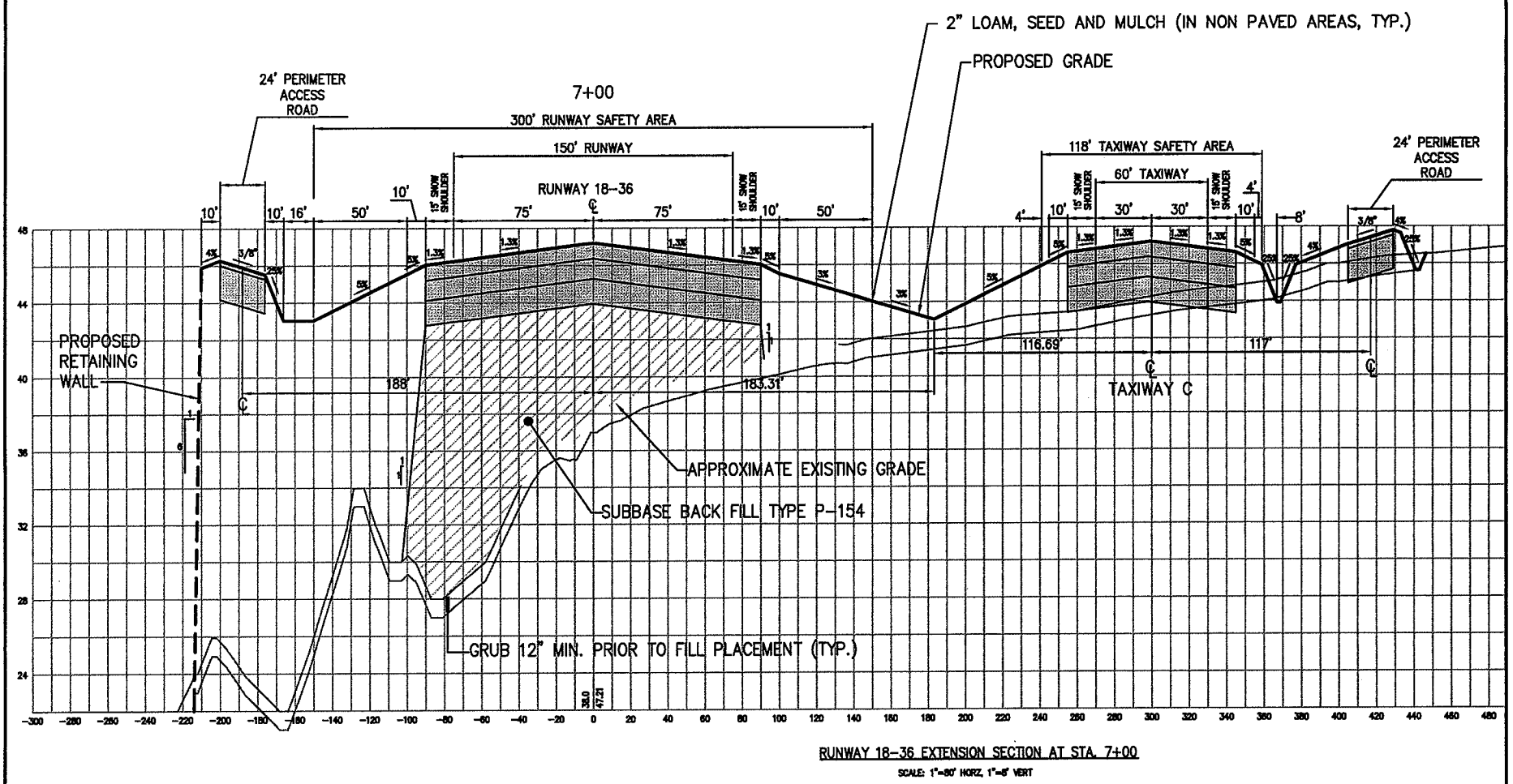
				DATE: 12.12.08	

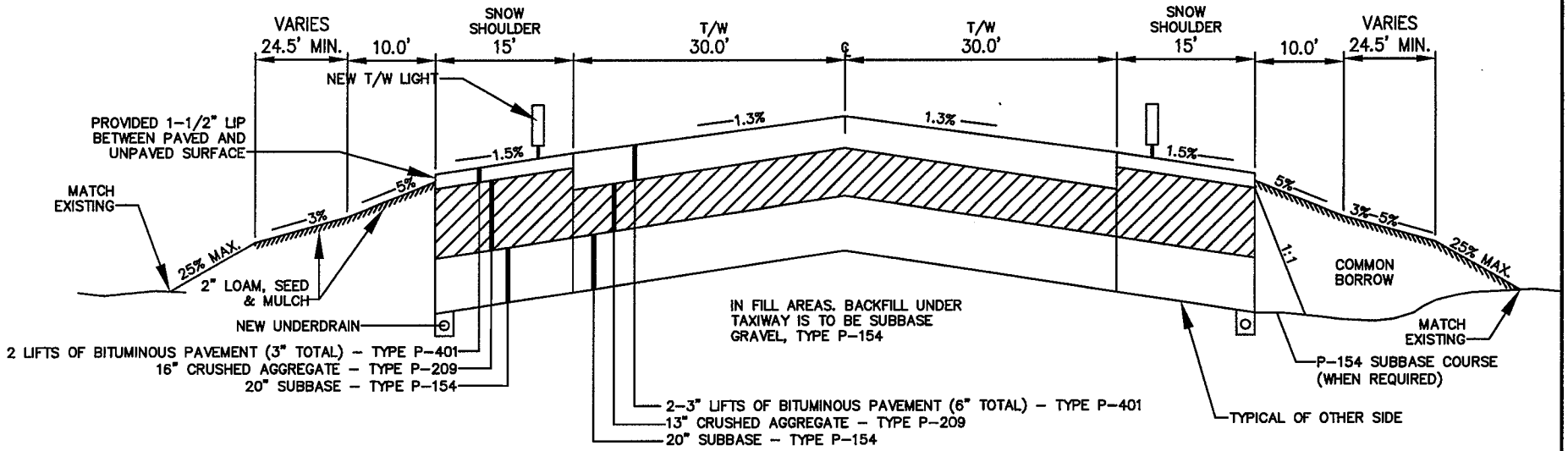


RUNWAY 18-36 EXTENSION SECTION AT STA. 7+00

SCALE: 1"=80' HORZ, 1"=8' VERT

FIGURE: 6	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: RUNWAY 18-36 EXTENSION	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29 DATE: 12.12.08

Deluca-Hoffman Associates, Inc.



1. CONNECT EVERY OTHER LIGHT TO 6" UNDERDRAIN WITH A 2"X6"X6" TEE

(A) TAXIWAY C- NEW PAVEMENT SECTION STA.--- TO STA.----

N.T.S.

FIGURE: 7	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: TAXIWAY C EXTENSION	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: N.T.S. DATUM: NGVD29 DATE: 12.12.08
				Deluca-Hoffman Associates, Inc.

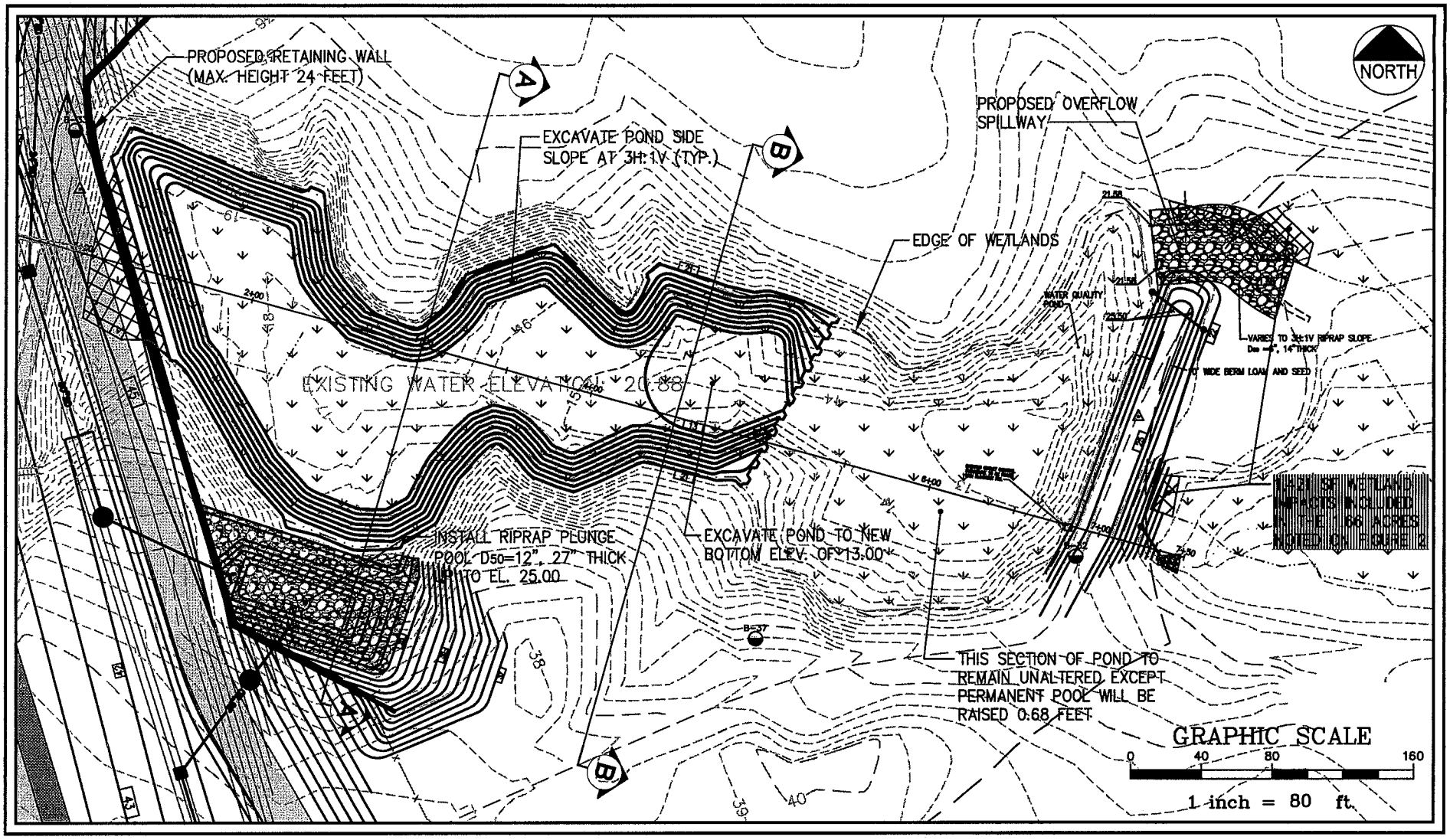
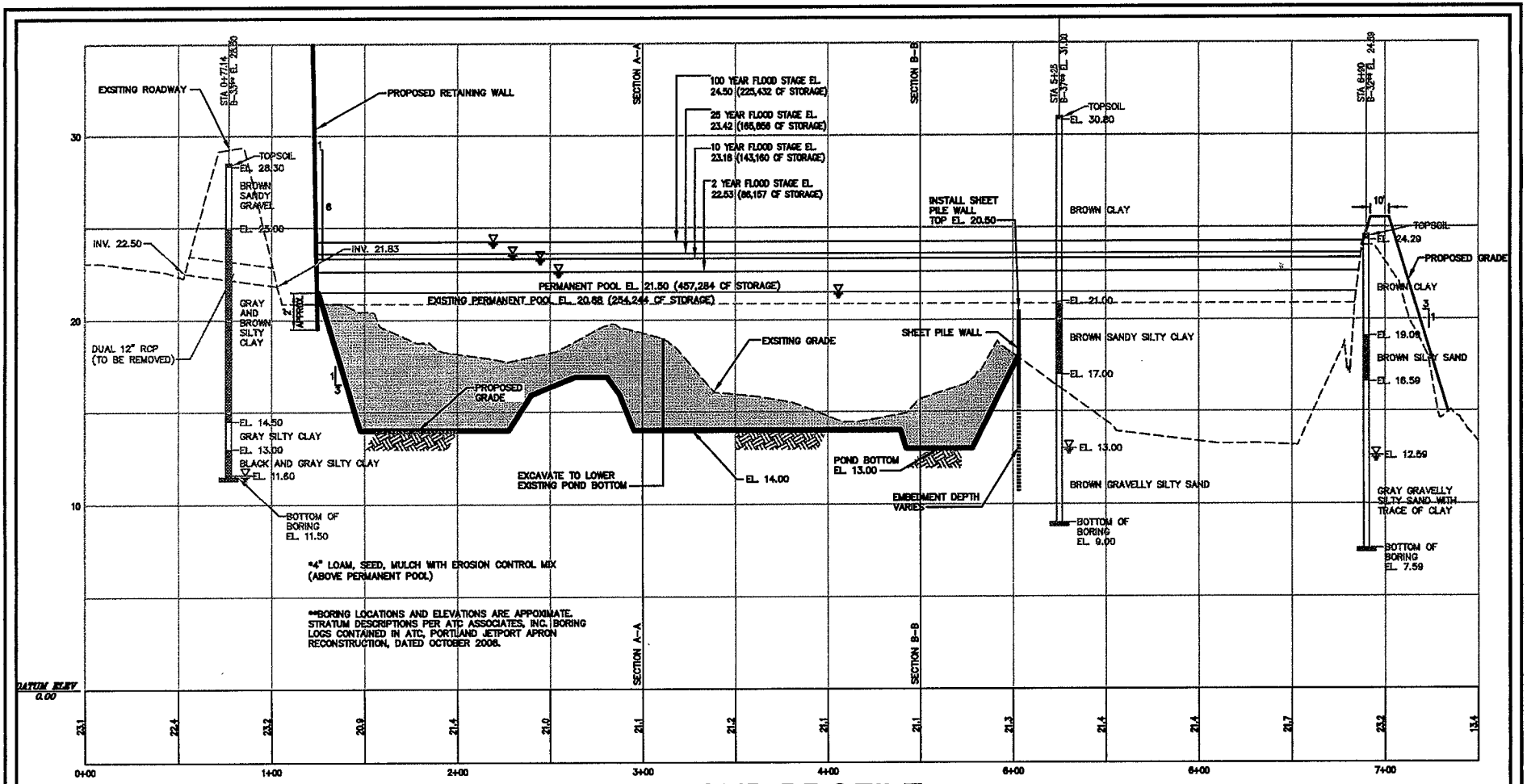


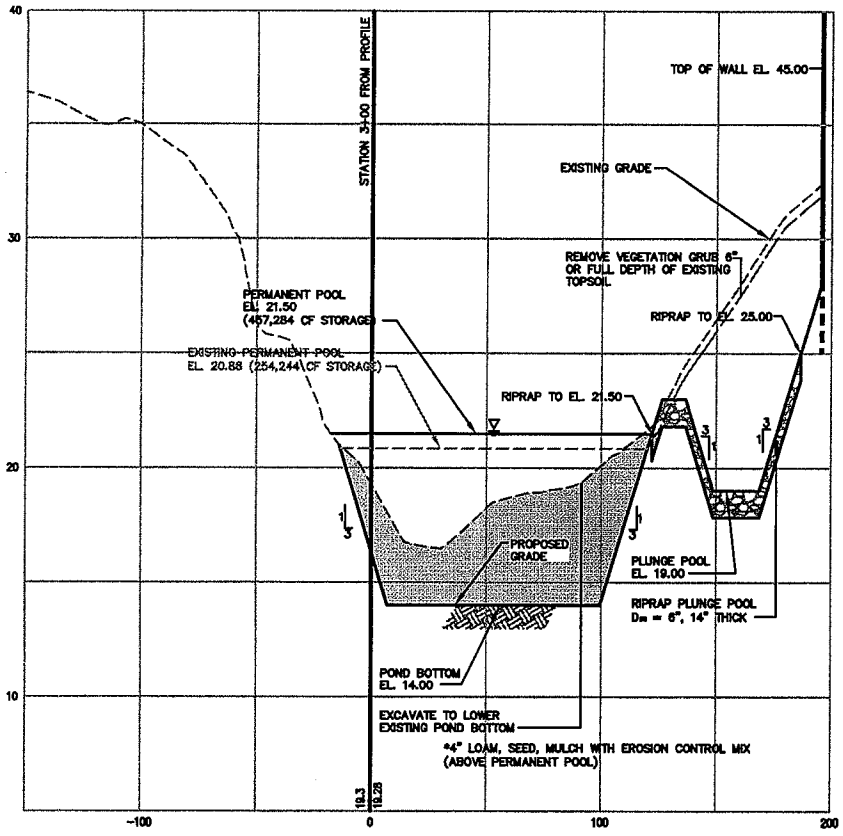
FIGURE:	BOOK: PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:	
8	REFER TO EXHIBIT A IN SLDA APPLICATION	PORTLAND AND SOUTH PORTLAND, MAINE	WATER QUALITY POND IMPROVEMENTS	CITY OF PORTLAND	
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29	Deluca-Hoffman Associates, Inc.
				DATE: 12.12.08	



POND PROFILE

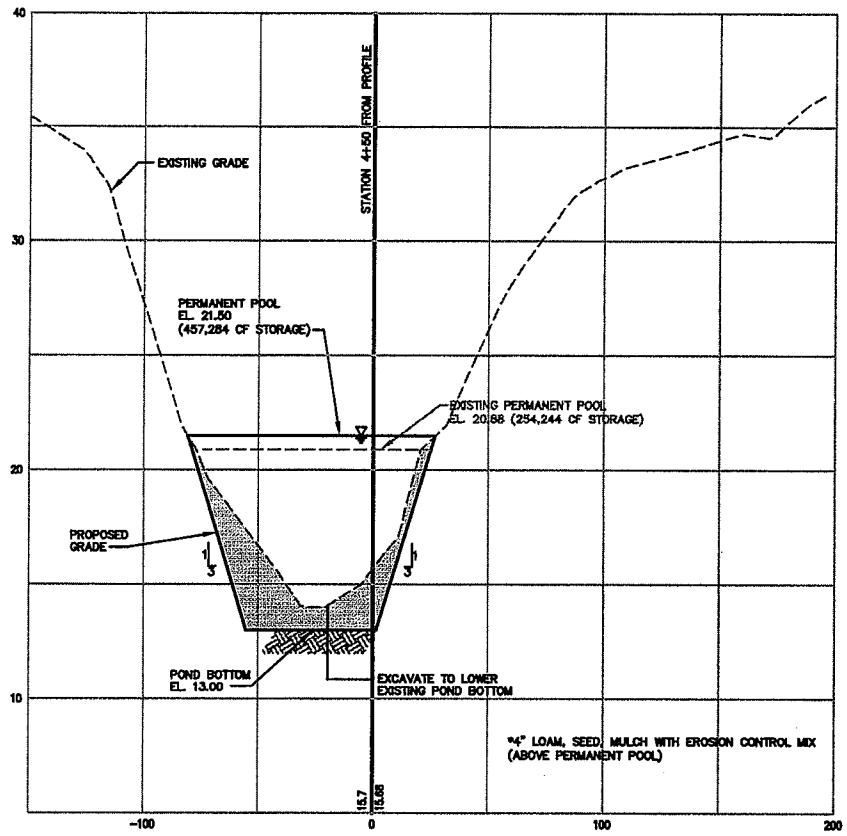
SCALE: 1"=80'H;1"=8'V

FIGURE: 9	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: WATER QUALITY POND IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29 DATE: 12.12.08 — Deluca-Hoffman Associates, Inc.



SECTION A-A

SCALE: 1"=80'H; 1"=8'V



SECTION B-B

SCALE: 1"=80'H; 1"=8'V

FIGURE: 10	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: WATER QUALITY POND IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29 DATE: 12.12.08
				Deluca-Hoffman Associates, Inc.

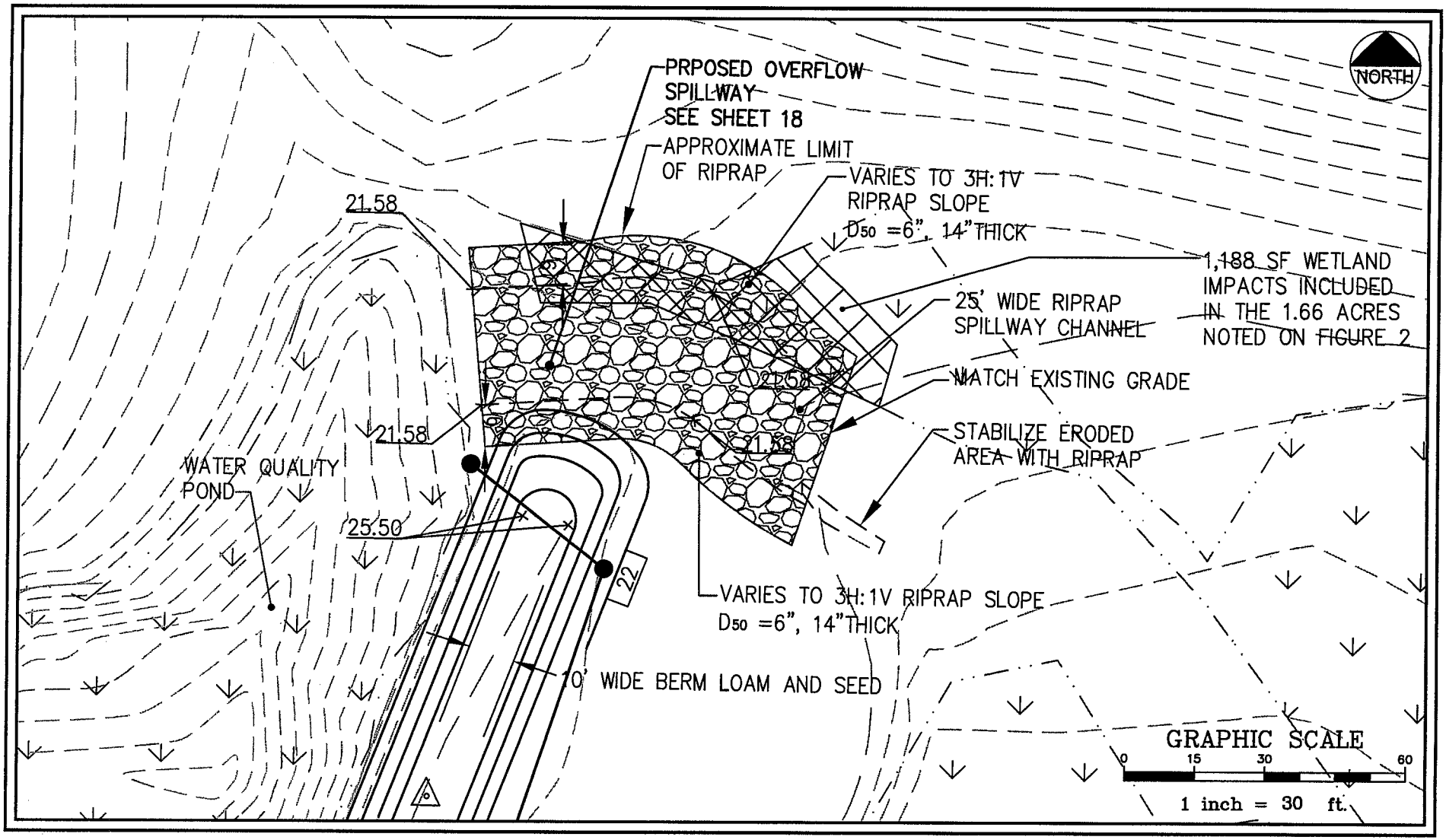
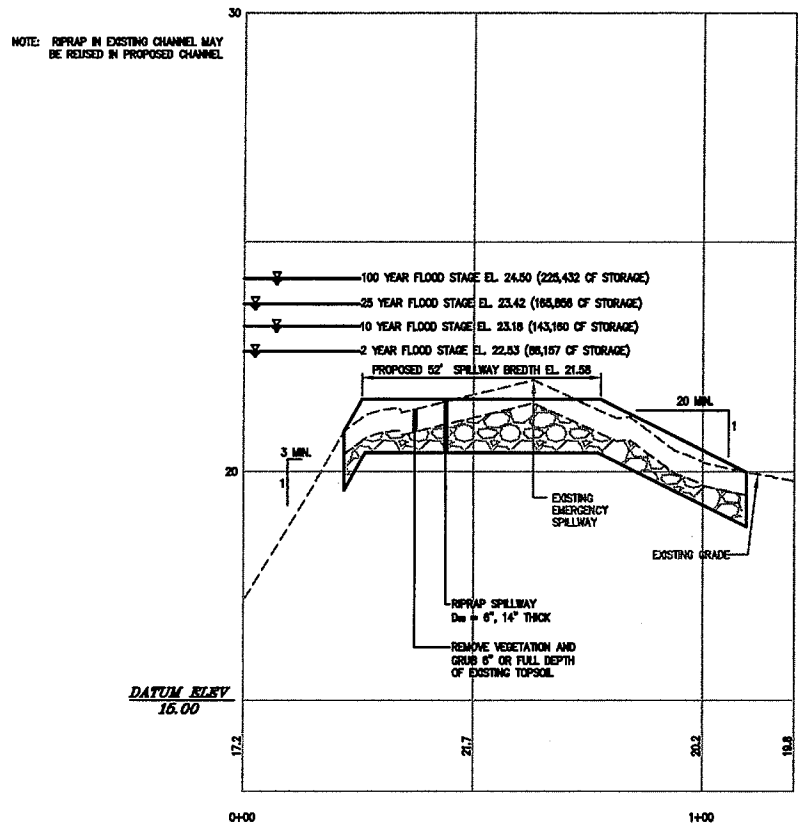


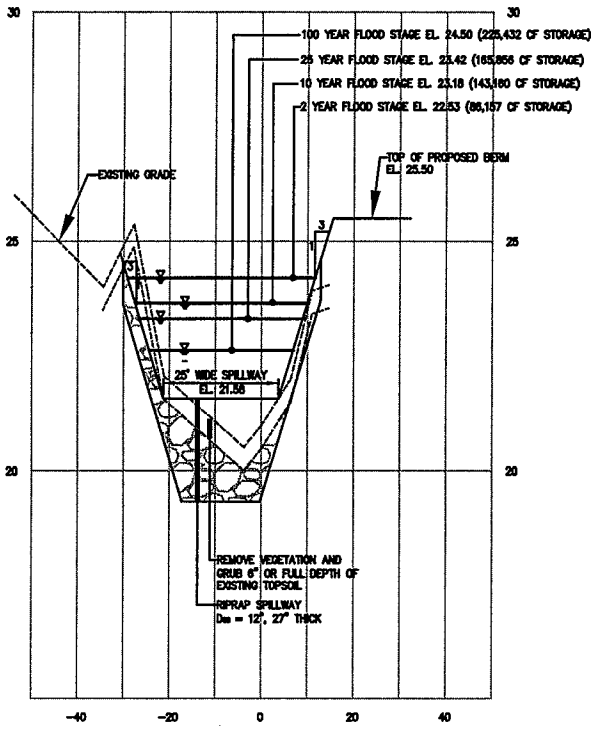
FIGURE: 11	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: WATER QUALITY POND IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=30' DATUM: NGVD29 DATE: 12.12.08

Deluca-Hoffman Associates, Inc.



OVERFLOW SPILLWAY PROFILE

SCALE: 1"=40'H; 1"=4'V



SECTION C-C

SCALE: 1"=40'H; 1"=4'V

FIGURE: 12	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: WATER QUALITY POND IMPROVEMENTS	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=40' DATUM: NGVD29 DATE: 12.12.08

Deluca-Hoffman Associates, Inc.

OUTLET CONTROL STRUCTURE PROFILE

SCALE: 1"=40'H; 1"=4'V

FIGURE: 13	
BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION	PAGE:
LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	
LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	
WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	
PROPOSED ACTIVITY: WATER QUALITY POND IMPROVEMENTS	
ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	
PROJECT APPLICANT: CITY OF PORTLAND	
SCALE: 1"=40' DATUM: NGVD29	
DATE: 12.12.08	
Deluca-Hoffman Associates, Inc.	

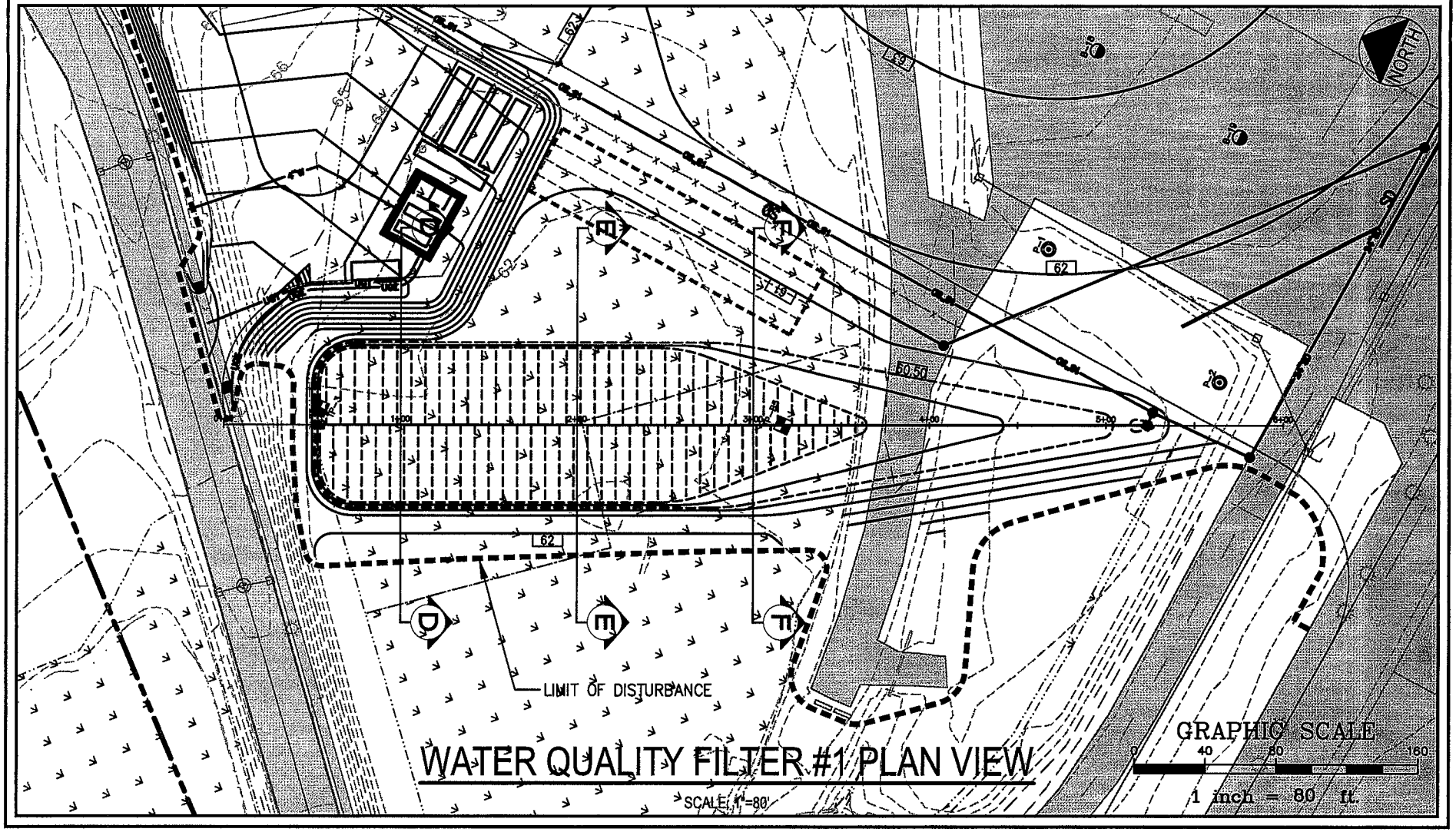
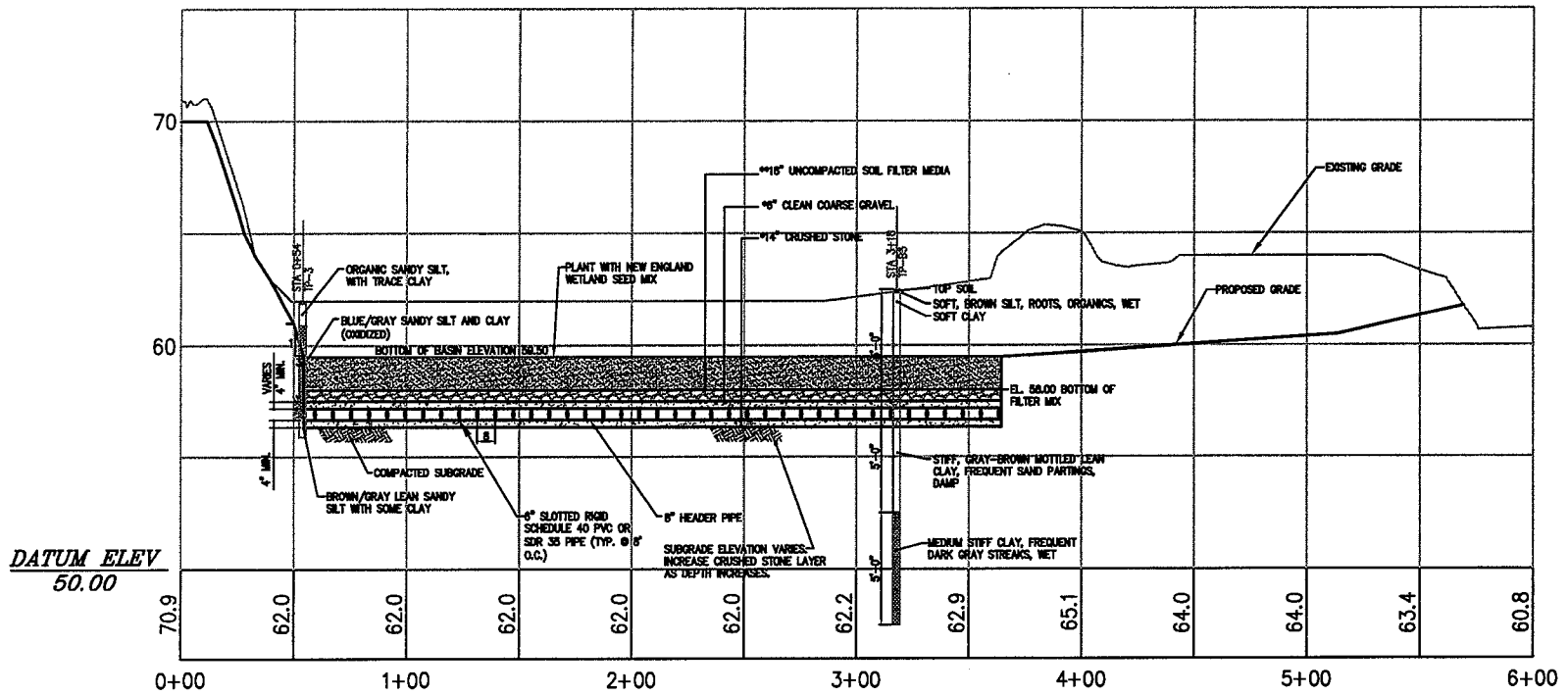


FIGURE:	BOOK: / PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:
14	REFER TO EXHIBIT A IN SLDA APPLICATION	PORTLAND AND SOUTH PORTLAND, MAINE	TERMINAL AREA WATER QUALITY FILTER	CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29 / DATE: 12.12.08

Deluca-Hoffman Associates, Inc.



WATER QUALITY FILTER PROFILE

SCALE: 1"=80'H;1"=8'V

FIGURE: 15	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: TERMINAL AREA WATER QUALITY FILTER	PROJECT APPLICANT: CITY OF PORTLAND
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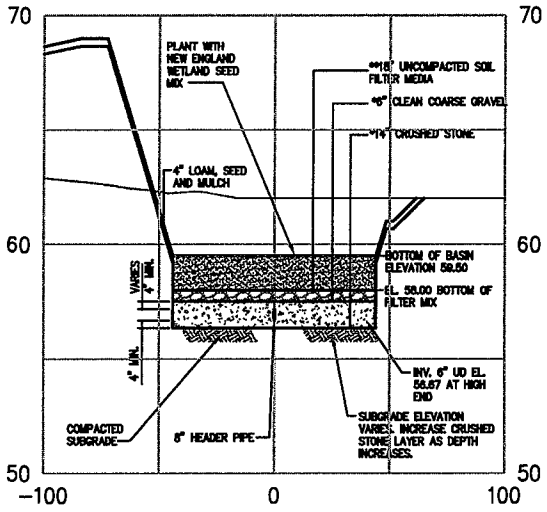
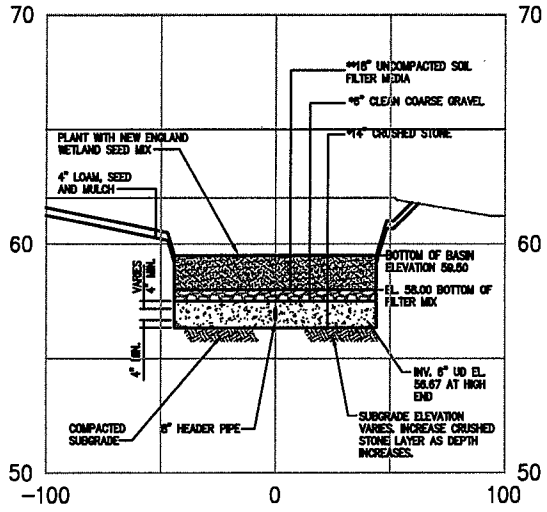


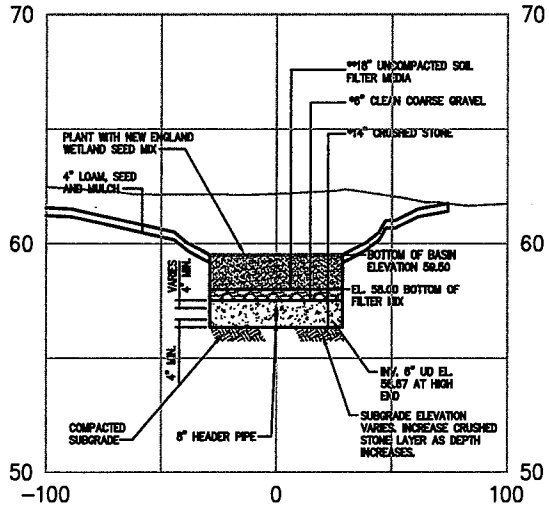
SECTION D-D

SCALE: 1"=80'H; 1"=8'V



SECTION E-E

SCALE: 1"=80'H; 1"=8'V

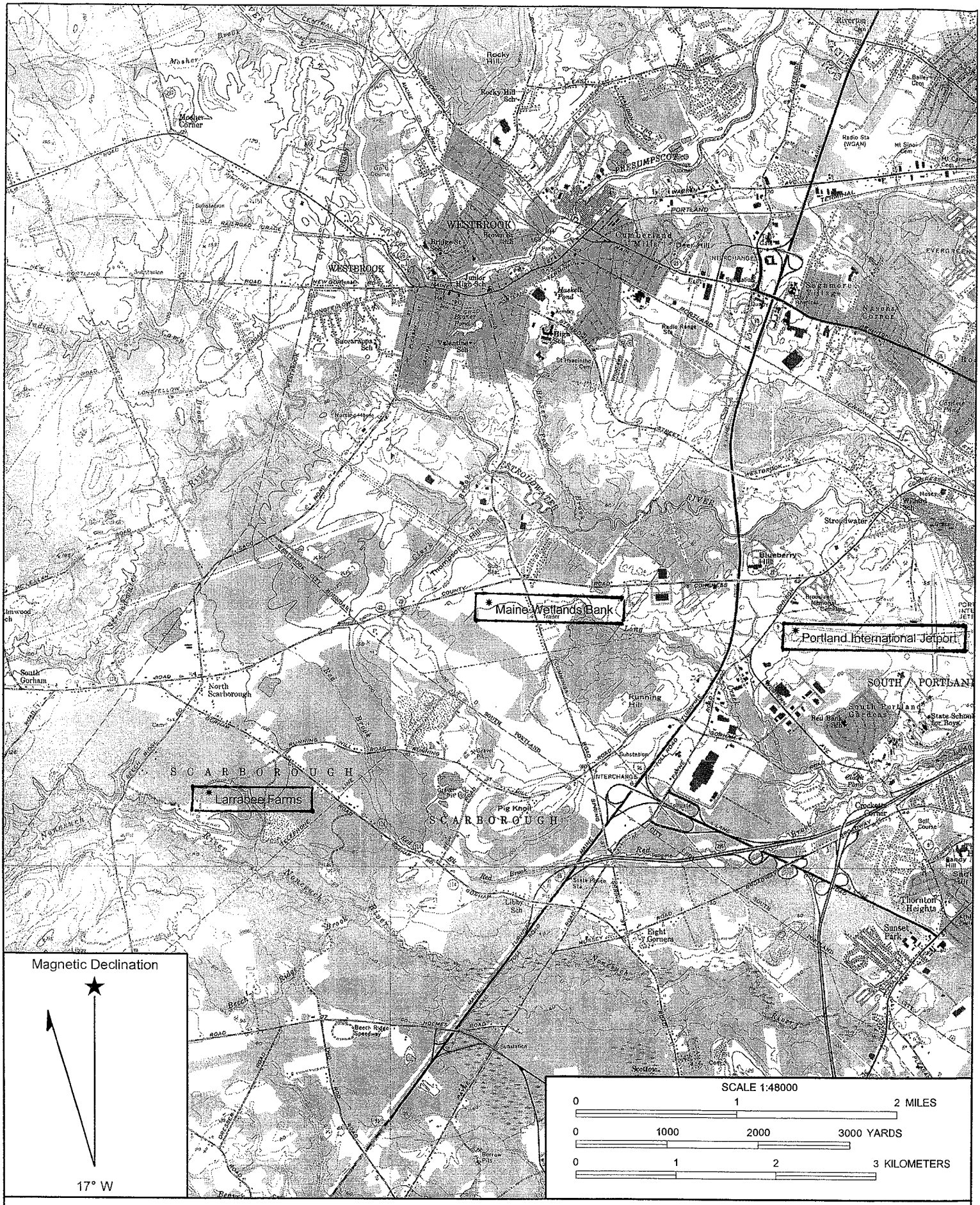


SECTION F-F

SCALE: 1"=80'H; 1"=8'V

FIGURE: 16	BOOK: REFER TO EXHIBIT A IN SLDA APPLICATION PAGE:	LOCATION: PORTLAND AND SOUTH PORTLAND, MAINE	PROPOSED ACTIVITY: TERMINAL AREA WATER QUALITY FILTER	PROJECT APPLICANT: CITY OF PORTLAND
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=80' DATUM: NGVD29 DATE: 12.12.08

Deluca-Hoffman Associates, Inc.



Name: PORTLAND WEST
Date: 3/23/2009
Scale: 1 inch equals 4000 feet

Location: 043.6486614° N 070.3627806° W NAD27
Caption: Portland International Jetport
Wetland Compensation Sites

22

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Maine Natural Resources Protection Act Permit Application Attachment 13

WETLAND MITIGATION PLAN: Larrabee Farms Mitigation Project

Project: **Portland International Jetport (PWM) – Terminal Area, Cargo Area Taxiway, Runway 11-29 Safety and Runway 18-36 Improvements (Herein referred to as "Jetport Project")**

Applicant: **Portland International Jetport (PWM) - City of Portland, Maine**

Compensatory Mitigation Project (LARRABEE PROJECT): **Wetland Creation, and Upland and Wetland Preservation at Larrabee Farms Wetland Mitigation Site, Scarborough, Maine**

Date: **March 11, 2009**

Prepared By:

BOYLE ASSOCIATES

Environmental Consultants
1000 Riverside Street • Portland • Maine • 04103
www.boyleassociates.net

&

Grondin Wetlands, LLC
11 Bartlett Road
Gorham, Maine 04038
www.grondinconstruction.com

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Appendix 2	Archeological Assessments
Appendix 3	Larrabee Farms Wetland Mitigation Project Contract Zoning Agreement with the Town of Scarborough, Maine: Contract Zone #8
Appendix 4	Correspondence: • FAA Mitigation Site Correspondence
Appendix 5	R.W. Gillespie & Associates Hydrogeology Reports
Appendix 6	Plan Drawings
Appendix 7	Deed of Conservation Easement (DRAFT)
Appendix 8	Purchase and Sale Agreement Letter
Appendix 9	A narrative describing the available literature or experience to date (if any) for carrying out the compensation work
Appendix 10	Cross-reference between compensation plan and the N.E. District, ACOE's *Mitigation Plan Checklist (*01/12/2007 version*)*
Appendix 11	Cross-reference between Compensation Plan and MDEP's NRPA Chapter 310 Standards

A. General Information

A.1. Jetport Project

This Wetland Compensation Plan (the Plan) describes a portion of the compensatory mitigation proposed by Portland International Jetport (the Jetport) for permanent impacts to freshwater wetlands associated with the proposed Portland International Jetport – Terminal Area, Cargo Area Taxiway, Runway 11-29 Safety and Runway 18-36 Improvements South Portland and Portland, Cumberland County Maine (herein referred to as "Jetport Project"). The project's purpose and need are further detailed in Exhibits 1 and 2 of the NRPA permit application.

The proposed development project is subject to the compensation requirements of the Maine Department of Environmental Protection (MDEP) Natural Resources Protection Act (NRPA) (Code of Maine Rules, Chapter 310; (2) 38 M.R.S.A. Section 480-A et seq. Chapter 310); and the compensatory mitigation requirements of the U.S. Army Corps of Engineers (ACOE) Section 404 of the U.S. Clean Water Act (33 U.S.C. Section 1344). This wetland compensation plan outlines the compensatory mitigation that will be implemented to offset the unavoidable wetland impacts associated with the project. Note that this Compensation Plan was developed to meet the application requirements of both the MDEP and the ACOE in a single document, even though the compensation plan requirements are slightly different for each agency. Cross-reference spreadsheets that detail where to find the requirements of the two guidelines are provided in Appendices 10 and 11 of this report.

A second Wetland Mitigation Plan describing compensatory wetland mitigation to be undertaken at a second site (Maine Wetlands Bank) will be submitted concurrently with this mitigation plan.

A.2 Proposed Compensatory Wetland Mitigation Project Description

The wetland compensation plan described herein is intended to offset impacts to scrub-shrub and emergent freshwater wetlands resulting from expansion of the Jetport. Proposed wetland compensation will take place at the Larrabee Farms site and at Maine Wetlands Bank. The Larrabee Farms Wetland Mitigation Project is situated southeast of the corner of Routes 114 and Beech Ridge Road, on Delorme's The Maine Atlas and Gazetteer Map 3, quadrant A-3, and on the USGS 7.5 minute series *Gorham* quadrangle. The parcel center is located at latitude 43.6343, longitude -70.3982. The wetlands impacted by the Jetport Project are all included within the Fore River watershed (HUC 12: 010600010502). The Larrabee Farms mitigation site is located approximately 4.0 miles to the southeast of the southwestern end of the Jetport Project in the Nonesuch River watershed (HUC 12: 010600010401). Both the Jetport Project and the Larrabee Farms site are located within the Presumpscot River and Casco Bay Watershed (HUC 8).

The Larrabee Farms site consists of forested and cleared uplands and wetlands, former sand and gravel quarries, a former clay extraction operation, former agricultural fields, and the expansive floodplain of the Nonesuch River. The proposed project site is well situated near the heart of the most rapidly developing region in Maine. Larrabee Farms was recently permitted to provide wetland mitigation for the MaineDOT Gorham Bypass Project in Gorham, and the Gateway at Scarborough Development (Cabela's) in Scarborough. Construction and planting on both projects wrapped up in fall of 2007. Mitigation for these two projects included nearly 20 acres of wetland creation and over 100 acres of wetland and upland buffer preservation at Larrabee Farms. The proposed compensation area for the Jetport Project has been designed to replace the lost functions and values of the wetlands directly filled by the expansion of the Jetport. The goal of the compensation project is to create and provide protection for wetlands and buffers in order to fully replace the lost functions, not just to offset wetland acreage.

The particular location of the proposed wetland creation and habitat preservation package for the Jetport Project is in the middle of the Larrabee Farms site. The proposed preservation areas will connect with the MaineDOT's preservation area on the east (56 acres +/-). The created scrub-shrub and emergent wetlands for the Jetport Project will be separated from the MaineDOT site by a narrow intermittent stream channel with steep, forested valley walls. The proposed creation area will be primarily scrub-shrub wetland habitat, with a small component of emergent wetland habitat, designed, built and planted in order to mimic the wetlands impacted by the proposed Jetport Project. The creation area will consist of a generally kidney-shaped basin, ranging from 5 to 10 feet in depth below the grade of the surrounding upland forest. The sideslopes of the created wetland will be graded with an approximate slope of 6:1 (6 units horizontal to 1 unit vertical) to allow for easy passage of small mammals and amphibians into and out of the created wetland. Upon completion of work within the proposed Jetport creation area, the mitigation site will provide a well-buffered wetland habitat island protected on three sides by mature, upland vegetation and linked hydrologically and biologically to future creation areas located to the northwest.

As depicted in Figure 1, the proposed compensation project at Larrabee will include 2.5 acres of scrub-shrub wetland creation, 1 acre of emergent wetland creation, 37.95 acres of (existing) wetland preservation, and 58.53 acres of upland buffer preservation. The existing wetland preservation includes primarily mature, forested areas adjacent to an intermittent stream channel and a stretch of the Nonesuch River. The upland buffers included in the mitigation package include upland hemlock/beech and red oak/white pine forest areas adjacent to the existing red and sugar maple-dominated forested wetlands. A hiking/running trail is included within a portion of the upland buffer preserved west of the creation area. This trail will link the east and west portions of the Larrabee project and provide a loop trail for passive recreational pursuits. The calculations included in this report for preservation areas include all upland area within the preservation area in the 'upland buffers' category. Also included with the proposed compensation plan are approximately 1,400 linear feet of a forested, intermittent stream channel and approximately 7,000 actual linear feet of the Nonesuch River (approximately 4,500 linear feet on a tie-line basis). The preservation area connects to the MaineDOT's preservation area along the intermittent stream. Including all proposed creation and preservation areas, the total proposed compensation area at Larrabee Farms for the Jetport Project is approximately 100 acres.

The creation area will be constructed with pit and mound microtopography within a portion of a cleared, existing upland forest area. Several white pine trees (approximately 10 to 20 feet tall) will be salvaged from a field located just north of the proposed creation area. Furthermore, a few small (approximately 10 feet by 20 feet) upland islands will be left in place within the wetland creation area in order to preserve a few large hemlock and beech trees located around the perimeter of the proposed creation area. If the hydrology of the site proves too wet to support these upland species, then, in time, they will become dead and dying woody debris. Potted nursery stock shrubs will be used for planting in the wetland creation area, with shrub plantings 2 to 3 feet tall at planting time. The combination of the transplanted pines, the existing mature hemlocks and the taller plantings will allow for a more rapid development of scrub-shrub conditions within the wetland creation site. In combination with the proposed preservation area and the onsite work, the proposed mitigation plan will adequately replace the impacted functions and values and will result in a net increase in overall wetland area.

Off-site wetland compensation at Larrabee Farms will provide wildlife habitat, groundwater recharge and discharge, production export, educational value and recreational opportunities. Wetland creation will include a deciduous scrub-shrub wetland with an emergent component designed to offset the impacts to and provide similar functionality as the wetlands impacted by the proposed Jetport Project.

A.3. Project Maps

Please see figures on the following 3 pages:

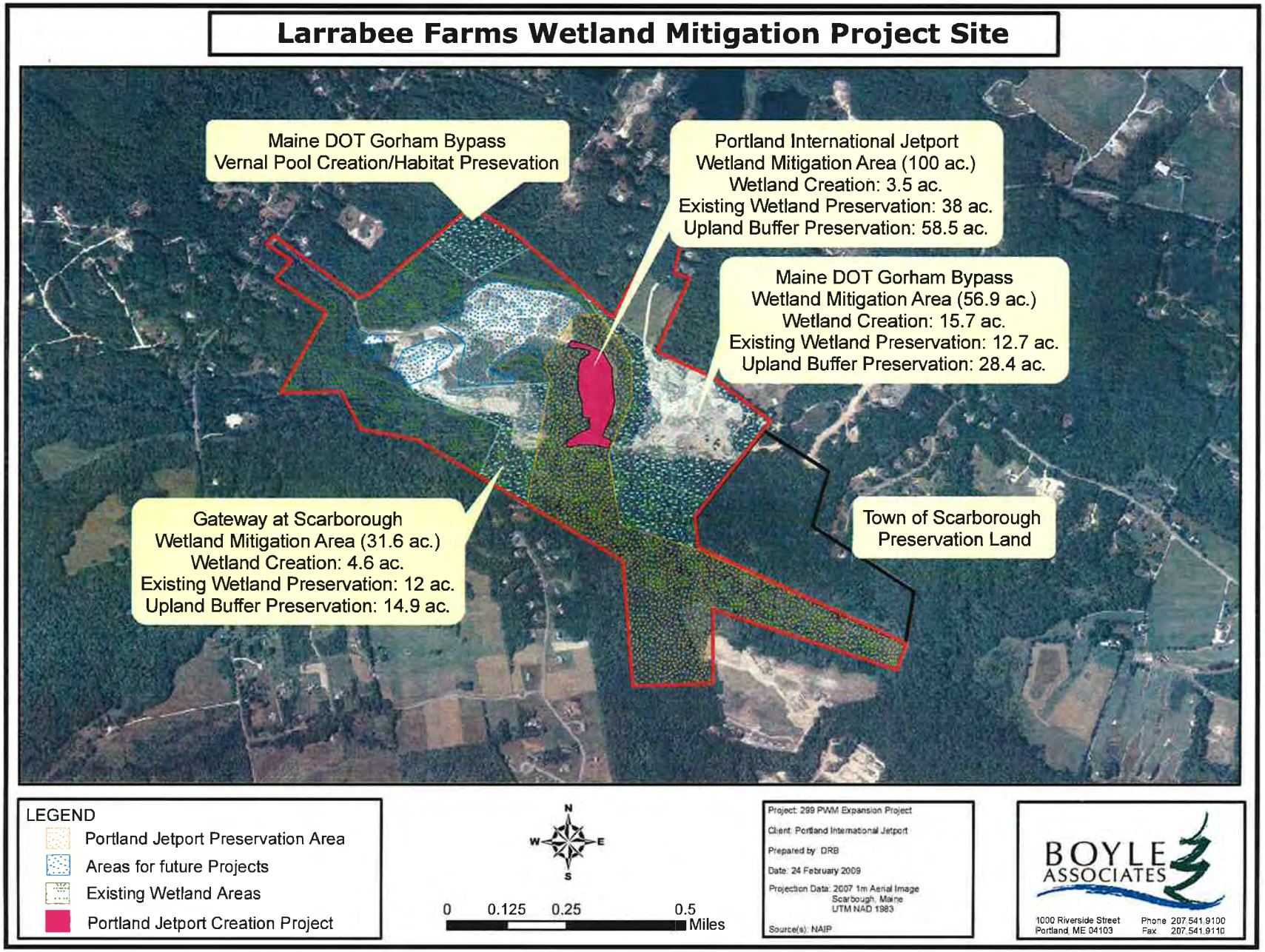

Figure 1. Sketch plan and 2007 aerial photo of proposed compensation for Jetport Project at the Larrabee Farms Project Site.

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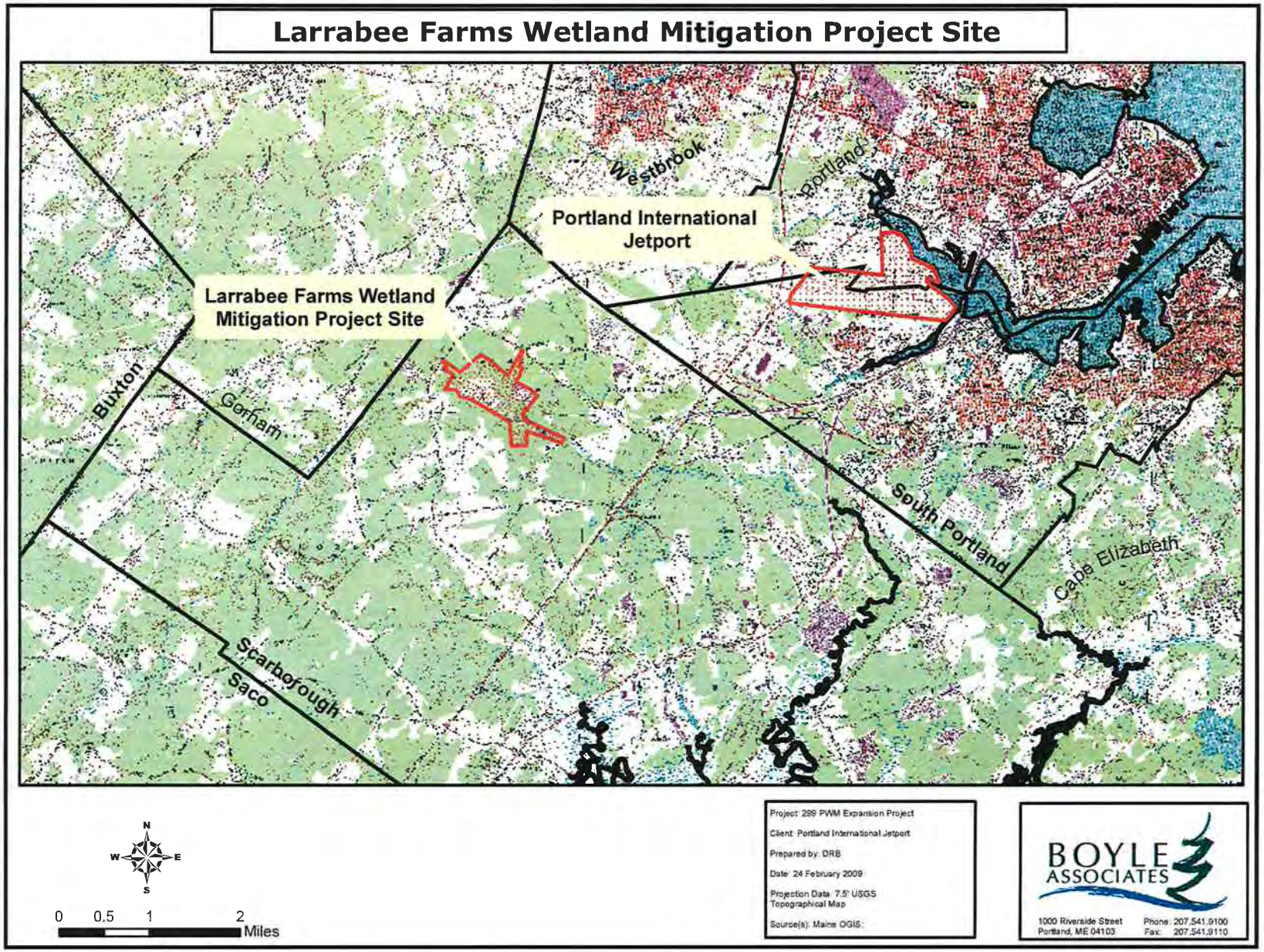

Figure 2. Locus Map: Larrabee Farms Wetland Mitigation Project

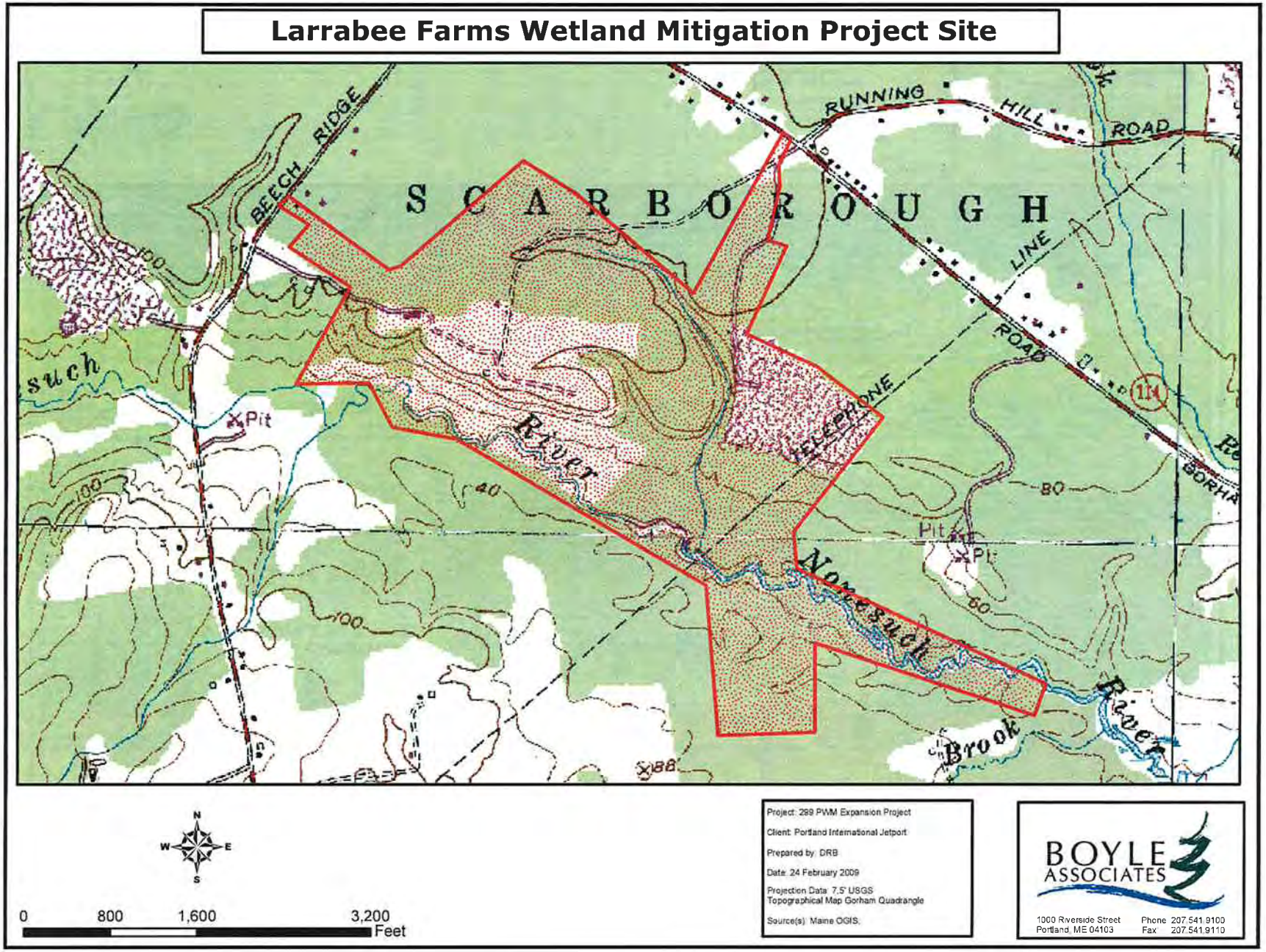

Figure 3. Close-up USGS Topographic quadrangle: Larrabee Farms Wetland Mitigation Project

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B. Impact Areas: Jetport Project

For information on impacts at the Jetport Project, please refer to the NRPA application materials and TRC's Mitigation Plan for the Maine Wetlands Bank Portion of the mitigation package.

C. Mitigation Area: Larrabee Farms

C.1. Introduction and Background Information: Larrabee Farms Wetland Mitigation Project

The proposed wetland compensation plan described herein will take place at Grondin Aggregates' Larrabee Farms Wetland Mitigation Project Site. The Larrabee Farms project involves a planned pooled user or multi-stage wetland mitigation project on 330-acres (+/-) of undeveloped land abutting the Nonesuch River. The parcel is located in northwestern Scarborough, Cumberland County Maine. The site is owned by Grondin Aggregates, LLC, a local family-owned industrial, commercial and transportation construction company located in Gorham, Maine. Grondin purchased the property in 2000.

The Larrabee Farms Wetland Mitigation Project site offers a wide array of wetland mitigation opportunities. The project site has a good source of mineral material overlying an appreciable and predictable water table. The site is also well buffered from paved roads and development and is connected by habitat and hydrology directly to a one-mile stretch of the Nonesuch River. These conditions make the site an ideal candidate for wetland creation and habitat preservation. Furthermore, the site has an abundance of existing wetland areas, including a small, woodland stream, several acres of forested wetlands and the extensive floodplain of the Nonesuch River. Upland forested areas, while cut-over, offer protected corridors between the wetland areas, both created and existing, and offer a corridor to and from the floodplain of the river.

The site has seen extensive management over the previous century. Historical and anecdotal evidence suggests that much of the land area was farmed in the late 18th and early 19th century. Logging has taken place throughout much of the land area as well, with trees more than 50 years old only found in pockets across the site. The most recent and most intensive land use at the site has been extractive industries. Sand, gravel, and clay materials have been removed from the site over the previous 30 years. The sand and gravel operations left the large, unforested tract of land upon which the wetland creation portion of this compensation plan is proposed. Clay removal conducted approximately 10 years ago resulted in exposure of several bedrock outcrops on the western portion of the property. Despite all of the previous impacts and disturbance, the wetland areas on the property have remained relatively undisturbed. This is especially true by the Nonesuch River where large pines, hemlocks and sugar maples can be observed throughout the floodplain wetland.

The property has approximately 90 acres of existing wetlands. Total wetland creation potential onsite is approximately 45 acres, as currently envisioned (not including vernal pool habitat creation). The site designers foresee an approximate 10 year buildout of all wetland mitigation potential at the site, following which, the entire 337 +/-acres will be entered into a permanent conservation easement and deeded to a not-for-profit entity, qualified under 33 M.R.S.A. Sections 476 through 479-B to hold such easements.

In 2006, Grondin signed a Contract Zone agreement with the Town of Scarborough to allow for excavation below the water table at the Larrabee Farms Site. In 2008 Grondin amended the contract zone, in part, to increase the potential preservation areas on the Larrabee Farms site to include the so-called Fish & Game lands on the south side of the river. A copy of the contract is included in Appendix 5 and lists the allowed uses on the parcel as well as the implementation schedule for permanent protection of the project parcel.

The proposed wetland creation project for the Jetport Project will take place on the former access road area used to bring materials and equipment to the MaineDOT creation site. This area is located centrally on the Larrabee Farms parcel, and is surrounded by oak/pine upland forest on the south and west and a deep stream valley on the north and east. The proposed preservation limits for the mitigation project will extend from just north of the proposed creation area to the centerline of the deep gully that bisects the property to the eastern border (wetland B), and to the south across the Nonesuch River (wetland C) to the southern and eastern limits of the Grondin property. The preservation area will include a vast area of emergent and scrub/shrub wetland floodplain on the Nonesuch River. The total footprint of the proposed compensation area for the Jetport Project is 100 acres.

C.1.a. Mitigation Site Search

For information on the mitigation alternatives analysis, please refer to the NRPA application materials and TRC's Mitigation Plan for the Maine Wetlands Bank Portion of the mitigation package.

C.1.b. Larrabee Farms Existing Wildlife Use

From a wildlife perspective, the presence of the Nonesuch River and its associated riparian habitat provides the greatest potential benefit of the site. Wildlife activity within the flood plain wetland is likely extensive upon the return of avian migrants in the spring, with wetlands associated with the Nonesuch River providing a diversity of food, nesting, and refuge substrates. In addition, forested wetlands adjacent to and aquatic habitats within the Nonesuch River undoubtedly provide suitable resources to support a variety of herpetological species during favorable ambient conditions. An adult male wood turtle (*Clemmys insculpta)* was observed on the western side of the property in August 2006. Wood turtles are listed in Maine as Species of Special Concern. Although the site is diverse in its surface features, the elimination of vertical strata in logged forested portions minimizes its current ability to support a diverse element of wildlife.

A variety of tracks were observed throughout the site, including white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces),* red fox (*Vulpes vulpes*), and raccoon (*Procyon lotor*), and avian species observed included black-capped chickadees (*Parus atricapillus*), white-breasted nuthatches (*Sitta carolinensis*), American goldfinch (*Carduelis tristis*), red-tailed hawk (*Buteo jamaicensis*), snow buntings (*Plectrophenax nivalis*), northern shrike (*Lanius excubitor*), northern harrier (*Circus cyaneus*), wild turkey (*Meleagris gallopavo),* ruffed grouse (*Bonasa umbellus*), American crow (*Corvus brachyrhynchos*), and ducks (multiple species). Beaver (*Castor canadensis*) activity (cuttings and transport runs) can be observed on the banks of the Nonesuch River.

The two creation areas that were built in 2007 (MaineDOT and Cabela's) have shown evidence of use by wildlife. Species identified in the areas by sight or signs include moose, deer, fox, coyote, raccoon, skunk, wild turkey, song sparrows, eastern bluebirds, chipping sparrows, northern chickadees, lesser yellowlegs, peeps, mallards, northern shrike, red-tailed hawk, green frogs, wood frogs, grey tree frogs, and spring peepers.

C.1.c. Larrabee Farms Existing Soil conditions

Soils – Wetland Creation Area

Soils on the Larrabee Farms project consist of the Windsor-Deerfield-Hinkley Association, mostly underlain by the Presumpscot formation of marine clay. Within the immediate area of the proposed creation site for the Jetport Project, the soils consist of Windsor loamy sand. The official series description of the Natural Resource Conservation Service (http://www2.ftw.nrcs.usda.gov/osd/dat/W/WINDSOR.html) describes Windsor loamy sand as such:

> Windsor soils are nearly level to very steep soils on glaciofluvial landforms. The steeper slopes are typically on terrace escarpments. Slope ranges from 0 to 60 percent. The soils formed in glacial outwash deposits of poorly graded sands and loamy sands derived mainly from crystalline rocks.

In September 2002, Grondin excavated several test pits across the Larrabee Farms site to check for soil texture and subsurface hydrology. Test pits 174 and 176 were dug within the proposed creation area for the Jetport Project. These tests indicated approximately 10 feet of silty clay, with lenses of fine sands. After approximately 10 feet, the blue clays were encountered. Groundwater monitoring wells were also installed in 2002 and additional wells were installed in the winter of 2008/2009. Monitoring well 11, installed in 2002, is located immediately adjacent to the proposed creation area for the Jetport Project. During installation of groundwater monitoring wells by R.W. Gillespie Associates, the testing crew found soil profiles similar to that found by Grondin's crew. Initial Gillespie findings in early 2002 indicated a stable groundwater source at an approximate depth of 4 to 6 feet below the surface (surface elevation at the well is 93.35 feet). Additional survey grades are being determined on the new wells installed in late 2008, and the data from these wells will be used during final site grading and during the long-term monitoring.

The created wetland will be an approximately 3.5 acre, generally oblong and kidney-shaped area, located within a complex parcel of land that includes rocky outcrops, deep sands, piles of marine clay, and mixed glacio-marine features. The Jetport wetland creation site is located in a sandy upland area between two eroded valleys. Downslope of the proposed creation area there is evidence of groundwater discharge where the sandy, Windsor soils meet the silt loam, alluvial Limerick-Saco soils above the Nonesuch floodplain wetlands. The soil type in the area of the proposed creation project is mapped as Deerfield loamy sand, overlaying glacio-marine clays at a depth of approximately 10-15 feet. In terms of soil type for the proposed creation area, we are designing the site to mimic those areas mapped by the Natural Resource Conservation Service as the series *Searsport sandy loam* (these areas were formerly mapped as *Scarboro sandy loam*).

The red maple swamp, mapped on sheet 1 of the site plan as "Wetland A" (Site Plan is included in Appendix 6), is mapped as primarily containing the Searsport series (shown in Figure 4 as *So*). As described in the official series description (http://www2.ftw.nrcs.usda.gov/osd/dat/S/SEARSPORT): "the Searsport series consists of very deep, very poorly drained soils formed in thick sandy deposits in pockets and depressions on outwash plains, deltas, and terraces." The Searsport series soils are generally very poorly drained, and maintain wetness due more to a high water table rather than a fine-grained matrix or perching. The Searsport series is often found located next to other poorly drained or very poorly drained soils.

The Jetport creation area will be designed to mimic a natural extension of the nearby "Searsport" wetland found northwest of the proposed creation site. The sand and sandy loam that currently coats much of the creation area will be removed to bring the overall landscape closer to the natural water table; the topography and soil makeup of the creation area will mimic the natural wetland situation found in the existing and adjacent wetlands. A representative soil profile of the Searsport series is similar to the target soil profile designed for the creation area. The typical Searsport series has a black organic topsoil horizon, underlain by up to 20 inches of sandy loam, often with horizons showing a depleted matrix and with redoximorphic features throughout.

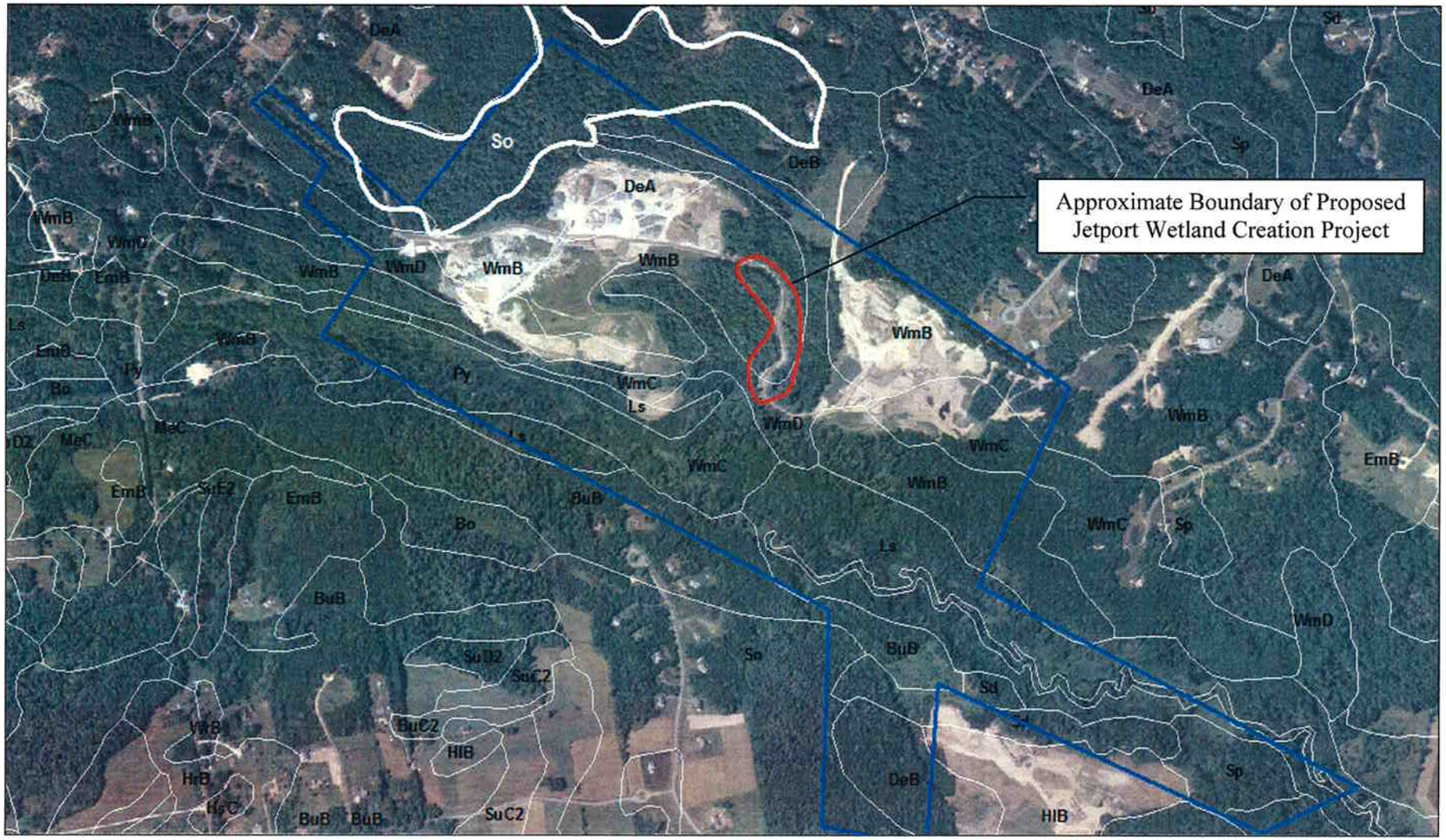


Figure 4: **NRCS Soil Map (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx) of Larrabee Farms area.**

C.1.d. Larrabee Farms Existing Vegetation

The wetland creation area proposed for the Jetport Project is located in an area previously cleared for construction of an access road. Historically, the creation site was partially cleared during forestry operations approximately 30 years ago. Many of the remaining adult hardwood trees were removed, presumably for firewood, while the site was abandoned throughout the 1990s. Currently some pioneer species dominate in the uplands surrounding the creation area, including hemlock (*Tsuga canadensis),* quaking aspen (*Populus tremuloides)* and American beech (*Fagus grandifolia).* Upland shrubs include young specimens of the tree species mentioned above, as well as witch hazel (*Hamamelis virginiana)* and beaked hazelnut *(Corylus cornuta).* Herbaceous species near the creation area include bracken fern (*Pteridium aquilinum)*, highbush and lowbush blueberry (*Vaccinium corymbosum* and *V. angustifolium*), Canada mayflower (*Maianthemum canadense)*, and partridgeberry (*Mitchella repens).*

The preservation area proposed for the Jetport Project includes several covertypes and, thus, a broad mix of vegetation. Vegetation in the upland forests of the preservation area is similar to that described for the creation area, although there is a greater density of large white pines *(Pinus strobus*) and red oaks (*Quercus rubra)* in the uplands nearer the river and on the so-called Fish & Game portion of the preservation area. Wetlands within the preservation area generally include mixed forested and shrub wetland habitats. Within the wetlands associated with the floodplain of the Nonesuch River, the dominant tree species include red maple (*Acer rubrum)*, sugar maple (*Acer saccharum),* green ash (*Fraxinus pensylvanicum),* hemlock, black cherry (*Prunus serotina),* and white pine. The shrub stratum within the floodplain wetlands is dominated by young specimens from the tree stratum, speckled alder (*Alnus incana),* grey birch (*Betula populifolia),* elderberry (*Sambucus canadensis),* and willow species (Salix spp.). Dominant herbaceous species throughout the preservation wetlands include several species of common wetland ferns, grasses, sedges and rushes.

C.1.e. Surrounding Land Use and Proximity to other protected lands

Another important and valuable aspect of the Larrabee Farms Wetland Mitigation Project is that the overall future preservation area contains over 1 mile of frontage and floodplain on the Nonesuch River. By protecting the forested and non-forested floodplain of this stretch of the river, the area will maintain its status as a wildlife corridor for both game and non-game species. Corridors are extremely important to maintaining the health of Maine's large mammals such as deer, moose and black bear. Also reliant upon non-developed areas, are other game species such as beaver, raccoon, woodcock, pheasant, turkey, and grouse, as well as countless non-game species. As stated in Chapter 6 of the Town of Scarborough Comprehensive Plan: "*Many of Scarborough's unique natural areas and wildlife habitats are located in the Nonesuch River watershed. The impact of potential growth on these resources should be kept in mind as areas for growth and protection are delineated in the development of this Comprehensive Plan.*" In fact, the Scarborough Conservation Land Trust has recently established the *Nonesuch River Protection Corridor,* which describes as its goal the protection of the riparian habitat along the Nonesuch River for its entire course through the town. The land trust has purchased 2 large tracts of land upstream from the Larrabee Farms parcel known as Fuller Farm and Meserve Farm, each protecting over 2,000 feet of frontage on the Nonesuch River. Immediately downstream on the property abutting Larrabee to the east, the Town of Scarborough as recently acquired the north side of the floodplain of the Nonesuch as part of agreements for a new subdivision. The Town owns a second piece of land on the eastern side of this parcel. Please see Figure 6 for a depiction of protected open space, public lands and recreation areas in Scarborough.

In addition to the Land Trust and State protection efforts, the Town of Scarborough has begun the process of updating its zoning ordinances to reflect the Town's commitment to protection of the Nonesuch River resource. In it's *Updates to the Comprehensive Plan* - 2006, the Town of Scarborough included the following:

Action C.3.D Update and strengthen the development review standards that require the protection of natural resources and/ or the mitigation of impacts on these resources. These standards should require that a holistic approach be taken to maintaining resource values within these non-residential districts including the protection of an adequate functional buffer where appropriate, and the maintenance of a significant buffer along the Nonesuch River.

Objective F. 7. Establish a "greenway" along the length of the Nonesuch River. Most of the area adjacent to the Nonesuch River is subject to either Resource Protection or Shoreland Zoning. The width and requirements of these zones vary. The Town should work with landowners to maintain a naturally vegetated "greenway" along the entire length of the Nonesuch. Where possible, the objective should be to establish a 250 foot wide vegetated buffer along both sides of the river. In doing this, existing development rights should not be reduced by allowing the development that could have occurred on the land within the greenway to be clustered on other parts of the property away from the river.

Action F. 7. a. As set out in the Future Land Use Plan, the width of the Shoreland Zone should be increased from 75 feet to 250 feet and new development should be required to be set back 250 feet from the river where feasible. A naturally vegetated buffer should be required to be maintained along the river with provisions for water access and low-intensity trail and recreational use within the buffer.

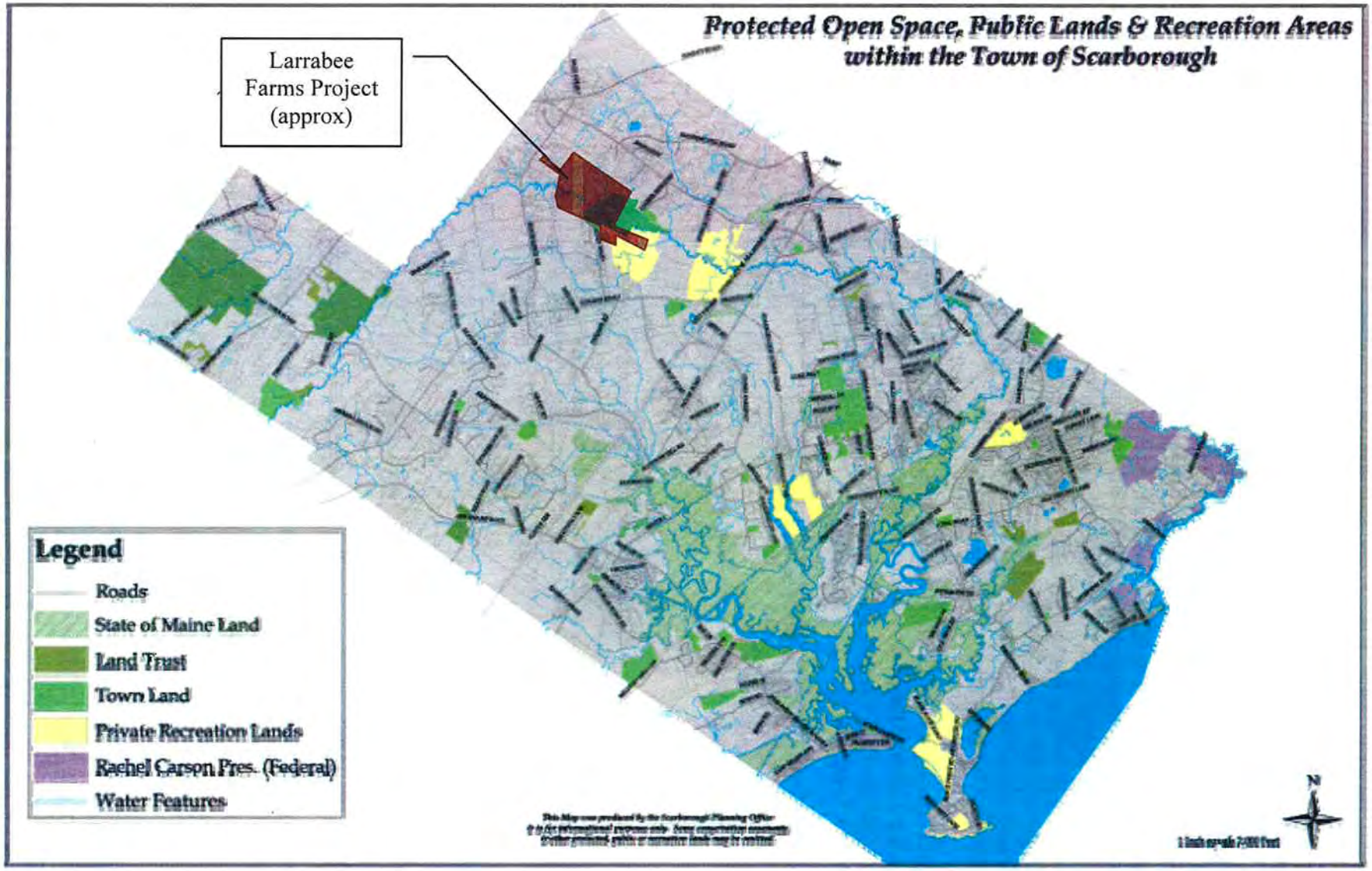


Figure 5. **Protected Open Space, Public Lands and Recreation Areas within the Town of Scarborough.**

C.1.f. USFWS Clearance Letter

The Larrabee Farms Wetland Mitigation site was reviewed in 2007 by the USFWS who determined that "no further action is required under Section 7 of the ESA".

C.1.g. Maine Historic Preservation Commission Review

The Maine Historic Preservation Commission (MHPC) has reviewed the proposed mitigation areas pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. In a memo dated March 27, 2003, MHPC requested that Grondin contract for a Phase 1 survey of any areas where the subsoil has not been disturbed in order to search for any structure or site of historic or archaeological significance. Grondin hired Archaeological Consultant Deborah Wilson to conduct preliminary surveys at the property. During the assessment, Mr. Dinsmore found no sites of historical significance on the property. Ms. Wilson did note, however, several areas across the property that had not been disturbed by previous excavations and that these areas should receive additional prehistorical assessment prior to disturbance. The proposed Jetport Project wetland creation area is included in one of these areas.

In 2007, Brian Valimont of New England Archaeology Company, LLC, conducted subsurface tests for cultural artifacts in the areas around the proposed Jetport wetland creation project. Mr. Valimont did not find any artifacts during his search of the area, as described in the email copied below. Mr. Valimont's complete report is also included in Appendix 4.

From: BRIAN VALIMONT [mailto:valimonster9@verizon.net]
Sent: Thursday, November 29, 2007 8:35 PM
To: Heather Storlazzi Ward; Rich Jordan
Subject: Larrabee Farms, Wetland Mitigation Area 3

Rich,

In response to your request, Phase I archaeological subsurface testing was undertaken at Larrabee Farms Wetland mitigation project area. A total of 5 archaeological shovel test pits (STP's) were excavated at proposed Wetland Creation Area 3. No cultural artifacts were recovered from the excavation of these STP's. Thus, no archaeological resources will be impacted by the creation of the proposed wetland in Area 3. No further archaeological investigation is necessary in this area.

Brian Valimont, MA
New England Archaeology Co., LLC
117 Cat Mousam Road
Kennebunk. ME 04043
office - (207) 985-2060
cell - (207) 251-9467
fax - (207) 985-7051

C.2.a./b. Wetland Acreages and Classes Proposed at the Mitigation Site

As depicted in Table C.1., the proposed wetland compensation project includes a combination of wetland creation, existing wetland preservation, and upland buffer preservation. The compensation project includes a total of 100 acres of preservation land including 3.53 acres of wetland creation. Please see Figure 1 for a sketch of the proposed mitigation plan. A copy of the mitigation plan drawing is also attached to this report in Appendix 8.

Wetland Creation and Preservation Area:

The wetland compensation plan includes a total preservation area of 100 acres. This area includes 3.53 acres (+/-) of wetland creation, 37.95 acres of existing forested wetland preservation and 58.53 acres of forested

upland buffer preservation. Wetland creation will consist of palustrine scrub-shrub and palustrine emergent wetland (PSS/EM1E). The creation area will include shrubs installed throughout the scrub-shrub component to provide various habitat types within the overall PSS/EM area. The creation area will be designed and planted in order to mimic the conditions of natural wetlands and to provide similar functionality as the wetlands impacted by the proposed project. The upland buffers included in the mitigation package include upland forest areas adjacent to the existing wetlands, and recreational trails with planned vegetative screen improvements. The proposed preservation area is dominated by forested land and includes approximately 1,400 linear feet of an intermittent stream channel approximately 7,000 actual linear feet of the Nonesuch River.

Table C.1. **Summary of proposed mitigation for the Jetport (Larrabee Farms Wetland Mitigation Project Site)**

Wetland Creation, Upland and Wetland Buffer Preservation			
Mitigation Type	*Acres*	*Proposed Mitigation Ratio*	*Mitigation Acre-Credits*
Wetland Creation	3.53	1.5:1	2.35
Wetland Preservation	37.95	20:1	1.90
Upland Buffer Preservation	58.53	10:1	5.85
Total Acres Preserved in Mitigation Project:	100.01	**Total Mitigation Acre-Credits:**	**10.10**
not included in mitigation credit calculation:			
Stream Preservation		+/- 1,400 linear feet	Wooded, Intermittent Stream
		+/- 7,000 linear feet	Nonesuch River

C.2.c. Anticipated Wetland Functions and Values at Each Mitigation Site

Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and that result from both living and non-living components of a specific wetland resource. These include all processes necessary for the self-maintenance of the wetland ecosystem such as primary productivity and nutrient cycling, among others. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

Values are benefits that derive from one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal value. The value of a particular wetland function, or combination of functions, is based on human judgment of the worth, merit, quality or importance attributed to those functions. (*ACOE New England Division, Wetland Functions and Values; The Highway Methodology Workbook Supplement. 1993)*

The preservation areas associated with the Larrabee Farms Project currently provide a wide range of benefits to the surrounding areas. The Nonesuch River, the floodplain wetlands and the forested and scrub/shrub wetlands that are found throughout the site provide the following functions and values: groundwater discharge, wildlife habitat (including that for fish and shellfish), sediment retention, nutrient retention, flood flow alteration, sediment stabilization, recreation, aesthetic/scenic value, and educational/scientific value. The wetland creation areas proposed in this mitigation plan, along with the proposed upland habitat and wetland preservation

envelopes are designed to augment the existing habitats on the property, thus increasing the ability of the property to provide these functions. While designing the grading and planting plans for the areas, project designers also planned for habitats that will provide or will have the *potential* to provide the same functions and values that are provided by the wetlands at the impact site.

The wetland creation area is located near the middle of the Larrabee Farms wetland mitigation project site, immediately adjacent to the MaineDOT's Gorham Bypass mitigation site. The proposed creation area will be constructed within a former upland forest that was cleared for a road over a decade ago when the site was first used for mineral extraction. The area was used as a haul road between the sand and gravel extraction areas on the east side of the parcel and the clay removal areas on the west. Most of the forest area adjacent to the road, except for the steep valley walls, is made up of beech and hemlock. Farther into the interior of the forested area, occasional large red oak and white pine trees are found, along with some older hemlocks. For the proposed wetland creation area, only young beech and hemlocks that are located adjacent to the existing roadway will need to be removed.

The creation area will add to the overall diversity of the Larrabee Farms project site by providing another habitat type within the larger matrix of the proposed +/- 337-acre preservation area. The created scrub-shrub/emergent wetland will be linked hydrologically via overflow to the 20-acre future wetland creation area proposed northeast of the proposed Jetport mitigation area. The Jetport creation area will drain to the narrow stream channel that is located between the 16-acre MaineDOT creation area and Jetport creation area. This stream drains into the floodplain of the Nonesuch River.

The Jetport wetland creation area will provide a link, both hydrologic and biologic, between the existing eastern and western wetland creation areas on the property. On a traverse from the west to the east across the center of the property, animals will cross through an existing upland forest, into the created wetlands on the Cabela's project, then into the steep valley with both upland and wetland habitats, then into the upland forest area of the proposed Jetport Parkway preservation area, then into the proposed forested wetland creation area, then into the forested upland buffer along the narrow stream, then up through the western banks and upland buffer of the stream, on into the MaineDOT 16-acre wetland creation area, and finally off the Larrabee Farms property onto conservation upland and wetland property held in easement by the Town of Scarborough.

Wetland Creation and Preservation Area:
The wetland creation area will consist of scrub-shrub wetlands, with a component of emergent wetland habitat types. The creation area is designed and anticipated to provide the following principal functions and values: groundwater recharge and discharge, flood flow alteration, production export, and wildlife habitat. The means by which the mitigation project will provide these functions is explained below.

Groundwater recharge and discharge - *This function considers the potential for the wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.*

Maine Geologic Survey maps indicated that the site is a Significant Sand and Gravel Aquifer. Water quality of groundwater in this area is presumably high, due to the lack of any known source of contaminants in the watershed upstream from this area. The wetland creation area, designed with a level slope across its gradient, will capture groundwater discharge in some areas near the northern slopes, and allow for settling and recharge of groundwater by stormwater and surface runoff. All surface flow will tend to the southeast, with the ultimate outflow through a rip-rap spillway and into the adjacent upland forested swale and onto the intermittent stream

Flood flow alteration – *This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.*

The proposed 3.53 acre wetland creation area north of the Nonesuch River will have dense, hydrophytic vegetation; organic-rich, hydric soils; and a constricted outlet to help retain water. The wetland will receive sheet flow from surrounding upland areas and slowly direct it to the river, attenuating the flood effects of storm events.

Production export - *This function evaluates the effectiveness of the wetland to produce food or usable products for man or other living organisms.*

The created wetland and the preserved upland and wetland buffers will provide habitat and food sources for all trophic levels on the food chain. The planting plan for the creation areas includes berry, seed and cone-producing shrub species. The habitat created and preserved by the mitigation project will provide breeding habitat for invertebrates, small mammals, and birds, all of which will emigrate from the area and provide food sources for higher trophic level consumers.

Wildlife habitat – *This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and migrating species are considered.*

Within the proposed compensation plan, wildlife habitat is currently provided by the preservation areas (uplands and wetlands). Permanent protection for the buffers along these areas will help maintain a high-quality, undisturbed area for wildlife. The overall Larrabee project will ultimately provide approximately 337 acres of preservation area, with most of the area either currently or proposed as forested habitat types. The mix of upland, wetland, pool, and stream systems will provide habitat for a variety of species. Currently, the property is known to provide habitat for amphibians and reptiles, a large mix of bird species, and large and small mammals (see Section C.1.b.)

Within the wetland creation area presented in this plan, project designers have proposed a mixture of scrub-shrub and emergent wetland types. Experience with similar types of wetland creation indicates that the created wetlands begin providing wildlife habitat within the first season. For example, woodcock probe holes are often encountered, indicating that insects are quick to colonize new areas. Created wetlands have been observed to provide shelter, food and nesting sites within the first couple of growing seasons as well, especially where dead and dying debris has been installed.

Since the proposed creation and preservation area at Larrabee Farms is part of an amalgamation of other preservation and creation areas, interconnected by forested land, the Larrabee Farms mitigation area in its entirety provides several other values, not provided by the individual creation areas alone. Since the proposed 3.53 acre wetland creation area and its surrounding buffer contributes to the sum total, these resulting values are worthy of mentioning, and include Recreational value and Educational/Scientific value, as described below.

Recreation value – *This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting and other active or passive recreational activities.*

The wetland creation areas, and the preservation areas associated with this mitigation plan, will provide recreational opportunities when combined with adjacent mitigation projects at the Larrabee Farms Mitigation Area. Grondin donated a 20-acre portion of the parcel (abutting Route 114) to the Town of Scarborough in November 2006. The Town may use the site as an intermediate school. Grondin has also worked with the Public Recreation Director from the town during the planning process of the Larrabee project. Several trail designs were incorporated into the overall design of the site and shown on existing and future site plans. Trails will primarily be primitive, consisting of narrow unimproved trails throughout the existing forest areas. A parking lot is provided on the western side of the site and additional access is accomplished via the Larrabee Farms Road. Additionally, existing trails link from Larrabee Farms to the conservation land located east of the project area. Current recreation uses of the site will remain, including hunting, hiking, cross-country skiing, running, bird watching, botanizing, and fishing.

Educational/Scientific value - *This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.*

The Town of Scarborough has shown interest in building a school adjacent to the Larrabee Farms site. The presence of the large preservation site and the created wetlands and vernal pools provide an excellent opportunity for an 'outdoor classroom'. The site includes a huge preservation area, connected directly to the Nonesuch River. Foot trails provide access to the various habitat types on all areas across the site. Wildlife use is abundant throughout, and there are several plant communities available for botanizing and exploration.

C.2.d. Stream Mitigation

The centerline and western bank of approximately 1,400 linear feet of an intermittent, forested stream channel and approximately 7,000 actual linear feet of the Nonesuch River (approximately 4,500 linear feet on a tie-line basis) is included within the proposed preservation area for the project.

C.2.e. Reference Site

The Larrabee Farms site has several types of existing wetlands that will be permanently protected as part of future mitigation projects. The ultimate plan for the Larrabee project includes over 150 acres of wetland preservation, including forested wetland, scrub/shrub wetlands and emergent floodplain wetlands. No particular reference site has been chosen for wetland comparison purposes, however, the existing, forested wetlands at Larrabee Farms provide a good representation of the type of wetlands being impacted by the proposed project. The creation site will be monitored for success based on the criteria provided by the New England Army Corps Mitigation Guidance documentation (1/12/2007 version).

C.2.f. Design Constraints

Overall and common landscape level concerns with mitigation sites, such as erosion controls, soil makeup, subsoil removal, grading, hydrology, local zoning, trucking expense, access, and abutters concerns have been allayed by Grondin through several years of planning and permitting at the Larrabee Farms site. Grondin has the equipment and manpower necessary to safely and efficiently undertake all earthwork associated with large-scale wetland creation, and has need and use for all of the subsoil material that will be removed from the site. Grondin has entered into a contract zoning agreement with the Town of Scarborough that allows the Larrabee Farms site to function as a wetland mitigation and land preservation site, allowing all of the necessary extractive industry work and reclamation associated therewith. Additionally, Grondin has built stable access routes throughout the previously disturbed uplands across the property, including the main access road upon which this creation project is proposed. Access to mitigation sites for construction, planting, monitoring, and maintenance will not provide a constraint. Finally, Grondin has developed working relationships with most of

the abutters throughout the planning process of the site. Abutters were given many opportunities to learn about the project through three public hearings held with the Planning Board and Town Council. There are no known abutter concerns as of this time.

Grondin finished construction and planting on the Cabela's and MaineDOT mitigation projects in the fall of 2007. Thus far, on these two projects, Grondin has had to mitigate for drought conditions during September of 2007 and herbivory of the planted woody species. Grondin scheduled planting of the two areas in late August to early September. This time of year proved a difficult one for planting new stock. Immediately after planting, Grondin installed a vast network of watering structures across both projects, providing frequent and prolonged watering of the new plants. This strategy worked through the dry period, and the sprinkler systems were removed in November, as October and November rains had brought the water table up enough to provide natural hydration to the areas. Impact to the plants from herbivores, which mainly include deer and turkeys, has been noted at both sites. Turkeys have scratched at some of the planted shrubs and pulled some of the smaller shrubs out of the ground. The turkeys do not seem to be species specific. The turkey issues were noted at the Cabela's project area and, to a lesser extent at the MaineDOT site. Deer have also caused some damage to the planted woody species on the Cabela's mitigation site. Deer have damaged, almost exclusively, tamaracks. They have peeled the bark off the small trees, and have browsed new growth. Both the deer and turkey concerns appear to have dissipated after the first month following planting. Following hunting season, no new browse or other herbivore damage has been noted.

C.2.g. Construction Oversight

A wetland scientist shall be on-site to monitor construction of the wetland creation area to ensure compliance with the mitigation plan. Grondin will be the primary contractor that works on the site and will provide construction and detail oversight regarding grading, survey, planting, erosion controls, and other ongoing maintenance and construction issues regarding the Larrabee Farms project site throughout the entirety of all mitigation projects thereon.

C.2.h. Project Construction Schedule

The wetland creation project will begin in the late winter of 2008/2009. The mitigation area described herein will be entered into a Conservation Easement following receipt of the required MDEP and ACOE permits for the Jetport Project. The wetland creation portion of project will be excavated and rough-graded during the winter of 2008-2009, with final grading and planting to occur in the spring or fall of 2009. *Compensatory mitigation shall be initiated not later than 90 days after project initiation and completed not later than one year after the permitted wetland impacts occur unless ACOE-approved mitigation plan specifically states otherwise and compensation for the temporal impacts are appropriate.* Any lag time between final grading and planting, if necessary, will allow for any changes to surface conditions or the outlet areas in order to address any minor needs for changes in hydrology observed after grading. Grondin will notify MDEP and ACOE of any changes in this anticipated schedule. *If the impact will occur before the mitigation is constructed, the mitigation plan will address temporal losses and the permittee will work with ACOE to develop financial assurances for the mitigation completion and monitoring, including remedial actions.* Financial assurances are further discussed in section C.2.j., below.

C.2.i. Grondin Aggregates, LLC - Description, Rights and Responsibilities

Grondin Aggregates, LLC is working with the Jetport to furnish wetland mitigation designed to offset impacts from the proposed Jetport Project. Grondin is a construction company with its headquarters in Gorham, Maine. Grondin is the operating company for the Larrabee Farms project. Grondin is responsible for contracting with appropriate professionals for the data collection and design of the mitigation site, constructing the mitigation site, overseeing the construction to insure that it is in substantial conformance with the design, and overseeing

the monitoring and maintenance of the site. The Jetport will enter into a contractual agreement with Grondin and Grondin will construct the proposed mitigation and protect the area with a conservation easement. A draft purchase and sale agreement has been prepared by the Jetport and Grondin and is currently being revised. The Jetport will provide MDEP and ACOE with a copy of the fully executed agreement before the Jetport Project begins. A copy of the draft purchase letter is included as Appendix 10.

C.2.j. Financial Assurances

Grondin Aggregates and the Jetport have prepared a preliminary purchase and sales agreement that provides for an agreed payment and/or other fiduciary arrangement for the mitigation project from the Jetport to Grondin. The P&S is designed pursuant to, and shall be governed by and construed in accordance with, the laws of the State of Maine. In the event that Grondin fails to close hereunder for any reason other than the default of the Jetport, the Jetport shall have all remedies available at law and equity. *Within 90 days of the date the NRPA and/or DOA permit is issued (whichever is latest), Grondin shall submit to the Corps of Engineers a final draft of the conservation easement. Within 30 days of the date ACOE approves this draft document in writing, Grondin shall execute and record it with the Registry of Deeds for the Town of Scarborough and the State of Maine.*

Grondin respectfully submits that the contractual obligations Grondin set forth with the Jetport through the purchase letter (Appendix 10), and with the Town of Scarborough through the Contract Zoning Agreement (Appendix 5), provide sufficient assurance that Grondin will perform, monitor and maintain the wetland mitigation project as planned and described herein.

C.2.k. FAA Correspondence

The New England Region Manager of the Environmental Program, Airports Division of the FAA found "no problem" with the Larrabee Farms Wetland Mitigation project site. Please see FAA correspondence regarding the Larrabee Farms Wetland Mitigation Site in Appendix 6 of this report.

D. Hydrology/Source of Water

Primary sources of hydrology at the Larrabee Farms site include groundwater and stream flow, with a limited supply of surface flow. An access road was constructed in the area of proposed wetland creation, resulting in minor alteration of hydrology. Information from test pits dug by Grondin, and monitoring wells installed by Gillespie indicate that there is a stable groundwater source below the surface (surface elevation at the well is 93.4 feet). Downslope, to the south of the proposed creation area, there is evidence of groundwater discharge where the sandy, outwash Windsor soils meet the silt loam, alluvial Limerick-Saco soils above the Nonesuch floodplain wetlands. In the valley, just east of the proposed creation area, it is clear where groundwater discharge occurs and has eroded the steep banks to expose the clay lenses found throughout the area.

In general, hydrology tends from the upper part of the Nonesuch River watershed, located approximately along Route 114, north of the project, and flows south to the Nonesuch River. The Nonesuch River flows generally from west to east from its origins near the Saco Heath to the Scarborough River. The Nonesuch River flows in the bottom of large valley carved by the late-glacial, proto-Saco River. The Nonesuch River drains into the Scarborough Marsh (outletting into the Scarborough River by Black Point) approximately 5 miles east of the project area. Five wetland bodies were previously delineated at the Larrabee Farms site and include emergent/scrub shrub types adjacent to the Nonesuch River (Wetland C), a small flood plain wetland associated with a riparian ravine (Wetland B), and forested pit and mound wetlands along the eastern boundary of the property (Wetlands A, D, and E.) Road construction and landscape alterations (*i.e., grading*) associated

with mining and logging activities has slightly altered the site's hydrology, especially along the abovementioned forested wetlands, and surface flow patterns were not evident, although standing water is present in portions of the forested wetland tracts away from the Nonesuch River. The Larrabee Farms Wetland Mitigation Project Site includes over 1 mile of frontage on the Nonesuch River. Included in the Jetport Project compensation package are approximately 1,400 linear feet of a wooded intermittent stream channel and the southern half of the stream's riparian wetlands, connected and adjacent to MaineDOT's mitigation area as well as approximately 7,000 actual linear feet of the Nonesuch River (approximately 4,500 linear feet on a tie-line basis).

The primary source of hydrology in the proposed Jetport Project wetland creation area will come from groundwater interception. Further hydrologic input will be provided by surface runoff and atmospheric deposition. Future creation areas to the northwest of the proposed Jetport Project creation area may also provide a source of hydrology, if it appears that additional sources are needed. The overall grading for the Jetport Project creation site is designed for the average proposed surface grade to intercept groundwater as it flows from northwest to south through the site. Additionally, in areas where discharge occurs, or where surface water inputs are sufficient, the site is designed to have a flat basin, with 2 outlets designed at 6 inches above prevailing grade. This slope is designed to slowly carry surface flow through the pit and mound microtopraphy eventually discharging any surface flow through a riprap aprons and level spreader outlets. One outlet will be constructed above a natural, forested drainage swale that empties into the small, intermittent stream channel to the east. The second swale will be constructed at the southeastern end of the site to drain excess surface water into the previously constructed road ditch (augmented with appropriately-sized riprap).

The proposed surface elevation is based on geohydrologic data gathered and analyzed by R.W. Gillespie & Associates. In the spring of 2002, Gillespie & Associates installed piezometers at several locations across the Larrabee Farms site. The piezometers were installed to serve as groundwater monitoring stations in order to enable assessment of the site geohydrology relative to wetland creation. A copy of the initial Gillespie report is included as Appendix 6. This report provides a summary of methodologies for well installation, and provides an initial analysis and recommendations for the site pertaining to wetland creation. An additional report compiled by R.W. Gillespie & Associates is also included that provides a short synopsis of geohydrologic conditions at the site through the fall of 2007 specific to the creation area proposed for Jetport Project. On 8 January 2008, Grondin provided the MDEP and ACOE with a link to a copy of this report completed by Cynthia Thayer, the Chief Geohydrologist from R.W. Gillespie & Associates. This report is entitled "Review of Geohydrologic Conditions – Haigis Parkway 3-acre Wetland Creation Area" and dated December 14, 2007. This letter and report describes the site and provides historical data on hydrology for the proposed creation area. A portion of this letter is included below:

> "Based on our review of the stratigraphic profile in the HP Area, RWG&A concludes that the soils beneath the proposed wetland elevation will form an aquitard, and are likely to retain or "perch" shallow groundwater along its upper surface supporting wetland hydrology.
>
> Review of available historical groundwater monitoring data for the Larrabee Farm site, including MW-11, for the period November 2003 to December 2006 (see attached) confirms the stability of groundwater levels at the site, and in particular at MW-11. Our evaluations indicate soil removal to elevation 87 ft would probably be sufficient to provide the requisite groundwater levels to support wetland creation most times of the year; however, we agree that soil removal to elevation 86 ft would be a more conservative approach. The proposed spillways will provide a mechanism for managing excess water levels in the project vicinity, should this condition occur."

The creation area will overflow, as needed, into a natural drainage swale that empties eventually into the small, intermittent stream channel in the center of the Larrabee Farms parcel. Additional sources of hydrology, if

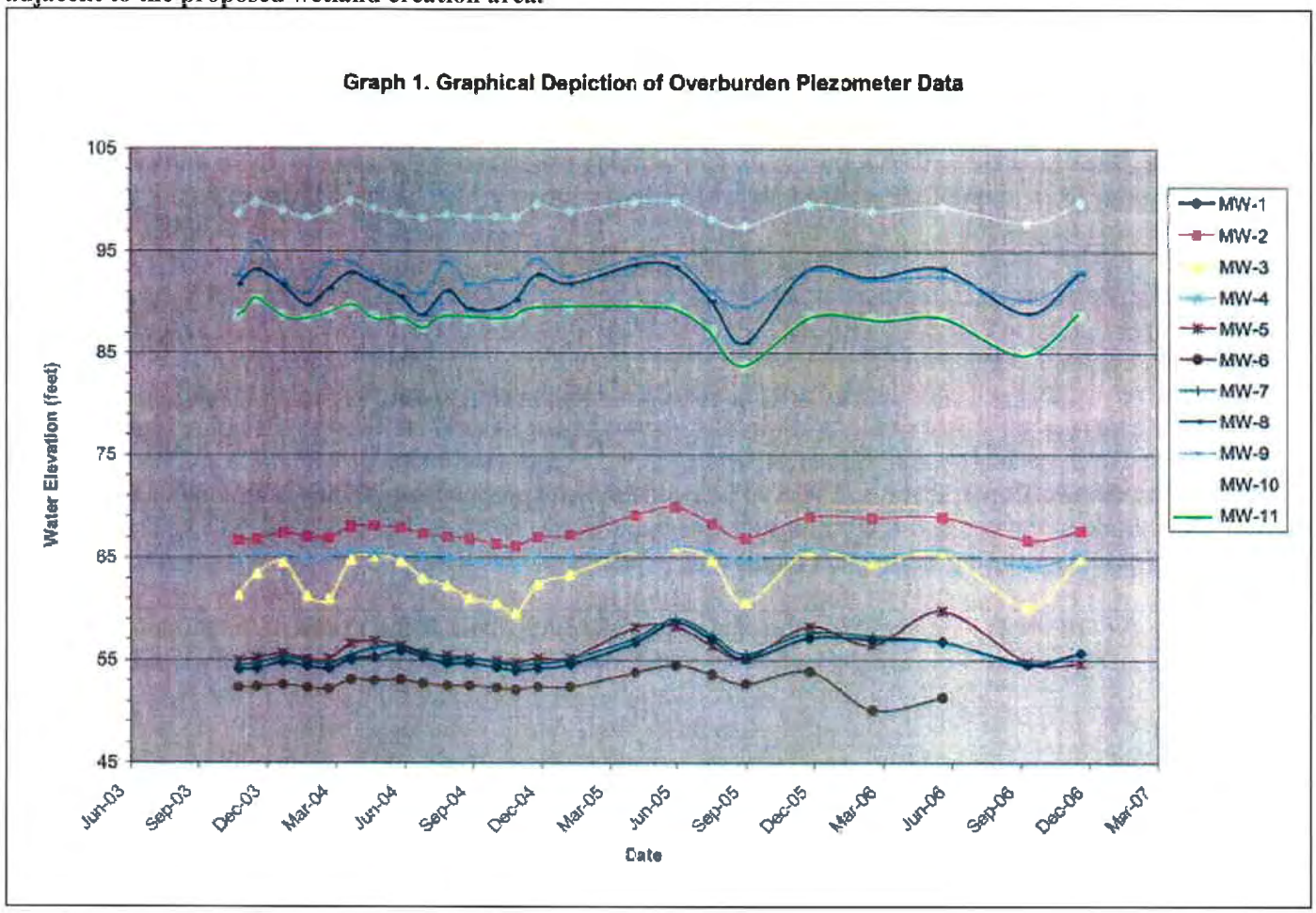
deemed necessary following monitoring, will come from the future wetland creation area located just northeast of the proposed Jetport creation area. This wetland creation area will encompass approximately 15 to 20 acres, and has a very stable source of groundwater flowing from the forested wetlands on the west and towards the stream channel to the east. If there is found to be too much water in the proposed Jetport creation area, the elevation of the site and its proximity to the adjacent valley allows for lowering of the riprap overspill, and partial or expedited drainage from the project site.

The wetland creation area proposed for use in this compensation plan is approximately 3.53 acres. One piezometer was installed in this area in 2002, identified as monitoring well 11 (MW-11). Groundwater elevation data from the groundwater monitoring stations were collected monthly or bi-monthly between April 2002 and 2007 (then sporadically since 2007). Soil test pits conducted by Grondin, and the monitoring well installation log completed by Gillespie, indicate that soils in the proposed creation area are dominated by silt and sand with lenses of both fine-grained clay and course sand materials. Groundwater data have indicated a relatively stable trend, with groundwater fluctuations generally mirroring precipitation and snowmelt events (please see Figure 7 for a depiction of well data between December 2003 and March 2007). In January 2009, Gillespie installed 5 additional wells in this area. The purpose of these wells was to construct additional monitoring stations that would enable more accurate (or representative) evaluation of groundwater elevations, on this portion of the site, relative to its development as a created wetland. The readings serve as a comparison elevation for future measurements, and their absolute elevations will be available once Grondin provides elevational survey data for the wells (anticipated in February 2009).

Final elevation of the creation area (approximate) will be at 86 feet. The creation area has been designed to achieve a flow pattern that intercepts surface and ground water and allows it to flow through the site and to the drainage outfalls located at the eastern and southeastern sides of the creation area (an approximately level slope from northwest to southeast). Data indicate that excavation to finished grade in the wetland creation will intercept existing groundwater, causing discharge of groundwater to the finished ground surface. A riprap apron with a level-lip-spreader and a swale drainage outlet will be constructed at the southeastern end of the wetland creation area and a similar outlet will be constructed on the eastern side of the site. The outlets will be constructed slightly above the grade of the surrounding created wetland (approximately 6 inches) to slow the release of surface runoff to areas down slope of the new wetland and to prevent prolonged flooding in the creation area. The outlet will be lined with appropriately sized riprap (to be determined by the Project Engineer) and allowed to re-vegetate with volunteer species of woody and herbaceous vegetation.

General hydrology across the wetland creation area will vary from seasonally saturated to occasionally flooded. The riprap spillway outlet will be constructed at the average grade elevation in order to prevent prolonged flooding of any parts of the site. With hydrologic conditions sufficient to allow for various water regimes across the wetland creation area, designers have planned the wetland creation project to sustain varying degrees of saturation. Micro-topography and planting species types and densities will further define the habitats.

Figure 6: **Groundwater elevations for the monitoring wells on the Larrabee Farms site. MW-11 was installed adjacent to the proposed wetland creation area.**



E. Grading Plan

Across the bottom of the proposed 3.53-acre wetland creation area, the general grading plan is designed to shed excess surface water slowly through the wetland area and toward a riprap, overflow spillway-type outlet structure located at southeastern end of the site. The structure will include a rip rap-lined apron and a level-lip spreader overflow chamber, designed to slowly sheet-flow water into a former road ditch and current riprap swale into the adjacent upland forest. The creation area will consist of scrub-shrub and emergent wetlands. *A wetland scientist shall be on-site to monitor construction of the wetland mitigation area to ensure compliance with the mitigation plan.* The proposed grading is explained below.

PSS/EM Creation Area - The hydrology of the scrub-shrub/emergent wetland creation area will mimic that of natural scrub-shrub/emergent wetlands found within the proposed Jetport Project area and in this region of southern Maine. Much of the wetland impact from the proposed project is to a PSS/PEM wetland system. Consequently, project designers will seek to achieve a PSS/PEM covertype in this compensation plan. The PSS wetland type common within this area includes alder, willow, grey birch, and dogwood-dominated swamps that are saturated by groundwater throughout the spring of most years. Many of these scrub/shrub wetlands display low pit-and-mound microtopography, with wetter pits interspersed amongst drier mounded areas. Some of these pits are deep enough to hold surface water, at or just above groundwater elevation, for long periods

throughout the year. The created scrub-shrub/emergent wetland microtopography will mimic this hydrologic situation. The wetland creation area will be graded such that the overall top of soil elevation will be approximately at the seasonal high water table. Pit and mound microtopography will range from approximately 6 inches below average grade in the pits, to approximately 12 inches above the average grade on the mounds. Through the process of capillary fringe (adhesion of water to the poor spaces within the soil matrices,) effective saturation throughout the scrub-shrub/emergent area will be to the surface during periods of high water table. Because there will be some clearing of existing vegetation in this area for the purpose of mineral extraction prior to creation of the wetland area, some larger mounds may be left within the creation basin to support existing vegetation.

A graphic guide of the overall pit and mound relief that designers are seeking can be seen in Figures 8 and 8a, below. These figures are meant to provide a graphical representation of the overall goals of the micro-gradations, however, a Wetland Scientist will be onsite during grading and may request variations in the grades depending on site and soil conditions. Particular attention will be paid to creating broad transition zones between the wettest and driest portions of the site, and to leaving several knolls at an elevation high enough to protect some of the plants should the site experience flood events. Additional protection from flooding will be provided by the overflow spillways. These will be constructed approximately 6 inches foot above the prevailing grade of the wetland and will insure that flood waters never exceed this level. The spillway can be adjusted if necessary during subsequent monitoring years.

Slopes to Creation Area – As shown on the plan drawings in Appendix 8, the slopes of the proposed creation area will transition from the existing grade down a uniform elevation of approximately 86 feet (with bulldozed finished grade at approximately 85 feet, prior to installation of topsoil and final grades). The sideslopes will be shallow graded, where practical, to a slope of approximately 6 to 1. Some areas will have a steeper grade, in order to avoid pushing the limits of excavation into existing upland forest and to tie-in with the slopes of the surrounding landscape.

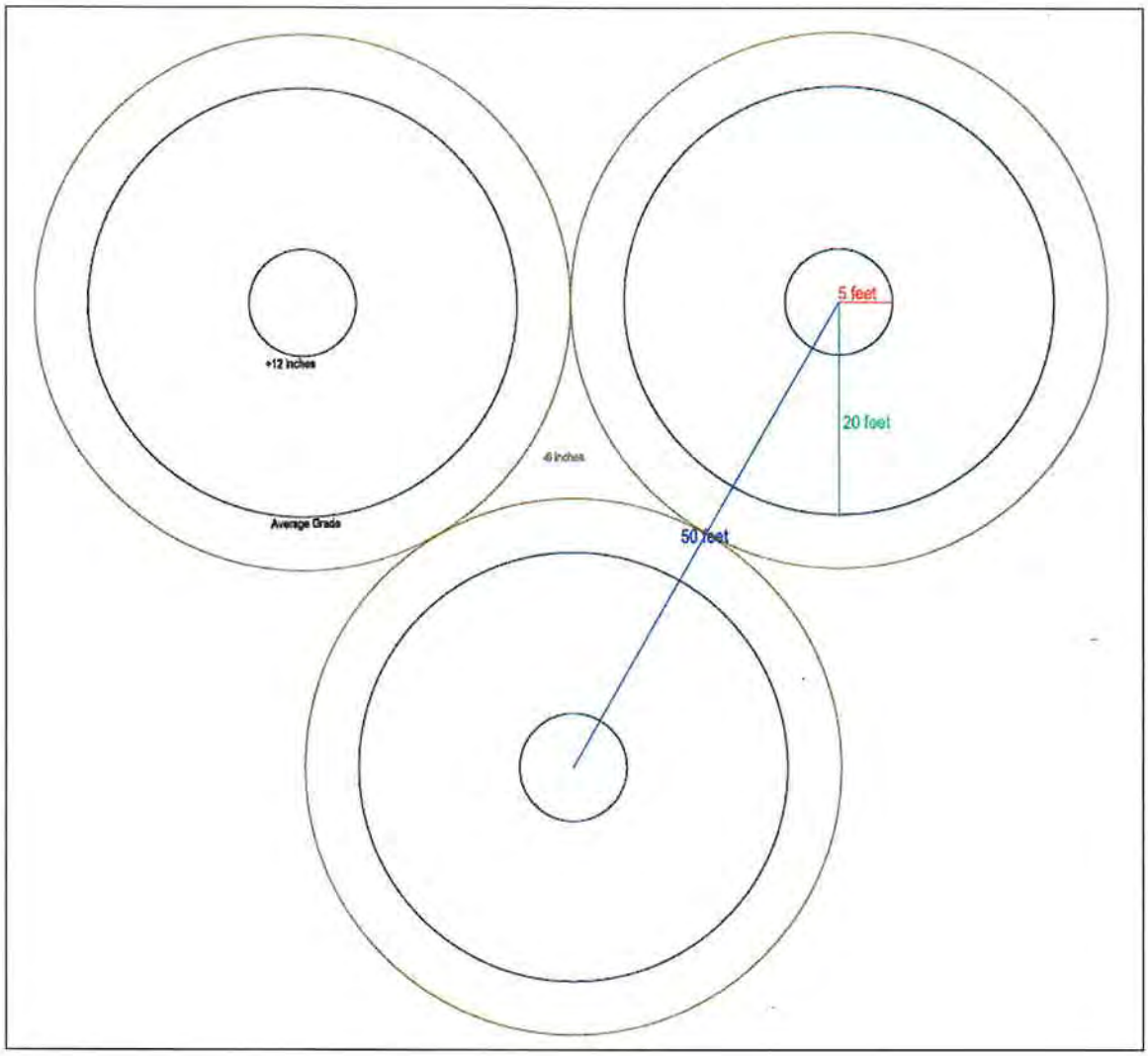


Figure 7. **Aerial view of typical/target pit and mound microtopography in PSS wetland creation area.**

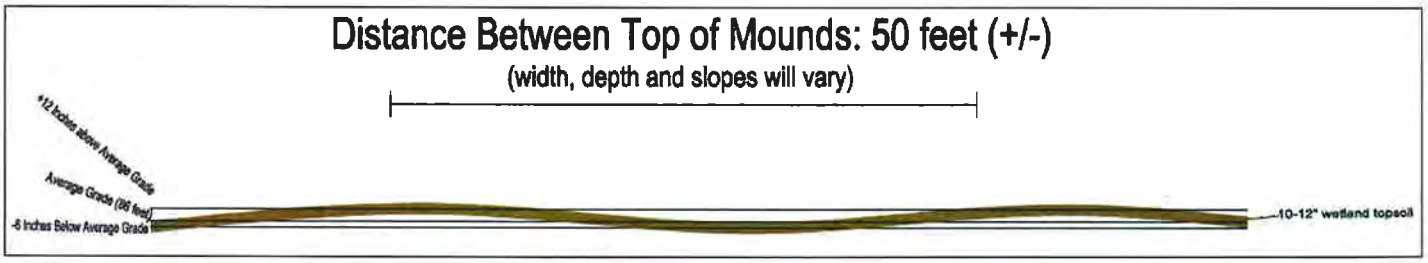


Figure 7a. **Cross-section of typical/target pit and mound microtopography in PSS/EM wetland creation area.**

F. Topsoil

Wetland Creation Areas
As with grading and planting, and as is the case in natural wetland systems, the organic carbon content of the soil will vary across the wetland creation sites. The percentages listed herein will be sought, on average, across the site.

Topsoil across the creation area will consist of a mixture of organic and mineral soil materials. At least 10 inches of augmented topsoil will be installed in all of the wetland creation areas. Because the proposed wetland creation area is currently occupied by an access road, the area has limited topsoil resources. Topsoil will be imported primarily from cleared forested sites in the area, and from piles that have been maintained and screened at Larrabee Farms. Topsoil will be augmented to achieve at least 10% organic carbon content by weight. Primary texture of the topsoil to be used on the site is sandy loam. Topsoil sources will be visually inspected by a Wetland Mitigation specialist prior to installation on creation areas in order to monitor the soil for the presence invasive weeds. Wetland creation areas will receive a mixture of topsoil with a carbon source. Grondin may use wetland topsoil from the impacted wetlands areas in the proposed project area, where appropriate, and when the source soils are known to be invasive species-free. Existing topsoil on the creation area is very thin, and if used, will be augmented with a carbon source.

Upland loam and topsoil augmentation will be from organic sources, and may include more than one source. Topsoil will be a mixture of one part municipal sludge compost to 6 parts stripped topsoil primarily from upland forests. Additional carbon sources may include commercially available compost mixtures, clean wetland and/or organic topsoil from permitted impacts on other projects or clean leaf compost. Note that "clean" refers both to the lack of physical contaminants such as plastic or construction debris and to the lack of chemical contaminants. Compost or other organic matter will be clean and free of weed seeds, specifically seeds of the species listed in Table J.1.

The following guidelines will be followed regarding soil storage onsite:
•Avoid stockpiling compost organics in piles over 4 feet in height;
•Protect stockpiles from surface water flow and contain them with haybales and/or silt fence;
•Cover stockpiles with a material that prevents erosion (tarps, erosion control mat, straw and temporary seed, depending on size and duration of storage)
•Inspect and repair protection measures listed above regularly (weekly), as well as prior to (to the extent possible) and after storm events.
•Maintain moisture in the soils during droughty periods.

Upland Slopes and Other Disturbance Areas
It is important to ensure quick stabilization of the upland slopes adjacent to the wetland creation areas in order to prevent erosion and siltation. Upland slopes will be rough graded to help slow surface flow and to avoid rill and gully erosion, as well as to maintain seed contact with the soil and prevent wind erosion. Topsoil will be added on the side slopes to a depth of approximately 4". On sandy and clay-material side slopes, like those found at the Larrabee Farms site, Grondin has had great success using a topsoil product, often referred to as 'rough loam,' to achieve quick stabilization and regrowth on poor soils and disturbance areas. The rough loam includes the first and second stage screening leftover from the procedure used to make screened loam. The topsoil resulting from this process includes small stones, and root materials that provide stability and coarseness to the soil, further helping to slow runoff velocity, to provide seeds with an organic carbon source and to help anchor the soil, seeds and mulch in place. After it is installed on the slopes and disturbance areas similar to traditional loam, the rough loam then receives an application of the upland seed mix and mulch.

G. Planting Plan

In order to mimic the scrub-shrub and emergent wetlands impacted by the proposed Jetport Project, a mix of shrubs will be included with the planting plan, and interspersed throughout the creation area. Native species were chosen based on several factors, including known suitability for wetland creation plantings, known ability to provide wildlife habitat, known ability to survive in a range of hydrologic and cover conditions, and availability. Woody plants will be installed as potted stock and bare root stock. Herbaceous species will be broadcast seeded across the creation areas and throughout the upland buffer areas on slopes and bare ground (as needed). The herbaceous seed mix was specifically designed for the creation site and formulated based on the knowledge of the wetland specialist and the nursery owner.

Woody Plantings
After returning the topsoil to the site and discing or grade-mixing compost (if necessary and as described in Topsoil section), pit and mound microtopography will be graded into the creation area basin. Pits and mounds will add topographic relief to the site and allow for planting survival of a diverse group of species. See Figure 8 for a depiction of the typical mounded topography. Please Figure 8b for a depiction of the typical planting goal.

In general, plants will be installed in groups and clumps, and depending on site conditions, spaced evenly across the site. A planting density of 600 plants per acre within the scrub-shrub covertype, will be achieved. Potted nursery stock and some bare root plantings, 18-36 inches tall will be used. All shrubs planted on the site will be mulched with a wood-fiber mulch (aged bark mulch or erosion control mix) to reduce competition from herbaceous vegetation. Mulch will be added to an average depth of three inches and to a radius of approximately 2-3 feet around plantings.

A qualified wetland professional will be on-site to monitor construction of the wetland mitigation area to ensure compliance with the mitigation plan. *During planting, the wetland professional may relocate up to 50 percent of the plants in each community type if as-built site conditions would pose an unreasonable threat to the survival of plantings installed according to the mitigation plan. The plantings shall be relocated to locations with suitable hydrology and soils and where appropriate structural context with other plantings can be maintained.*

TABLE G.1. **PSS Wetland Creation Planting List – potted nursery stock planted at a uniform density, at approximately 600 plants per acre {[(2.55 acres PSS – 4.0% area for dead and dying debris) * 600 plants/acre] = 1470}.**

Scientific Name	Common Name	Wetland Indicator Status	Quantity	Plant Height
Shrub Species				
Alnus incana (v. rugosa)	Speckled alder	FAC	420	18"
Salix discolor	Pussy Willow	FACW	300	2-3'
Ilex verticillata	Winterberry Holly	FACW	300	2-3'
Aronia melanocarpa	Black Chokeberry	FAC	175	2-3'
Cornus sericea	Red osier Dogwood	FACW	175	2-3'
Vaccinium corymbosum	Highbush Blueberry	FACW	100	2-3'
		Total	**1470**	

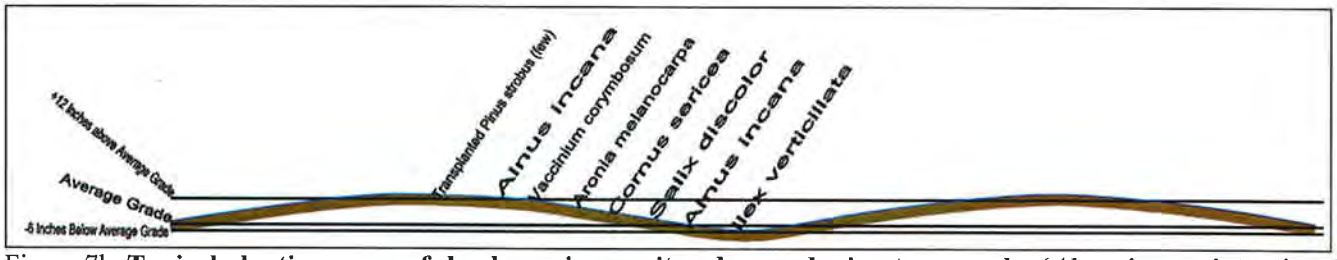


Figure 7b. **Typical planting array of shrub species on pit and mound microtopography (*Alnus incana* intentionally shown planted at both higher and lower elevations).**

Seeding

Following installation of the woody plants, exposed soils will be seeded and mulched to provide soil stabilization and to promote the growth of native herbaceous plants. Across the wetland creation sites, a native wetland seed mixture will be applied at a rate of 18 lbs/acre (see table G.2. for species included - *species not specified in the mitigation plan shall not be used without prior written approval from ACOE*). Straw mulch will be applied at a rate of 70-90 lbs. (about 2 bales)/1,000 square feet. To reduce the immediate threat and minimize the long-term potential of degradation, the species included on the invasive plant species list in Table 4 of the New England District Mitigation Plan Guidance shall not be included as planting stock in the overall project (Table J.1., herein). Only plant materials native and indigenous to the region shall be used. In lieu of broadcast hand seeding and straw mulch, the same seed mix may be applied via hydroseeding using a wood-fiber mulch and tackifier.

Table G.2. **Wetland Creation Seeding Species List: to be applied at a rate of 18 lbs/acre – seed mix may vary from this list – Grondin will request written permission from the Corps if additional or different species are proposed. Straw mulch will be applied at a rate of 70-90 lbs. (about 2 bales)/1,000 square feet.**

Common Name	Scientific Name	Wetland Indicator Status
Mud Plantain	*Alisma plantago-aquatica*	OBL
Swamp milkweed	*Asclepias incarnata*	OBL
New York Aster	*Aster novi-belgii*	FACW+
Nodding Bur-marigold	*Bidens cernua*	OBL
Bristly/Cosmos Sedge	*Carex comosa*	OBL
Fringed Sedge (Nodding)	*Carex crinita*	OBL
Hop Sedge	*Carex lupulina*	OBL
Lurid Sedge (Shallow)	*Carex lurida*	OBL
Blunt Broom Sedge	*Carex scoparia*	FACW
Fox Sedge	*Carex vulpinoidea*	OBL
Spotted Joe Pye weed	*Eupatorium maculatum*	FACW
Boneset	*Eupatorium perfoliatum*	FACW+
Rattlesnake Grass	*Glyceria canadensis*	OBL
Fowl Mannagrass	*Glyceria striata*	OBL
Soft Rush	*Juncus effusus*	FACW+
Square Stemmed Monkey Flower	*Mimulus ringens*	OBL
Sensitive Fern	*Onoclea sensibilis*	FACW
Green Bulrush	*Scirpus atrovirens*	OBL
Wool Grass	*Scirpus cyperinus*	FACW+
Soft-Stem Bulrush	*Shoenoplectus tabernaemontani* (ex- *S. validus*)	OBL
Blue Vervain	*Verbena hastata*	FACW+

Created Upland Slopes and Disturbance Areas

Upland buffers and slopes created during wetland creation will be stabilized and broadcast seeded with native, herbaceous, upland vegetation. Created and disturbed slopes around the wetland creation area will be broadcast seeded with herbaceous vegetation to provide habitat for small mammals, birds and insects, and to provide wildlife habitat between the created wetlands and the adjacent upland forested areas. Upland buffers that have not been disturbed will be left in their current state, ranging from upland fields to shrub and forest uplands and wetlands. Disturbed slopes adjacent to the wetland creation areas will be temporarily stabilized using a commercially available rolled erosion control product, or RECP, as needed (Tenax or curlex netting, coconut fiber mat, etc). Prior to applying the RECP, slopes will have at least 4" of loam or topsoil product added and will be seeded with a native upland seed mix. Fertilizer and lime will be added to ensure quick vegetation growth, as necessary. Please see Table G.3. for seeding and fertilizer rates for disturbed upland areas.

Previously Disturbed Upland Buffer Areas

The area will be seeded with upland herbaceous vegetation seed mix as described in Table G.3.

Table G.3. **Upland area seeding and fertilizer[1] application rates.**

Item:	Application Rate:
10-20-20 Fertilizer (N-P205-K20 or equal)	18 lbs/1,000 sq. ft.
Ground limestone (50% Ca & MgOH)	138 lbs/1,000 sq. ft.
Upland seed mix[2]	3-lbs/1,000 sq. ft

[2] Fertilizer and limestone application rates may vary or not be required at all depending on site characteristics – soil tests will be performed to determine the appropriate requirements prior to applying seed.

[1] Seed mixture shall be comprised of a mixture designed to provide quick cover and a lasting seed base for wildlife food sources. The following list represents a sample mixture: creeping red fescue (*Festuca rubra*), annual rye-grass (*Lolium multiflorum*), timothy (*Phleum pratense*), white clover (*Trifolium repens*), red top (*Agrostis alba*), little bluestem (*Schizachyrium scoparium*), indian grass (*Sorgastrum nutans*). **The seed mix shall be free of the invasive and nuisance weeds listed in Table J.1.**

H. Coarse Woody Debris and Other Features

A supply of dead and dying woody debris and other structural items such as snags, logs, branches, stumps, and boulders shall cover at least 4% of the ground throughout the creation area (approximately 6,185 sq. ft.). For the purposes of this plan, the term 'coarse woody debris and other features' includes such materials as logs, stumps, smaller branches, rocks, and standing snags. These materials will not include species shown on the list of invasive species in Table J.1. As much as possible, these materials will be in various stages of decomposition and salvaged from areas within the Larrabee Farms Wetland Mitigation Project site (from road construction, pit creation and development, and as found within several of the disturbed upland areas onsite). **None of these materials will be removed from wetlands within the preservation areas, except as necessary for trail creation and design. No further stumping or grubbing will occur in the preservation areas except that which has occurred for wetland creation.** During site grading and planting, these non-living features will be installed randomly throughout the wetland creation areas to provide habitat and to mimic similar, natural environments. Additionally, some living, upland trees found around the wetland creation area will be left in place to provide habitat and eventually, standing dead and dying debris.

I. Erosion Control

A. Pre-construction Phase – roads and uplands adjacent to creation areas
Prior to beginning the wetland creation area and associated road construction, silt fence, staked haybales or erosion control mix sediment barriers will be installed across the slope(s), on the contour, at or just below the limits of clearing or grubbing, and/or just above any watercourse to protect against construction related erosion. The placement of sediment barriers shall be completed in accordance with guidelines established in the guidebook *Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices* and in accordance with this erosion control plan. This network is to be maintained by the contractor until all exposed slopes have at least 85%-90% vigorous perennial vegetative cover to prevent erosion.

B. Construction and Post-Construction Phase– roads and uplands adjacent to creation areas
1a.) Areas undergoing actual construction shall only expose that amount of mineral soil necessary for progressive and efficient construction and shall not be left exposed longer than 14 days. Areas that will not be completed (covered and/or finish graded) within fourteen days of disturbance shall be anchored with temporary erosion control measures. Temporary erosion control measures shall include erosion control mesh, netting, or mulch as directed by the project designer/manager. If mulch is used, straw shall be applied at the rate of 2 bales

per 1,000 square feet. The application area shall be covered with enough mulch to avoid any visible soil exposure. Mulch shall be kept moist or otherwise anchored to avoid loss due to wind. Mulch and netting shall be applied in the base of all grassed waterways (i.e. roadway ditches) and in slopes that exceed 15%.

1b.) If disturbed areas do not receive final seeding by November 1st of the year of construction, then all disturbed areas shall be seeded with a winter cover crop of winter rye at the rate of 3 lbs/1,000 sq. ft. to provide winter protection. Winter seeding shall be covered with twice the normal application rate of straw mulch.

1c.) During winter conditions, areas that will not be completed (covered and/or finish graded) within seven days of disturbance shall be anchored with temporary erosion control measures. Temporary erosion control shall include erosion control mesh, netting or mulch as directed by the inspecting engineer and as shown on the design plans. If mulch is used, straw mulch shall be applied. The application area shall be sufficiently covered with enough mulch to avoid any visible soil exposure.

2.) All topsoil shall be collected, stockpiled, seeded with rye at 3-lbs/1,000 sq. ft. and mulched, and re-used as required. An erosion control barrier shall be installed down gradient from any stockpiled loam; loam shall be stockpiled at locations designated by the owner and/or inspecting engineer.

3.) All silt fences and other erosion control measures shall be installed according to this plan. These shall be maintained during development to remove sediment from runoff water. All the silt fences and erosion control measures shall be inspected before and after any rainfall or runoff event, and maintained and cleaned until all areas have at least 85%-90% vigorous perennial vegetative cover of grasses.

4.) Roadway areas on the site shall be periodically swept or washed to avoid tracking of mud, dust or debris from the construction area. Dust control during construction shall be achieved by the use of a soil binding agent and/or water applied to the roadway areas as necessary to reduce dust during the dry months.

5.) All area shall be seeded and stabilized in accordance with the following vegetation plan.

C. Vegetation plan - roads and uplands adjacent to creation areas

Re-vegetation measures shall commence immediately upon completion of the installation of the wetland vegetation in the creation area. Disturbed areas adjacent to wetland creation areas shall also be mulched and anchored prior to any storm event (in this context, 'adjacent' means within 100 linear feet). If final seeding cannot be accomplished by November 1st, then all disturbed areas shall be seeded with a cover crop of winter rye at the rate of 3-lbs/1,000 sq. ft. to provide winter protection, and mulched at a rate of 140-180 lbs. of straw (about 4 bales)/1,000 square feet. Seeded and mulched areas on slopes greater than 1.5:1 shall be covered with erosion control mesh that is properly anchored in place.

Permanent re-vegetation measures in upland areas shall consist of the following:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface. Loam shall be free of subsoil, clay lumps, stones and other objects over 3" in diameter, and without weeds or other objectionable material.

2. Soil amendments may be applied as follows:

Item:	Application Rate:
10-20-20 Fertilizer (N-P205-K20 or equal)	18.4 lbs/1,000 sq. ft.
Ground limestone (50% Ca & MgOH)	138 lbs/1,000 sq. ft.

3. Following seedbed preparation, swale areas, disturbance areas and side slopes shall be seeded at a rate of 3-lbs/1,000 sq. ft. with a upland seed mix that is certified free of any nuisance and invasive species listed in Table J.1.

4. Erosion control mesh shall be applied in accordance with the plans over all finish-seeded areas as specified in the designs.

5. All hay bale, silt fence or erosion control mix sedimentation barriers will remain in place until seeding has become 85%-90% established and then removed within 1 year.

J. Invasive and Noxious Species

J.1. Risk Section

During the first few years, while the designed wetland vegetative zones become established, they are susceptible to colonization and subsequent domination by invasive species. A number of plants are known to be especially troublesome in this regard. Table J.1. provides a list of invasive and nuisance weeds for which care will be taken to avoid importing in any manner or number to the compensation site.

Table J.1. **Invasive and other Unacceptable Plant Species (adapted from Table 4, *U.S. Army Corps of Engineers New England District, Guidance for Mitigation Plan Checklist, 06/15/2004*)**

A. Herbaceous Plants [1]	
Scientific Name	**Common Name**
Aegopodium podagraria	Goutweed or Bishop's weed
Aira caryophyllea	Silver hairgrass
Alliaria petiolata	Garlic mustard
Allium vineale	Field garlic
Ampelopsis brevipedunculata	Porcelain berry
Anthoxanthum odoratum	Sweet vernal grass
Anthriscus sylvestris	Chervil
Arctium minus	Common burdock
Asparagus officinalis	Asparagus
Barbarea vulgaris	Yellow rocket
Bromus tectorum	Drooping brome-grass
Butomus umbellatus	Flowering rush
Cabomba caroliniana	Fanwort
Callitriche stagnalis	Water-starwort
Calystegia sepium	Japanese bindweed
Cardamine impatiens	Bushy rock-cress
Cardamine pratensis	Cuckoo-flower
Carex kobomugi	Japanese sedge
Centaurea biebersteinii	Spotted knapweed
Chelidonium majus	Celandine
Cirsium arvense	Canada-thistle
Cirsium palustre	Marsh thistle

Commelina communis	Asiatic day-flower
Coronilla varia	Crown vetch
Cyperus esculentus	Yellow nutsedge
Dactylis glomerata	Orchard-grass
Datura stramonium	Jimsonweed
Echinochloa crusgalli	Barnyard grass
Egeria densa	Giant waterweed
Eichhornia crassipes	Water hyacinth
Eleusine indica	Goosegrass
Elsholtzia ciliata	Elsholtzia
Elytrigia repens	Quack-grass
Epilobium hirsutum	Hairy willow-herb
Euphorbia cyparissias	Cypress spurge
Euphorbia esula	Leafy spurge
Festuca filiformia	Hair fescue
Festuca ovina	Sheep fescue
Froelichia gracilis	Slender snake cotton
Geranium nepalense (G. sibericum)	Nepalese crane's-bill
Geranium thunbergii	Thunberg's geranium
Glaucium flavum	Sea- or horned poppy
Glechoma hederacea	Gill-over-the-ground
Glyceria maxima	Sweet reedgrass
Hemerocallis fulva	Tiger-lily
Heracleum mantegazzianum	Giant hogweed
Hesperis matronalis	Dame's rocket
Hydrilla verticillata	Hydrilla
Hydrocharis morsus-ranae	European frog-bit
Hylotelephium telephium (Sedum telephium)	Live-forever or Orpine
Hypericum perforatum	St. John's wort
Impatiens glandulifera	Ornamental jewelweed
Iris pseudacorus	Yellow iris
Kochia scoparia	Summer cypress
Lamium spp. (all)	Dead nettle
Lepidium latifolium	Tall pepperwort
Lotus corniculatus	Birdsfoot trefoil
Lysimachia nummularia	Moneywort
Lysimachia vulgaris	Garden loosestrife
Lythrum salicaria	Purple loosestrife
Malva neglecta	Cheeses or common malva
Marsilea quadrifolia	Water shamrock or water clover
Mentha arvensis	Field-mint
Microstegium vimineum	Japanese stilt-grass
Miscanthus sinensis	Eulalia
Myosotis scorpioides	True forget-me-not
Myosoton aquaticum	Giant chickweed
Myriophyllum aquaticum	Parrot feather
Myriophyllum heterophyllum	Variable water-milfoil
Myriophyllum spicatum	Eurasian water-milfoil
Najas minor	Lesser naiad
Nymphoides peltata	Yellow floating heart
Ornithogalum umbellatum	Star of Bethlehem
Pastinaca sativa	Wild parsnip
Phalaris arundinacea	Reed canary-grass

Phragmites australis	Reed grass, Phragmites
Poa compressa	Canada bluegrass
Poa pratensis	Kentucky bluegrass
Poa trivialis	Rough bluegrass
Polygonum aubertii	Silver lace-vine
Polygonum cespitosum	Cespitose knotweed
Polygonum cuspidatum	Japanese knotweed
Polygonum perfoliatum	Mile-a-minute vine
Polygonum persicaria	Lady's thumb
Polygonum sachalinense	Giant knotweed
Potamogeton crispus	Curly pondweed
Puccinellia maritima	Seaside alkali-grass
Pueraria montana	Kudzu
Ranunculus ficaria	Lesser celandine
Ranunculus repens	Creeping buttercup
Rorippa microphylla	One-row yellow cress
Rorippa nasturtium-aquaticum	Watercress
Rorippa sylvestris	Creeping yellow cress
Rumex acetosella	Sheep-sorrel
Rumex obtusifolius	Bitter dock
Salvinia molesta	Salvinia
Senecio jacobaea	Tansy ragwort
Setaria pumila (S.lutescens, S. glauca)	Yellow foxtail or y. bristlegrass
Silphium perfoliatum	Cup plant
Solanum dulcamara	Bittersweet nightshade
Stellaria graminea	Common stitchwort
Tanacetum vulgare	Tansy
Thymus pulegioides	Wild thyme
Trapa natans	Water-chestnut
Tussilago farfara	Coltsfoot
Typha latifolia [2]	Common or Broad-leaved cattail
Typha angustifolia [4]	Narrow-leaved cattail
Valeriana officinalis	Garden heliotrope
Verbascum thapsus	Common mullein
Veronica beccabunga	European speedwell
Vincetoxicum rossicum (V. nigrum)	Black swallow-wort
Xanthium strumarium	Common cocklebur
b. Woody Plants:	
Acer ginnala	Amur maple
Acer platanoides	Norway maple
Acer pseudoplatanus	Sycamore maple
Actinidia arguta	Kiwi vine
Ailanthus altissima	Tree-of-heaven
Berberis thunbergii	Japanese barberry
Berberis vulgaris	Common barberry
Catalpa speciosa	Western catalpa
Celastrus orbiculatus	Oriental bittersweet
Cynanchum louiseae	Black swallow-wort
Cytisis scoparius	Scotch broom
Elaeagnus angustifolia	Russian olive
Elaeagnus umbellata	Autumn olive
Euonymus alata	Winged euonymus
Euonymus fortunei	Climbing euonymus

Humulus japonicus	Japanese hops
Hypericum prolificum	Shrubby St. John's Wort
Ligustrum obtusifolium	Japanese privet
Ligustrum vulgare	Common/hedge privet
Lonicera japonica	Japanese honeysuckle
Lonicera maackii	Amur honeysuckle
Lonicera morrowii	Morrow's honeysuckle
Lonicera tartarica	Tatarian honeysuckle
Lonicera x bella	Morrow's X Tatarian honeysuckle
Lonicera xylosteum	European fly-honeysuckle
Morus alba	White mulberry
Paulownia tomentosa	Princess tree or empress tree
Phellodendron japonicum	Corktree
Populus alba	Silver poplar
Rhamnus cathartica	Common buckthorn
Rhamnus frangula	European buckthorn
Ribes sativum	Garden red currant
Robinia pseudoacacia	Black locust
Rosa multiflora	Multiflora rose
Rosa rugosa	Rugosa rose
Rubus phoenicolasius	Wineberry
Salix purpurea [3]	Basket or purple-osier willow
Sorbus aucuparia	European mountain-ash
Taxus cuspidata	Japanese yew
Ulmus pumila	Siberian elm
Wisteria floribunda	Wisteria

1 Scientific names are those used in Gleason, Henry and A. Cronquist, 1991, *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*: Second Edition, The New York Botanical Garden: New York
2 *Typha* spp. are native species which provide good water quality renovation and other functions/values. However, they are aggressive colonizers which, given the opportunity, will preclude establishment of other native species. They are included in this list as species not to be planted, not because they are undesirable in an established wetland, but to provide opportunities for other species to become established. It is likely they will eventually move in without human assistance.
3 This is not appropriate for use in wetland mitigation. In some circumstances, it may be appropriate in stream bank stabilization.

The risk of invasion from species brought into the site from adjacent areas is limited due to isolated, protected nature of site. The property is surrounded by a forested buffer, and most development within an approximately 1-mile radius of the property is residential. Because the site is relatively isolated from roadways, commercial areas or other common avenues of invasive species colonization, we are confident that given proper and rigorous control methodologies, invasive species can be controlled within the wetland mitigation area. The main threat posed by invasive plants to the project is from the species and individuals currently found onsite. Found mostly in the hayed field portions of the property on the western side of the project area, the following invasive species have been documented: autumn and Russian olive (*Elaeagnus umbellata/angustifolia)*, black locust (*Robinia pseudoacacia)*, common reed (*Phragmites australis)*, honeysuckle (Lonicera spp.), Rose species, Asiatic bittersweet (*Celastrus orbiculata*), and buckthorn (Rhamnus spp.). While not traditionally thought of as invasive, canary reedgrass (*Phalaris arundinacea)* and broad-leaved cattail (*Typha latifolia)* are also found in existing wetland areas on the property. Another potential source of invasive species is the soil, seeds, mulch, and other site augmentations that are installed on the property.

J.2. Constraints

Overall and common landscape level concerns with mitigation sites, such as erosion controls, soil makeup, subsoil removal, grading, hydrology, local zoning, trucking expense, access, and abutters concerns have been allayed by Grondin through four years of planning and permitting the Larrabee Farms site. The goal of

invasive species control across the mitigation site will be achieved through the use of an integrated pest management (IPM) plan that includes a combination of hand-pulling, mechanical control, chemical control, and, if appropriate, biological control methodologies. One constraint of this plan includes maintaining adherence to the rules administered by the Maine Board of Pesticide Control (MBPC). If chemical control methods are required to maintain control, the project designers will acquire the services of a Master Pesticide Applicator, licensed to apply pesticides in the State of Maine. The other constraint of this plan includes following the rules administered by the U.S. Department of Agriculture for release of the species used in biological control techniques. Typically, however, biological control methodologies are only appropriate in sites with significant infestations of invasive species and we plan to avoid a strong infestation by utilizing the more traditional methods of IPM.

J.3. Invasive Species Control Plan

Because many of the invasive species found near the wetland creation area are already well established in southern Maine, the goal will be to control the invasive species within the wetland creation area. Eventually, the plan provides that the native and planted wetland vegetation will provide sufficient competition. Furthermore, the planned hydrology of the wetland creation area will be sufficient to reduce the chance for colonization by upland invasive plants. Wetland invasive species will be controlled before, during and after the mitigation project is constructed. During each successive monitoring period, invasive species found in or adjacent to the wetland creation area will be destroyed. The combination of hand removal prior to disturbance, addition of organic matter, seeding with native herbs, weed blocking around new plantings, and shading from the planted shrub and tree species will help control wetland invasive species. Furthermore, care will be taken to avoid importing invasive species onto the site during construction activities. The wetland mitigation specialist will visually inspect soil, seed, organic materials, and mulch sources prior to their use on the site to ensure that clean materials are being installed. After construction, and during successive monitoring periods, invasive species invasions will be documented and attempts will be made to keep invasive species from colonizing the creation area.

Depending on the severity of an invasion, an integrated pest management (IPM) plan to include hand-pulling of individual plants, cutting of vines and runners, mowing, flaming, and/or spot and swab application of glyphosate herbicide (Roundup® or Rodeo®) will be considered for use singly or in combination. Herbicide use, if necessary, will be done in accordance with guidance provided by the MDEP regarding herbicide use in wetlands, and rules administered by the Maine Board of Pesticide Control. Additionally, biological control methods, such as a release of *Galerucella* beatles for purple loosestrife control, may be considered if specific species control is needed. Any biological control methods will be administered following the guidelines of the Department of Agriculture.

K. Off-Road Vehicle Use

K.1. Usage in the Vicinity of Larrabee Farms

There are several active ORV trails that course through the Larrabee Farms site. These are currently not in use, as Grondin is actively mining the site and has put up permanent fencing and signage requesting no trespassing. There are a few known trails that access the Larrabee site from other areas, including foot paths from the adjacent church property and ORV, hiking and hunting trails from abutting landowners' properties. During the winter of 2007/2008, Grondin installed several signs describing the purpose of the site and requesting that no vehicular traffic trespass within the basins of the wetland creation areas. Grondin will continue to monitor ATV use around Larrabee Farms and prohibit access.

K.2. ORV Control Plan

ORV's will be kept out of the wetland creation areas by a combination of signage, blocked access and maintenance of existing trails around and away from creation areas. Grondin has a long history of working with local recreational groups, such as ATV clubs, and will work with local organizations and abutting landowners to prevent resource impacts at the site. Signage at the site will describe the mitigation site's purpose and design. Signage will clearly detail the repercussions of causing impacts to any of the non-designated trail areas on the property including prohibition of further entrance, fines and criminal charges. Roads and trails created during construction and for maintenance and restoration of the creation sites will be blocked using a combination of gates, boulders, brush, and debris piles.

L. Protection and Long-Term Stewardship

L.1. Adequate buffers

The Larrabee Farms project includes adequate buffers to protect the ecological integrity of the wetland compensation projects. The wetland creation area is preserved within large and diverse preservation parcels that includes at least 100-foot buffers between excavation work and the abutting properties. The mitigation project is further buffeted from outside impacts by the presence of the Nonesuch River on the south and by its distance from the nearest roads or commercial developments. The proposed Jetport Project is buffered by a proposed conservation easement to be placed around the entire creation area, eventually to be included within the overall Larrabee Project's preservation.

L.2. Internal Wetlands Protected

Not applicable – no development associated within mitigation parcel.

L.3. Preservation Language

Compensatory mitigation sites and buffers to be set aside for conservation shall be protected in perpetuity from future development. On-site unimpacted wetlands to be protected via deed restriction. Please see the draft Deed of Conservation Easement in Appendix 9 – this is the proposed model easement that will be followed for all mitigation projects conducted at the Larrabee Farms site. *Within 90 days of the date the NRPA and/or DOA permit is issued (whichever is latest), Grondin shall submit to the Corps of Engineers a final draft of the conservation easement. Within 30 days of the date ACOE approves this draft document in writing, Grondin shall execute and record it with the Registry of Deeds for the Town of Scarborough and the State of Maine. A copy of the executed and recorded document must then be sent to the Corps of Engineers and Maine MDEP within 90 days of the date it was recorded. The conservation easement or deed restriction shall enable the site or sites to be protected in perpetuity from any future development. For preservation as part of compensation, the conservation easement or deed restriction shall expressly allow for the creation, restoration, remediation and monitoring activities required by this permit on the site or sites. It shall prohibit all other filling, clearing and other disturbances (including vehicle access) on these sites except for activities explicitly authorized by the Corps of Engineers in these approved documents.*

L.4. Preservation Site Plans

Site plans are included in Appendix 8.

L.5. Legal Instrumentation

Please see the attached draft of Deed of Conservation Easement in Appendix 9.

L.6. Acceptance by Receiving Agency

The Town of Scarborough shall be the grantee of the conservation easement as they were for the Cabela's site. Currently, the DOT holds their own CE for the Gorham Bypass mitigation site but plan to grant that to the Town upon completion of all Larrabee projects.

M. Mitigation Monitoring Plan

M.1. Performance Standards

The wetland creation areas will be monitored pursuant to the guidelines included below, as adapted from the New England District Mitigation Guidance For New England District Mitigation Plan Checklist, 1/12/2007 Version. The wetland creation and buffer areas will be assessed once annually during the summer growing season (May-October) for at least 10 years. Monitoring will take place twice per season during the first through fifth years following planting. One visit will take place in the spring, and will include a general site walk and assessment of general site health, an assessment of any winter damage and in order to determine any correction needs. A second visit will take place between June and October to assess plant mortality/vitality and to gather data for the annual monitoring reports. The data gathering and reporting procedure will then take place once during the first through fifth years, and during the 7th and 10th year, if necessary, following construction.

The success of the mitigation will be evaluated at the end of year 5 to determine if additional corrective measures are necessary. Provided the site meets the success criteria listed below, the fifth year will be the final monitoring year during which full reports are provided. Two additional site visits will be made, once during the 7th and once during the 10th year following construction. Truncated reports will be provided during these years, including general information on site health and photographs. If the site experiences failure, as measured by non-attainment of any of the success standards discussed below, or if it is clear that the objectives of the compensation area have not been met, the monitoring period will be extended upon consultation with ACOE and MDEP.

Notification of Construction Completion

Within 60 days of completing a mitigation project that includes restoration, creation, and/or enhancement, Grondin Wetlands, LLC will submit a signed letter to ACOE and MDEP specifying the date of completion of the mitigation work. If mitigation construction is initiated in, or continues throughout the year, but is not completed by prior to the completion of the proposed Jetport Project, Grondin Wetlands, LLC will provide ACOE, Policy Analysis and Technical Support Branch, a letter providing the date mitigation work began and the work completed up to that point.

M.2. Monitoring Methods and Reporting

For at least each of the first 5, and during the 7th and 10th full growing seasons following construction of the mitigation sites, the sites shall be monitored and annual monitoring reports submitted. During the first 5 years following construction, observations will occur at least two times during the growing season – in late spring/early summer and again in late summer/early fall. Each annual monitoring report shall be submitted to ACOE and MDEP, no later than December 15 of the year being monitored. Failure to perform the monitoring and submit monitoring reports constitutes permit non-compliance. A self-certification form will be completed, and signed as the transmittal of each annual monitoring report and shall indicate the permit number and the report number (monitoring report 1 of 5, for example). The reports shall answer the following success-standard questions in the summary data section and shall address the additional items listed after the questions, in the appropriate section. The reports shall also include the monitoring-report appendices listed below. The first year of monitoring shall be the first year that the site has been through a full growing season after completion of construction and planting. For these special conditions, a growing season starts no later than May 31. However, if there are problems that need to be addressed and if the measures to correct them require prior approval from

ACOE and/or MDEP, the permittee shall contact ACOE and MDEP as soon as the need for corrective action is discovered.

Remedial measures will be implemented - at least two years prior to the completion of the monitoring period - to attain the success standards described below within three growing seasons after completion of construction of the mitigation site. Should measures be required within two years of the end of the monitoring period, the monitoring period will be extended to ensure two years of monitoring after the remedial work is completed. Measures requiring earth movement or changes in hydrology will not be implemented without written approval from the Corps.

Success Standards

1) Is the proposed hydrology met at the site? What percentage of the site is meeting projected hydrology levels. Areas that are too wet or too dry should be identified along with suggested corrective measures.

2) Is the proposed vegetation standard met? At least 600 shrubs per acre, that are healthy and vigorous and are at least 18" tall in 75% of each planned woody zone AND at least the following number of non-exotic species including planted and volunteer species:

# species planted minimum (volunteer and planted)	# species required
2	2
3	3
4	3
5	4
6	4
7	5
8	5
9 or more	6
To count a species, it should be well represented on the site (e.g., at least 50 individuals of that species per acre).	

Given the size of the mitigation area and the number of proposed woody plantings, total inventory is not feasible. Therefore, woody densities will be determined by quadrats established in the created wetland community. Quadrats will be permanently monunented in the field, and GPS located. From the data collected, an overall assessment of the plant mortality will be extrapolated, summarized and reported.

3) Does each mitigation site have at least 80% aerial cover, excluding planned open water areas, by noninvasive species (See Table J.1)? Do planned emergent areas on each mitigation site have at least 80% cover by noninvasive hydrophytes? Do planned shrub and forested cover types have at least 60% cover by noninvasive hydrophytes, of which at least 15% are woody species? For the purpose of this success standard, invasive species of hydrophytes are: cattails (*Typha latifolia, Typha angustifolia, Typha glauca)*; common reed (*Phragmites australis)*; purple loosestrife (*Lythrum salicaria)*; reed canary grass (*Phalaris arundinacea)*; and buckthorn (*Rhamnus spp.)*.

4) Are common reed (*Phragmites australis*), purple loosestrife *(Lythrum salicaria*), Russian and autumn olive (*Elaeagnus* spp.), buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), and/or multiflora rose (*Rosa multiflora*) plants at the mitigation site(s) being controlled?

5) Are all slopes, soils and substrates within and adjacent to the mitigation site(s) stabilized?

Monitoring Report Requirements

Project Overview

- Highlighted summary of problems that need immediate attention (e.g., problem with hydrology, severe invasive problem, serious erosion, major losses from herbivory, etc.). This should be at the beginning of the report and highlighted in the project overview and in the self-certification form.

Requirements

- A copy of this permit's mitigation special conditions and summary of the mitigation goals.

Summary Data

- Address success standard questions (above).
- Describe the monitoring inspections that occurred since the last report.
- Soils data, commensurate with the requirements of the soils portion of the 1987 Corps Delineation Manual (Technical Report Y-87-1) New England District data form, should be collected after construction and every alternate year throughout the monitoring period. If monitoring wells or gauges were installed as part of the project, this hydrology data should be submitted annually.
- Concisely describe remedial actions done during the monitoring year to meet the five success standards – actions such as removing debris, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.
- Report the status of all erosion control measures on the compensation site(s). Are they in place and functioning? If temporary measures are no longer needed, have they been removed?
- Give visual estimates of (1) percent vegetative cover for each mitigation site and (2) percent cover of the invasive species listed under Success Standard No. 2, above, in each mitigation site.
- What fish and wildlife use the site(s) and what do they use it for (nesting, feeding, shelter, etc.)?
- By species planted, describe the general health and vigor of the surviving plants, the prognosis for their future survival and a diagnosis of the cause(s) of morbidity or mortality.

Conclusions

- What remedial measures are recommended to achieve or maintain achievement of the five success standards and otherwise improve the extent to which the mitigation site(s) replace the functions and values lost because of project impacts?

Monitoring Report Appendices

Appendix A An as-built plan showing topography to 1-foot contours, any inlet/outlet structures and the location and extent of the designed plant community types (e.g., shrub swamp). Within each community type the plan shall show the species planted—but it is not necessary to illustrate the precise location of each individual plant. This should be included in the first monitoring report unless there are grading modifications or additional plantings of different species in subsequent years.

Appendix B A vegetative species list of volunteer species in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.

Appendix C Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.

N. Assessment Plan

A post-construction assessment of the condition of the mitigation sites shall be performed following the fifth growing season after completion of the mitigation sites construction, or by the end of the monitoring period, whichever is later. "Growing season" in this context begins no later than May 31st. To ensure objectivity, the persons who prepared the annual monitoring reports shall not perform this assessment without written approval from the MDEP and Corps. The assessment report shall be submitted to the MDEP and Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

The post-construction assessment shall include the four assessment appendices listed below and shall:

- summarize the original or modified mitigation goals and discuss the level of attainment of these goals at each mitigation site (including vernal pool creation);
- describe significant problems and solutions during construction and maintenance (monitoring) of the mitigation sites;
- identify agency procedures or policies that encumbered implementation of the mitigation plan. Specifically note procedures or policies that contributed to less success or less effectiveness than anticipated in the mitigation plan;
- recommend measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

Assessment Appendices:

Appendix A Summary of the results of a functions and values assessment of the mitigation sites, using the same methodology used to determine the functions and values of the impacted wetlands.

Appendix B Calculation of the area of wetlands in each mitigation site using the 1987 Corps Wetlands Delineation Manual. Supporting documents shall include:

(1) a scaled drawing showing the wetland boundaries and representative transects, and
(2) datasheets for corresponding data points along each transect.

Appendix C Comparison of the area and extent of delineated constructed wetlands (from Appendix B) with the area and extent of created wetlands proposed in the mitigation plan. This comparison shall be made on a scaled drawing or as an overlay on the as-built plan. This plan shall also show the major vegetation community types.

Appendix D Photos of the mitigation site taken from the same locations as the monitoring photos.

O. Contingency

To ensure mitigation success, problems identified during monitoring visits at the Wetland Creation Area mitigation site will be addressed within the same monitoring year that they are encountered. Given the types of wetland mitigation proposed under this plan, it is expected that potential remedial measures could include:

- re-grading;
- surface water diversion;
- modification of the spillway elevation to adjust water depths and flows;
- re-planting or re-seeding;
- re-soiling due to erosion;
- repair of erosion control features;
- supplemental seeding;
- invasive plant control;
- installation of ORV control measures;
- removal or control of herbaceous vegetation competition around trees and shrubs;
- herbivore control (e.g., fencing, tree guards); and
- fertilizing woody plantings.

Grondin will undertake remedial and or maintenance needs on a timely basis, and in coordination with the project design team. MDEP and ACOE will be consulted on a case-by-case basis regarding the need for remedial measures.

P. Long-Term Stewardship

The Larrabee Farms Wetland Mitigation Project site, in which the Jetport Project is proposed, includes over 300 acres of land abutting the Nonesuch River in Scarborough, Maine. The Town and the local land trust have both expressed interest, and have stated goals of preserving lands along the Nonesuch River. In fact, as is discussed in Section C.1.e. of this report, several nearby areas have already been preserved and the town is considering a new 'Nonesuch River Corridor' that will help limit development within and adjacent to the Nonesuch River floodplain. Finally, by 2018, 10 years after final approval of the amended contract by the Town of Scarborough, the entire 337-acre (+/-) lot will be permanently preserved through a conservation easement or easements. At that time, either the Town or the Scarborough Conservation Land Trust will combine all existing easements across the property into a complete document. The following is copied from

the Contract Zoning agreement and amendments for Larrabee Farms (please see complete document in Appendix 5):

> **4. Property Conveyance:** Grondin shall have the right to convey its fee interest in the property, in whole or in part, as necessary to satisfy applicable requirements of the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection in connection with the wetlands mitigation project and sale of the authorized wetlands mitigation credits; provided, however, that any parcel conveyed shall first be encumbered by conservation easement or easements limiting its use to the uses permitted by this Agreement. Portions of the property conveyed for wetlands compensation and restricted in perpetuity by conservation easement or easements to wetlands preservation shall not be considered lots under the Zoning Ordinance or the Subdivision Ordinance. Within 90 days of approval of this Agreement, Grondin shall convey the dedicated lot shown on Exhibit A to the Town, provided such dedicated lot is accepted by the Town Council. Upon completion of all phases of the wetlands mitigation and sale of the authorized wetlands mitigation credits or at the end of 10 years after the date of this Agreement, whichever occurs first, Grondin agrees to convey as a gift any remaining portions of the property to the Town, or to a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council, subject to the same use limitations prescribed for conservation easements under Section 3(p) of this Agreement (except that the approximately 53 acres owned by SF&G shall not be required to be conveyed).

Q. Other Comments

As stated earlier in this document, the Larrabee Farms wetland mitigation portion of the Jetport Project compensatory mitigation plan is only one of two projects. The additional portion of the mitigation plan is being submitted concurrently with the Larrabee Farms plan by TRC.

Appendix 1: Photographs

Facing northwest along proposed area for wetland creation (Boyle Associates: October 2, 2007)

Facing northwest towards end of proposed wetland creation area (Boyle Associates: October 2, 2007)

Facing southwest towards southern end of creation area - site clearing completed and initial subgrading and stump grubbing underway (Boyle Associates: February 25, 2009)

Appendix 2: Archeological Assessment: Larrabee Farms Wetland Mitigation Project

(portions attached)

PROPOSED WETLAND MITGATION AREA
LARRABEE FARMS GRAVEL PIT
SCARBOROUGH, MAINE

PHASE I ARCHAEOLOGICAL INVESTIGATION

REPORT PREPARED FOR
GRODIN AGGREGATES, LLC
& BOYLE ASSOCIATES

BY BRIAN VALIMONT, MA
NEW ENGLAND ARCHAEOLOGY CO., LLC

DECEMBER 2007

Management Summary

Phase I archaeological investigation was conducted at the project area proposed for the construction of a 3 acre wetland mitigation area at Grondin Aggregate's Larrabee Farms gravel pit located in Scarborough, Cumberland County, Maine. The project area lies upon level, sandy uplands overlooking an unnamed perennial stream that is a tributary of the Nonesuch River. The archaeological survey was required by Maine Department of Environmental Protection regulations under Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800, as amended, and 16 U.S.C. 470f) as administered by the Maine Historic Preservation Commission. The archaeological survey entailed field inspection of the project area, archival documentary research, the excavation of 5 shovel test pits and preparation of this report. This investigation was completed in November and December of 2007. Three sections of Larrabee Farms gravel pit were investigated at this time. These three areas correlate with archaeological sensitivity areas (ASA) 3, 11 and 12 previously assigned to Larrabee Farms by archaeologist Deb Wilson in 2003. It was determined that ASA 3 had been extensively disturbed by grading and leveling for the creation of a materials stockpile area. ASA's 11 and 12 were subsurface investigated with 5 shovel test pits. No Native American or historic artifacts were recovered from the shovel tests and thus no archaeological sites were encountered as a result of the investigation. It is recommended that no further archaeological investigation is required in ASA's 3, 11 and 12.

Table of Contents

Investigation Methods

Three specific approaches were used in order to conduct the Phase I archaeological investigation. A combination of field inspection, archival documentary research and the excavation of shovel test pits were used to gain an understanding of how the project area was used in the past by humans. The results were applied together and are discussed in the following sections of this report.

Field Inspection

Phase IA archaeological site sensitivity assessment was previously conducted by archaeologists Deb Wilson and Timothy Dinsmore in 2003. The project area encompassing Wilson's (2003) archaeological sensitivity areas 3, 11 and 12 were field-inspected. These areas were walked over in order to determine if archaeological sites were visibly present on the ground surface. Exposed patches of the ground surface and the exposed roots of fallen trees were inspected for the presence of cultural artifacts. Most of the ground surface is obscured by dense grass, leaf litter and underbrush making this inspection difficult. No Native American or historic artifacts were discovered during the inspection. No archaeological sites or features were visibly encountered on the ground surface within the project area.

Archival Documentary Research

An understanding of past and present environments aids in assessment of potential archaeological resources that are not readily visible on the ground surface. Information regarding the past and present environments of the project area was drawn from a number of sources. The Maine Geological Survey (MGS) provided detailed bedrock geological maps and data relevant to the project area (Berry and Hussey 1998; Hussey 1971 and 2003). Surficial (i.e., surface) geologic maps and data relevant to the project area were also obtained from the MGS (Loiselle 2007; Retelle 1999a and 1999b; Smith 1999a and 1999b). Also helpful in illuminating the environment of the project area were soil maps and soil data produced by the Soil Conservation Service (Hedstrom 1974) and topographic maps produced by United States Geological Survey (1956 and 1957). In addition, existing conditions maps and proposed project plans for the proposed project area (Figures 2, 4 and 5) were provided by Sebago Technics, Inc. of Westbrook, ME.

At the Maine Historic Preservation Commission in Augusta, archaeological sites files and maps related to documented archaeological sites in Scarborough and surrounding areas were reviewed in order to establish how such archaeological sites were related to the project area. In addition, several limited distribution archaeological reports were reviewed for information relevant to Native American sites in the Scarborough area (Robinson 1985; Spiess et al. 1988; Will 1986; Will et al 1995; Wilson and Dinsmore 2003). All of the above materials were reviewed, collated and synthesized to illustrate past human use of the project area.

Subsurface Excavation

The excavation of 5 shovel test pits (STP's) was completed on archaeologically site-sensitivity areas within the project area, specifically in archaeological sensitivity areas 11 and 12 (Figures 4 and 5). The STP's measured 50 by 50 centimeters (19.5 inches) square and were excavated to the greatest depths obtainable through hand excavation efforts. The depth of the STP's ranged between 46 and 65 centimeters (18 and 26 inches) in depth and averaged 56 centimeters (22 inches) in depth. The soil from the STP's was screened through ¼ inch mesh to facilitate the identification and recovery of cultural artifacts. The soil strata of each STP were recorded in a field notebook along with the depths of strata, the relationship of soil strata, soil color, soil texture and percent and type of rock inclusions. Upon completion of recording each STP the soil was backfilled. Soil strata were generally consistent throughout the proposed wetland mitigation area, the principal variable being the relative thickness of each stratum. There were four strata observed:

- A naturally developing A horizon extended from the ground surface to an average depth of 11 centimeters (4 inches). The shallow depth of the A horizon indicates that this section of the project area has not been historically plowed. The A horizon was typically dark gray (10 YR 4/1) loam.
- Below this was a B1 horizon that extended to an average depth of 24 centimeters (9.5 inches). The B1 horizon was typically dark yellowish brown (10 YR 3/6) sandy loam that contained about 25% gravel- and cobble-sized inclusions. This B1 horizon was not detected in STP's 1 and 4.
- Below this was a B2 horizon that extended to an average depth of 45 centimeters (18 inches). The B horizon was typically dark yellowish brown (10 YR 4/6) sandy loam that contained about 25% gravel- and cobble-sized inclusions.
- Beneath this was a C horizon which extended to an undermined depth. The C horizon was typically olive brown (2.5 Y 5/4) silty loam that contained about 25% gravel- and cobble-sized inclusions.

The upper 30 centimeters of STP 5 appears to have been disturbed by logging activity and the use of a recreational ATV trail. It is possible that the lower 30 centimeters was also disturbed but it was difficult to definitively determine. No Native American or historic cultural artifacts were recovered from the excavation of the STP's. Thus, no archaeological sites were encountered as a result of the subsurface investigations.

Environmental Context

The project area is proposed for the construction of a 3 acre wetland mitigation area at R.J. Grondin and Sons Aggregate's Larrabee Farms gravel pit in Scarborough, Cumberland County, Maine (Figures 1 and 5). The project area lies upon level uplands overlooking an unnamed perennial stream that is a tributary of the Nonesuch River (Figure 2). Elevations in the project area range from about 40 feet amsl (above mean sea level) along the floodplain of the unnamed stream to about 106 feet amsl at the highest points in the uplands. The topography in the uplands is quite level with slight undulations. The terrain slopes very steeply down to the small floodplain-lined stream. Vegetation consists of a mix of sparse to thick undergrowth within a mixed pine and hardwood forest. A gravel road has previously been constructed through the middle of the proposed wetland mitigation area. The margins along both sides of this gravel road have been cleared of vegetation. The project area is situated along the Nonesuch River drainage basin. Wetlands and small streams within the project area are formed from ground water discharge and drain southerly into the Nonesuch River (Figures 1 and 2). The Nonesuch River originates to the west of the project area in Saco. The Nonesuch River meanders in an easterly direction for about 26 miles before emptying into the Atlantic Ocean just north of Old Orchard Beach.

Bedrock

The project area is underlain by bedrock of the Eliot formation (Hussey 1971 and 2003). This formation was formerly referred to as the Cape Elizabeth Formation until it was correlated with the larger Eliot Formation (Figure 3). The Eliot Formation extends from Portland, ME and trends southwest into Plaistow, New Hampshire, where exposures of the formation are more extensive (Hussey 1971; Osberg et al. 1985; Lyons et al. 1997). The majority of this rock consists of beds of phyllite. Phyllite resembles slate but has a very shiny sheen, and wavy folding is often visible in outcrops as well as hand-sized specimens. Some beds are of green phyllite consisting of quartz and mica minerals, and other beds are dark to light grey consisting of quartz, mica and chlorite. Occasional 2-5 inch thick beds of schist and mica-quartzite also occur. The bedrock of the Eliot Formation is estimated to be as much as 2,500 feet thick (Hussey 1971:6). The Eliot Formation originally consisted of sediments that were deposited in three units: limey mud, sandy mud and mud (Novotny 1969: 10-11). The rocks that were pushed down into the crust were metamorphosed from shale and quartzite into phyllite and schist during the late Ordovician/ early Silurian Epoch (Hussey 1971:5 and 2003), about 400 million years ago. These deposits were then folded, faulted and some sections of it have been eroded. Outcrops of this bedrock are frequently visible but the bedrock is largely covered over by glacially worked surficial deposits that were deposited between 15,000 to 13,000 years ago.

Surficial Geology

The appearance of the project area today is a result of post-glacial actions and earth shaping processes that begun during the ice age, between 1.5 million and 13,000 years

ago. Enormous sheets of ice several thousands of feet thick expanded from the arctic and stretched across the landscape at least three times. As the glacier expanded, it scoured, crushed and absorbed massive amounts of rock and soil from the earth's surface, carrying these sediments along with it. The last glacier occurred about 25,000 years ago. North America as far south as Long Island, NY was entirely covered (and hence scoured) by ice. A warmer global climate caused the glacier to begin to shrink in size, and withdraw back to the arctic. The last episode of glacial withdrawal occurred between 17,000 and 13,000 years ago. As the glacier withdrew it dropped the large quantities of scoured rock and soil. These deposits are known as glacial till (Smith 1999a; Retelle 1999a). Glacial till is readily recognizable in the New England landscape, as rock-strewn fields or forests. Oftentimes, these rocks were removed to create fields and were piled into the numerous stonewalls that are visible throughout New England.

Due to the massive weight of the glacial ice upon the continental crust, the land was actually depressed several hundred feet lower than it is today. The massive quantities of water released from the melted glacier flooded the depressed landscape. Sea level rose much higher than the present day sea level between 13,000 and 11,000 years ago. Areas now far inland (at some points 420 feet above present sea level) were inundated by the rise in sea level. The Kennebec and Penobscot River valleys were completely flooded into very large bays at this time. The majority of the Scarborough area was submerged by the ocean at this time. The extent of the previous sea level is evident in the surface geological deposits that have been mapped across Maine. Finer, small particles of clay and silt accumulated on the recently formed ocean floor, forming a muddy sea bottom. The glacial marine clays that are exposed on land today are known as the Presumpscot Formation (Smith 1999a; Retelle 1999a). Clays of the Presumpscot Formation are exposed along the steep slopes of brooks and the Nonesuch River in the southern end of the project area (Figure 3).

Tunnels within the ice also deposited long lines of sand and gravel, exposed today as eskers. Other deposits of till, sand and gravel formed mounds (kames) and ridges (end moraines) along the ice/ocean margin. Glacial melt waters flooded out of the glacier in streams, and emptied massive quantities of sand and gravel that formed deltas and fans at the ocean/glacier contact margin. Larger streams such as the Nonesuch River also have quantities of sand deposited onto terraces that were cut during the post glacial melting and drainage of water into the sea. There are such alluvium terraces along the Nonesuch River along the southern side of the project area (Figure 3).

As the level of the land rebounded up from the former glaciers weight the sea level began to drop. Sea level actually dropped rapidly to 197 feet below present-day sea level by 8000 years ago. As sea level dropped, sands were deposited at the successive receding shorelines and built up to considerable amounts over many sections of the Presumpscot Formation (Smith 1999a; Retelle 1999a). The sandy deposits in the uplands throughout the majority of the project area consists of these sands deposited as the sea level receded, labeled Pmrs, on Figure 3. Wells and borings dug in the vicinity of the project area indicate that the depth of these surficial deposits is variable (Figure 3). The surficial deposits can be as much as 40 to over 200 feet thick (Loiselle 2007).

The continental plate then settled from the previous rapid rise, rebounding again but this time lowering in elevation to a level similar to present-day. This isostatic rebound (as it is called) caused sea level to rapidly rise once again to 40 feet below present-day sea level by 7,000 years ago. At that point, glacial melt water had significantly reduced in amount, and the continental crust had basically settled from the previous glacier weight upon it. Sea level began to rise at a much slower pace. Floodplains formed along the margins of streams, such as along the Nonesuch River in the project area, and are labeled Ha on Figure 3. By 2000 years ago, sea level was slightly lower than present-day (Smith 1999a; Retelle 1999a).

Soils

Once the sea and lake waters had receded from the area, soils began to form on top of the glacially deposited sediments (Hedstrom 1974). The soil types in the project area principally consist of two types: upland soils and lowland soils (Figure 3). The soils in the uplands consist of moderately well drained Deerfield loamy sand (DeB) and excessively drained Windsor loamy sand (WmB). In the lowland areas in the drainage basins and valleys along the southwestern and southeastern sections of the project are poorly drained Limerick-Saco silt loams (Ls) and very poorly drained Scarboro sandy loam (So). Some of the terrace areas consist of moderately well drained Podunk fine sandy loam (Py).

Native American Context

Archaeological studies in the 20th century have determined that Native Americans have occupied North America for the past 18,000 years. Evidence of Native Americans in New England has been firmly dated to 14,500 years ago, after the glacier retreated and areas of the land were able to be occupied. Archaeologists have been able to track changes in artifact styles and the pattern of sites across the landscape during that long span of time. Archaeologists generally refer to the time of past occupation in terms of years BP, before present (for example, 3,000 B.P. is 1,000 B.C). The main divisions that have been detected thus far are the Paleo-Indian (12,500-10,000 BP), the Early Archaic (10,000-8000 BP), Middle Archaic (8000-6000 B.P.), Late Archaic (6000-3000 B.P), Early Ceramic (3000-2000 BP), Middle Ceramic (2000-1000 BP), Late Ceramic (1000-450 BP), and the Contact (450-350 B.P) periods (Snow 1980).

Archaeological Research in the Scarborough Area

A few sites have been identified around the periphery of Scarborough marsh. Shell middens with animal bone food remains and Late Ceramic period ceramics have been reported from Winnock's Neck. Excavations at the Seavey's Landing I site resulted in the recovery of ceramics, plummets, an axe, and several spear points which indicate sporadic use of the site from the Middle Archaic through the Late Ceramic periods (8000-450 B.P). Thirteen Native American burials dating to the Contact period (450-350 B.P.) were excavated on Prout's Neck during the 1800s (Robinson 1985: 22-24). Scarborough histories also indicate that Native American villages were established at Pine Point and Winnock's Neck at the time of European settlement during the 1600s. Scarborough marsh has been canoed in search of Late Archaic (6000-3000 B.P) Native American sites that have since become submerged by the rising sea level. Evidence of a single prehistoric hearth was found unearthed in a drainage trench in the Blue Point marsh (Robinson 1985: 31-38).

A number of Native American sites have been recorded in the vicinity of Scarborough, but detailed information is available on only a few sites. One Native American site was recorded on the banks of Goosefare Brook in Saco. Five pieces of felsite stone tool manufacturing debris were recovered during construction of a subdivision road (Will 1986: 7-8; Will et al. 1995:36-37). Another site was discovered in a hayfield next to Coles Brook. Artifacts recovered at this site include 8 pieces of quartz, quartzite and felsite tool manufacturing debris along with several pieces of rock that had been reddened from use in a campfire. A Native American site was discovered on the high terraces overlooking the Nonesuch River, where chert and rhyolite stone tool manufacturing debris was recovered. On the Saco River there is a recorded Native American site. The site is on the river terrace, and artifacts were excavated as deep as 1.5 meters (five feet) below the ground surface. Artifacts recovered from the sites include fire altered stones, cooking hearths and at least three projectile points including a corner notched point and an Orient Fishtail point. Diagnostic artifacts indicate Late Archaic through Late Ceramic period (6000-450 B.P) settlement of the site. A radiocarbon date from the site is 6050 +/-210, giving a firm Late Archaic period date of use for the site (Spiess et al 1988).

Bibliography

Berry, Henry N. IV, and Arthur M. Hussey II
1998 Bedrock Geology of the Portland 1:100,000 Quadrangle, Maine and New Hampshire. Open File No. 98-1. Department of Conservation, Maine Geological Survey, Augusta, ME.

Hedstrom, Gary
1974 Soil Survey of Cumberland County, Maine. United States Department of Agriculture, Soil Conservation Service, with the Maine Agricultural Experiment Station and the Maine Soil and Water Conservation Commission.

Hussey, Arthur M. II
1971 *Geologic Map of the Portland Quadrangle, Maine*. GM-1, Geologic Map Series (report and map). Department of Economic Development, Maine Geological Survey, Augusta, ME.

2003 Bedrock Geology of the Old Orchard Beach 7.5-minute Quadrangle, Cumberland and York Counties, Maine. Open File No. 03-96 (map and report). Department of Conservation, Maine Geological Survey, Augusta, ME.

Loiselle, Marc
2007 Estimated Overburden Thickness in the Portland 30X60-minute Quadrangle. Open File No. 07-90, Department of Conservation, Maine Geological Survey, Augusta, ME.

Lyons, John B., Wallace A. Bothner, Robert H. Moench and James B. Thompson
1997 *Bedrock Geologic Map of New Hampshire*. New Hampshire Geologic Survey, Department of Environmental Services, Concord, NH.

Novotny, Robert F.
1969 The Geology of the Seacoast Region, New Hampshire. T.R. Meyers, Ed. New Hampshire Department of Resources and Economic Development, Concord, NH. Available from the Department of Environmental Resources, Concord, NH.

Osberg, Philip H., Arthur M. Hussey II and Gary M. Boone
1985 *Bedrock Geologic Map of Maine*. Department of Conservation, Maine Geological Survey, Augusta. ME.

Retelle, Michael J.
1999a Surficial Geology of the Old Orchard Beach 7.5-minute Quadrangle, Cumberland and York Counties, Maine. Open File No. 99-125 (report). Department of Conservation, Maine Geological Survey, Augusta, ME.

199b Surficial Geology, Old Orchard Beach Quadrangle, Maine. Open File Report No. 99-94 (map). Department of Conservation, Maine Geological Survey, Augusta, ME.

Robinson, Brian S.
1985 "An Intertidal Archaeological Survey of the Scarborough Marsh." Maine Archaeological Society Bulletin 25(1).

Smith, Geoffrey W.
1999a Surficial Geology of the Gorham 7.5-minute Quadrangle, Cumberland County, Maine. Open File No. 99-115 (report). Department of Conservation, Maine Geological Survey, Augusta, ME.

199b Surficial Geology, Gorham Quadrangle, Maine. Open File Report No. 99-84 (map). Department of Conservation, Maine Geological Survey, Augusta, ME.

Snow, Dean R.
1980 The Archaeology of New England. Academic Press, New York, NY.

Spiess, Arthur, Leon Cranmer, Christopher Monahan and Emerson W. Baker Jr.
1988 An Archaeological Phase I Survey of the Maine Turnpike Widening Project in Southern Maine.

United States Geological Survey
1956 Old Orchard Beach, ME 7.5' Topographic Map (Photo-revised 1978).
1957 Gorham, ME 7.5' Topographic Map (Photo-revised 1978).

Will, Richard T.
1986 A Report of a Preliminary Survey for Prehistoric Archaeological Sites in York County, Maine.

Will, Richard T., Emerson W. Baker, Janet Cormier and James Clark
1995 Rachel Carson National Wildlife Refuge, Historic and Prehistoric Archaeological Resource Survey.

Wilson, Deborah B. and Timothy S. Dinsmore
2003 Report on the Preliminary Archaeological Assessment, Prehistoric and Historic Components, R.J. Grondin and Sons Property, Scarborough, Maine, MHPC#0522-03.

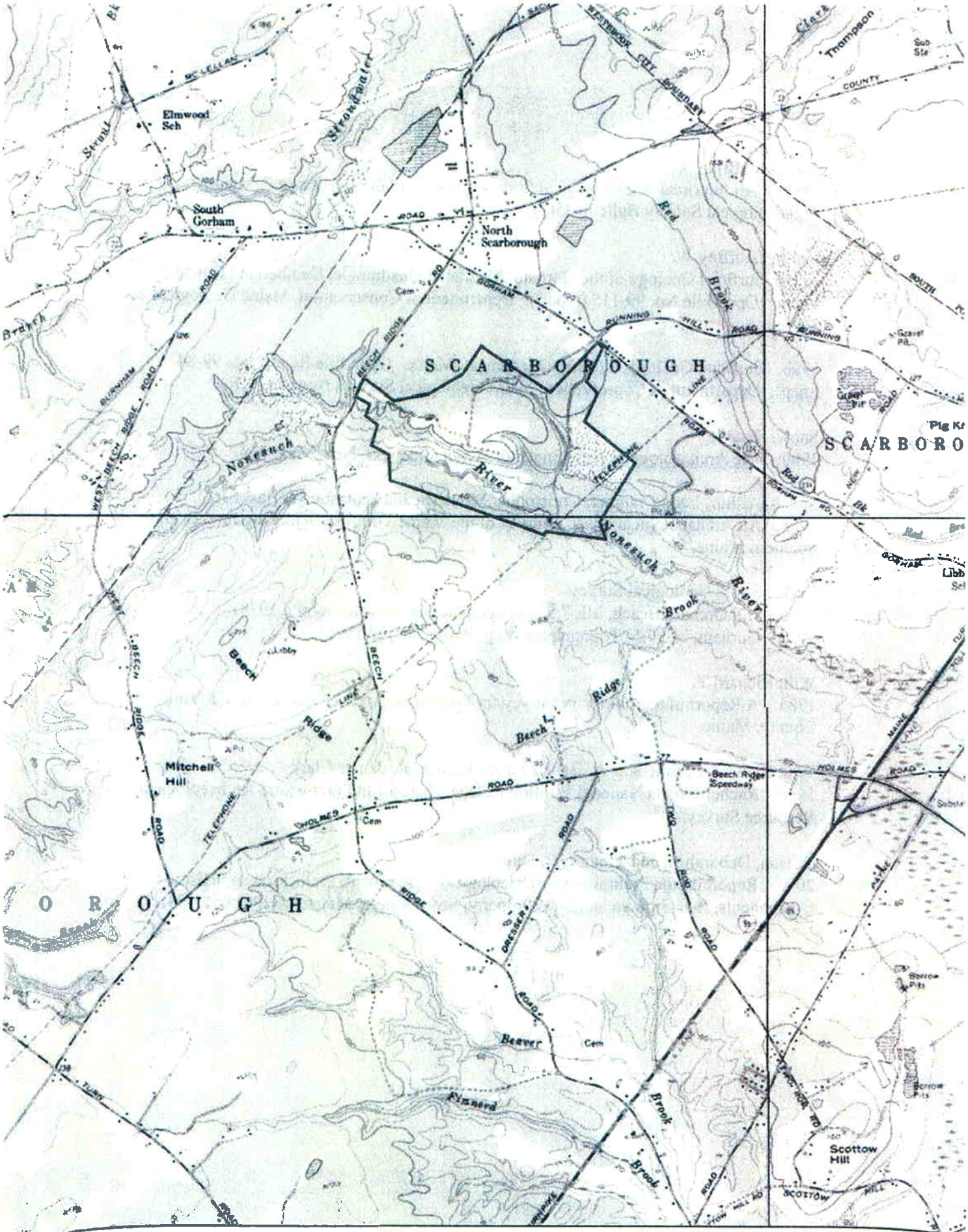
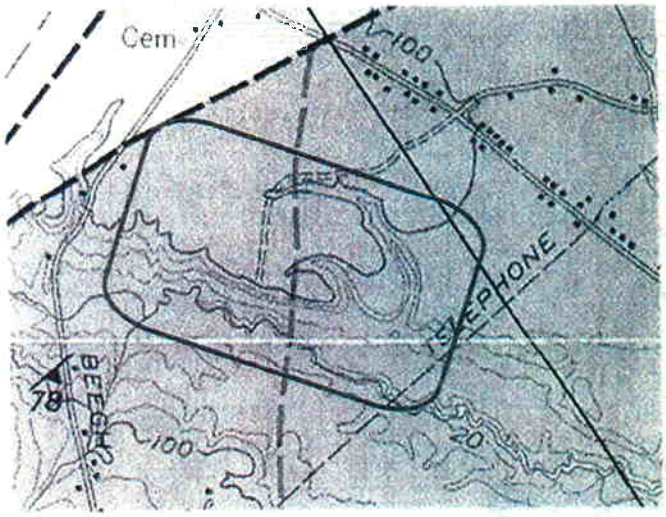


Figure 1 - The Larrabee Farms gravel pit, outlined in red on the 1957 (photo-inspected 1975) Gorham, ME and 1956 (photo-inspected 1975) Old Orchard Beach, ME USGS 7.5' topographic maps.



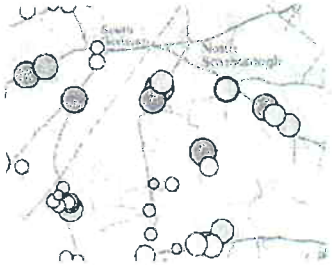
Cape Elizabeth Formation

Dotted Quartz-plagioclase-muscovite-graphite or schist with chlorite biotite, garnet or staurolite depending on grade of metamorphism. Carbonate locally common in biotite and chlorite zones. Dshcss Thin-bedded to laminated quartz-plagioclase-biotite schist and quartzite with minor carbonate or calc silicate beds.

chlorite
biotite

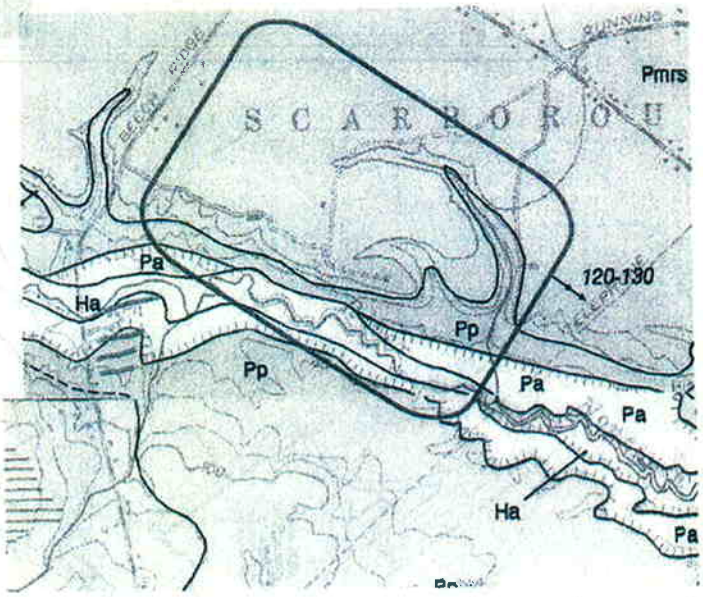
Metamorphic isograd

Bedrock Geology (Hussey 1971)



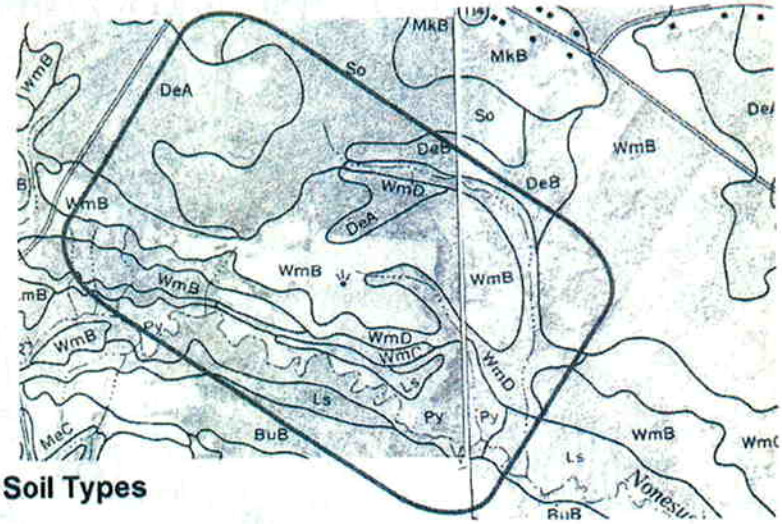
- 0-5 feet
- 5-10 feet
- 10-15 feet
- 15-20 feet
- 20-25 feet
- 25-30 feet
- 30-40 feet
- 40-50 feet
- 50-75 feet
- 75-100 feet
- 100-200 feet
- >200 feet

Depth of Surficial Deposits over Bedrock (Loiselle 2007)



Pmrs	**Marine regressive sand deposits** - Sand deposited in marine waters during regression of the sea from the coastal zone. Sand is commonly interbedded with fine-grained sediments of the Presumpscot Formation.
Pp	**Presumpscot Formation** - Fine-grained silt and clay with minor marine fossils and dropstones deposited in deeper, quiet water during the marine submergence of the coastal zone.
Pa	**Alluvium** - Coarse to fine alluvial sand in high terraces and overlying Presumpscot Formation clays, north and south of the Nonesuch River.
Ha	**Stream alluvium** - Gravel, sand, and silt deposited on flood plains of modern streams.

Surficial Geology (Smith 1999; Retelle 1999)



Soil Types

DeA & DeB: Deerfield loamy sand, moderately well drained

Ls: Limerick-Saco silt loams, poorly drained

Py: Podunk fine sandy loam, moderately well drained

So: Scarboro sandy loam, very poorly drained

WmB, WmC & WmD: Windsor loamy sand, excessively drained

Figure 3 - Environmental data. The location of the Larrabee Farms gravel pit is approximately outlined in red.

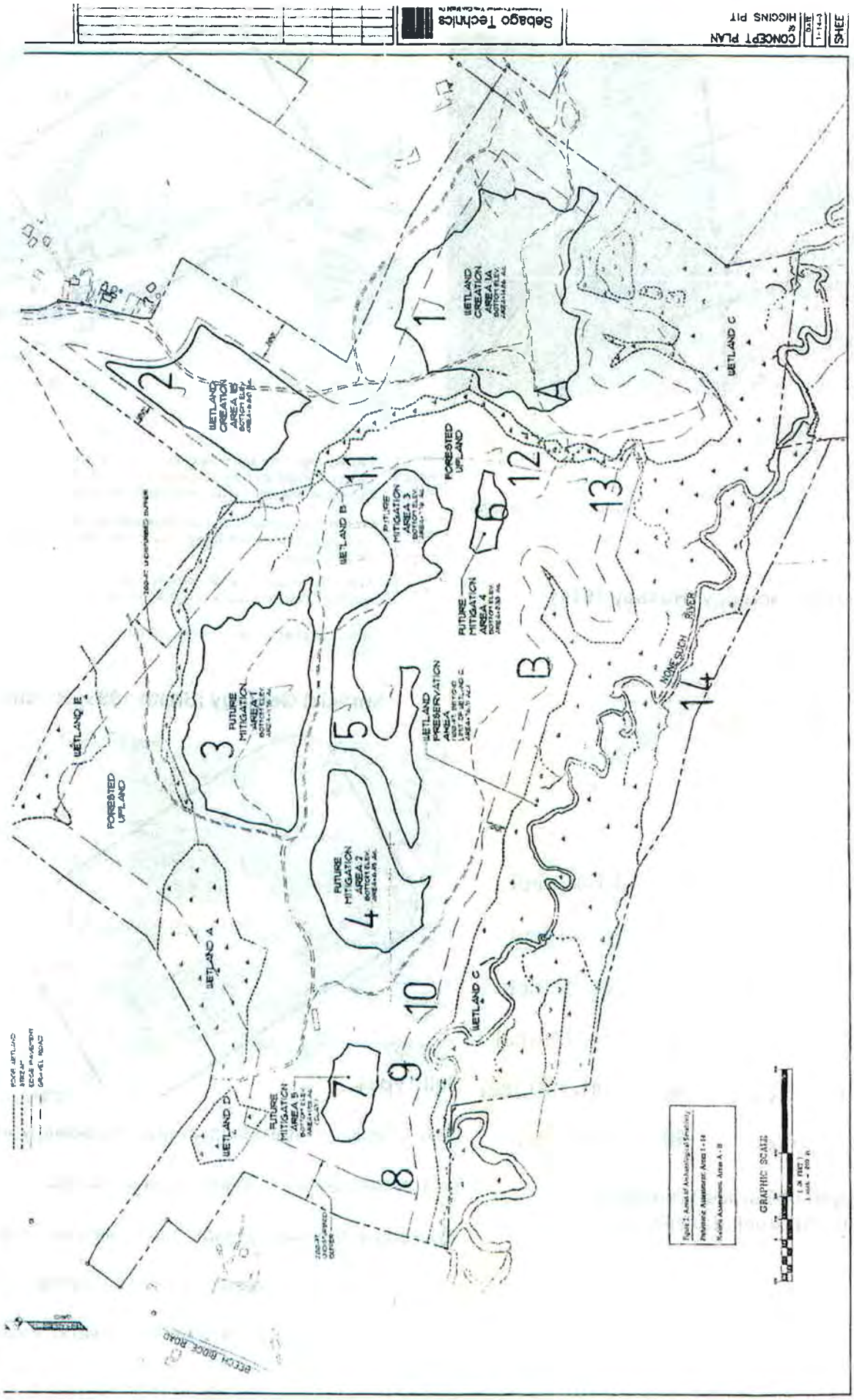


Figure 4 - Areas of Archaeological Sensitvity assigned by Wilson and Dinsmore (2003).

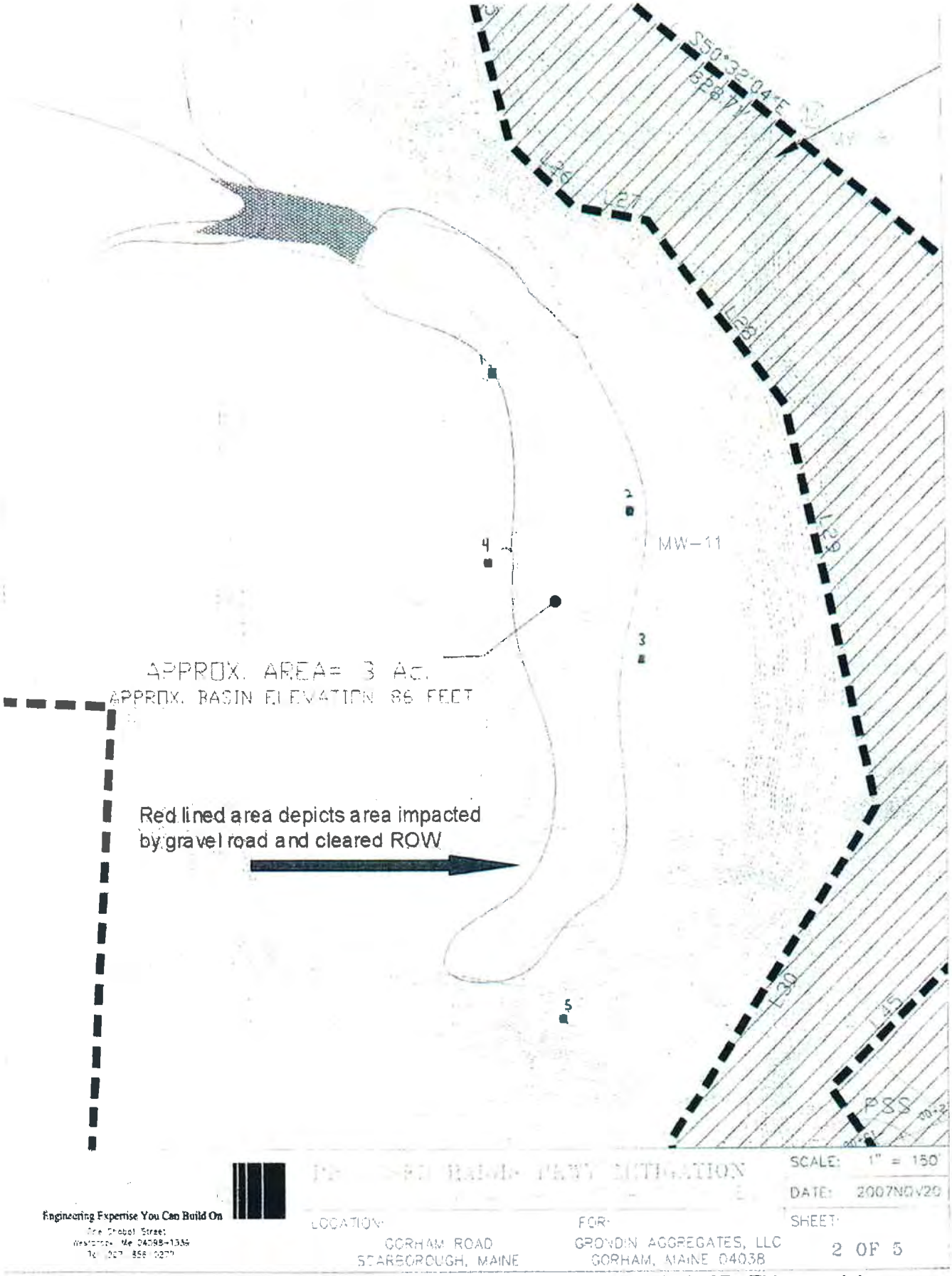


Figure 5 - Area tested with archaeological shovel test pits in 2007. This correlates with Wilson and Diinsmore's (2003) archaeological sensitity areas 11 and 12.

Appendix 3: Larrabee Farms Wetland Mitigation Project Contract Zoning Agreement with the Town of Scarborough, Maine: Contract Zone #8, Approved by Vote of Town Council on August 6, 2006 and amended by Council Vote March 5, 2008

(attached)

CONTRACT ZONING AGREEMENT
BETWEEN THE TOWN OF SCARBOROUGH AND
GRONDIN AGGREGATES LLC

This is a Contract Zoning Agreement made as of the 16th day of August 2006, by and between the TOWN OF SCARBOROUGH, a body corporate and politic, located in the County of Cumberland and State of Maine (hereinafter "the Town"), and GRONDIN AGGREGATES LLC, with a mailing address of 11 Bartlett Rd, Gorham, Maine 04038 (hereinafter "Grondin") pursuant to the Contract Zoning provisions of Section II, Subsection I of the Scarborough Zoning Ordinance (hereinafter the "Zoning Ordinance").

WHEREAS, Grondin owns a parcel of real estate located southeast of the corner of Beech Ridge Road and Route 114 in Scarborough, Maine consisting of 284.2 acres (hereinafter "the property"); and

WHEREAS, the property is currently zoned in a Rural Residence and Farm District (RF) under the Zoning Ordinance, and the land within 75 feet of the Nonesuch River is zoned within the Stream Protection District (SPD) under the Scarborough Shoreland Zoning Ordinance (hereinafter the "Shoreland Zoning Ordinance") and will be maintained in its current state; and

WHEREAS, the Rural Residence and Farm District allows wetlands creation on previously excavated property pursuant to a contract zoning agreement approved by the Town Council under Section II(I) of the Zoning Ordinance; and

WHEREAS, the property contains over 1 mile of frontage on the Nonesuch River, and the associated floodplain and wetlands, which provide unique and quality resources of wildlife habitat and opportunities for recreation, and the area currently zoned within the Stream Protection District will remain undeveloped; and

WHEREAS, Grondin wishes to establish a large wetlands mitigation project on the site, the Larrabee Farms Wetlands Mitigation Project (the "project"), which would involve preservation and creation of wetlands to provide compensation for wetlands impacts on other properties; and

WHEREAS, the size, location, hydrogeology, and topography of this site provide a unique and viable opportunity for a wetlands creation and preservation project, and the project will be satisfactorily buffered from abutting properties; and

WHEREAS, the entire parcel that includes this contract zone, except approximately 20 acres shown on Exhibit A and dedicated to the Town for possible use as a school or other municipal uses, will be encumbered by a conservation easement or easements limiting the use of the property to wetlands and open space preservation and passive outdoor recreation; and

WHEREAS, Grondin has requested a rezoning of the property to allow construction of said wetlands mitigation project; and

WHEREAS, each wetlands creation and preservation phase of the proposed project would be overseen and authorized by the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899; and

WHEREAS, each wetlands creation and preservation phase of the proposed project would also be overseen and authorized by the Maine Department of Environmental Protection pursuant to the Maine Natural Resources Protection Act (38 M.R.S.A. §§480-A *et seq.*), and the Maine Department of Environmental Protection may also act as a third-party enforcer of the conservation easement or easements on the property; and

WHEREAS, the rezoning would be consistent with the Policies and Future Land Use Plan of Part III of the Scarborough Comprehensive Plan; and

WHEREAS, the Larrabee Farms Wetlands Mitigation Project site will provide unique and expansive recreational opportunities for the Town of Scarborough through the creation of trails and the permanent protection placed upon parcel and trail areas; and

WHEREAS, the Town of Scarborough, by and through its Town Council, has determined that the said rezoning would be pursuant to and consistent with the Town's Comprehensive Plan and consistent with the existing and permitted uses within the original zoning district classification and has authorized the execution of this Contract Zoning Agreement on August 16, 2006.

NOW THEREFORE, *in consideration of the mutual promises made by each party to the* other, the parties covenant and agree as follows:

1. **Zoning Map**: The Town hereby amends the Zoning Map of the Town of Scarborough, by adopting the map change amendment shown below:

2. **Depth of Excavation:** Except as otherwise specified in this Agreement, the project shall not be subject to and shall not require review under the Town of Scarborough

Extractive Industry and Land Reclamation Ordinance (the "Extractive Industry Ordinance"). Notwithstanding contrary provisions in the Extractive Industry Ordinance, excavation may occur below the seasonal high water table for the purpose of accessing groundwater for wetlands creation. Any excavation deeper than 12 inches above the seasonal high water table is limited to a wetlands creation area within a compensation package which has been accepted for use as mitigation by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection and has been approved by the Town Engineer under Section 3(h) below and secured by a performance guarantee under Section 3(h) below.

3. Process and Regulations: Grondin is authorized to create a wetlands mitigation project including wetlands creation, and wetlands with surrounding uplands preservation on the property, subject to the following conditions:

(a) Commencement: The project must be commenced within two years of the date of this Agreement.

(b) **Plan Approval:** With the exception of the property to be dedicated to the Town and shown on Exhibit A, the property subject to this Agreement shall be developed and used substantially in accordance with the Larrabee Farms Wetlands Mitigation Project Plan granted preliminary approval by the Scarborough Planning Board on July 17, 2006, as such plan is finally approved by the Planning Board and may be amended from time to time by the Planning Board (hereinafter the "Plan").

(c) **Permitted Uses:** The permitted uses on the property shall be limited to the following:

(i) wetlands mitigation and associated work; specifically: wetlands creation in previously excavated areas, wetlands creation in areas excavated in order to create wetlands, extractive industry incidental to or in preparation for wetlands creation; and land reclamation;

(ii) passive recreation, including trails as depicted on the Plan and trail maintenance;

(iii) public schools, municipal uses and uses allowed in the RF District on the property depicted on Exhibit A and hereby dedicated to the Town;

(iv) preservation of wetlands and open space.

(d) **Wetland Mitigation Packages:** As wetlands compensation packages are accepted for use as mitigation by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection, wetlands creation will be conducted pursuant to the terms of this Agreement. Grondin shall give first priority to wetlands compensation packages which will mitigate or compensate for the effects of impacts to wetlands located in Scarborough and shall give second priority to wetlands compensation packages which will mitigate or compensate for the effects

of impacts to wetlands located outside Scarborough but within the Nonesuch River watershed. Prior to the commencement of development of each wetlands creation area, Grondin shall submit to the Town Planner and the Town Engineer a description of the wetlands creation project, which shall include the identity of the off-site project being benefited by the wetlands compensation package. If such benefited project is not within the Town of Scarborough or the Nonesuch River watershed, Grondin must demonstrate to the satisfaction of the Town Planner that there are no projects in Scarborough or the Nonesuch River watershed that have pending applications with the U.S. Army Corps of Engineers and/or the Maine Department of Environmental Protection that will necessitate wetlands creation or mitigation and which therefore could be benefited by, and are willing to participate in, a wetlands compensation package through Grondin.

(e) **Wetlands Creation Area Development:** Excavation on the property shall be undertaken by area, substantially in accordance with the Plan. Any deviations in wetland creation areas from the depictions on the plan shall require Town Engineer approval in accordance with Section 3(h). Substantial changes to the plan, as determined by the Town Engineer, shall require approval from the Planning Board. No more than three areas may be open at any one time. For purposes of this paragraph, an area is considered open from the time any excavation has commenced within the area until the area has been permanently reclaimed or work within the area has commenced on a wetlands creation plan approved by the Town Engineer and secured by a performance guarantee under Section 3(h) below.

(f) **Excavation without Approved Wetlands Creation Plan:** If Grondin elects to undertake excavation in any designated wetlands creation area before receiving approval from the Town Engineer of a plan for wetlands creation under Section 3(h) of this Agreement, Grondin shall submit: a detailed plan of the excavation and a contingent permanent reclamation plan for approval by the Town Engineer and an application fee as set forth in the Schedule of License, Permit and Application Fees established by order of the Town Council. The reclamation plan shall comply with the Standards of Section 10 of the Extractive Industry Ordinance. Upon approval of the excavation and reclamation plans by the Town Engineer, Grondin shall furnish to the Town a performance guarantee for the cost of implementing the approved reclamation plan meeting the requirements of Section 9 of the Town of Scarborough Subdivision Ordinance and a construction inspection fee meeting the requirements of Section 11 of the Subdivision Ordinance. Grondin shall pay for the services of any consultants the Town Engineer deems appropriate to evaluate the application and inspect the work. Excavation pursuant to this paragraph is limited to a depth of no greater than 12 inches above the seasonal high water table.

(g) **Temporary Reclamation:** An area which is excavated pursuant to Section 3(f) above shall be temporarily stabilized with a nurse crop and mulch until such time as a plan for wetlands creation is approved under Section 3(h) of this Agreement. Any such area excavated and temporarily stabilized which is not converted to wetlands within 5 years after the approval of the excavation and

reclamation plans by the Town Engineer shall be permanently reclaimed in accordance with the contingent permanent reclamation plan approved under Section 3(f).

(h) **Wetlands Creation Plans and Performance Guarantees:** Prior to excavation deeper than 12 inches above the seasonal high water table for the commencement of a Wetlands Mitigation Plan in any designated wetlands creation area, whether or not the area has previously been excavated, Grondin shall submit for approval by the Town Engineer: a detailed plan of the wetlands creation; a reclamation plan that complies with the Standards of Section 10 of the Extractive Industry Ordinance; an application fee as set forth in the Schedule of License, Permit and Application Fees established by order of the Town Council; and copies of the approved permits and wetland mitigation plans for the wetlands creation areas issued by the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection. Upon approval by the Town Engineer of the plan for wetlands creation, Grondin shall furnish to the Town a performance guarantee meeting the requirements of Section 9 of the Town of Scarborough Subdivision Ordinance for the cost of implementing the reclamation plan that complies with the Standards of Section 10 of the Extractive Industry Ordinance, and a construction inspection fee meeting the requirements of Section 11 of the Subdivision Ordinance. Grondin shall pay for the services of any consultants the Town Engineer deems appropriate to evaluate the application and inspect the work.

(i) **Buffering:** A 200-foot buffer shall be maintained around the property except in those areas shown on the Plan. This buffer shall be maintained around the property as sound and site screen during development of the wetlands creation areas and be maintained as buffers following development.

(j) **Hours of Operation:** With the exception of emergency situations, the hours during which extractive industries work shall be allowed on the property shall be limited to between 7:00 a.m. and 5:30 p.m. Monday through Saturday.

(k) **Public Use:** Public access to the designated trails on site and to the Nonesuch River shall be made available following completion of the applicable portions of the project, with the trails to be protected in the conservation easement or easements encumbering the parcel. The approximate locations of the trails and the timing of their construction shall be approved by the Planning Board and depicted on the Plan.

(l) **Road Improvements:** No later than 90 days after approval of the Plan by the Planning Board, Grondin shall make improvements to and pave a section of the existing roadway abutting the properties identified on the Plan as N/F Jerome and Carmen Gayle, N/F Robert Rawding, N/F Shirley Bodman and N/F Howard Rawding, and shown as a private easement for access and utilities on the Plan. Thereafter, such road shall not be used for the hauling of materials excavated from the property or transportation of fill materials into the property. As shown on the

Plan, a portion of the roadway will be deeded to the abutting landowners as a private right-of-way in a form acceptable to the landowners and the Town.

(m) **Water Quality and Testing:** Grondin shall, at its sole expense, perform testing on all domestic water supply wells serving any residences located within ½ mile (2,640 feet) of the blasting area, and wells within 300 feet of any sand and gravel excavation that are not included within the ½ mile blasting radius. The well testing will be conducted in order to determine the volume, quantity and quality of water provided by each such well. Such testing shall be in accordance with testing protocols to be established by a hydrogeologist selected by the Town and paid by Grondin. As a component of these testing protocols, the hydrogeologist shall determine the requisite time period necessary for water supply testing to be performed in advance of any excavation below the seasonal high water table. Grondin agrees that, for a period of 20 years after the date of this Agreement, it will, at its sole expense, repair, replace or provide a substitute water source for any such well if it is determined by a hydrogeologist selected by the Town and paid by Grondin that such well was damaged, degraded or impaired for use as a domestic water supply by any activities occurring on the property or associated with the project.

(n) **Reports to the Planning Board:** One year after the commencement of excavation pursuant to this Agreement and then every three years thereafter, Grondin shall submit a report to the Planning Board on the progress of the project. Such report shall address traffic, environmental monitoring, operational impacts on the neighborhood (for example, noise and dust), the creation or opening of trail areas to the public, drainage, rate of wetlands creation, anticipated wetlands creation over the next three-year period, and any other factors which relate to compliance with the requirements of this Agreement and with the Planning Board's approval of the Plan. Upon review of the progress report, the Planning Board may, if the Board finds that the Project is not proceeding in accordance with the Plan or this Agreement, impose additional conditions on its approval of the Plan and/or may refer the report to the Town Council with recommendations for amendments to this Agreement.

(o) **Off-site Road and Traffic Mitigation:** Grondin shall implement, at Grondin's sole expense, all off-site traffic mitigation measures described in the June 15, 2005 memorandum from Scarborough Town Engineer Jim Wendel to Scarborough Town Manager Ron Owens, attached to and incorporated into this Agreement as Addendum A.

(p) **Conservation Easement(s):** Upon approval by the Maine DEP and the U.S. Army Corps of Engineers, and prior to approval by the Town Engineer of the plan for wetlands creation under Section 3(h), each wetland mitigation project will be entered into a Conservation Easement. Ultimately, and within a time period of no more than 20 years from the date of approval of this Agreement by the Town of Scarborough, the entire property with the exception of the land area shown on

Exhibit A that is hereby dedicated to the town for a school or other municipal use, will be entered into a conservation easement to be held by the Town, or a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council. The conservation easement or easements shall be permanent and shall limit the uses of the property to wetlands mitigation and monitoring, open space preservation, passive outdoor recreation, excluding use by motorized vehicles other than service and emergency vehicles, and may allow hunting provided hunting is limited to those areas where the hunting will not create a danger to persons using the property for walking, hiking, jogging, bicycling, picnicking and other passive recreational activities. The conservation easement or easements shall allow the uses permitted under Section 3(c) above. As is required under state and federal wetland statutes, the Maine DEP and the U.S. Army Corps of Engineers will have third party oversight in the easement.

4. **Property Conveyance:** Grondin shall have the right to convey its fee interest in the property, in whole or in part, as necessary to satisfy applicable requirements of the U.S. Army Corps of Engineers and the Maine Department of Environmental Protection in connection with the wetlands mitigation project and sale of the authorized wetlands mitigation credits; provided, however, that any parcel conveyed shall first be encumbered by conservation easement or easements limiting its use to the uses permitted by this Agreement. Portions of the property conveyed for wetlands compensation and restricted in perpetuity by conservation easement or easements to wetlands preservation shall not be considered lots under the Zoning Ordinance or the Subdivision Ordinance. Within 90 days of approval of this Agreement, Grondin shall convey the dedicated lot shown on Exhibit A to the Town, provided such dedicated lot is accepted by the Town Council. Upon completion of all phases of the wetlands mitigation and sale of the authorized wetlands mitigation credits or at the end of 20 years after the date of this Agreement, whichever occurs first, Grondin agrees to convey as a gift any remaining portions of the property to the Town, or to a land trust or similar entity designated by the Town, if such conveyance is approved by the Scarborough Town Council, subject to the same use limitations prescribed for conservation easements under Section 3(p) of this Agreement.

5. **Recordation:** Grondin shall record this Contract Zoning Agreement in the Cumberland County Registry of Deeds within 30 days after its approval by the Scarborough Town Council.

6. **Contract Zoning Agreement and Amendments:** The provisions of this Contract Zoning Agreement shall be deemed restrictions on the use of the property except as this Contract Zoning Agreement may be amended by future written agreement of the Town of Scarborough and Grondin, or their successors in interest.

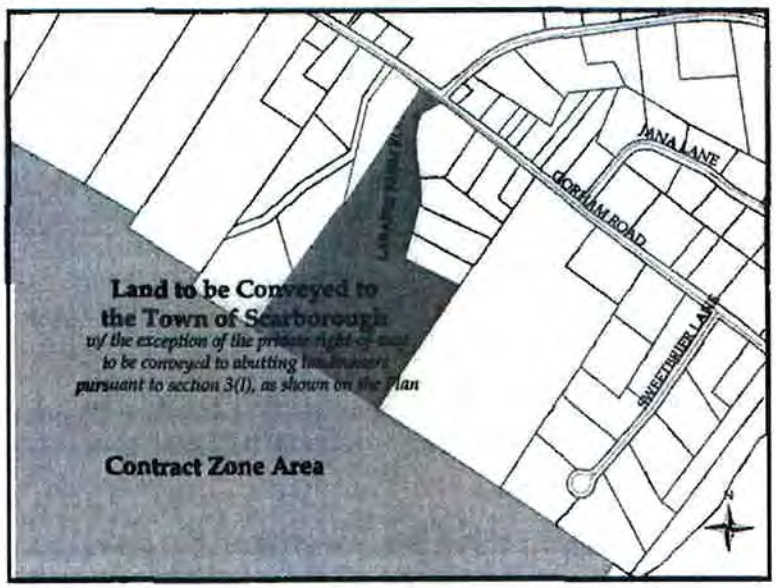
7. **Property Restrictions:** The above restrictions, provisions and conditions are an essential part of the rezoning, shall run with the property, shall bind Grondin, their successors in interest and assigns of said property or any part thereof, and shall inure to the benefit of and be enforceable by the Town of Scarborough.

8. Zoning Ordinance Applicability: Except as expressly modified herein, the use and occupancy of the subject premises shall be governed by and comply with the provisions of the Zoning Ordinance of the Town of Scarborough and any applicable amendments thereto or replacement thereof. The land within the Stream Protection District, as depicted on the Town of Scarborough, Maine GIS Zoning Map prior to the adoption of this Contract Zoning Agreement and as illustrated on Exhibit B to this Agreement, shall continue to be governed by the applicable provisions of the Shoreland Zoning Ordinance, none of which are abrogated or modified by this Agreement.

9. Agreement Termination: In the event that Grondin or its successors or assigns fail to develop the project in accordance with this Agreement, or in the event of any other breach hereof, this Contact may be terminated by vote of the Scarborough Town Council. In that event, the property may then be used only for such uses as are otherwise allowed by law.

10. Section 901: This Agreement is subject to Section 901 of the Council-Manager Charter of the Town of Scarborough.

11. Exhibit A:



WITNESS:

TOWN OF SCARBOROUGH

By: _____

Ronald W. Owens, Its Town Manager (duly authorized by vote of the Scarborough Town Council on August 16, 2006)

_____

GRONDIN AGGREGATES LLC

_____

Philip H. Grondin Jr., Its Manager

EXHIBIT 8
ADDENDUM "A" – PAGE 1

Town of Scarborough, Maine
259 US Route One, PO Box 360
Scarborough, Maine • 04070-3360

MEMORANDUM

TO: Ron Owens, Town Manager

CC: Joe Ziepniewski, Planner
Dan Bacon, Assistant Planner
Mike Shaw, Director of Public Works

FROM: Jim Wendel, PE, Planning Department

DATE: June 15, 2005

RE: Larabee Wetland Mitigation Contract Zone

Below is a summary of the Planning Departments requirements for off-site traffic mitigation for the project.

1. All truck access to the site shall only be through the Beech Ridge Road entrance. Further, no trucks exiting the site shall take a left and drive southerly on Beech Ridge Road. However, the Public Works Director may authorize the use of the southern portion Beech Ridge Road for a specific project based on the review of a written request by the applicant identifying the project location, route and anticipated round trips between the pit and the project.
2. Reconstruct approximately 2,740 LF of Beech Ridge Road from Rte 114 south towards the proposed site entrance. The actual beginning and end points shall be coordinated with and agreed to by the Director of Public Works. The work shall include;
   a. Grinding the existing pavement and mixing a certain depth of the underlying existing subgrade granular material.
   b. Fine grade the surface for paving.
   c. Placement of a total of 4inches of pavement to a width of 32ft (12ft travel lanes and 4ft shoulders).
   d. Install pavement markings for a double yellow centerline and white travel edge lines.
   e. Reconstruct all existing driveways and Town roads within the work limits to allow a proper match with the new road grade. Reconstructed driveways shall include a paved apron if the driveway is not paved. The paved driveway apron shall be 3ft long by 3 inches of total pavement depth with a width to match the reconstructed driveway. The existing paved driveway shall have a total replacement paving depth of 3 inches. The Town road replacement paving shall be 4 inches.
3. Construct, prior to the start of pit operations, an exclusive left-turn lane of sufficient length to accommodate two "wheeler" trucks on the south approach of Beech Ridge Road at the site

entrance. The design shall be based upon MDOT standards as presented in their 1994 Highway Design Manual.

4. Widen, prior to the start of pit operations, the southwest corner of Beech Ridge Road and Route 114 intersection as conceptually depicted on Figure 5 enclosed with the March 16, 2005 Gorrill-Palmer, Inc. letter to accommodate a turning WB-50 tractor trailer vehicle.
5. Detailed designs for items 2, 3 &4 above shall evaluate surface and subsurface drainage, and subgrade soil conditions and provide appropriate designs in response to any identified deficiencies. Detailed design plans including plan and profiles and typical sections for these improvements will be submitted to both the Director of Public Works and the Town Engineer for review and approval.
6. Construction of the site entrance shall be in general conformance to the conceptual design depicted on Figure 4 enclosed with the March 16, 2005 Gorrill-Palmer, Inc. letter. However, in addition, the entrance shall include a paved apron. The apron shall be 10ft long with 4inches of total pavement depth and shall match the width of the proposed entrance drive geometry.
7. The Applicant will commit in writing to complete by October 15, 2010 or in year five of the pit operation to either a heavy maintenance shim or the road reconstruction improvements on Beech Ridge Road identified in item 2. The Director of Public Works will advise the applicant in writing which level of improvement will be required by late summer of the same year. If the maintenance shim is required than the applicant will complete the required final reconstruction improvements to Beech Ridge Road, identified in item 2, in a time frame required by the Director of Public Works.
8. Install a truck actuated flashing warning light and "TRUCK ENTERING" sign assembly on Beech Ridge Road southerly of the site entrance in conformance with MUTCD. Maintenance of the installation is the applicant's responsibility.
9. The Payne Road Impact Fee computation for Zone #2 should be revised for a total of 9 trips @ $292.42=$2,631.78. The total impact fee is therefore revised from $12,160.83 to $13,038.09
10. Prior to the start of pit operations, the applicant shall provide a performance guarantee for the value of the required off-site improvements outlined in item 2 above. The initial minimum duration of the performance guarantee shall be to December 31, 2011 or the end of the first six years of the pit operation. Pit operation is defined as mobilization to, and set-up of pit equipment on the site and hauling of any natural resource material from or to the site.

Thank you,

AMENDMENT TO THE CONTRACT ZONING AGREEMENT
FOR THE LARRABEE FARMS WETLAND MITIGATION PROJECT

This First Amendment to Contract Zoning Agreement (hereinafter, this "Amendment") is made as of the day of 2008 by and between the Town of Scarborough, a body corporate and politic, located in the County of Cumberland and State of Maine (hereinafter, "the Town"), Grondin Aggregates LLC, a limited liability company, located in Gorham, Maine (hereinafter, "Grondin"), and the Scarborough Fish and Game Association, a Maine not-for-profit corporation, located in Scarborough, Maine (hereinafter, "SF&G"), pursuant to the Contract Zoning provisions of Section II, Subsection I of the Zoning Ordinance of the Town of Scarborough (hereinafter, the "Zoning Ordinance").

WHEREAS, Grondin entered into a Contract Zoning Agreement with the Town dated as of the _____ day of _____ 200__ (hereinafter, the "Agreement") creating Contract Zoning District Number VIII (hereinafter, the "District") as described in Section XXIII of the Zoning Ordinance, said Agreement having been recorded in the Cumberland County Registry of Deeds in Book _____, Page _____; and,

WHEREAS, Grondin has acquired, by a certain Easement Agreement and Declaration between Grondin and SF&G dated April 13, 2007 and recorded in the Cumberland County Registry of Deeds at Book ____, Page ____, the right to utilize portions of approximately 53 acres of land owned by the Scarborough Fish & Game Association for the wetlands mitigation and preservation purposes described in the Agreement; and

WHEREAS, SF&G is willing to have that 53 acres rezoned in order to become part of the Agreement; and

WHEREAS, SF&G is willing to submit its 53 acres to a conservation easement; and

WHEREAS, Grondin wishes to amend the Agreement in order to allow the importation and storage of aggregate materials from outside the District to be used in the mixing and processing of materials excavated or quarried onsite to create aggregate products for end users; and

WHEREAS, the ability of Grondin to undertake such mixing and processing within the District will expedite the completion of the wetlands mitigation and preservation work authorized by the Agreement, making the property within the District available for public recreational use sooner;

NOW THEREFORE, in consideration of the mutual promises made by the parties to one another, the parties covenant and agree as follows:

1. The Zoning Map of the Town of Scarborough is amended and the District is enlarged as shown on Attachment 1 hereto.

2. Section 3(c) (Permitted Uses) of the Agreement is amended by adding a new permitted use as described and limited in the following new subparagraph (v):

   (v) Production of end-user aggregate products by the mixing and processing of naturally deposited materials excavated or mined on property within the District with materials imported from outside the District. The imported materials can include naturally deposited material, old bituminous asphalt cement pavement, and old portland cement and pozzolan cement concrete customarily used in the construction of infrastructure. The imported material may be stored on the property temporarily pending its use to produce the end-user aggregate products. All reinforcing steel imbedded in portland or pozzolan cement concrete which is imported into the District and is removed during mixing and processing must be removed from the District on a regular basis, no longer than 90 days after it arrives in the District. Mixing and processing shall be accomplished only by mechanical crushing, screening and blending of the material, without the use of heat or the application of chemicals. Hot bituminous asphalt pavement and cement concrete shall not be manufactured on site. The mixing and processing allowed under this subparagraph (v) is limited to that portion of the property depicted as "Aggregate Material Mixing, Processing and Storage Area" on the plan attached hereto as Attachment 2. The operation of crushers, grinders, mixers and other machinery in the location shown on Attachment 2 as Crusher/Sorter #1 is limited to the hours of 9:00 a.m. to 3:00 p.m. weekdays. The operation of crushers, grinders, mixers and other machinery in the location shown on Attachment 2 as Crusher/Sorter #2 is subject to the hours of operation set forth in Section 3(j) of the Agreement.

3. Section 3(c) (Permitted Uses) of the Agreement is amended by adding a new permitted use as described and limited in the following new subparagraph (vi):

   (vi) A temporary shelter for materials and equipment storage and equipment maintenance, as depicted on the plan attached hereto as Attachment 3. Maintenance activities within the District are limited to repairs and routine maintenance of on-site machinery and equipment used in the excavation, wetlands creation, wetlands reclamation and aggregate materials mixing and processing allowed under the Agreement and this Amendment. Maintenance, servicing and repairs of over-the-road vehicles are not allowed on the property.

4. The requirements of Section 3(o) of the Agreement and the June 15, 2005 memorandum from Scarborough Town Engineer Jim Wendel to Scarborough Town Manager Ron Owens shall remain in effect, except that the amount of the Payne Road Impact Fee for Zone No. 2 is revised to $25,286.76.

5. The requirements for conservation easements under Section 3(p) shall remain in effect, except the time period for subjecting the entire property to conservation

easements is changed from 20 years to "10 years after the date of this amendment," and except that, as to the approximately 53 acres owned by SF&G, SF&G shall make the designation of the land trust or other entity qualified under Maine law to be the holder of the conservation easement.

6. The requirement of Section 4 that remaining portions of the property shall be conveyed as a gift to the Town or a land trust suitable to the Town remains in effect, except the time period for completing such conveyance is changed from 20 years to "10 years after the date of this amendment," and except that the approximately 53 acres owned by SF&G shall not be required to be conveyed.

7. Except as specifically amended herein, all terms and conditions of the Agreement shall remain in full force and effect.

8. Grondin shall record this Amendment in the Cumberland County Registry of Deeds within thirty (30) days after its approval by the Scarborough Town Council.

9. No later than five (5) working days after commencing one or more of the uses permitted by paragraphs 2 and 3 of this Amendment, Grondin shall give written notice to the Town Engineer that the use has commenced, specifying the date of commencement. If Grondin fails to give such notice, the Town Engineer may independently determine when the use commences. In either event, the Town Engineer, in person or by agent, shall confirm by site visit that the use has commenced and then provide written notice to the Town Manager of the date of commencement of the use. At the end of six (6) months after the date of commencement of use specified by the Town Engineer, the Town Manager shall place an item on the agenda of the next regular Town Council meeting to review the operation of such use, and the Council, after notice and public hearing, shall evaluate whether there have occurred significant adverse impacts on the surrounding neighborhood which were not identified or anticipated at the time of approval of this Amendment. If the Council finds that significant adverse impacts have occurred, the Council may amend the Agreement and/or this Amendment as the Council deems necessary to address such impacts. Any such amendment would require Town Council approval only, unless the Council should elect to refer the proposed amendment to the Planning Board for a recommendation.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the date first set forth above.

WITNESS

GRONDIN AGGREGATES, LLC

_____

By: _____
Philip H. Grondin, Jr., its Manager

Appendix 4: Correspondence

- **FAA Correspondence (attached)**

Richard Jordan

From: john.silva@faa.gov
Sent: Tuesday, November 21, 2006 10:21 AM
To: rjordan@boyleassociates.net
Cc: bob.siris@faa.gov
Subject: Fw: Wetland Mitigation Project in Scarborough, Maine (near Airport PWM)

FAA Letter.pdf

I do not see a problem with this mitigation plan, since it is over 10,000 feet from the nearest runway at PWM and forested or scrub/shrub wetland generally attracts solitary bird activity rather than flocking or waterfowl activity. Within 10,000 feet FAA is generally opposed to open water and wet meadow creation or enhancement.

John Silva, Manager, Environmental Programs
Airports Division
FAA New England Region
12 New England Executive Park
Burlington, MA 01803
781-238-7602-voice
781-238-7608-fax
----- Forwarded by John Silva/ANE/FAA on 11/21/2006 10:14 AM -----

Bob Siris/ANE/FAA
ANE-620, Safety & Standards

To
John Silva/ANE/FAA@FAA

cc

11/21/2006 06:56 AM

Subject
Fw: Wetland Mitigation Project in Scarborough, Maine (near Airport PWM)

John

Can you advise him on this?

-Bob

----- Forwarded by Bob Siris/ANE/FAA on 11/21/2006 06:55 AM -----

"Richard Jordan" <rjordan@boyleassociates.net> To Bob Siris/ANE/FAA@FAA
11/16/2006 02:28 PM cc
Subject
Please respond to <rjordan@boyleassociates.net> Wetland Mitigation Project in Scarborough, Maine (near Airport PWM)

Hi Mr. Siris -

I am working on a wetland mitigation project for the Maine DOT - the project involves wetland creation and preservation along a stretch of the Nonesuch River in Scarborough, Maine - approximately 2.5 miles from the Portland Jetport (PWM). Please see the attached map. As part of the overview process, the Army Corps PM has requested that we seek clearance from FAA pursuant to the Advisory Circular 150/5200-33.

No open water systems proposed as part of the mitigation (except for small vernal pool-type features). Further, we anticipate about 75-90% of our wetland creation efforts to include forested wetland systems, with the rest containing shrubs and emergent wetlands. Would you please advise me as to what we need to do to receive review from FAA as to our project in order to satisfy the Corps recommendations?

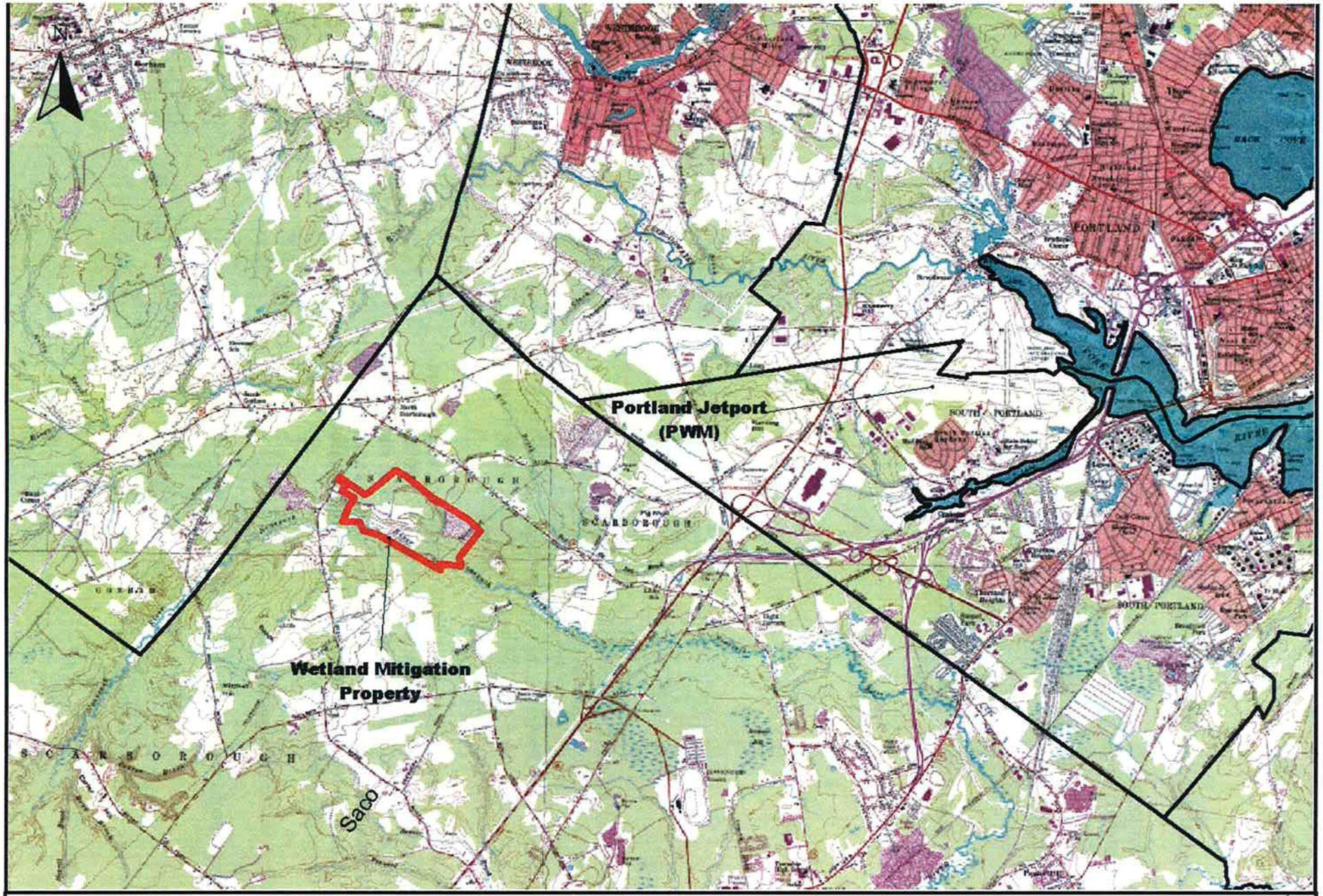
Please call or write for more information.

Thank you very much,

Rich

PS - I copied this email to John Silva.

Richard Jordan, PWS, CPESC



Grondin Aggregates, LLC
Larrabee Farms Wetland Mitigation Project
Scarborough, Cumberland County Maine
November 2006 -- REJ

0.5 0 0.5 1 1.5 2 Miles

BOYLE ASSOCIATES
Environmental Consultants
1309 Broadway
South Portland, Maine 04106
(P) 207.799.5565
www.boyleassociates.net

Appendix 5: R.W. Gillespie Hydrogeological Report

(portions attached)

R. W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

December 14, 2007

Mr. Kenneth Grondin
R. J. Grondin & Sons, Inc.
11 Bartlett Road
Gorham, Maine 04038

Re: Review of Geohydrologic Conditions - "Haigis Parkway" 3 Ac. Wetland Creation Area
Larrabee Farms Wetland Mitigation Project
Scarborough, Maine
RWG&A Project No. 395-07.ENV

Dear Mr. Grondin:

At your request, and as a follow-up to our several meetings with your office, the Maine Department of Environmental Protection, Army Corps of Engineers, and other agencies, R.W. Gillespie & Associates, Inc., (RWG&A) had reviewed geohydrologic conditions in proximity to the 3 ac. wetland creation area proposed for the "Haigis Parkway" development project in Scarborough, Maine. The following sections summarize our findings and conclusions based on RWG&A's review of available supporting geologic and geohydrologic data.

Background

The subject "Haigis Parkway" wetland creation area (HP Area) is 3 acres in size, and is situated near the center of the Larrabee Farms site, immediately west of the MDOT Gorham Bypass Mitigation 2006 area as shown on the attached *Overall Site Plan* provided by Sebago Technics, Inc. (Sheet 1 of 3). The HP Area is currently a forested upland bounded by a deeply incised stream channel along its northeast and eastern side. The general soil profile in the HP Area as documented in RWG&A test boring P-11/MW-11 (see log attached) consists of topsoil and organic material overlying about 1.5 ft of medium to fine sand; silty clay deposits of the glaciomarine Presumpscot Formation are present to a depth of about 15 feet (approx. elevation 79) where the deposits transition to a very soft, predominantly clay material. The upper, silty clay strata have fine sandy silt seams and lenses that appear to transmit groundwater through the formation; seeps along the bank of the adjacent stream valley flow much of the year, and are attributed to groundwater transmission through the sandy silt layers.

200 International Dr., Ste 170
Portsmouth, NH 03801
603-427-0244 • Fax 603-430-2041

Corporate Office
86 Industrial Park Rd., Ste 4
Saco, ME 04072
207-286-8008 • Fax 207-286-2882
www.rwgillespie.com

P.O. Box 289
Augusta, ME 04344
207-623-4914 • Fax 207-623-3429

As shown on the attached *Site Sketch* (Sheet 1 of 1) prepared by Sebago Technics, Inc. the proposed configuration of the HP Area requires removal of overburden soils and recontouring/regrading of the area, to a final elevation of 86 ft at its deepest point. The HP Area will be augmented by two spillways, as depicted on the *Site Sketch*, to control hydrology in the area in case of excessive precipitation or greater than normal groundwater levels in the area.

Conclusions

Based on our review of the stratigraphic profile in the HP Area, RWG&A concludes that the soils beneath the proposed wetland elevation will form an aquitard, and are likely to retain or "perch" shallow groundwater along its upper surface supporting wetland hydrology.

Review of available historical groundwater monitoring data for the Larrabee Farm site, including MW-11, for the period November 2003 to December 2006 (see attached) confirms the stability of groundwater levels at the site, and in particular at MW-11. Our evaluations indicate soil removal to elevation 87 ft would probably be sufficient to provide the requisite groundwater levels to support wetland creation most times of the year; however, we agree that soil removal to elevation 86 ft would be a more conservative approach. The proposed spillways will provide a mechanism for managing excess water levels in the project vicinity, should this condition occur.

In summary, based on the foregoing, RWG&A concludes that the location and configuration of the proposed HP Area at the Larrabee Farms site would likely support wetland creation.

Closure

RWG&A appreciates the opportunity to be of continued assistance to you on this project. If you have any questions, or if we may be of additional assistance, please contact us.

Cynthia Thayer Digitally signed by Cynthia Thayer DN: cn=Cynthia Thayer, o=US, o=R.W. Gillespie Assoc. Inc. Date: 2007.12.14 16:36:12 -05'00'

Very truly yours,
R. W. GILLESPIE & ASSOCIATES, INC.

Cynthia A. Thayer

Cynthia A. Thayer, C.G.
Chief Geohydrologist

CAT:ci
Attachments

cc: Richard Jordan - Boyle Associates

BORING LOG P-11

Project: Larabee Farm Road
Location: Scarborough, Maine

Approximate Surface Elevation: 93.4'
Ground Water Depth: 4'

Client: Grondin

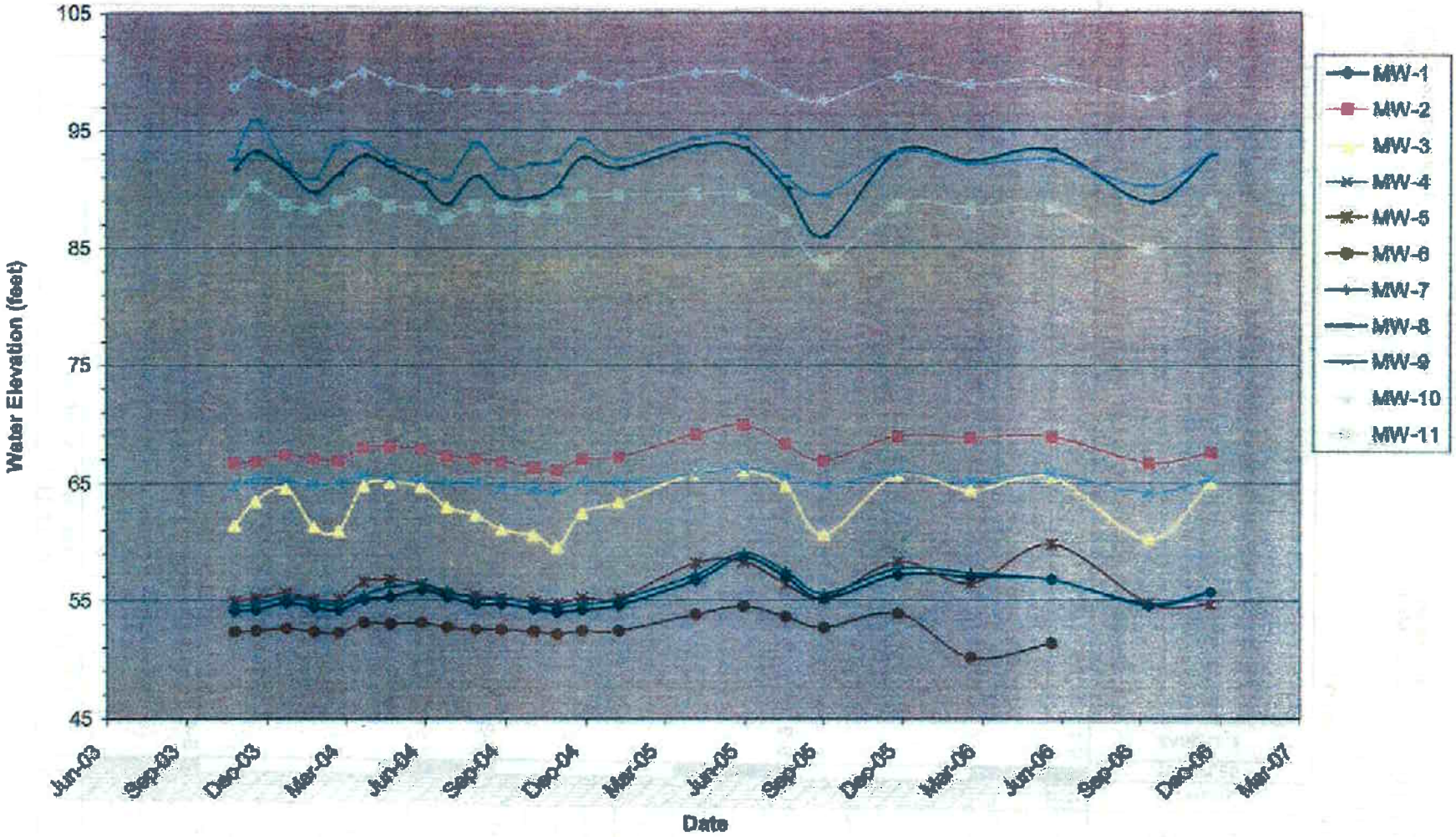
Date: 4/10/02

Project No. 395-07

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE #	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	OVM / PID	Lab Tests
0			S-1	TOPSOIL AND ORGANIC MATERIAL (7").	20	WOH 1 2 3	3		
				SAND (SP); loose, moist, coarse to fine, mostly medium to fine, little silt, yellow orange.					
2.5				SILTY CLAY (ML-CL); soft, moist, some silt, brown.					
5			S-2		24	1 2 3 5	5		
7.5									
10			S-3	Becomes wet, some fine sandy silt lenses and mottling.	24	WOH WOH WOH WOH			
12.5									
15			S-4	CLAY (CL-ML); very soft, wet, bluish gray.	24	WOR WOR WOR WOR			
17.5				Bottom of Exploration at 17': no refusal Set Monitoring Well P-11.					

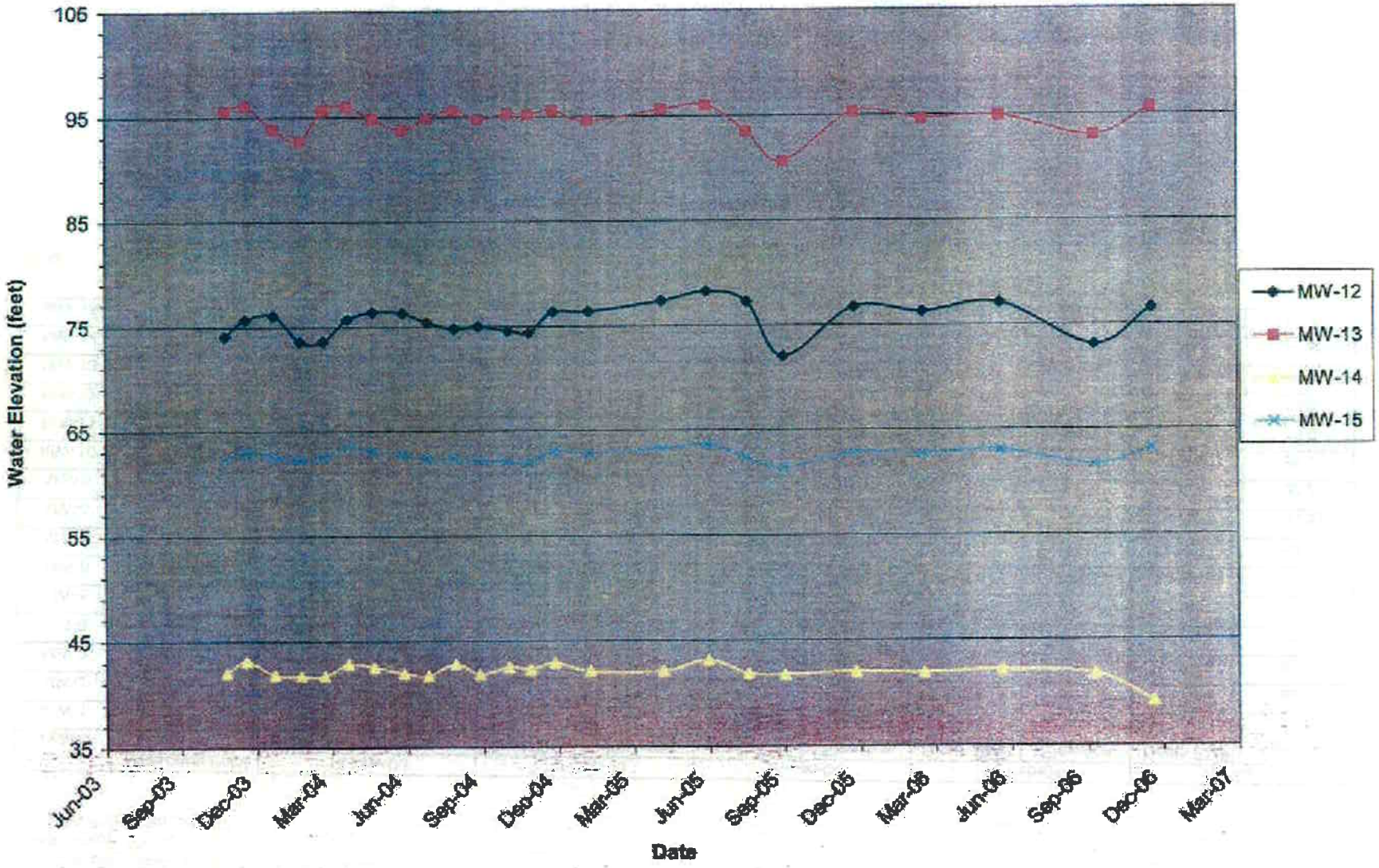
R.W. Gillespie & Associates, Inc.
Portsmouth, New Hampshire

Graph 1. Graphical Depiction of Overburden Piezometer Data



RWGA Project No. 395-07.ENV | Larrabee Farm Wetlands | December 2006

Graph 2. Graphical Depiction of Bedrock Piezometer Data



RWGA Project No. 366-07.ENV

Lambee Farms Wetlands

December 2006

Table 1. Measuring Point and Groundwater Elevation Data

Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	18-Nov-03		12-Dec-03		15-Jan-04		16-Feb-04		15-Mar-04	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	20.7	54.1	20.6	54.2	20.0	54.8	20.4	54.4	20.5	54.2
MW-2	78.46	11.8	66.7	11.6	66.8	11.0	67.4	11.5	67.0	11.6	66.9
MW-3	68.94	7.6	61.4	5.5	63.6	4.3	64.6	7.6	61.3	7.9	61.0
MW-4	69.05	4.3	64.8	3.7	65.4	3.8	65.3	4.1	64.9	4.0	65.1
MW-5	67.59	12.7	54.9	12.4	55.2	12.0	55.6	12.5	55.1	12.5	55.1
MW-6	67.89	15.6	52.3	15.5	52.4	15.3	52.6	15.6	52.3	15.7	52.2
MW-7	69.63	15.1	54.5	14.9	54.7	14.4	55.3	14.8	54.9	14.9	54.7
MW-8	98.44	6.8	91.7	5.2	93.2	6.7	91.7	8.8	89.7	7.2	91.3
MW-9	102.12	9.5	92.6	6.2	95.9	9.9	92.2	11.2	90.9	8.3	93.8
MW-10	104.28	5.6	98.7	4.5	99.8	5.3	99.0	6.0	98.3	5.3	99.0
MW-11	95.91	7.2	88.7	5.7	90.2	7.3	88.7	7.6	88.3	7.0	88.9
MW-12	95.54	21.4	74.1	19.9	75.7	19.5	76.1	21.9	73.6	22.0	73.6
MW-13	99.23	3.6	95.6	3.1	96.1	5.3	93.9	6.6	92.7	3.5	95.7
MW-14	67.15	25.1	42.1	24.0	43.2	25.2	41.9	25.4	41.8	25.4	41.8
MW-15	70.54	8.1	62.4	7.5	63.1	7.8	62.7	8.2	62.3	7.9	62.6

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point

Table 1. Measuring Point and Groundwater Elevation Data Cont.

Larrabee Farm Road Wetlands Reclaimation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	13-Apr-04		18-May-04		17-Jun-04		16-Jul-04		17-Aug-04	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	19.7	55.1	19.5	55.3	18.9	55.9	19.5	55.3	20.1	54.7
MW-2	78.46	10.4	68.0	10.4	68.1	10.5	67.9	11.2	67.3	11.5	67.0
MW-3	68.94	4.2	64.8	3.8	65.1	4.2	64.7	5.9	63.0	6.6	62.3
MW-4	69.05	3.4	65.7	3.6	65.5	3.7	65.3	3.9	65.1	4.0	65.1
MW-5	67.59	11.0	56.6	10.8	56.8	11.2	56.4	12.0	55.6	12.2	55.4
MW-6	67.89	14.8	53.1	14.9	53.0	14.8	53.1	15.2	52.7	15.4	52.5
MW-7	69.63	14.1	55.5	13.4	56.2	13.3	56.4	13.8	55.8	14.5	55.2
MW-8	98.44	5.6	92.9	6.6	91.9	8.0	90.5	9.7	88.7	7.4	91.1
MW-9	102.12	8.2	94.0	9.7	92.5	10.5	91.7	11.4	90.8	8.1	94.0
MW-10	104.28	4.3	100.0	5.1	99.2	5.7	98.6	6.0	98.3	5.7	98.6
MW-11	95.91	6.3	89.6	7.3	88.6	7.5	88.4	8.4	87.5	7.3	88.6
MW-12	95.54	19.8	75.7	19.1	76.4	19.2	76.3	20.1	75.4	20.8	74.8
MW-13	99.23	3.3	96.0	4.5	94.8	5.5	93.8	4.3	94.9	3.6	95.6
MW-14	67.15	24.3	42.9	24.6	42.6	25.2	42.0	25.4	41.8	24.2	42.9
MW-15	70.54	6.9	63.6	7.4	63.1	7.7	62.8	8.2	62.4	8.2	62.4

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point

Table 1. Measuring Point and Groundwater Elevation Data Cont.

Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	15-Sep-04		21-Oct-04		15-Nov-04		14-Dec-04		25-Jan-05	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	20.1	54.7	20.5	54.3	20.8	54.0	20.6	54.2	20.2	54.6
MW-2	78.46	11.7	66.8	12.1	66.3	12.4	66.1	11.5	67.0	11.2	67.2
MW-3	68.94	7.8	61.1	8.3	60.6	9.4	59.8	6.5	62.5	5.6	63.4
MW-4	69.05	4.4	64.7	4.6	64.5	4.8	64.3	3.9	65.2	3.9	65.2
MW-5	67.59	12.4	55.2	12.7	54.9	12.9	54.7	12.4	55.2	12.4	55.2
MW-6	67.89	15.4	52.5	15.6	52.3	15.8	52.1	15.5	52.4	15.5	52.4
MW-7	69.63	14.5	55.2	14.9	54.8	15.2	54.5	14.9	54.7	14.6	55.1
MW-8	98.44	9.2	89.3	9.2	89.3	8.2	90.2	5.8	92.7	6.7	91.8
MW-9	102.12	10.3	91.8	10.0	92.2	9.8	92.4	7.8	94.3	9.5	92.6
MW-10	104.28	5.9	98.4	5.9	98.4	5.9	98.4	4.7	99.6	5.3	99.0
MW-11	96.91	7.5	88.4	7.7	88.2	7.4	88.5	6.5	89.4	--	--
MW-12	95.54	20.6	75.0	21.0	74.6	21.1	74.4	19.1	76.4	19.1	76.4
MW-13	99.23	4.5	94.8	3.9	95.3	4.0	95.2	3.6	95.6	4.7	94.6
MW-14	67.15	25.2	41.9	24.6	42.6	24.7	42.4	24.1	43.0	24.9	42.2
MW-15	70.54	8.4	62.2	8.4	62.1	8.6	62.0	7.5	63.1	7.7	62.9

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point

Table 1. Measuring Point and Groundwater Elevation Data Cont.

Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	22-Apr-05		15-Jun-05		2-Aug-05		15-Sep-05		8-Dec-05	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	18.1	56.7	16.1	58.7	17.8	57.0	19.6	55.2	17.6	57.2
MW-2	78.46	9.4	69.1	8.5	69.9	10.2	68.3	11.6	66.9	9.5	69.0
MW-3	68.94	3.1	65.8	2.8	66.1	4.1	64.8	8.3	60.7	3.2	65.7
MW-4	69.05	3.2	65.8	2.8	66.3	3.4	65.7	4.2	64.9	3.1	65.9
MW-5	67.59	9.4	58.2	9.3	58.3	11.2	56.4	12.4	55.2	9.3	58.3
MW-6	67.89	14.1	53.8	13.4	54.5	14.25	53.6	15.2	52.7	14	53.9
MW-7	69.63	12.5	57.2	10.6	59.1	12.2	57.5	14.0	55.6	11.9	57.7
MW-8	98.44	4.8	93.7	5.0	93.5	8.4	90.1	12.4	86.0	5.2	93.3
MW-9	102.12	7.8	94.4	7.6	94.5	11.1	91.1	12.6	89.6	8.9	93.2
MW-10	104.26	4.4	99.9	4.3	99.9	6.1	98.2	6.8	97.5	4.7	99.6
MW-11	95.91	6.3	89.6	6.4	89.5	8.6	87.3	12.2	83.8	7.3	88.6
MW-12	95.54	18.2	77.4	17.3	78.3	18.2	77.3	23.5	72.0	18.8	76.8
MW-13	99.23	3.6	95.6	3.2	96.0	5.8	93.5	8.6	90.7	3.9	95.3
MW-14	67.15	25.0	42.2	23.9	43.2	25.3	41.9	25.4	41.8	25.1	42.1
MW-15	70.54	7.2	63.3	6.9	63.7	8.1	62.4	9.1	61.4	7.7	62.8

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point

Table 1. Measuring Point and Groundwater Elevation Data Cont.

Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Measuring Point Elevation (ft)	28-Feb-06		31-May-06		19-Sep-06		10-Nov-06		27-Nov-06	
		Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation	Depth BMP	Elevation
MW-1	74.77	17.7	57.0	18.0	56.8	20.2	54.6	19.4	55.4	19.1	55.7
MW-2	78.46	9.6	68.8	9.6	68.9	11.8	66.7	--	--	10.9	67.6
MW-3	68.94	4.5	64.4	3.4	65.5	8.6	60.3	--	--	3.9	65.1
MW-4	69.05	3.8	65.3	3.2	65.8	4.9	64.2	3.5	65.5	3.7	65.4
MW-5	67.59	11.1	56.5	7.8	59.8	12.9	54.7	--	--	12.9	54.7
MW-6	67.89	17.7	50.2	16.6	51.3	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
MW-7	69.63	12.3	57.4	12.9	56.8	14.9	54.8	14.2	55.4	13.9	55.8
MW-8	98.44	6.0	92.4	5.1	93.3	9.5	88.9	--	--	5.5	93.0
MW-9	102.12	9.9	92.2	9.6	92.6	11.9	90.3	--	--	9.0	93.1
MW-10	104.26	5.3	99.0	4.9	99.4	6.5	97.8	3.7	100.6	4.5	99.8
MW-11	96.91	7.5	88.4	7.4	88.5	11.0	84.9	5.4	90.5	7.2	88.8
MW-12	95.54	19.3	76.3	18.4	77.1	22.5	73.1	19.9	75.6	19.0	76.6
MW-13	99.23	4.5	94.7	4.3	94.9	6.2	93.0	3.3	96.0	3.6	95.6
MW-14	67.15	25.2	42.0	24.9	42.2	25.3	41.8	24.2	42.9	27.9	39.3
MW-15	70.54	7.8	62.7	7.5	63.1	8.9	61.7	6.9	63.6	7.3	63.2

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off
"--" indicates that data was not collected from the monitoring point during the field event.
BMP - Below Measuring Point
Note: November 2006 measurements were made from PVC measure point, not metal stand pipe top.

Table 2. Groundwater Depths Below Ground Surface

Historic Groundwater Data
Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Ground Surface Elevation (ft)	18-Nov-03 Depth BGS	12-Dec-03 Depth BGS	15-Jan-04 Depth BGS	16-Feb-04 Depth BGS	15-Mar-04 Depth BGS
MW-1	72.09	18.0	17.9	17.3	17.7	17.9
MW-2	75.94	9.3	9.1	8.5	9.0	9.1
MW-3	66.32	4.9	2.8	1.7	5.0	5.3
MW-4	66.47	1.7	1.1	1.2	1.5	1.4
MW-5	65.02	10.1	9.8	9.4	10.0	9.9
MW-6	65.39	13.1	13.0	12.8	13.1	13.2
MW-7	67.06	12.6	12.4	11.8	12.2	12.3
MW-8	95.66	4.0	2.5	3.9	6.0	4.4
MW-9	99.56	7.0	3.7	7.4	8.7	5.8
MW-10	101.19	2.5	1.4	2.2	2.9	2.2
MW-11	93.35	4.6	3.2	4.7	5.0	4.5
MW-12	92.93	18.8	17.3	16.9	19.3	19.4
MW-13	96.74	1.1	0.6	2.8	4.1	1.0
MW-14	64.55	22.5	21.4	22.6	22.8	22.8
MW-15	67.76	5.3	4.7	5.1	5.4	5.2

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"–" indicates that data was not collected from the monitoring point during the field event.
BGS- Below Ground Surface

Table 2. Groundwater Depths Below Ground Surface Cont.

Historic Groundwater Data
Larrabee Farm Road Wetlands Reclaimation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Ground Surface Elevation (ft)	13-Apr-04 Depth BGS	13-May-04 Depth BGS	17-Jun-04 Depth BGS	16-Jul-04 Depth BGS	17-Aug-04 Depth BGS
MW-1	72.09	17.0	16.8	16.2	16.8	17.4
MW-2	75.94	7.9	7.9	8.0	8.7	9.0
MW-3	66.32	1.5	1.2	1.6	3.3	4.0
MW-4	66.47	0.8	1.0	1.2	1.3	1.4
MW-5	65.02	8.4	8.2	8.6	9.4	9.6
MW-6	65.39	12.3	12.4	12.3	12.7	12.9
MW-7	67.06	11.6	10.9	10.7	11.3	11.9
MW-8	95.66	2.8	3.8	5.2	6.9	4.6
MW-9	99.56	5.6	7.1	7.9	8.8	5.5
MW-10	101.19	1.2	2.0	2.6	2.9	2.6
MW-11	93.35	3.7	4.8	4.9	5.8	4.7
MW-12	92.93	17.2	16.5	16.6	17.5	18.2
MW-13	96.74	0.8	2.0	3.0	1.8	1.1
MW-14	64.55	21.7	22.0	22.6	22.8	21.6
MW-15	67.76	4.1	4.6	5.0	5.4	5.4

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"–" indicates that data was not collected from the monitoring point during the field event.
BGS- Below Ground Surface

Table 2. Groundwater Depths Below Ground Surface Cont.

Historic Groundwater Data
Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Ground Surface Elevation (ft)	15-Sep-04 Depth BGS	21-Oct-04 Depth BGS	15-Nov-04 Depth BGS	14-Dec-04 Depth BGS	25-Jan-05 Depth BGS
MW-1	72.09	17.4	17.8	18.1	17.9	17.5
MW-2	75.94	9.2	9.6	9.8	9.0	8.7
MW-3	66.32	5.2	5.7	6.7	3.8	2.9
MW-4	66.47	1.8	2.0	2.2	1.3	1.3
MW-5	65.02	9.8	10.1	10.3	9.8	9.8
MW-6	65.39	12.9	13.1	13.3	13.0	13.0
MW-7	67.08	11.9	12.3	12.6	12.3	12.0
MW-8	95.66	6.4	6.4	5.4	3.0	3.9
MW-9	99.66	7.8	7.4	7.2	5.3	6.9
MW-10	101.19	2.8	2.8	2.8	1.6	2.2
MW-11	93.35	5.0	5.1	4.9	3.9	–
MW-12	92.93	18.0	18.4	18.6	16.5	16.5
MW-13	98.74	2.0	1.4	1.5	1.1	2.2
MW-14	64.55	22.6	22.0	22.1	21.5	22.3
MW-15	67.76	5.6	5.6	5.8	4.7	4.9

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"–" indicates that data was not collected from the monitoring point during the field event.
BGS- Below Ground Surface

Table 2. Groundwater Depths Below Ground Surface Cont.

Historic Groundwater Data
Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Ground Surface Elevation (ft)	22-Apr-05 Depth BGS	15-Jun-05 Depth BGS	2-Aug-05 Depth BGS	15-Sep-05 Depth BGS	8-Dec-05 Depth BGS
MW-1	72.09	15.4	13.4	15.1	16.9	14.9
MW-2	75.94	6.9	6.0	7.6	9.0	7.0
MW-3	66.32	0.5	0.2	1.5	5.6	0.6
MW-4	66.47	0.7	0.2	0.8	1.6	0.5
MW-5	65.02	6.8	6.8	8.6	9.9	6.7
MW-6	65.39	11.6	10.9	11.8	12.7	11.5
MW-7	67.06	9.9	8.0	9.6	11.4	9.4
MW-8	95.66	2.0	2.2	5.6	9.6	2.4
MW-9	99.56	5.2	5.1	8.5	10.0	6.3
MW-10	101.19	1.3	1.3	3.0	3.7	1.6
MW-11	93.35	3.7	3.9	6.1	9.6	4.7
MW-12	92.93	15.6	14.7	15.6	20.9	16.2
MW-13	96.74	1.1	0.7	3.3	6.1	1.4
MW-14	64.55	22.4	21.3	22.7	22.8	22.5
MW-15	67.76	4.4	4.1	5.3	6.3	4.9

Notes:

All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"–" indicates that data was not collected from the monitoring point during the field event.
BGS- Below Ground Surface

Table 2. Groundwater Depths Below Ground Surface Cont.

Historic Groundwater Data
Larrabee Farm Road Wetlands Reclamation Site
Scarborough, Maine
RWG&A Project No. 395-07

Location	Ground Surface Elevation (ft)	28-Feb-06 Depth BGS	31-May-06 Depth BGS	19-Sep-06 Depth BGS	10-Nov-06 Depth BGS	27-Nov-06 Depth BGS
MW-1	72.09	15.1	15.3	17.5	16.7	16.4
MW-2	75.94	7.1	7.1	9.3	--	8.3
MW-3	66.32	1.9	0.8	6.0	--	1.2
MW-4	66.47	1.2	0.7	2.3	1.0	1.1
MW-5	65.02	8.6	5.2	10.3	--	10.4
MW-6	65.39	15.2	14.1	Destroyed	Destroyed	Destroyed
MW-7	67.06	9.7	10.3	12.3	11.7	11.3
MW-8	95.66	3.2	2.3	6.8	--	2.7
MW-9	99.56	7.3	7.0	9.3	--	6.5
MW-10	101.19	2.2	1.8	3.4	0.6	1.4
MW-11	93.35	4.9	4.8	8.4	2.9	4.6
MW-12	92.93	16.6	15.8	19.8	17.3	16.3
MW-13	96.74	2.0	1.8	3.7	0.8	1.1
MW-14	64.55	22.6	22.3	22.7	21.6	25.3
MW-15	67.76	5.0	4.7	6.1	4.1	4.6

Notes:

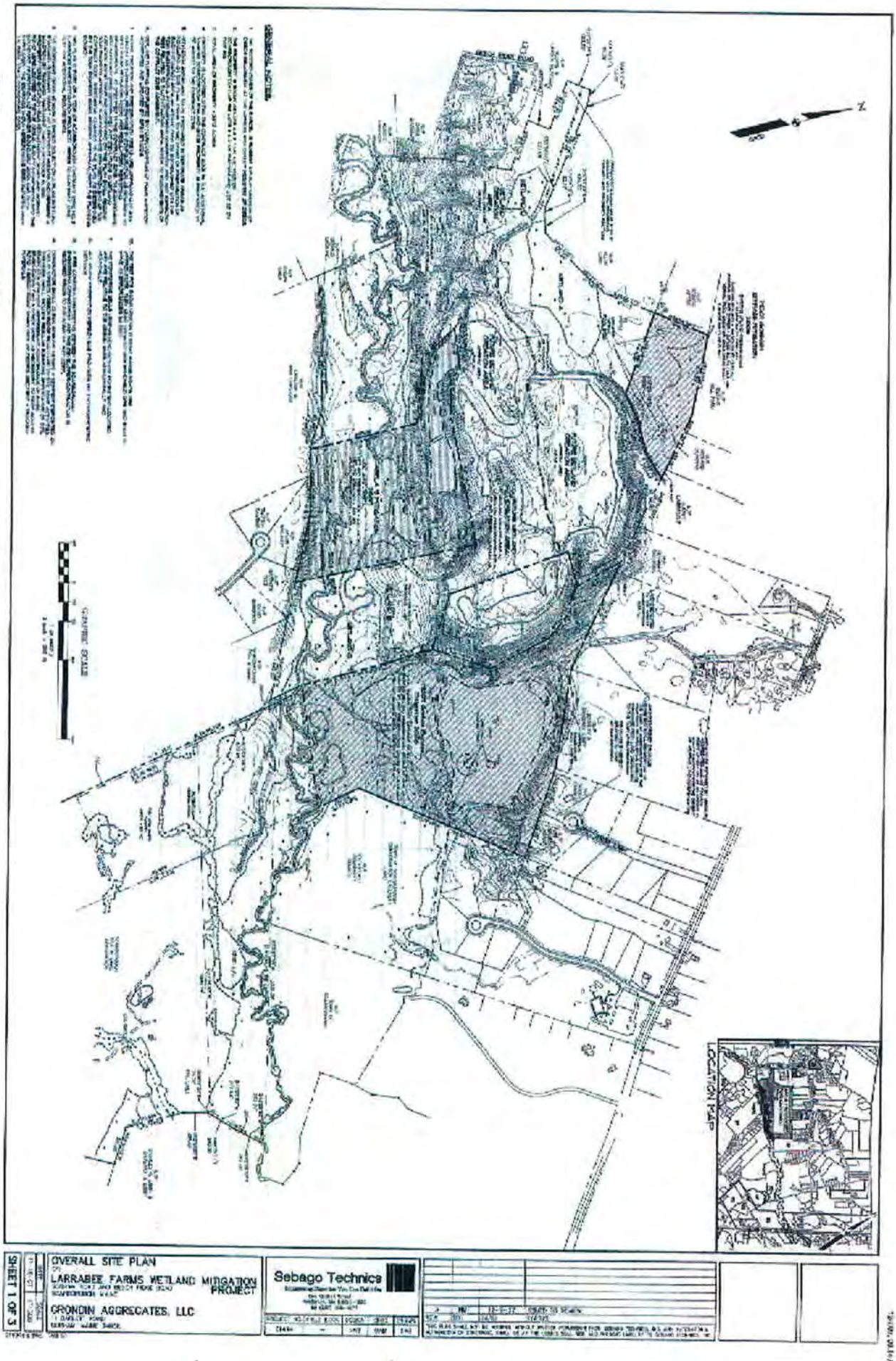
All wells installed for this project by RWG&A, April 2002.
Measuring point at each monitoring location is the top of the metal stand pipe, cap off.
"--" Indicates that data was not collected from the monitoring point during the field event.
BGS- Below Ground Surface
Note: November 2006 measurements were made from PVC measure point, not metal stand pipe top.

SHEET 1 OF 1

SITE SKETCH
OF
LARRABEE FARMS WETLAND MITIGATION PROJECT

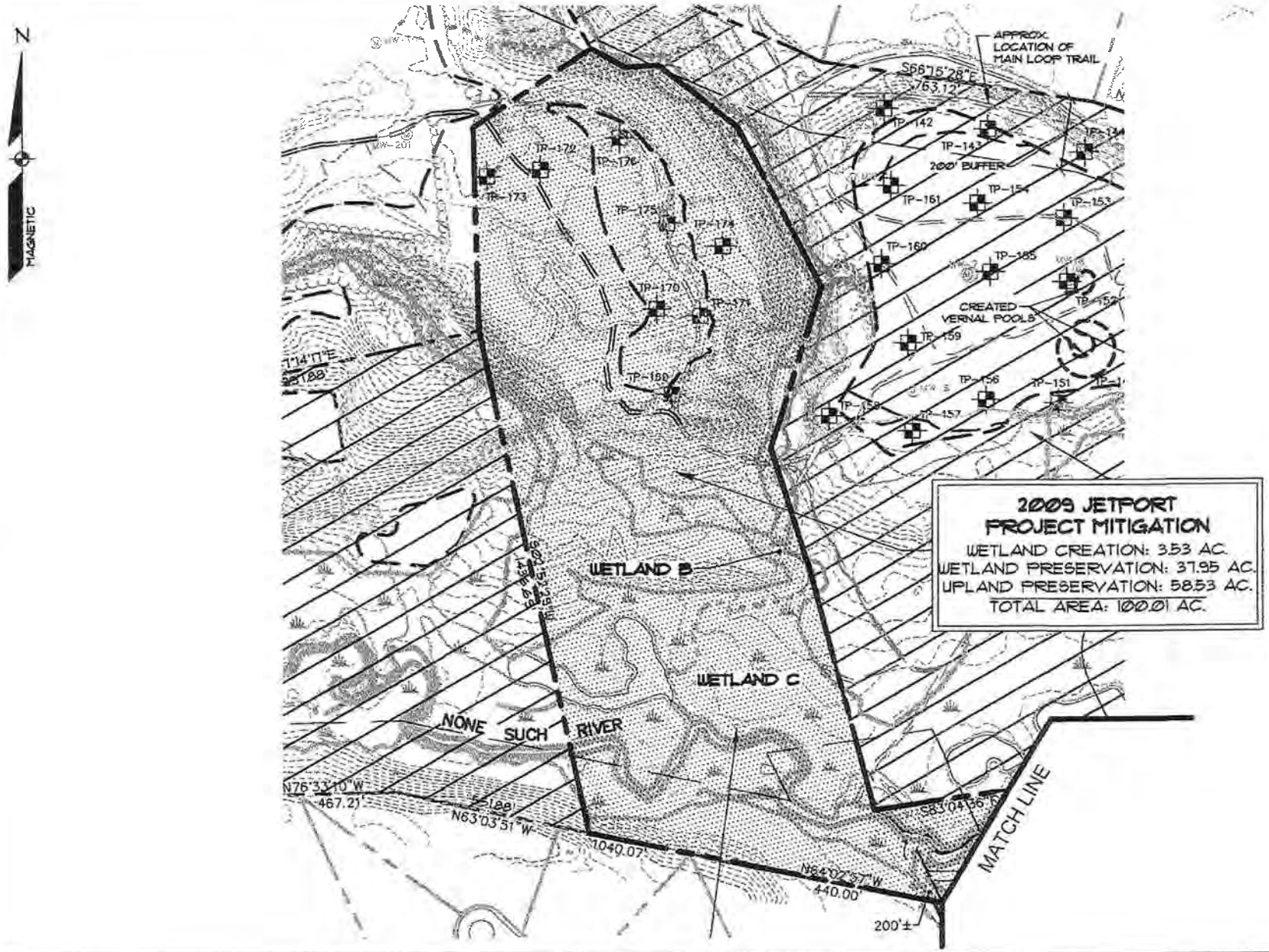
GRONDIN AGGREGATES, LLC

Sebago Technics


LOCATION MAP
SHEET 1 OF 3
OVERALL SITE PLAN
LARRABEE FARMS WETLAND MITIGATION PROJECT
GRONDIN AGGREGATES, LLC
Sebago Technics

Appendix 6: Plan Drawings

(attached)



D-182

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2009 JETPORT MITIGATION EXHIBIT

OF LARRABEE FARMS WETLAND MITIGATION PROJECT

SCALE:	1" = 400'
DATE:	3/9/09
SHEET:	1 OF 3

LOCATION:
GORHAM ROAD & BEECH RIDGE ROAD
SCARBOROUGH, MAINE

FOR:
GRONDIN AGGREGATES, LLC
GORHAM, MAINE 04038

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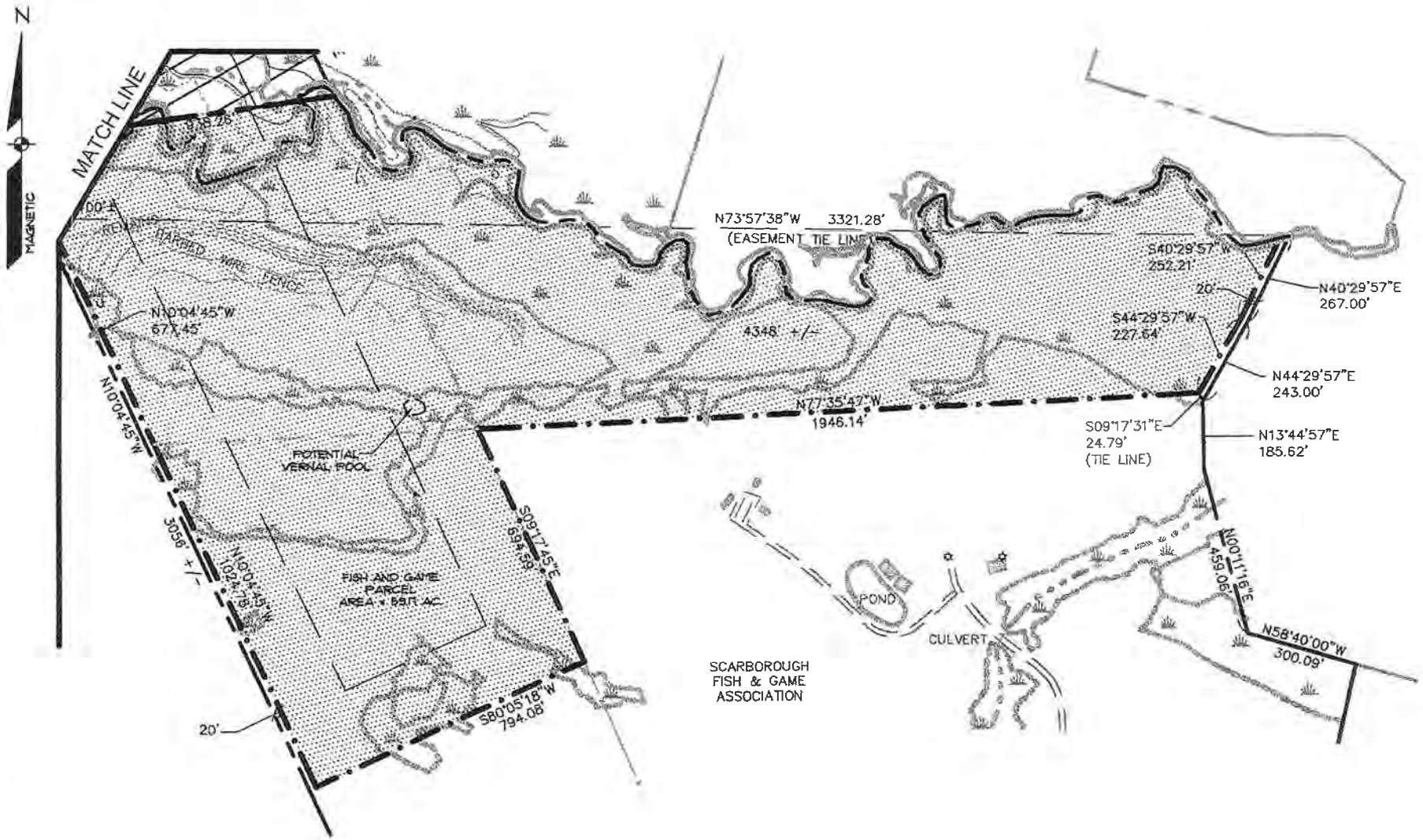

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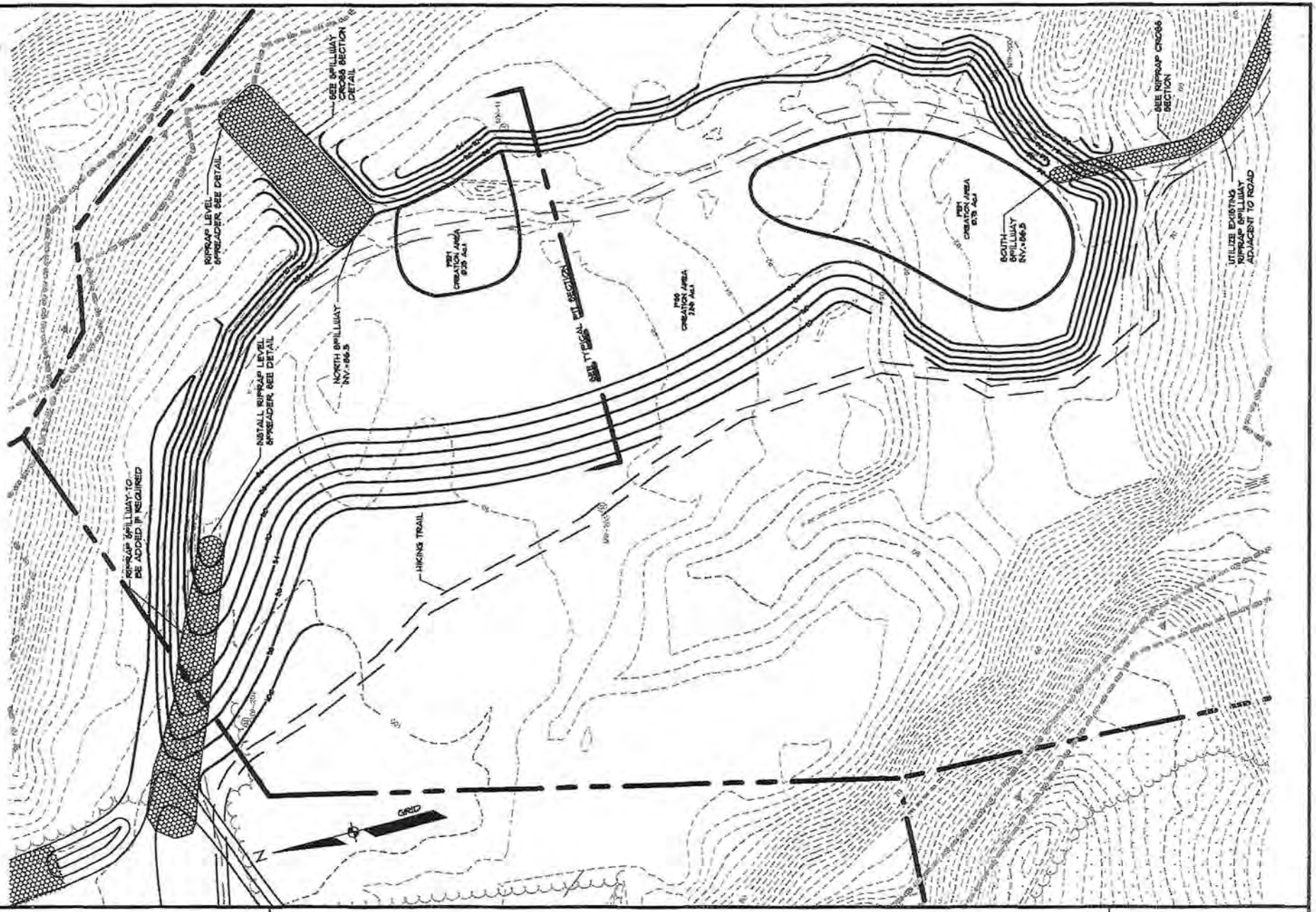
2009 JETPORT MITIGATION EXHIBIT

OF LARRABEE FARMS WETLAND MITIGATION PROJECT

LOCATION: GORHAM ROAD & BEECH RIDGE ROAD SCARBOROUGH, MAINE	FOR: GRONDIN AGGREGATES, LLC GORHAM, MAINE 04038

SCALE:	1" = 400'
DATE:	3/9/09
SHEET:	2 OF3

01494–JETPORT–S.dwg, TAB: EXH2



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Lewiston, ME 04240
Tel (207) 783-5656

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2009 JETPORT MITIGATION EXHIBIT
OF LARRABEE FARMS WETLAND MITIGATION PROJECT

SCALE:	1" = 100'
DATE:	3/9/09
SHEET:	3 OF 3

LOCATION:
GORHAM ROAD & BEECH RIDGE ROAD
SCARBOROUGH, MAINE

FOR:
GRONDIN AGGREGATES, LLC
GORHAM, MAINE 04038

01494-JETPORT-G.dwg, TAB: EXH3

Appendix 7: Deed of Conservation Easement (Draft)

(attached)

NOTE: This CE is the approved CE used for the Cabela's project. This is the model that will be used in creating the Jetport Project CE. The CE will be submitted to the Corps and DEP upon signing and recordation within the Cumberland County Registry of Deeds.

CONSERVATION EASEMENT DEED

AGREEMENT made this ____ day of _____, _____, by and between **GRONDIN AGGREGATES LLC**, a Maine limited liability company with a mailing address of 11 Bartlett Road, Gorham, Maine 04038 (hereinafter referred to as "Grantor," which word shall include Grantor's executors, administrators, legal representatives, devisees, heirs, successors, assigns, lessees, tenants and other occupiers and users), and the **TOWN OF SCARBOROUGH**, a municipality in the State of Maine with a mailing address of P.O. Box 360, Scarborough, Maine 04070 (hereinafter referred to as "Grantee," which word shall include all successors, assigns, agents and designees), with a contingent third party right of enforcement in the **STATE OF MAINE** acting by and through its **DEPARTMENT OF ENVIRONMENTAL PROTECTION** (hereinafter referred to as "DEP", which reference shall include DEP's successors and assigns).

WHEREAS, Grantor is the owner in fee simple of certain real property located in Scarborough, Maine, County of Cumberland (hereinafter "The Larrabee Farms Site"), being more particularly described in a deed recorded in the Cumberland County Registry of Deeds in Book 16018, Page 27; and

WHEREAS, the Larrabee Farms Site is the subject of a contract zoning agreement between Grantor and Grantee that allows construction of a compensatory wetland mitigation site, including both creation of wetlands and preservation of wetlands and uplands to provide compensation for wetland impacts caused by development on other properties;

WHEREAS, Grantor has identified an approximately 31.55 acre portion of the Larrabee Farms Site (hereinafter the "Easement Area"), being more particularly described in **Appendix A** and depicted on the plan in **Appendix B**, both of which are attached hereto and made a part hereof, that is suitable as a compensatory wetland mitigation project for a development by New England Expeditions – Scarborough, LLC, known as the "The Gateway at Scarborough" development project; and

WHEREAS, Grantor has created approximately 4.55 acres of wetland on portions of the Easement Area, which it intends to preserve in perpetuity, along with approximately 27 acres of upland, including nearly 2,000 linear feet of frontage on both sides of the Nonesuch River, pursuant to the following permits: Maine Department of Environmental Protection permit number _____ and the United States Army Corps of Engineers permit number _____ (collectively, the "Wetland Permits"); and

WHEREAS, Grantee has agreed to ensure that the Easement Area is protected in perpetuity by the conveyance of a conservation easement, which easement shall benefit, protect, and conserve the functions and values of the Easement Area, conserve and protect the indigenous plant and animal populations, and prevent the use or development of the Easement Area for any purpose or in any manner inconsistent with these purposes, for the benefit of the people of the Town of Scarborough, Cumberland County, and the State of Maine; and

WHEREAS, Grantee agrees to honor the intention of Grantor as stated herein, and to preserve and protect in perpetuity the conservation values of the Easement Area; and

WHEREAS, consistent with state and federal regulations, Grantor intends to convey to DEP third party enforcement rights to preserve and protect the conservation values of the Easement Area;

NOW THEREFORE, Grantor, in consideration of the mutual promises herein and other valuable consideration, including the agreement of Grantee to enforce in perpetuity the restrictions contained herein for the benefit of the general public and the Easement Area, the receipt of which is acknowledged, does hereby grant to Grantee, its successors and assigns forever, a perpetual *conservation easement* (hereinafter "Easement") pursuant to Title 33, Maine Revised Statutes Annotated, Section 476 *et seq.* and Section 170(h) of the federal Internal Revenue Code over the Easement Area.

Grantor further hereby does grant third party enforcement rights for the terms of this Easement unto DEP.

1. PURPOSE

It is the purpose of this Easement to assure that the Easement Area will be retained forever in its improved or preserved condition in accordance with the requirements of the Wetland Permits, and will not be used in any way that will significantly impair or impede the conservation values of the Easement Area.

2. USE LIMITATIONS

Grantor intends that this Easement will confine the use of the Easement Area in perpetuity to such activities as are consistent with the purposes of this Easement. Any activity on or use of the Easement Area that is inconsistent with the purposes of this Easement is prohibited. The following limitations shall apply:

a. The Easement Area shall be maintained in perpetuity as open space without there being conducted thereon any industrial, commercial, agricultural or forestry activities. Agricultural and forestry activities shall include animal husbandry, floricultural and horticultural activities, the production of plant and animal products for domestic or commercial purposes, the growing, stocking, cutting and sale of forest trees of any size capable of producing timber or other forest products, and the processing and sale of products produced on the property (e.g., maple syrup).

b. The cutting or removal of vegetation is prohibited, except that *de minimis* flower picking and clearing necessary for the maintenance of any existing path or trail shall be allowed.

c. No structures, improvements or alterations, including, but not limited to, dwellings, any portion of a subsurface wastewater treatment and disposal system, mobile homes,

utility towers, or billboards shall be constructed, placed or introduced onto the Easement Area, except that Grantor shall have the right to place, construct, and maintain minor structures, such as small unlit signs, boundary markers, benches, and primitive trails, in addition to fences or other barriers to prevent unauthorized access and to protect fragile features of the Easement Area so long as such minor structures do not interfere with the conservation nature of the Easement Area.

d. No removal, filling, or other disturbances of soil, nor any changes in the topography, surface or subsurface water systems, wetlands, or natural habitats shall be allowed, other than for the maintenance of any existing path or trail.

e. No mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, oil, natural gas, or other similar materials shall be allowed.

f. There shall be no use of pesticides, poisons, biocides or fertilizers, unless such use is authorized by the appropriate regulatory agencies.

g. There shall be no manipulation or alteration of the natural watercourses, lakeshores, marshes, or other water bodies, nor shall any uses of or activities upon the property be permitted that could be detrimental to water purity or to any vegetative, wildlife, or hydrological function.

h. There shall be no operation of motor vehicles on the Easement Area, except for service and emergency vehicles.

i. There shall be no storage or placement of equipment, natural, or man-made materials or substances upon the Easement Area, except that the placement and use of non-intrusive research equipment is not a prohibited activity.

j. There shall be no dumping, burning, release, burial, injection, or disposal of any type of material on, in, or under the Easement Area.

k. Any other disturbance of the Easement Area that is inconsistent with the purposes of this Easement is prohibited, provided that environmental research and education, and passive recreation activities, such as hunting, fishing, walking, and bird watching, are permitted.

3. EXCEPTIONS

Grantor may enter upon the Easement Area to conduct the following activities after written approval from the Grantee and any other governmental agencies from which approval is required:

a. Removal of debris, dead trees, or brush for the purpose of promoting safety and aesthetic quality.

b. Pruning and thinning live trees and brush for the purpose of promoting safety and aesthetic quality.

c. Grading and landscaping at the direction and approval of the Town Engineer and/or any other local or state boards/agencies.

4. RESERVED RIGHTS

Notwithstanding the foregoing, Grantor reserves the following rights:

a. This Easement is created solely for the protection of the Easement Area and Grantor reserves the ownership of the fee simple estate and all rights appertaining thereto, including, without limitation, the right to use the Easement Area for all purposes consistent with this Easement.

b. Grantor reserves the right to create, restore, remediate, monitor, maintain, and take any other action within the Easement Area to ensure compliance with the Wetland Permits.

5. MARKING OF PROPERTY

Boundaries of the Easement Area shall be adequately marked and maintained to permit Grantee to carry out its responsibilities. Grantor and Grantee agree that the marking of boundaries by an electronic boundary survey shall be sufficient to meet the requirements of this section. Cost of such work will be borne by Grantor.

6. PROPERTY TRANSFERS, TAXES, MAINTENANCE AND GRANTOR OBLIGATIONS

a. Grantor shall include the following notice on all deeds, mortgages, plats, or any other legal instrument used to convey any interest in the Easement Area. Failure to comply with this paragraph does not impair the validity or enforceability of this Easement:

> NOTICE: This Property is Subject To a Conservation Easement recorded in the Cumberland County Registry of Deeds in Book ___, Page ___.

b. Grantor shall notify Grantee, in writing, thirty (30) days before transfer of title to the Easement Area.

c. Grantor will pay all property taxes and assessments that may impact Grantee's interests in the Easement Area. Grantee shall be under no obligation to pay any taxes or assessment on the Easement Area.

d. Grantor acknowledges that, except as otherwise set forth herein, Grantee has no possessory rights in the Easement Area, nor any responsibility or right to control, maintain, or keep up the Easement Area. Grantor is responsible for all costs

associated with ownership, control, operation, and maintenance of the Easement Area.

7. RIGHTS OF GRANTEE

a. Grantee has the right to enter upon the Easement Area over the Larrabee Farms Site, at any reasonable time, to monitor compliance with the terms of this Easement. Except in emergency circumstances, Grantee will make reasonable efforts to contact Grantor prior to entry onto the Easement Area. "Emergency circumstances" shall mean that the Grantee has a good-faith basis to believe a violation of the Easement is occurring or is imminent.

b. Grantee has the right to enforce by proceedings at law or in equity the covenants set forth herein, including the right to require restoration of the Easement Area to its condition prior to any breach hereof. Notwithstanding the foregoing, Grantee agrees to provide written notice to Grantor of any breach of this Easement at least sixty (60) days prior to initiating judicial proceedings, during which time the parties shall endeavor to resolve any disputes as to their rights and duties hereunder by good faith negotiation.

c. The failure or delay of Grantee to enforce any of the terms, covenants, or other provisions of this Easement shall not constitute a waiver of its right to enforce the same or any other provisions hereof.

d. Nothing in this Easement shall be construed to allow Grantee to bring an action against Grantor for any injury to or change in the Easement Area resulting from causes beyond Grantor's control, including, but not limited to, unauthorized actions by third parties, or from natural disasters such as fire, flood, storm, or earth movement.

e. Grantee has the right to transfer or assign rights in this Easement to any qualified holder within the meaning of Title 33, Maine Revised Statutes Annotated, Section 476(2), as may be amended from time to time. Any such assignee or transferee shall have a like power of assignment or transfer, and shall agree to uphold the purposes of this Easement. Notice of assignment or transfer shall be provided to DEP for written approval at least six (6) months prior to such intended assignment or transfer, such approval not to be unreasonably withheld.

8. RIGHTS OF DEP

Grantor grants to DEP the same inspection and enforcement rights as are granted to Grantee under this Easement; however, the parties hereto intend that Grantee will be primarily responsible for enforcement of this Easement, and that DEP will assume that responsibility only if Grantee fails to enforce it. If DEP determines that Grantee is failing in such enforcement, DEP must give notice of such failure of Grantee and Grantor, and if such failure is not corrected within a reasonable time thereafter, DEP may exercise, in its

own name and for its own account, all the rights of enforcement granted to Grantee in this Easement. DEP's rights under this Easement shall be exercised at its own expense and DEP shall not have the right to bring any action against Grantee for failure to enforce this Easement. DEP shall also have reasonable access to all records of Grantee relevant to the Easement Area.

9. BENEFITS AND BURDENS

The burden of the Easement conveyed hereby shall run with the Easement Area and shall be enforceable against all future owners and tenants in perpetuity. The benefits of said Easement shall not be appurtenant to any particular parcel of land but shall be in gross.

10. PUBLIC ACCESS

Notwithstanding any public use of the Easement Area and any insurance coverage therefor, Grantor and Grantee reserve the rights and protections against liability for injury to the fullest extent of the law under Title 14, Maine Revised Statutes Annotated, Sections 159-A *et seq*., as amended from time to time.

11. NOTICE

Any notices required by this Easement shall be in writing and shall be personally delivered or sent certified mail, return receipt requested, or by such commercial delivery service as provides proof of delivery, to Grantor and Grantee, and, if applicable, to DEP, at the following addresses, unless one has been notified by the other of a change of address or change of ownership:

Grantor:
Grondin Aggregates LLC
Attn: Ken Grondin
11 Bartlett Road
Gorham, ME 04038

Grantee:
Town of Scarborough
Town Manager
Scarborough Municipal Building
P.O. Box 360
Scarborough, ME 04070-0360

With a copy to:
Commissioner, Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

12. CONDEMNATION

a. Whenever all or part of the Easement Area is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate in whole or in part the Easement

conveyed hereby, Grantor and Grantee shall thereupon act jointly to recover the full damages resulting from such taking with all incidental or direct damages and expenses incurred by them thereby to be paid out of the damages recovered.

b. The balance of the land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale, in lieu of condemnation, of the Easement Area unencumbered by the restrictions hereunder) shall be divided between the Grantor and the Grantee in proportion to the values of their respective interests on the date of the taking.

c. Grantee shall use its share of any such proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

13. ADDITIONAL CONSERVATION EASEMENT

Should Grantor determine that the expressed purposes of this Easement could better be effectuated by the conveyance of an additional conservation easement, the Grantor may, upon providing notice to Grantee, execute an additional instrument to that effect, provided that the conservation purposes of this Easement are not diminished thereby and that a public agency or qualified organization, as described in section 7(e), above, accepts and records the additional conservation easement.

14. LIMITATION ON AMENDMENT

If circumstances arise under which an amendment to or modification of this Easement would be appropriate, Grantor, Grantee and DEP may, by mutual written agreement, jointly amend this Easement. Any such amendment shall be consistent with the purposes of this Easement, shall not affect its perpetual duration, shall not permit any residential or any commercial development of the Easement Area, and shall not permit any impairment of the significant conservation values of the Easement Area. Any such amendment shall be authorized by the appropriate regulatory agencies and recorded in the Registry of Deeds of Cumberland County, Maine, after all approvals required by law have been obtained. Nothing in this subsection shall require Grantor, Grantee, or DEP to agree to any amendment or to consult or negotiate regarding any amendment.

15. MERGER

Grantor and Grantee explicitly agrees that it is their expressed intent, forming a part of the consideration hereunder, that the provisions of the Easement set forth herein are to last in perpetuity, and to that end no purchase or transfer of the underlying fee interest in the Easement Area by or to Grantee or any successor or assign shall be deemed to eliminate the Easement, or any portion thereof, granted hereunder under the doctrine of "merger" or any other legal doctrine.

16. RECORDATION

Grantee shall record this instrument in timely fashion in the Registry of Deeds for Cumberland County, State of Maine, and may re-record it at any time as may be required to preserve its rights in the Easement.

17. ACCEPTANCE BY GRANTEE AND THIRD PARTY ENFORCER

Grantee and DEP hereby accept the rights and duties set for in this Easement by signing the Agreement below.

18. ENTIRE AGREEMENT

This instrument sets forth the entire agreement of the parties with respect to the Easement and supersedes all prior discussions, negotiations, understandings, or agreements related to the Easement.

19. MAINE CONSERVATION EASEMENT ACT

This Easement is established pursuant to the Maine Conservation Easement Act at Title 33, Maine Revised Statutes Annotated, Sections 476 through 479-B, inclusive, as amended, and shall be construed in accordance with the laws of the State of Maine.

20. CONSERVATION PURPOSES

This Easement is established exclusively for conservation purposes pursuant to the Internal Revenue Code, as amended, at Title 26, United States Code Annotated, Section 170(h)(1)–(6), and under Treasury Regulations at Title 26 CFR § 1.170A-14 *et seq.*, as amended.

IN WITNESS WHEREOF, Grantor, Grantee, and DEP have duly executed and sealed this document this day and year first above written.

GRANTOR:
GRONDIN AGGREGATES LLC

By: _____
Name:
Title:

STATE OF MAINE
COUNTY OF CUMBERLAND, ss

On this the ____ day of _____, 2007, personally appeared the above named _____, in his capacity as _____ of Grondin Aggregates LLC, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of Grondin Aggregates LLC .

_____
Notary Public/Attorney at Law
Printed Name:

GRANTEE:
TOWN OF SCARBOROUGH

By: _____
Name:
Title:

STATE OF MAINE
COUNTY OF CUMBERLAND, ss

On this the ____ day of _____, 2007, personally appeared the above named _____, in his capacity as _____ of the Town of Scarborough, and acknowledged the foregoing instrument to be her free act and deed and the free act and deed of the Town of Scarborough.

_____
Notary Public/Attorney at Law
Printed Name:

THIRD PARTY ENFORCER:
STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____
Name:
Title:

STATE OF MAINE
COUNTY OF _____, ss

On this the ____ day of _____, 2007, personally appeared the above named _____, in his capacity as _____ of the State of Maine Department of Environmental Protection, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of the State of Maine Department of Environmental Protection.

_____
Notary Public/Attorney at Law
Printed Name:

APPENDIX A

A certain wetland mitigation area situated on the southerly side of, but not adjacent to, State Route 114, in the Town of Scarborough, County of Cumberland, State of Maine being depicted on a plan of land titled "Site Mitigation Plan of Larrabee Farms Wetland Mitigation Project" dated through November 29, 2006 by Sebago Technics, Inc., said area being more particularly bounded and described as follows:

BEGINNING at an angle point in the northerly line of land now or formerly of Comstock and being the southwesterly corner of easement area herein described;

Thence, S 76° 33' 10" E, by and along said land of Comstock and the land of Macavoy, a distance of 467.21 feet to an angle point in said land of Macavoy;

Thence, S 63° 03' 51" E, by and along said land of Macavoy and land of Tees, a distance of 551.88 feet;

Thence, N 02° 52' 29" E, a distance of 1436.69 feet;

Thence, N 87° 14' 17" W, a distance of 997.88 feet;

Thence, N 75° 34' 27" W, a distance of 279.93 feet;

Thence, N 30° 47' 50" W, a distance of 103.48 feet;

Thence, N 83° 04' 11" W, a distance of 312.18 feet;

Thence, S 28° 05' 35" E, a distance of 341.39 feet;

Thence, S 70° 59' 13" E, a distance of 492.73 feet;

Thence S 00° 57' 31" W, a distance of 859.04 feet to the POINT OF BEGINNING.

Easement area described above is depicted as Larrabee Farms Mitigation Area 2A and encompasses 1,374,310 square feet or 31.55 acres, more or less.

APPENDIX B

Easement Area Map

Appendix 8: Purchase and Sale Agreement Letter

NOTE: A purchase and sale agreement letter is currently being drafted between the City of Portland and Grondin Wetlands, LLC and will be provided as soon as it is available.

Appendix 9: Narrative describing the available literature or experience to date (if any) for carrying out the compensation work;

The Larrabee Farms Wetland Mitigation Site design team for the Jetport Project includes experts in several fields. The project team includes the following:

Professional Wetland Scientists	Boyle Associates
Professional Engineers	Sebago Technics
Geotechnical Engineers, Geohydrologists	R.W. Gillespie & Associates
Project Owners and Construction Management	R.J. Grondin & Sons; Grondin Aggregates

Mitigation design and planting plans will be designed based on the project team's vast experience in mitigation sequencing and design. Further information sources include the following literature:

Hammer, Donald A. 1997. Creating Freshwater Wetlands Second Edition. Lewis Publishers, Boca Raton.

Harker, Donald; G. Libby, K. Harker, S. Evans, and M. Evans. 1999. Landscape Restoration Handbook Second Edition. Lewis Publishers, Boca Raton.

Marble, Anne D. 1992. A Guide to Wetland Functional Design. Lewis Publishers, Boca Raton.

Payne, Neil. 1992. Techniques for Wildlife Habitat Management of Wetlands. McGraw-Hill, New York.

Thunhorst, Gwendolyn A. 1993. Wetland Planting Guide for the Northeastern United States. Environmental Concerns, Inc, Maryland.

U.S. Army Corps of Engineers. 2007. Checklist for Review of Mitigation Plan (1/12/2007). United States Army Corps of Engineers, New England District Regulatory Branch.

Appendix 10: Cross-reference between compensation plan and the N.E. District, ACOE's *Mitigation Plan Checklist* (01/12/2007 version)

Check-list Item	Description	Mitigation Plan Section #
A. General Information		
1.	One complete package	☺
2.a	Locus map	A
2.b	Aerial photo	A
2.c	Lat/Long	A
2.d	HUC	A
B. Impact Areas		
1.	Wetland acreage	Info provided by TRC
2.	Wetland classes	Info provided by TRC
3.	Streams Section	Info provided by TRC
4.	Wetland and stream functions and values	Info provided by TRC
5.	Type and purpose of work	Info provided by TRC
6.	Watershed plans	Info provided by TRC
C. Mitigation Area		
1.a	Mitigation alternatives	Info provided by TRC
1.b	Existing wildlife use	C
1.c	Existing soil	C
1.d	Existing vegetation	C
1.e	Surrounding land use	C
1.f	USFWS Clearance Letter	C
1.g	SHPO Letter	C, Appendix 4
2.a	Wetland acreages at each site	C
2.b	Wetland classes at each site	C
2.c	Functions and values proposed at each site	C
2.d	Stream mitigation	N/A
2.e	Reference site(s)	C
2.f	Design Constraints	C
2.g	Construction oversight	C
2.h	Project construction timing	C
2.i	Responsible parties	C
2.j	Financial assurances	C, Appendix 10
2.k	FAA Issues	C
D. Hydrology		
1.	Adequate hydrology	D, Appendix 7
1.a	Typical year water budget	D, Appendix 7
1.b	Wet year water budget	D, Appendix 7
1.c	Dry year water budget	D, Appendix 7
2.	Water source(s)	D, Appendix 7
3.	If vernal pool, adequate hydrology	N/A

Check-list Item	Description	Mitigation Plan Section #
E. Grading Plan		
1.a	Plan View - existing and proposed contours	E, Appendix 8
1.b	Plan View – microtopography	E, Appendix 8
1.c	Plan View – scale	E, Appendix 8
1.d	Plan View - legible	E, Appendix 8
2.	Representative cross-sections	E, Appendix 8
3.	Other grading comments (if any)	N/A
F. Topsoil		
1.	Proposed source	F
2.	Depth	F
3.	Organic content	F
G. Planting Plan		
1.	Scientific names	G
2.	Native materials	G
3.	Community types	G
4.	Location on plans	G, Appendix 8
5.	Plantings for community type	G
6.	Woody stock density	G
7.	Herbaceous stock density	G
8.	Seed mix composition	G
9.	Cross-sections	G
10	Relocation text	G
11.	Other	N/A
H. Coarse Woody Debris		H
I. Erosion Controls		I
Deadline for removal		I
J. Invasive and Noxious Species		
1.	Risk Section	J
2.	Constraints	J
3.	Control plan	J
K. Off-Road Vehicle Use		
1.	Usage in vicinity	K
2.	Control plan	K
L. Preservation		
1.	Adequate buffers	L, Appendix 9
2.	Internal wetlands protected	L, Appendix 9
3.	Preservation language	L, Appendix 9
4.	Preservation site plans	L, Appendix 9
5.	Legal instrument	L, Appendix 9
6.	Acceptance by receiving agency	L, Appendix 9
M. Monitoring Plan		
Appropriate language		M
N. Assessment Plan		

Check-list Item	Description	Mitigation Plan Section #
Appropriate language		N
O. Contingency		
Plan in place		O
P. Long-term Stewardship		P
Q. Other		Q

Appendix 11: Cross-reference between Compensation Plan and MDEP's NRPA Chapter 310 Standards

Chapter Section	Description	Mitigation Plan Section #
6-A	**Expertise.** The applicant shall demonstrate sufficient scientific expertise to carry out the proposed compensation work.	A
6-B	**Financial Resources.** The applicant shall demonstrate sufficient financial resources to complete the proposed compensation work, including subsequent monitoring and corrective actions.	C, Appendix 10
6-C	**Persistence.** For restoration, enhancement and creation projects, on the basis of an updated functional assessment, a minimum of 85% of the compensation area must successfully replace the altered wetland's functions after a period of three years unless otherwise approved by the department. If this level is not achieved, or if evidence exists that the compensation site is becoming less effective, the department may require additional monitoring and corrective action, or additional wetland restoration, enhancement or creation in order to achieve the compensation ratio as originally approved.	A, B, C
6-D	**Monitoring.** The applicant shall set forth a plan for interim reporting and remediation measures during monitoring of the restored or created wetland over a minimum of five years, which shall include contingency plans for replanting, contouring or other corrections if the project fails to meet project goals during that time.	M
6-E	**Maintenance.** A compensation project that will naturally maintain itself without active intervention is preferred. However, the permittee may be required to conduct activities to assure continuation of the wetland, or the accomplishment of compensation goals, after a compensation project has been technically completed. Such activities may include, but are not limited to, water level manipulations and control of non-native plant species.	M, O
6-F-1	A compensation project involving restoration, enhancement or creation must provide for **covenant and restriction or a conservation easement** conveyed to a qualified holder that requires maintenance of the area as a coastal wetland, freshwater wetland or great pond in perpetuity. The conservation easement must list the department as an enforcing agent. Regardless of the size of the compensation area, any future alterations in, on or over it must be approved by the department.	L, Appendix 9

Chapter Section	Description	Mitigation Plan Section #
6-F-2	A compensation project involving preservation must provide for a **conservation easement conveyed to a qualified holder or covenant and restriction** so that the parcel will remain undeveloped in perpetuity. The easement must list the department as an enforcing agent. Compensation areas may be deeded to local or state conservation groups or agencies, but any land management practices must be approved by the department.	L, Appendix 9
6-G	**Source of Water (Creation Only).** For a creation project, the department prefers that the created wetland be located adjacent to an existing wetland or waterbody.	D, Appendix 7
6-H	**Implementation Schedule.** A schedule for implementing the compensation plan must be submitted. Generally, compensation will be required to be completed prior to, or concurrent with, the permitted alteration. For on-going or long-term alterations, such as mining, compensation must be completed no later than within the first year of operation unless otherwise approved by the department.	C
9-D	**Compensation Plan.** A plan for the proposed compensation work, if any, including a topographic map at a scale of a minimum of 1 inch equals 100 feet showing two-foot contour intervals and proposed wetland boundaries. This plan must also include:	Appendix 8
9-D-1	Proposed **boundaries and characteristics** of the compensation site, including elevation, sources of water, and proposed vegetation;	C, D, E, G, Appendix 8
9-D-2	A narrative describing the **specific goals of the compensation work** in terms of particular wetland functions and values as related to those of the original wetland. This narrative must also identify the criteria by which to measure success of the compensation work (e.g. water level within tolerances as defined in the proposal, percent survival of plants, etc.);	C
9-D-3	A narrative describing the **available literature or experience to date** (if any) for carrying out the compensation work;	Appendix 11
9-D-4	Proposed **implementation and management procedures** for the compensation work;	C
9-D-5	A description of the **short-term and long-term sources of water** for the wetland, including the water quality of these sources;	D, Appendix 7

Chapter Section	Description	Mitigation Plan Section #
9-D-6	**Plans for re-planting**, including a description of plant species, sizes and sources of plant material, numbers of each species/size, proposed spacing of plants, and explanation of how, when and where seeding or planting will take place;	G
9-D-7	**Proposed buffers or protective measures** such as sediment control methods;	L, Appendix 8
9-D-8	Plans for **monitoring** the compensation work, identifying criteria which require mid-course corrections (e.g. less than 75% plant survival after 2 years). A description of proposed remediation measures and a construction schedule for them shall be included unless otherwise approved by the department; and	M
9-D-9	Plans, if any, for control of **non-indigenous plant species**.	J
9-E	**Covenant and Restriction or Conservation Easement**. For compensation projects involving a covenant and restriction or a conservation easement, the proposed deed or easement language, developed in accordance with Section 6(F) above, must be submitted. Additionally, any agreements or terms necessary to execute the restriction or easement, such as an agreement for the holder of the easement, must also be included.	L

Portland International Jetport (PWM)
Maine Wetlands Bank
Offsite Wetland Compensation Plan for

NRPA Application (# L-013760-18-AN-A) - Attachment 13 and Department of Army Individual Permit

---

Prepared for:

The US Federal Aviation Administration
Burlington, MA

The Portland International Jetport
Portland, ME

Maine Wetlands Bank, LLC
Portland, ME

Submitted to:

The Maine Department of Environmental Protection
Portland, ME

and

The US Army Corps of Engineers
Manchester, ME and Concord, MA

Prepared by:

TRC Companies, Inc.
400 Southborough Drive
South Portland, ME

March 2009

Portland International Jetport (PWM)
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Offsite Wetland Compensation Plan for

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March 2009

TABLE OF CONTENTS

EXHIBITS

FIGURES

TABLES

1.0 PROJECT DESCRIPTION

1.1 Introduction

The Portland International Jetport in Portland and South Portland, Maine is in the process of permitting a five-year Capital Improvement Plan and Wildlife Hazard Management Plan. Certain work to be conducted for the Capital Improvement Plan and Wildlife Hazard Management Plan must occur in wetlands subject to the jurisdiction of the Maine Natural Resources Protection Act (NRPA – 38 MRSA §§ 480-A to 480-FF) and Section 404 of the federal Clean Water Act. In conjunction with DeLuca Hoffman Associates and Coffman Associates, wetland scientists from TRC's South Portland, Maine, office have prepared a NRPA Tier 3 permit application to the Maine Department of Environmental Protection (MDEP) and Individual Permit application to the US Army Corps of Engineers (Corps). The following document supplements an earlier conceptual-level wetland compensation plan that was submitted as Attachment 13 of the MDEP and Corps applications.

1.2 Portland International Jetport

Portland International Jetport (PWM) is located between Interstates 95 and 295 and is bordered on the north and east by the tidal Fore River and its tributary Long Creek (Figure 1). Within these two Interstates, major arterial highways, including Route 22 or Congress Street and Route 9 or Johnson Road and Western Avenue, encircle PWM on the west and south. In operation since 1934, and now Maine's largest commercial airport, PWM covers approximately 726 acres and is located immediately to the northeast of the Maine Mall area, the largest retail, commercial, and office complex north of Boston (http://www.southportland.org/index). The Jetport is owned and operated by the City of Portland, Maine, but is uniquely situated on the corporate boundaries of the cities of Portland, South Portland, and Westbrook. In fact, portions of the airport are located within each municipality.

The five-year Capital Improvement Plan and Wildlife Hazard Management Plan (CFR Title 14 FAR Part 139.337) are generally comprised of five elements displayed and described on Exhibit C. Four of these occur within the existing airfield security fence or in the immediate vicinity of the terminal and encompass:

- Implementation of a Wildlife Hazard Management Plan at the end of Runway 29 to eliminate concentrations of flocking birds known to include blackbirds and starlings;
- Runway 11 – 29 improvements;
- Cargo Facility Improvements;
- Terminal Area Improvements including construction of a terminal building addition, new aprons, a deicing pad and an ancillary building on developed and undeveloped areas between Jetport Boulevard and the terminal; and
- Runway 18 – 36 improvements that chiefly consist of extending the runway and parallel Taxiway C southward 1,100 ft and outside the area now enclosed by the existing airfield security fence.

1.3 Project Description and Wetland Impact Areas

An update to the airport's Master Plan was completed in 2007 and approved by Portland City Council in 2008. The purpose of the Master Plan update was to evaluate the airport's ability to meet design standards and provide a safe and efficient operating facility for existing and anticipated future users of the airport. This update provided an inventory of existing facilities, projected aviation demand forecasts, and identified facility requirements to accommodate forecasted demand. The study also examined airside and landside alternatives, and recommended an airport layout and improvement schedule. Among other things, this document identified the need to provide additional commercial airline terminal facilities, enhance operational safety by providing adequate runway safety area for Runway 18-36 and a new taxiway to reduce runway incursion potential, as well as provide additional runway length for Runway 11-29.

Proposed improvements at the Jetport subject to the MDEP and Corps permit applications are summarized below and are displayed on Exhibit C, the development concept formulated during the 2007 airport master planning process. The locations of related wetland impact areas are displayed on the attached NRPA application Figure 9-1 and a breakdown by location of approximate wetland impact areas is presented in Table 1.

1.3.1 Implementation of Wildlife Hazard Management Plan Recommendations

Pursuant to Title 14 of the Code of Federal Regulations (CFR) Part 139.337(e.1), the Jetport has developed a Wildlife Hazard Management Plan (WHMP) in cooperation with the US Department of Agriculture Wildlife Hazard Group. The WHMP was finalized in March 2006 and recommended that the wetland at the approach end of Runway 29 be filled and that the upland shrub thicket adjacent to wetland be cleared and graded. The location of the wetland and brush/scrub area is depicted with a purple hatch on Exhibit C.

As described by the WHMP and identified during the Wildlife Hazard Assessment, *Phragmites* and other vegetation this wetland attracts large flocks of blackbirds and European starlings. Such starling and blackbird roosts located near airports pose an aircraft safety hazard because of the potential for these birds to be ingested into jet engines, resulting in aircraft damage or loss and, at times, human injuries. According to FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, blackbirds and starlings have a relative hazard score of 10. The FAA National Wildlife Strike Database, Serial Report Number 12, *Wildlife Strikes to Civil Aircraft in the United States, 1990-2005*, reports that starling and blackbird strikes cost the aviation industry millions of dollars from 1990 to 2005.

The blackbird roost in the *Phragmites* at the east of Runway 29 occurs in a wetland that has been designated as Wetland L (Figure 9-1). A ten-foot wide gravel road regularly used for operation and maintenance of runway approach lights crosses this area and leads to the airport security fence located atop a berm. The PEM1/PSS1 wetland community lies enclosed behind the 2-to-4 foot high berm at an elevation of approximately 20 ft above mean water of the tidal Long Creek/

07SP05-1B-6/27/08

SUMMARY

1. **Wildlife Hazard Management Plan (WHMP) Implementation.** Fill the wetland areas east of Runway 29 and grade the brush and scrub areas surrounding the wetland.
2. **Terminal Area Improvements.** Construct additions to the existing terminal building. Construct new apron areas adjoining terminal addition and replacement automobile parking. Construct de-ice fluid collection system.
3. **Taxiway Access.** Construct direct taxiway access to Runway 29 end.
4. **Runway 18-36 Improvements.** Extend the runway and parallel Taxiway C 1,100 feet to the south. Improve the RSA (outlined in green) and displace the landing thresholds. Rehabilitate runway surface. Add 15 foot snow shoulders each side.
5. **Runway 11-29 Improvements.** Eliminate Runway 11 departure length restrictions by improving RSA (outline in green) which requires relocating the airport access road and localizer antenna and filling to meet required RSA grade requirements..

DECLARED DISTANCES	RUNWAY 18	RUNWAY 36
ASDA	5,600'	5,650'
LDA	5,150'	5,150'

ASDA - Accelerate Stop Distance Available
LDA - Landing Distance Available

LEGEND

- Existing Airport Property Line
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)
- Ultimate Airfield Pavement
- Ultimate Road/Parking
- Ultimate Building
- Wildlife Hazard Area
- Previously Identified Wetland Areas
- Previously Permitted Wetlands

DEPARTURE RPZ
APPROACH RPZ
RUNWAY 18 END
RUNWAY 18 DISPLACED THRESHOLD
450'
91'
SAKOT DIXFIELD
Congress St.
Garrison St.
Westbrook St.
Yellowbird Rd.
FORE RIVER
International Pkwy.
Jetport Blvd.
Taxiway C
Runway 18-36 (5,001' x 150')
Parking Garage Under Construction
I-295
Taxiway A
Runway 11-29 (7,200' x 150')
Perimeter Service Rd.
RELOCATED SERVICE ROAD
RELOCATED LOCALIZER
EXISTING LOCALIZER
300'
1,100'
RUNWAY 36 DISPLACED LANDING THRESHOLD
RUNWAY 36 END
BY-PASS TAXIWAY
DEPARTURE RPZ
3/4 MILE APPROACH RPZ
SOUTH PORTLAND
Long Creek
NORTH
0 1000 2000
SCALE IN FEET

PWM PORTLAND INTERNATIONAL JETPORT

Exhibit C
PROPOSED AIRPORT DEVELOPMENT

NORTH

LEGEND

EXISTING WETLAND F

POTENTIAL WETLAND IMPACT AREAS L

PREVIOUSLY PERMITTED WETLAND IMPACT AC

IMPACT AREA # ACRES

*NOTE: ALL AREAS ARE APPROXIMATE

TOTAL POTENTIAL WETLAND IMPACTS 13.61 ACRES	
NEW PROPOSED	11.58 ACRES
JURISDICTIONAL	6.80 ACRES
JD REQUESTED	4.78 ACRES
PREVIOUSLY PERMITTED AND COMPENSATED	2.03 ACRES

CONGRESS STREET

FORE RIVER

RUNWAY 18-36

RUNWAY 11-29

MAINE TURNPIKE

TO MAINE MALL

WESTERN AVENUE

CITY OF PORTLAND
CITY OF SOUTH PORTLAND

AE

AC

B

H

N

D

0.64 ACRES

3.85 ACRES (NEW IMPACT)
2.03 ACRES (PREVIOUSLY PERMITTED)

J

A

L

4.89 ACRES

I-295

F

E

1.66 ACRES

Z

T

V

W

X

0.54 ACRES

S

YOUTH CENTER

BRICK HILL

LONG CREEK

GRAPHIC SCALE

0 400 800 1600

1 inch = 800 ft.

DeLuca-Hoffman Associates, Inc.	DRAWN:	LECJ	DATE:	MAY 2008
778 MAIN STREET, SUITE 8	DESIGNED:	DDA	SCALE:	1" - 800'
SOUTH PORTLAND, ME 04106	CHECKED:	DDA	JOB NO.	2743
207.775.1121	FILE NAME:	2743-SP		
WWW.DELUCAHOFFMAN.COM				

PORTLAND INTERNATIONAL JETPORT
ENVIRONMENTAL ASSESSMENT AND
REQUIRED ENVIRONMENTAL PERMITS

OVERALL WETLAND FIGURE

FIGURE 9-1

Table 1
Summary of Wetland Characteristics and Impacts, Portland International Jetport

Wetland	Photo	Delineation	Wetland Type [1]	Wetland Function/Value(s) [2]	Impact Area/Type
A	1	October 1997 – Smart Associates [3]	E2EM1 (Fore River)	FFA, FSH, PE, SS, WLH, R, A	No Impact
D	8	" " "	Mowed (airfield) PEM2	Surface water conveyance	No Impact
E		" " "	Mowed (airfield) PEM2 (isolated)		No Impact
F		" " "	Mowed (airfield) PEM2 (isolated)	ESH ?	No Impact
H	9	" " "	Drainage ditch PEM1	Surface water conveyance	0.64 acre PEM
L	2	" " "	PEM1 (wildlife hazard) / PSS1	WLH, ESH (PSS portion)	2.58 acres PEM / 2.31acres PSS
N		" " "	PSS1	Surface water conveyance	No Impact
S	7	June 2007 – TRC	Mowed PEM2	WLH	0.54 acre PEM
T (B)		October 2006 – Smart Associates [4]	PEM1	STPR, WLH	No Impact
V (D)	3	" " "	PEM1	STPR, NRRT, WLH	1.61 acres PEM
W (E)	4	" " "	POWh	STPR, NRRT, WLH, A	0.05 acre POW
X (F)	5	" " "	PEM1	STPR, NRRT, WLH, A	No Impact
Y (G)	6	" " "	E2EM1 (Long Creek)	FFA, FSH, PE, SS, WLH, R, A	No Impact
Z (H)		" " "	PSS1 (isolated)	WLH	No Impact
AC	11	October 1991 – Normandeau Associates [5]	PEM1/PSS1	STPR, WLH	2.98 acres PSS [6]
AE	10	" " "	PFO1 (now isolated)	WLH	0.87 acre PFO
				Total Area of New Impact	**11. 58 acres**

[1] Wetland types from USFWS *Classification of Wetlands and Deepwater Habitats* (Cowardin et al, 1979) with net acreage of impact:
E2EM – Estuarine, inter-tidal, persistent emergent
0.05 acre – POWh – Palustrine, open water, diked/impounded
4.83 acre – PEM1 – Palustrine, persistent emergent
0.54 acre – PEM2 – Palustrine, non-persistent (mown) emergent
5.29 acre – PSS1 – Palustrine, broad-leaved deciduous scrub shrub
0.87 acre – PFO1 – Palustrine, broad-leaved deciduous forested

[2] Based on the September 1999 supplement to the New England Division of the Corps *Descriptive Approach* to assessing wetland functions and values described in *The Highway Methodology Workbook*. Functions and values present in wetlands at PWM include: FFA – floodflow alteration; F/SH – fish/shellfish habitat; STPR – sediment, toxicant, pollutant retention; NRRT – nutrient removal/retention/transformation; PE – production export; SS – sediment/shoreline stabilization; WLH – wildlife habitat; R – recreation; A – Visual quality/ aesthetics; ESH – threatened/endangered species habitat. Wetland functions and values are described in greater detail in Attachment 12 of the NRPA application.

[3] Part of: 1999 *Preferred Facilities Improvement Plan* Applications to the US Army Corps of Engineers and Maine Department of Environmental Protection.

[4] Described in : 2006 *Wetlands Technical Report for Portland International Jetport* by The Smart Associates (Alphabetic wetland label has been changed from original in () to prevent duplicative labeling of previous delineations).

[5] Contained in: 1991*Draft Environmental Assessment/Regulatory Feasibility Study for Airport Access Road, Congress Street Parcel.*

[6] 2.03 acres of impact to this wetland has been previously impacted and compensated for.

Fore River. The only direct hydrologic connection that exists between Long Creek and Wetland L is by a catch basin that drains through approximately 120 feet of deteriorated CMP culvert buried more than 12 ft below grade. A smaller (approximately 15-inch diameter) plastic pipe was "slip-lined" through the deteriorated CMP culvert in 1991 during repair of storm damage from Hurricane Bob. A total of 4.89 acres of wetland impact is proposed in Wetland L for implementation of the WHMP and safety improvements for Runway 29

1.3.2 Runway 11-29 Improvements

Analysis during the Master Plan process showed that existing airport users have a need for 7,200 feet of departure and landing distance in each direction on Runway 11-29. Only Runway 29 currently provides 7,200 feet of landing and departure length. Runway 11 is limited to 6,800 feet to ensure that FAA runway safety area (RSA) standards can be met for aircraft using Runway 11. Improvements are planned to the Runway 11 RSA to eliminate the need to restrict the Runway 11 landing and departure length and provide the needed 7,200 feet of landing and departure length on Runway 11. These improvements include relocating a portion of the perimeter service road, the localizer antenna, and bringing the RSA area to standard (Exhibit C).

1.3.3 Taxiway Improvements

A new taxiway between Taxiway G and Taxiway A will provide access to Runway 29 and is intended to reduce the number of runway crossings and the potential for runway incursions (Exhibit C). North of Runway 29 and south of the existing Cargo Facility, the man-induced origin of areas labeled as D, H, L and N is discernable on 1970 aerial photography which also illustrates how their respective connections to the Fore River were created. Runways, constructed since the late 1930's to be elevated above adjacent terrain at PWM surround areas D on three sides so that should wetland have even existed here prior to construction of the airfield, any connection to the Fore River now only results from construction of the storm drain system. Similarly, areas identified as H are aligned along a ditch May 21, 1970 photograph that is shown to be under construction through upland and crosses an abandoned runway. The now ditch conveys storm water captured by area N on the opposite (west) side of Runway 36 which was also heavily disturbed by construction in 1970. Opportunistic hydrophtyes such as soft rush (*Juncus effusus*) dominate these altered soils and by occurring in a regularly mown part of the airfield are a non-persistent emergent community (PEM2). A total of 0.64 acre of wetland impact is proposed in Wetlands H for constructing and new taxiway to reduce Runway 18 – 36 incursions and improve conditions for the Cargo Facility.

1.3.4 Terminal Area Improvements

A long-term passenger terminal building study was completed concurrently with the Airport Master Plan in 2006. A primary conclusion of the terminal planning process was that the terminal building has existing capacity and circulation deficiencies that need to be addressed and cannot be resolved without expanding the facility. The terminal building plan extends the departure concourse to the west to add additional aircraft contact gates. A new core structure west of the existing building is planned to accommodate new ticketing and baggage makeup with in-line explosive detection devices. Finally, an expanded second floor would provide larger

passenger screening points, secure hold room, and concessions areas. Replacement terminal employee parking is planned north of the existing surface parking areas to accommodate spaces lost due to the terminal building expansion. A deicing fluid collection and recycling system is planned for the terminal apron area. The locations of the various terminal improvements are depicted on Exhibit C.

Improvements to the Terminal Area are proposed to the south of the intersection of Jetport Boulevard and International Parkway. An isolated forested wetland (PFO1) in this location dominated by red maple trees (*Acer rubrum*) is designated as Wetland AE and a nearby wetland that ultimately drains to the north is dominated by a mixture of alder and cattail (PSS1/PEM1) and is designated as Wetland AC. A total of 3.85 acres of new wetland impact are proposed in Wetlands AC and AE for constructing Terminal Area improvements and the de-icing pad which will also occur over 2.03 acres of previously approved and compensated impacts in Wetland AC.

1.3.5 Runway 18-36 Improvements

Several improvements are planned for Runway 18-36 to more effectively serve as a back-up to Runway 11-29 when it is closed for maintenance or other reasons. Runway 18-36 now serves a limited role in maintaining the continuity of air service when Runway 11-29 is closed, as Runway 18-36 can only accommodate the regional jet and turboprop aircraft that use the airport in scheduled airline and air cargo services. The improvements to Runway 18-36 include upgrading design standards, a 1,100-foot extension to the south, and wider and longer runway safety areas behind each end to bring the RSAs to standard. Fifteen-foot snow shoulders are also planned on each side of the runway.

Evidence of former land use continues to be evident in the fallow fields where improvements are to occur for Runway 18-36 and is exhibited by grading and drainage patterns, old-field succession plant communities and roads used into the 1970s for construction of the adjacent Interstate 295 and bridge over the Fore River. The extent of the creation or loss of wetland associated with agricultural activities at the Southern Maine Juvenile Facility/Maine Youth Center is challenging to document but is conspicuously evident today in the form of linear swales dominated by invasive reed canary grass (*Phalaris arundinacea*) and identified as Wetland T (Figure 9-1). The swales drain into two impoundments dominated by cattail (PEM1) or open water (POWh) and then downstream into Long Creek. Roads separate Wetland segments V, W and X and provide access to the area south of Runway 29 including airfield gate 15. Wetland S located near the proposed terminus of Runway 36 is also dominated by reed canary grass and drains by a different route into Long Creek. A total of 2.20 acres of wetland impact is proposed in Wetlands V, W and S for constructing Runway 36 improvements.

1.3.6 Construction Schedule

All project elements discussed above are expected to be developed within the next five federal fiscal years (2009-2013). Table 2 outlines the anticipated development schedule. The FAA has federal oversight for the implementation of the proposed Airport Master Plan update near-term project improvements.

Table 2 Schedule of Proposed Improvements, 2009-2013 Portland International Jetport	
Project Description	**Anticipated Start Date**
Terminal Building Construction	2009
Wetlands Mitigation	2009
Extend Runway 18-36 and Taxiway C 1,100 feet south; Improve RSA to ARC B-III; Displace landing thresholds	2010
Runway 11-29 Improvements	2011
Construct Taxiway east of Runway 18-36 between Taxiways G and A	2012

1.4 Summary

Implementation of a Wildlife Hazard Management Plan (CFR Title 14 FAA Part 139.337) and Capital Improvement Plan at the Portland International Jetport are anticipated to require approximately 11.58 acres of new wetland impacts over the course of five years. Areas of wetland impact and related elements of the Wildlife Hazard Management Plan and Capital Improvement Plan include:

- 4.89 acres – Implementation of Wildlife Hazard Management Plan and Runway 29 improvements;
- 2.20 acres – Runway 18 – 36 Improvements chiefly comprised of an 1,110 ft southward extension of the runway and parallel Taxiway C;
- 0.64 acres – Cargo Facility Improvements; and
- 3.85 acres – Terminal Area Improvements including construction of new aprons in areas that also includes 2.03 acres of formerly approved and compensated wetland impacts.

A combination of offsite compensation opportunities is available and to offset any impacts to wetland functions that may be attributed to implementation of a Wildlife Hazard Management Plan and Capital Improvement Plan over the course of five years at the Portland International Jetport.

2.0 OFFSITE WETLAND COMPENSATION

Onsite wetland compensation is not encouraged by the FAA due to potential introduction of synergistic attractants for "hazardous wildlife" (*Hazardous Wildlife Attractants on or near Airports,* FAA Advisory Circular #150/5200-33B, August 8, 2007). Therefore PWM proposes to provide the wetland compensation needed for this project at two offsite locations referred to as Maine Wetlands Bank (MWB) in Westbrook and Larrabee Farm in Scarborough (Figure 1). Wetland compensation approved by the MDEP and Corps has been implemented at both of these sites for other projects and at Maine Wetlands Bank includes two previous permitting efforts by PWM. Contingent on meeting its guidelines for mitigation ratios, the Corps has also concluded both sites are acceptable as compensation for the unavoidable wetland impacts required to complete this project. To fulfill MDEP requirements, documentation for title, right and interest will be obtained and submitted prior to issuance of project permits.

2.1 Wetland Compensation Goals

The functional assessment (NRPA Application Attachment 12) for the 11.58 acres of new wetland impacts concludes the project will have limited impact to the "principal" functions of these wetlands which include: *sediment/toxicant retention,* and *wildlife habitat.* Other functions and values attributed to wetlands are not detrimentally affected by the Jetport project. The offsite wetland compensation proposed has been selected and designed to replace or further protect these two functions by restoring and enhancing existing wetland and creating new wetland in locations contiguous with other previously approved and implemented wetland compensation.

2.2 Proposed Compensation

In consultation with MDEP and the Corps through pre-application and follow-up Inter-Agency meetings, the identification and selection of the two compensation sites resulted from an inventory of wetland compensation opportunities in the greater Portland area. The inventory included review of an earlier inventory conducted more than 10 years ago of at least 56 different sites in Portland, South Portland, Cape Elizabeth, Westbrook, Scarborough, Gorham and Falmouth for wetland impacts required to implement PWM's Preferred Facilities Improvement Plan. Compensation opportunities at these 56 sites: are no longer available due to site development, have subsequently been implemented such as at Evergreen Cemetery in Portland, or continue to be unsuitable as compensation for the impacts at PWM such as undeveloped parcels north of Warren Avenue in Portland.

Potential sites reviewed for PWM's current permitting effort also included those identified in *Mitigation Properties Available* in the Town of Falmouth prepared by a sub-committee of the Falmouth Conservation Commission (July 2007). This portfolio of approximately a dozen properties covering more than 400 acres has been identified primarily for preservation to ensure that significant natural areas in the Town are protected and that the historic rural character of the community is retained. One such property that was reviewed in north Falmouth covers approximately 227 acres containing forested wetlands, vernal pools, upland and snowmobile trails and is referred to as the Hadlock Road parcel (Figure 1).

Hadlock Road Parcel
Falmouth

TBC Parcel
Westbrook

Glassworld Parcel
Westbrook

Project Site: PWM

Larrabee Farm
Scarborough

3 Mile Radius

PRESUMPSCOT RIVER

FORE RIVER

SCARBOROUGH RIVER

CASCO BAY COASTAL

Portland International Jetport
Environmental Assessment

Figure 1. Location Map of Potential Wetland Compensation

LEGEND

- Project Location
- Three-Mile Radius
- Potential Wetland Compensation
- Watershed Boundary (HUC 10)

Wetlands (NWI)

- PFO1 Forested
- PFO4 Forested
- PSS Scrub Shrub
- PEM Emergent
- PUB Open Water

0 1 2
Miles

Data Sources: USDA, MEGIS, USGS Topography 1:100,000 via ESRI Data Server.
Projection: NAD83, UTM Zone 19N.

Map prepared by: TRC 400 Southborough Drive South Portland, ME 04106 7/23/2008

On April 10, 2008 the Corps and EPA jointly issued a Final Rule addressing *Compensatory Mitigation for Losses of Aquatic Resources* (33 CFR Parts 325 and 332) that codifies "*General compensatory mitigation requirements*" (33 CFR §332.3 (a-o)) for activities authorized by permits issued by the Corps such as the project proposed by PWM. Relevant elements addressed by these compensatory mitigation requirements include (but are not limited to):

- Type and location of compensatory mitigation with a preference hierarchy in the following order (§332.3 b 1-6) –
  - Mitigation bank credits
  - In-lieu fee program credits
  - Permittee-responsible mitigation under a watershed approach
  - Permittee-responsible mitigation through on-site and in-kind mitigation
  - Permittee-responsible mitigation through off-sites and/or out-of-kind mitigation
- Watershed approach to compensatory mitigation (§332.3 c)
- Site selection (§332.3 d)
- Mitigation type (§332.3 e)
- Amount of compensatory mitigation (§332.3 f)
- Use of mitigation banks and in-lieu fee programs (§332.3 g)
- Preservation (§332.3 h)
- Relationship to other federal, tribal, state and local programs (§332.3 j)

Based on the inventory conducted of wetland compensation sites and requirements of the Rule summarized above, Mane Wetlands Bank and Larrabee Farms have been identified as the best locations and forms of wetland compensation necessary to offset the wetland impacts required by the current project at PWM. Wetland compensation to be implemented at each of these locations is addressed separately below.

2.2.1 Proposed Compensation Amounts

The NRPA Wetland and Waterbodies Rules recognize that "*Compensation is the off-setting of a lost wetland function with a function of equal or greater value.*" and sets as a goal "*no net loss of wetland functions and values*" (Ch 310 5C). This goal supports the national goal of *No Net Loss* articulated in a February 6, 1990 MOA between the EPA and USACE *Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines.*

Compensation amounts, or ratios of compensation to impact, are established by these NRPA Rules based on the size of alteration, the type of compensation to be used, functions of the wetland to be altered and characteristics of the compensation site. Compensation by restoration, enhancement or creation is to be at least at a ratio of 1:1 for wetlands that are not of special

significance and 2:1 for impacts to "wetlands of special significance" (Ch 310 (4)). The ratio is set at 8:1 for preservation which can include adjacent upland areas (Ch 310 (5)(C)(5)(a-c)).

Compensation ratios established by the New England District of the Corps are based on complexity of the wetland system, likelihood of compensation success, degree to which functions are replaced and temporal losses for certain functions and are specified in a December 12, 2007 Public Notice entitled *Addendum to New England District Compensatory Mitigation Guidance: Compensation for Impacted Aquatic Resource Functions* (NAE-2006-3648).

Locations of wetland impact proposed at PWM are displayed on Figure 9-1; respective wetland types and functions or values provided by these wetlands are summarized in Table 1; and representative photographs of wetlands to be impacted appear in Attachment 4 of the NRPA application. The net area of wetland impact proposed at PWM is 11.58 acres of which 1.66 acres occur in Wetland V, cattail marsh, and therefore a "wetland of special significance". Approximately 42 per cent of the impacts (4.53 acres) are for implementation of the WHMP in Wetland L which formed in the fill disposal area used for relocating Long Creek and constructing Interstate 295 in the 1970s.

Compensation amounts required for the net area of wetland impact at PWM under the various Maine and federal ratios is summarized in Table 3. In lieu fee is another form of wetland compensation available under the NRPA (38 MRSA §480 (Z) (3)) that in addition to the MDEP, has also been agreed to by the Corps and The Nature Conservancy. Compensation fee rates are based on location, area of impact and resource multipliers for wetlands of special significance (http://maine.gov/dep/blwq/docstand/nrpa/in_lieu_program.pdf). The compensation fee amount calculated for wetland impacts required at PWM is also presented in Table 3.

Table 3
Wetland Compensation Analysis for Portland International Jetport

Impact	Compensation					
	Form	Federal		State		
Wetland (acres)		Ratio [7]	Acre-equivalent	Ratio [8]	Acre-equivalent	In-lieu Fee @ $3.81/sq ft [9]
Total: 13.61 Now permitted: 2.03 Uncompensated: 11.58 (± 1.66 = PEM >20k)	Creation	2:1	23.16	1:1 – 2:1	11.58 – 23.16	$2,197,358.06 [10] Both 1:1 and 2:1impact-to-compensation ratio; 2:1 required for impact to emergent marsh wetlands > 20,000 sq ft (PEM >20k)
	Restoration	2:1– 3:1	23.16 – 34.74	1:1 – 2:1	11.58 – 23.16	
	Enhancement	3:1-10:1	34.74–115.80	1:1 – 2:1	11.58 – 23.16	
	Preservation	15:1	173.70	8:1	92.64	
	Potential Total Area		23.16–173.70		11.58 – 92.64	
	Possible Area Difference			≤ 162.12 acres		

[7] From – US Army Corps of Engineers New England District recommended compensatory mitigation guidance ratios presented in Public Notice NAE-2006-3648, effective December 18, 2007.

[8] From – NRPA Ch 310 §5C(5) a, b, c. 1:1 ratio for impacts to wetlands not of special significance ***and*** 2:1 ratio for impacts to wetlands of special significance.

[9] From – DEP Fact Sheet for In Lieu Fee Wetland Mitigation Program dated June 2008 using Cumberland County square footage rate of $3.81/sq ft = $ 3.28 + $0.53 wherein $3.28 = "wetland creation/sq ft" and $0.53 = "assessed land value/ sq ft (non coastal)". A resource multiplier of 2X is used for certain wetlands such as PEM >20k.

[10] ILF = $3.81/sq ft = $165,963.60/acre. 1.66 of 11.58 acres = PEM>20k @2:1 ratio for total of 13.24 compensation acres or $2,197,358.06 = $165,963.60(11.58+1.66)

2.3 Larrabee Farms

The Larrabee Farms compensation site is located approximately four miles southwest of PWM and borders the Nonesuch River (Figure 1), a tributary of the Scarborough River (HUC #0106000104). The compensation site protects more than 1.4 miles of both sides of the Nonesuch River has over the last several years had also provided and implemented approved wetland compensation approved by MDEP and the Corps for several other projects with large wetland impacts. Wetland compensation proposed at Larrabee Farms for PWM covers a land area of 100.01 acres comprised of 3.53 acres of wetland creation and 96.48 acres of preservation which interlinks two existing wetland compensation areas covering a combined area of 88.46 acres. Based on compensation criteria of the NRPA Wetland and Waterbodies Protection Rules, wetland compensation provided by the 100.01 acres at Larrabee Farms would be adequate for the offsetting approximately 15.6-acres of wetland impacts. Additional information about this compensation site is presented in a separate document prepared by Boyle Associates and R.J. Grondin & Sons that is also part of PWM's permit applications to the MDEP and Corps.

2.4 Maine Wetlands Bank

Wetland compensation at Maine Wetlands Bank (MWB) (N°43 38'50.9", W 70°21'34.3') envelops and incorporates the perennial Blanchette Brook tributary of Long Creek which flows into the Fore River (HUC #0106000105). The tidal reach of Long Creek forms the southern boundary of PWM and MWB therefore occurs in the same watershed as the project impacts (Figure 2). Over the last nine years MWB has provided approved wetland compensation for several projects including two prior projects for PWM that have also reviewed and accepted by the Maine Historic Preservation Commission, FAA and US Fish and Wildlife Service.

MWB is located in the County Road Business Park and Glassworld Industrial Park which were commenced in the mid to late 1980's. The general extent and configuration of the two Parks prior to establishment of MWB is illustrated on the accompanying June 6, 1997 aerial photograph that serves as the base map for the Natural Resource Conservation Services medium intensity soil survey. Outlined in blue on the soil survey map are the areas of MWB to be used as wetland compensation and are shown to be predominantly underlain by the poorly drained, silt loams of the hydric, Scantic Series (Sn).

Wetland compensation proposed at MWB covers a land area of 10.04 acres comprised of wetland restoration from removal of 1.7 acres of illegal fill, enhancement of an additional 2.3 acres of existing wetland and the preservation from future development of 4.0 acres of developable upland and wetland in the Glassworld Industrial Park (Figure 3). Two additional acres of wetland restoration now in place in a stormwater management basin retrofitted in 2006 (Figure 4) are also part of the wetland compensation for PWM. By development not taking place on Lots 14-17, maintenance of this two acre portion of the stormwater management basin will not be necessary, particularly filtration area FB-C which can be further augmented with additional woody hydrophytes. Based on compensation criteria of the NRPA Wetland and Waterbodies Protection Rules, wetland compensation provided by the 10.04 acres at MWB would be adequate for offsetting approximately 5-acres of wetland impacts.

APPROXIMATE SCALE

0 2000 4000

FEET

FIGURE 2

MAINE WETLANDS BANK
OFF-SITE WETLAND COMPENSATION AREA

TRC

USGS QUADRANGLE 7.5 MINUTE
PORTLAND WEST

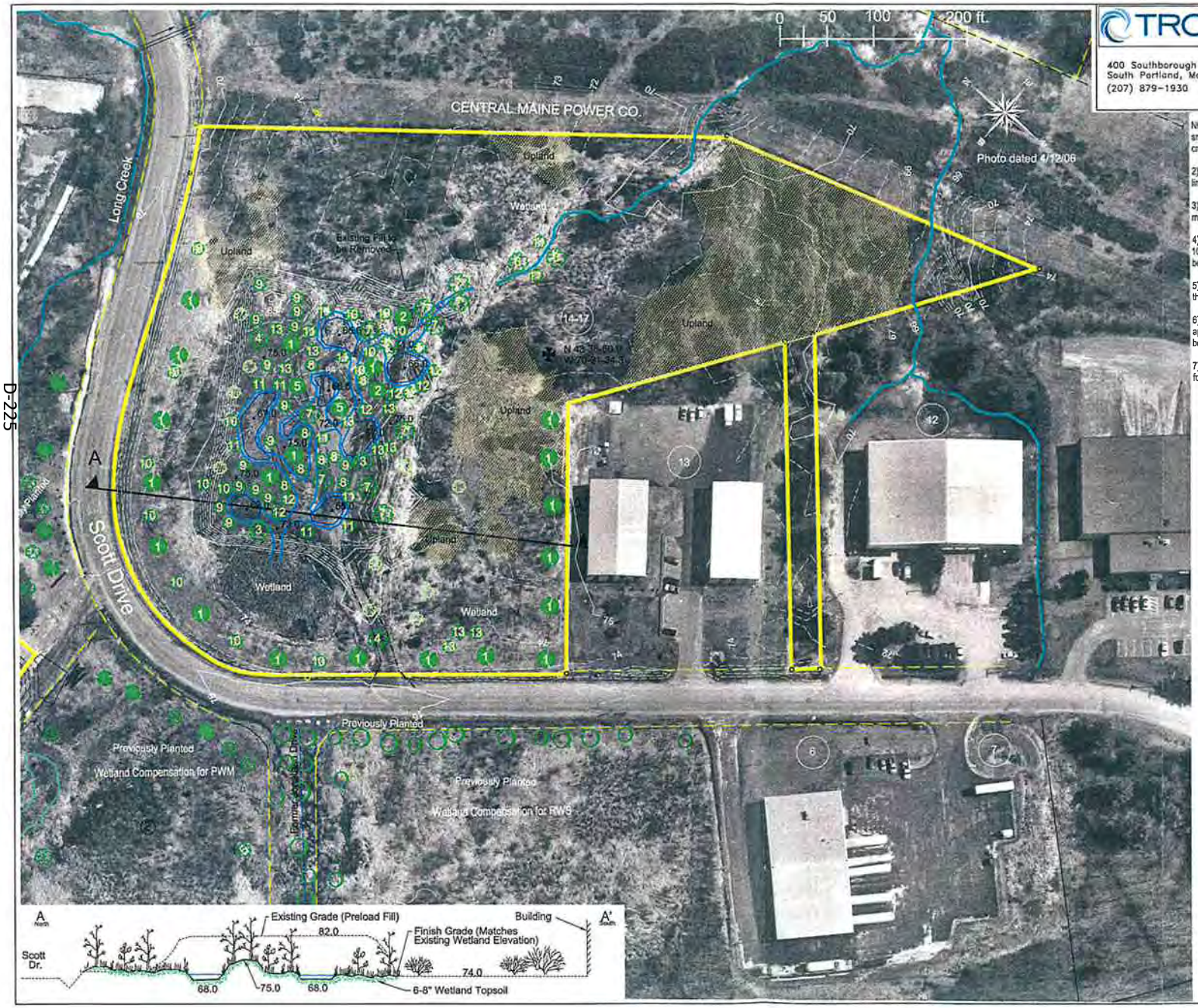
The aerial photograph base map taken on April 12, 2006 for Figures 3 and 4 illustrates existing conditions in the vicinity of the wetland compensation proposed on Lots 14-17 and the stormwater management basing directly across Scott Drive. A transmission line forms the easterly boundary of Lots 14-17 which are bordered on the north and west by Scott Drive. Commercial warehouse buildings are located south of these Lots and across Scott Drive, also surround the stormwater management basin retrofitted in 2006 to comply with Maine's updated water quality improvement and flood storage specifications. Implementation of compensation for PWM is anticipated to conclude wetland compensation at MWB and will occupy the last developable lots at the Glassworld Industrial Park.

Through the course of monitoring previous wetland compensation projects a wide variety of wildlife has been observed at MWB. Whitetail deer, coyote, mink, muskrat, raccoon, wild turkey, mallard and black ducks, great blue and green herons, common egret, ruffed grouse, red wing black bird, king fisher, numerous songbirds, wood, green and bull frogs, monarch butterflies and dragon flies are examples of wildlife commonly sighted throughout MWB. This diverse assemblage of species can at least in part be credited to the wildlife habitat provided by previously implemented wetland compensation adjacent, bordering and neighboring Blanchette Brook. These same species can be anticipated to continue to utilize habitat provided by the existing compensation and therefore are also likely to make use of wetland compensation proposed for Lots 14-17 and the stormwater management basin.

Natural channel conditions were restored in the segment of Blanchette Brook that flows through the stormwater management basin in 2006. As described on plans referenced by MDEP (L-1804-39-F-M) and Corps (NAE-2005-3198) permits this included replacing the former ditch down the center of the basin with a meandering channel with banks that distinctly separate regular stream base flow from the remainder of the larger basin. Floodflow alteration however is provided by the basin during higher stages when flood water spills over the banks. During PWM's initial wetland compensation project at MWB in 2000, a segment of this stream channel further upstream on the west side of Karen Drive that had been relegated to a roadside ditch was restored to its former natural course through a deciduous wooded swamp. As a headwater tributary to Long Creek, wetland compensation at MWB is consistent with and makes a positive contribution to MDEP's and EPA's efforts to protect and improve water quality of the urban-impaired Long Creek watershed.

2.4.1 MWB Construction Plan

Construction layout plans for the wetland restoration component of the offsite compensation at MWB are discussed below and displayed on Figures 3 and 4. Construction requirements depicted on the finalized Wetland Compensation Plans include: erosion control, sub-grade, micro-topographic and final grade specifications, hydrology and surface drainage requirements, topsoil thickness, and planting specifications depicting the locations, quantities, density and species needed for establishment of palustrine emergent (PEM), scrub shrub (PSS) or forested (PFO) wetland communities. These elements are also displayed in typical, cross-sections across areas of wetland restoration and enhancement.



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400 Southborough Dr.
South Portland, Maine 04106
(207) 879-1930

PORTLAND INTERNATIONAL JETPORT
Off-site Wetland Compensation
LOTS 14-17
MAINE WETLANDS BANK LLC

FIGURE 3 Date: March 2009

NOTES: 1) Fill shall be removed down to native soil leaving an irregular surface (not uniformly, smooth grade) with a micro-topography within 0.5 ft. of adjacent natural grade. Refer to typical cross sections for depicted relationship of native soil, fill, subgrade, and applied topsoil.

2) Outer edge of excavations shall be graded to blend in with contours outside or beyond the limit of work.

3) Loam shall be friable to a thickness of 8 to 12 inches across excavated area so that micro-topography of subgrades per #1 above is retained.

4) Locations of plants shown on this plan are approximate only. Each plant symbol represents 10 plants of the designated species. Actual locations of the trees and shrubs to be planted will be established on the site by the project wetland scientist.

5) Bark mulch shall be spread around all planted trees and shrubs for a radius of 18 inches and thickness of 3 inches.

6) Emergent seed mix shall consist of native species indigenous to New England and shall be applied to bare topsoil and covered with straw mulch free of weeds and species considered to be invasive to wetland mitigation sites.

7) Existing contour information from a plan entitled "ALTA/ACSM Land Title Survey" prepared for Deluca-Hoffman Associates, Inc., dated August 15, 2004 by Titcomb Associates, Inc.

PLANT SPECIFICATIONS

Qnty.	Ref.#	Botanical Name	Common Name	Size
		Trees		
200	1	Abies/Picea (Buffer)	Balsam/Spruce	2-3 ft.
20	2	Ulmus americana	American Elm	2-3 ft.
20	3	Nyssa sylvatica	Black Gum	2-3 ft.
20	4	Salix nigra	Black Willow	2-3 ft.
20	5	Quercus bicolor	Swamp White Oak	2-3 ft.
20	6	Fraxinus nigra	Black Ash	2-3 ft.
100	7	Fraxinus pennsylvanica	Green Ash	2-3 ft.
		Shrubs		
100	8	Ilex verticillata	Common Winterberry	18-24 in.
150	9	Cornus stolonifera	Red Osier Dogwood	18-24 in.
150	10	Aronia melanocarpa	Chokeberry	18-24 in.
100	11	Salix nigra	Black Willow	18-24 in.
50	12	Lindera benzoin	Northern Spicebush	18-24 in.
50	13	Clethra anifolia	Sweet Pepper Bush	18-24 in.

.67.0 Proposed Spot Grade with plantings through out of (100 ea.) Pickerel Weed, Burr Reed, Arrowhead and Water Lillys.

Salvage plantings (Alder etc.)

SEEDING SPECIFICATIONS

PEM OBL-FACW Food and Cover Wetland Mix

10%	Asclepais incarnata	Swamp milkweed
30%	Elymus virginicus	Virginia wild rye
10%	Leersia virginica	Rice cutgrass
10%	Onoclea sensibilis	Sensitive fern
6%	Scirpus cyperinus	Wool grass
6%	Sparganium eurycarpum	Giant bur-reed
5%	Polygonum arifolium	Tearthumb
5%	Carex comosa	Cosmos sedge

1-3% 3-9 other native species in commercially available mix

BUFFER ENHANCEMENT

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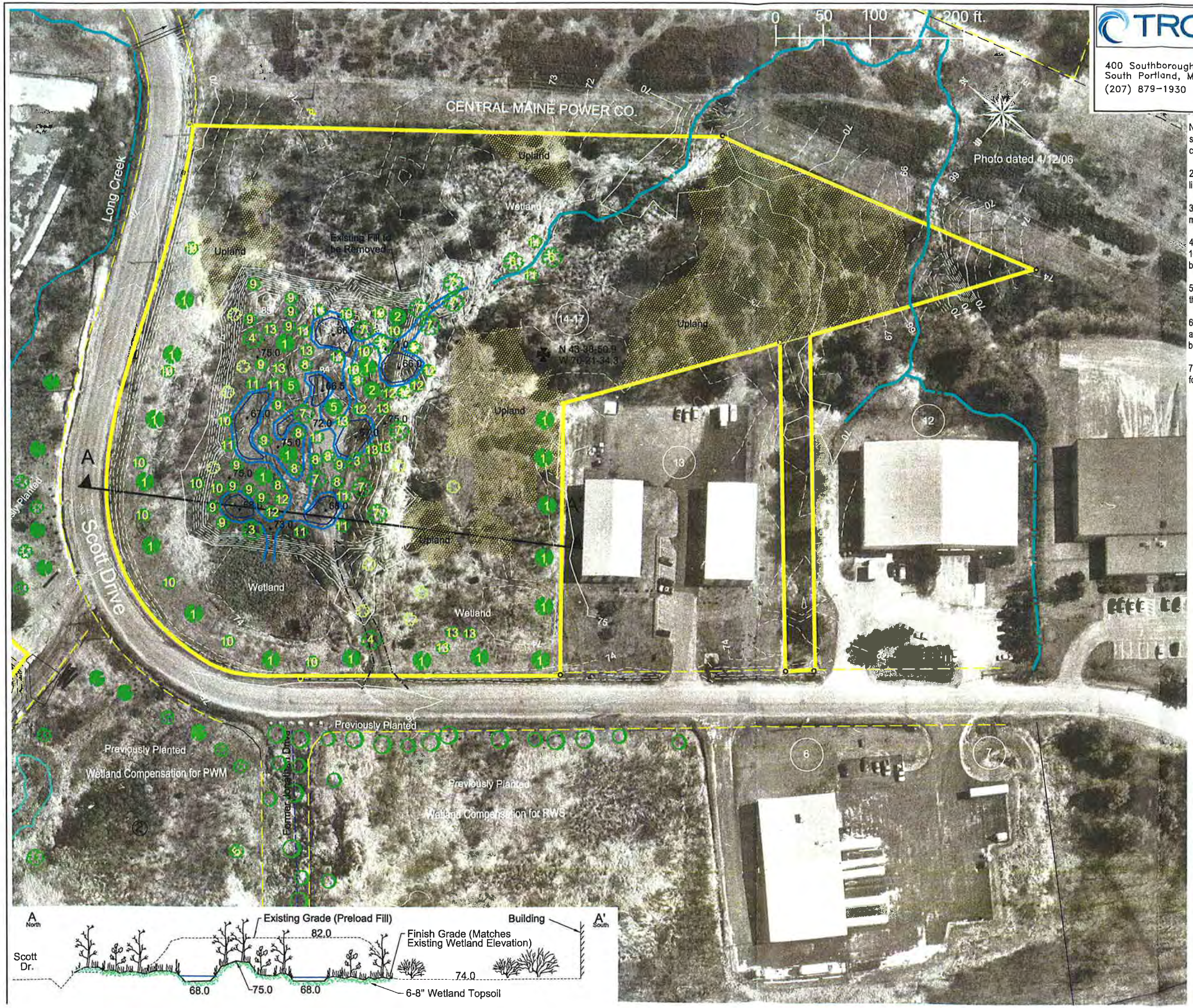
400 Southborough Dr.
South Portland, Maine 04106
(207) 879-1930

PORTLAND INTERNATIONAL JETPORT
Off-site Wetland Compensation
LOTS 14-17
MAINE WETLANDS BANK LLC

FIGURE 3 Date: March 2009



NOTES: 1) Fill shall be removed down to native soil leaving an irregular surface (not uniformly, smooth grade) with a micro-topography within 0.5 ft. of adjacent natural grade. Refer to typical cross sections for depicted relationship of native soil, fill, subgrade, and applied topsoil.

2) Outer edge of excavations shall be graded to blend in with contours outside or beyond the limit of work.

3) Loam shall be friable to a thickness of 8 to 12 inches across excavated area so that micro-topography of subgrades per #1 above is retained.

4) Locations of plants shown on this plan are approximate only. Each plant symbol represents 10 plants of the designated species. Actual locations of the trees and shrubs to be planted will be established on the site by the project wetland scientist.

5) Bark mulch shall be spread around all planted trees and shrubs for a radius of 18 inches and thickness of 3 inches.

6) Emergent seed mix shall consist of native species indigenous to New England and shall be applied to bare topsoil and covered with straw mulch free of weeds and species considered to be invasive to wetland mitigation sites.

7) Existing contour information from a plan entitled "ALTA/ACSM Land Title Survey" prepared for Deluca-Hoffman Associates. Inc., dated August 15, 2004 by Titcomb Associates, Inc.

PLANT SPECIFICATIONS

Qnty.	Ref.#	Botanical Name	Common Name	Size
		Trees		
200		Abies/Picea (Buffer)	Balsam/Spruce	2-3 ft.
20	5	Ulmus americana	American Elm	2-3 ft.
20	9	Nyssa sylvatica	Black Gum	2-3 ft.
20	4	Salix nigra	Black Willow	2-3 ft.
20	5	Quercus bicolor	Swamp White Oak	2-3 ft.
20	6	Fraxinus nigra	Black Ash	2-3 ft.
100	7	Fraxinus pennsylvanica	Green Ash	2-3 ft.
		Shrubs		
100	8	Ilex verticillata	Common Winterberry	18-24 in.
150	9	Cornus stolonifera	Red Osier Dogwood	18-24 in.
150	10	Aronia melanocarpa	Chokeberry	18-24 in.
100	11	Salix nigra	Black Willow	18-24 in.
50		Lindera benzoin	Northern Spicebush	18-24 in.
50		Clethra anifolia	Sweet Pepper Bush	18-24 in.

67.0 Proposed Spot Grade with plantings through out of (100 ea.) Pickerel Weed, Burr Reed, Arrowhead and Water Lillys.

Salvage plantings (Alder etc.)

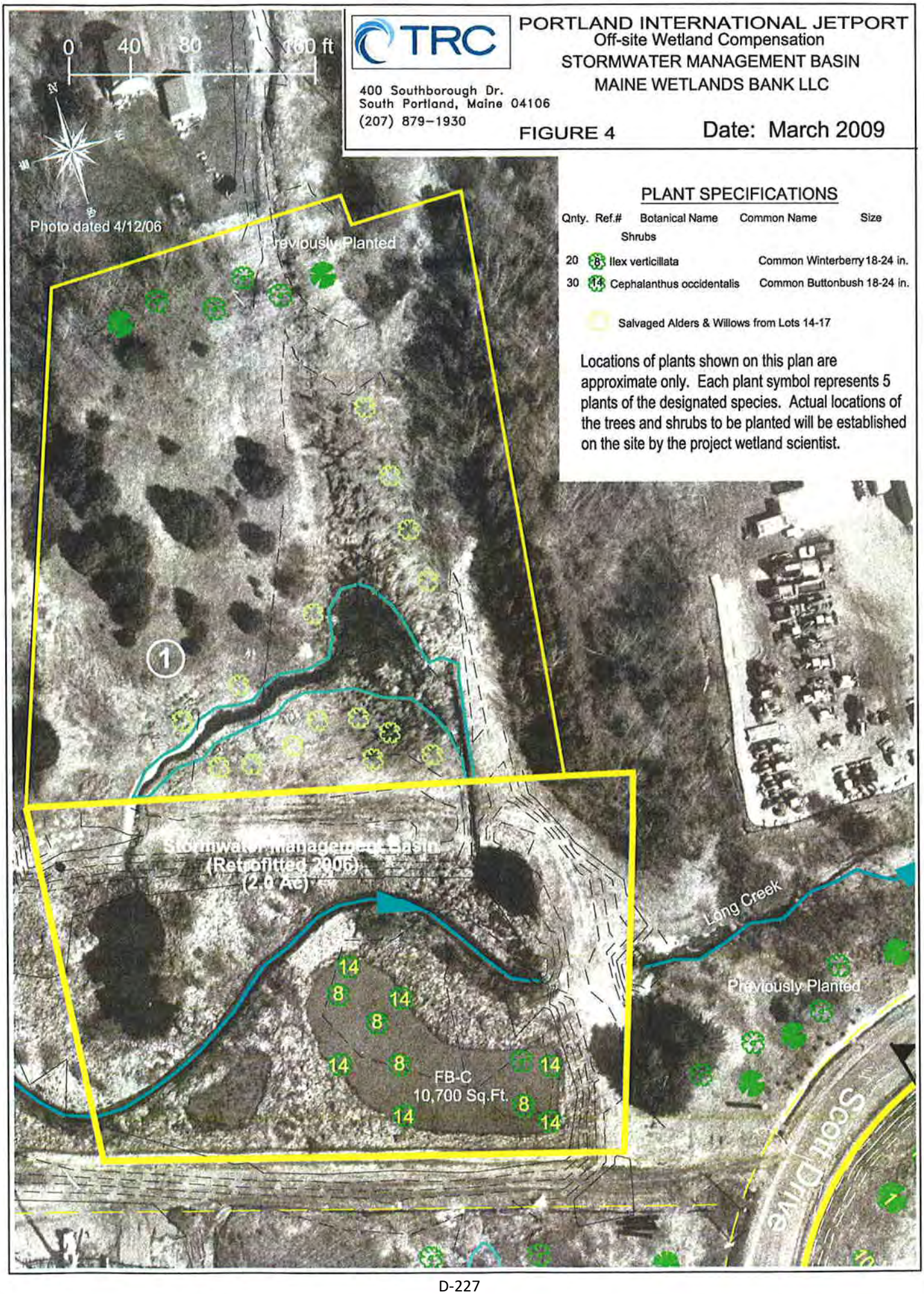
SEEDING SPECIFICATIONS

PEM OBL-FACW Food and Cover Wetland Mix

10%	Asclepais incanata	Swamp milkweed
30%	Elymus virginicus	Virginia wild rye
10%	Leersia virginica	Rice cutgrass
10%	Onoclea sensibilis	Sensitive fern
6%	Scirpus cyperinus	Wool grass
6%	Sparganium eurycarpum	Giant bur-reed
5%	Polygonum arifolium	Tearthumb
5%	Carex comosa	Cosmos sedge

1-3% 3-9 other native species in commercially available mix

BUFFER ENHANCEMENT



TRC

400 Southborough Dr.
South Portland, Maine 04106
(207) 879-1930

PORTLAND INTERNATIONAL JETPORT
Off-site Wetland Compensation
STORMWATER MANAGEMENT BASIN
MAINE WETLANDS BANK LLC

FIGURE 4

Date: March 2009

PLANT SPECIFICATIONS

Qnty.	Ref.#	Botanical Name	Common Name	Size
		Shrubs		
20	8	Ilex verticillata	Common Winterberry	18-24 in.
30	14	Cephalanthus occidentalis	Common Buttonbush	18-24 in.

Salvaged Alders & Willows from Lots 14-17

Locations of plants shown on this plan are approximate only. Each plant symbol represents 5 plants of the designated species. Actual locations of the trees and shrubs to be planted will be established on the site by the project wetland scientist.

Provided necessary authorization is obtained, construction in work areas depicted on the plans could commence as early as Summer 2009 and would therefore be finished before construction of the five-year PWM project is scheduled to be completed. Prior to commencement of work, a pre-construction meeting will be held to familiarize contractors with the compensation area design and permitting requirements. The meeting will be convened by a wetland scientist familiar with the requirements of the project plans and the conditions of the permits issued by the Corps and MDEP. The project wetland scientist will be present onsite during the construction to monitor the work and to ensure compliance with requirements of the compensation plan.

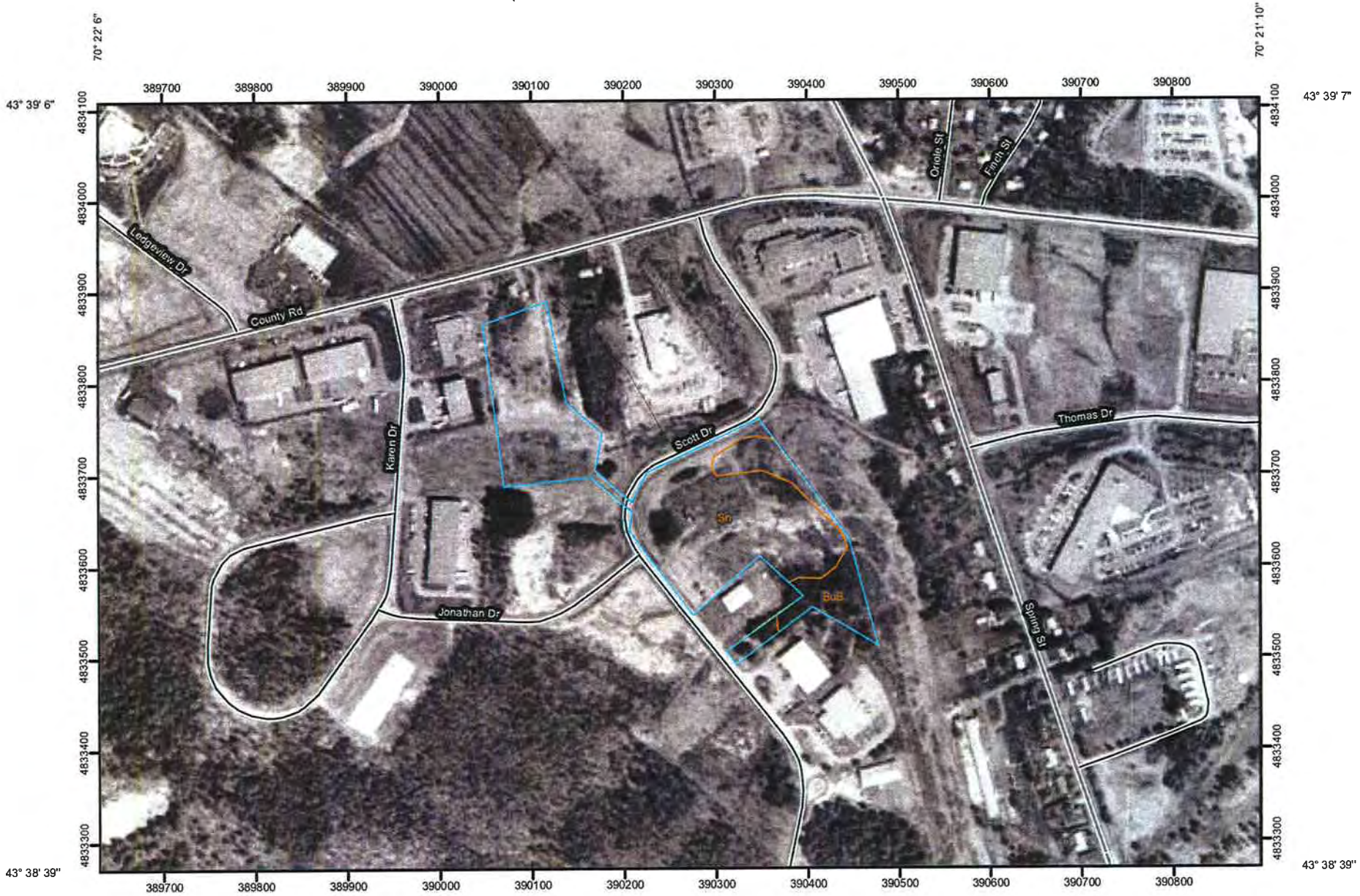
Erosion control conforming to MDEP's BMP (Best Management Practices) specifications such as mulch, stone check dams, staked hay bales or silt fence, will be erected prior to construction along the edge of sensitive areas such as wetlands that could be impacted during the course of project construction. Erosion control measures will be functionally maintained until adjacent slopes are stabilized with vegetation. It is expected soil stability will be promptly achieved so that erosion control measures can be removed and properly disposed of by or before November 1 of the third growing season. Any sediment collected by the erosion control measures will be stabilized, or removed and disposed of in a manner that prevents its erosion and transport into a waterway or wetland. The sequence of work is critical to implementation of erosion control measures and will proceed in a direction moving away from existing wetland so that completed work will not be re-crossed. Construction access for wetland compensation is facilitated by Scott Drive bordering two sides of Lots 14-17 and will therefore not pass through streams or existing wetland.

Topography across the MWB wetland restoration site generally slopes to the east. Surface water levels as well as adjacent natural grades therefore control placement of proposed contours. In areas where earthwork is to occur, proposed contours will be tied to existing elevations in the adjacent undisturbed wetlands. The resultant proposed contours are to be developed to provide grades conducive to establishment of PEM, PSS or PFO wetland communities that are integrated with the relief between where wetland is to be restored and adjoining undisturbed conditions.

Wetland hydrology is chiefly surface runoff dependent where wetland restoration is to occur on Lots 14-17 and as described by the Natural Resources Conservation Service will be augmented throughout the growing season by the shallow water table of the underlying Scantic soils. Surface hydrology at MWB is predominantly runoff from the developed area to the west and proposed grades throughout the restoration area have been designed to capture this drainage. Across Scott Drive from Lots 14-17, water levels in the stormwater management basin FB-C are linked to levels of the headwaters of Long Creek. Rising floodwaters spill out of the restored stream channel and are detained in the retrofitted basin much like in a natural floodplain and then recede back to the channel and lower elevations when flood levels drop.

A tracked excavator will be used to remove fill to restore the wetland and will also be used to establish the irregular, rough micro-topography of mounds and pools that is characteristic of natural wetlands. Total relief between the bottom of the pools and the tops of the mounds will be approximately one vertical foot.

Soil Map—Cumberland County and Part of Oxford County, Maine
(MWB Lots 14-17 with Stormwater Managment Basin)



USDA Natural Resources Conservation Service

Web Soil Survey 2.1
National Cooperative Soil Survey

3/4/2009
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 7, Jan 8, 2009

Date(s) aerial images were photographed: 6/7/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BuB	Buxton silt loam, 3 to 8 percent slopes	2.1	16.5%
Sn	Scantic silt loam	10.8	83.5%
Totals for Area of Interest		**12.9**	**100.0%**

D-230

Report—Water Features

Water Features– Cumberland County and Part of Oxford County, Maine										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*	*Ft*				
BuB—Buxton silt loam, 3 to 8 percent slopes										
Buxton	D	—	January	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	February	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	March	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	April	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	May	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	June	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	November	0.5-1.5	1.0-2.0	—	—	None	—	None
	D	—	December	0.5-1.5	1.0-2.0	—	—	None	—	None
Sn—Scantic silt loam										
Scantic	D	—	January	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	February	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	March	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	April	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	May	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	June	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	October	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	November	0.0-1.0	1.0-2.0	—	—	None	—	None
	D	—	December	0.0-1.0	1.0-2.0	—	—	None	—	None

Where excavation is required, sub-grades will be excavated 8-to-12 inches below final grade to accept backfill with a corresponding thickness of wetland topsoil. This thickness of topsoil is representative of that of the "A" horizon of the Scantic soils found beneath other undisturbed wetlands adjoining the offsite compensation areas. After application of the topsoil to sub-grades, the constructed wetland footprint will blend in with contours of adjacent undisturbed slopes.

Topsoil stripped from the area of Scantic soils where pre-load fill was placed on Lots 14-17 remains at the site and will be reapplied to the same area where wetland is to be restored. Natural wetland topsoil consists of 4-12% organic carbon by weight (NED, 2004 *Guidance for Mitigation Plan Checklist*). Clean woody debris (such as bark and twigs) from timber harvesting can be added to the salvaged topsoil as necessary to enrich and supplement organic carbon to levels typical of Scantic soils.

Dead or dying woody debris obtained from logs, limbs and stumps of non-invasive species will be distributed throughout the constructed wetlands and after completion shall cover at least four percent of this area or approximately 2,200 sq ft. The woody debris is intended to provide structural and temporal diversity and cover, nest sites, and perches for wildlife. Woody debris will be sited to represent dispersed configurations typically observed in wetlands including fallen logs, snags, overturned stumps depicting tree-throw and fallen canopy.

Native species indigenous to New England are to be planted at the off-site compensation areas to replicate and re-establish PEM, PSS and PFO wetland communities. To improve habitat cover and enrich species diversity, eight tree and seven shrub species will be planted at a density of 600 woody plants per acre and will include: balsam fir, white spruce, American elm, black gum, swamp white oak, black willow, black and green ash, winterberry holly, red osier dogwood, chokeberry, black willow, northern spicebush, sweet pepperbush and buttonbush (Figures 3 and 4). All of these species are recognized as food sources for wildlife including small mammals and songbirds (Martin et al. 1951; Thunhorst, 1993; Leopold, 2005). In addition to the planted 400 trees and the 680 shrubs, based on the proximity of existing PSS wetlands at MWB, it is reasonable to expect other "volunteer" species of woody vegetation such as speckled alder (*Alnus rugosa*) and meadow sweet (*Spirea* spp.) will also colonize the compensatory wetlands and supplement plantings. With the exception of cattail (*Typha* spp.) which historically exists at the site, other woody plant and herbaceous species listed as invasive or unacceptable in Table 4 of the New England District's January 1, 2007 *Mitigation Guidance for New England District Mitigation Plan Checklist* will not be used as planting stock for the compensation areas.

A commercially available seed mixture of acceptable native hydrophytes will be sown across bare soil in the restored wetland area to establish an understory of herbaceous wetland vegetation beneath the woody plantings. The seed mix will be formulated for wildlife and plant diversity and this relationship of emergents, shrubs and trees will create an interspersed mosaic of plant forms or an ecotone typical of natural wetland communities. Typical application rates of such seed mixes are 15 pounds per acre ($\pm$0.5 pounds per 1,000 square feet).

Patches of common reed (*Phragmites australis*) and reed canary grass (*Phalaris arundinacea*) are now present in specific areas of Lots 14-17 and purple loosestrife (*Lythrum salicaria*), and multi-flora rose (*Rosa multiflora*) are represented at a few locations by solitary plants. Other invasive and noxious plants such as buckthorns (*Rhamnus* spp.) olives (*Elaeagnus* spp.) or

Japanese knotweed (*Polygonum cuspidatum*) have not been observed. In areas where earthwork will take place to restore or enhance wetlands on Lots 14-17 and the retrofitted stormwater management basin, any existing invasive and noxious plants will be removed during the course of earthwork and properly disposed of in manner that prevents reintroduction to the site or other locations. In the event invasive or noxious plants begin to colonize areas where wetland compensation work has been implemented, regulatory staff will be consulted to determine the most appropriate form of biological, mechanical, or chemical form of control or eradication. Possible methods to be employed include: pulling, mowing, excavation, release of herbivorous insects, hydrologic and shade manipulation, herbicides or a combination thereof.

Off-road vehicle use is not now authorized at MWB and no evidence of same has been witnessed. Off-road vehicle use is prohibited by the Declaration of Covenants and Restrictions (1 e, page 3) that has been adopted by the MDEP and reviewed and approved by the Corps Assistant District Counsel. In the event evidence of such property damage and trespass take place, site specific measures will be implemented through the Westbrook Police Department in accordance with the full extent of provisions provided under the Maine ATV Law (Title 12, Chapter 933) and in particular §13157A22.

In the event site conditions or circumstances occur that prevent the site from being developed as proposed by the Wetland Compensation Plans, regulatory staff will be consulted to determine the most appropriate measures to be implemented in order to achieve the goals of the wetland compensation plan.

Within 60 days of completing the wetland compensation at MWB the MDEP and Corps Policy Analysis and Technical Support Branch will be notified in writing of the completed work.

2.4.2 MWB Monitoring Plan

Monitoring of the offsite compensation areas will commence at initiation of construction and continue for five full growing seasons after completion of construction. The monitoring will be conducted by a wetland scientist familiar with the design of the compensation areas and the associated permitting requirements. Annual reports on the outcome of monitoring are to be submitted to the Corps and MDEP by the December 15th of the year in which the monitoring is conducted and will display the respective permit numbers and monitoring year on the front covers. Below is a discussion of the observations that are to be made during the monitoring along with topics that are to be addressed in the annual monitoring reports.

Monitoring will take place at several key times throughout construction. The time and purpose of these site visits are listed below and are based on construction commencing during the Summer of 2009:

Prior to excavation - confirm proper layout of the compensation area, document near-by or in-place occurrence of invasive or problematic species that may require future control or management;

Prior to earthwork completion - verify hydrology, subgrades and final grades have been achieved;

Onset of planting - verify adherence to planting specifications and identify planting locations;

Completion of planting - verify planting placement, evaluate need for irrigation, identify corrective measures;

Weekly after planting - evaluate need for irrigation and implement as necessary;

Within 60 days of completion or by early November - inspect success of plantings, implement necessary corrective measures before month end, photograph site from designated monitoring stations and evaluate achievement of mitigation goals.

In the event compensation construction is not completed by December 31, a letter referencing permit numbers and identifying the date work commenced and status will be sent to the MDEP and Corps prior to January 31, 2010.

In the subsequent five growing seasons, monitoring should be conducted as scheduled below for the accompanying purposes:

Late Spring / Early Summer - evaluate planting success and need for irrigation, inventory occurrence of invasive species, implement remedial measures ranging from physical removal to application of herbicides as appropriate for invasive species; and

Late Summer / Early Fall - inspect plantings success, implement necessary corrective measures before month end (end of growing season), photograph site from designated monitoring stations, and evaluate achievement of mitigation goals.

Two permanent monitoring stations will be established on each compensation parcel (Lots 14-17 and Stormwater Basin), from which photographs will be taken annually to track development of wetland conditions in the areas of creation, restoration and enhancement. Data will also be collected at the monitoring stations in late July or early August during the middle of the growing season. Vegetative data to be collected from nested quadrats containing respective stratums at these stations will include species composition, percent dominance, and percent survival of planted species. Soils observations will consist of describing soil profiles at each monitoring station. Hydrologic data will be obtained from test pits excavated for the soil profiles and/or a monitoring well that will be measured monthly between May and October. The above data will be evaluated in accordance with methods of the 1987 *Corps of Engineers Wetland Delineation Manual* to determine whether conditions occur that meet criteria representative of the respective PEM, PSS, and PFO wetland communities. Conditions throughout the offsite wetland compensation parcels such as vegetative cover, occurrence and extent of invasive species,

evidence of disturbance, slope stability, and use by wildlife (e.g. tracks, scat, browsing, nests, and egg masses) will also be recorded during the mid-growing season monitoring.

Conditions observed at the monitoring stations and throughout the parcels will be summarized in the annual reports along with a summary of the project schedule and a discussion of any necessary recommendations for remedial measures such as replanting dead vegetation, re-grading to achieve appropriate hydrology, controlling invasive species, and stabilizing un-vegetated and eroding soil. Remedial measures shall be implemented at least two years prior to the completion of the monitoring. Should remedial measures be required after this time, demonstration of successful completion by extension of the monitoring period an additional two years may be necessary. Written approval from the Corps is necessary for remedial measures requiring earthwork or hydrologic modifications. Data collected during monitoring site visits will be summarized in the report that Special Conditions from the MDEP and Corps permits for the Portland Jetport project and a summary of the mitigation goals will also address the status of the following success standards:

1. Suitable wetland hydrology to support designed wetland type demonstrated from well data or other substantial evidence;

2. More than 75 percent of each woody (trees and shrubs) planting zone shall contain a minimum of four planted or non-exotic volunteer species that are well represented in the compensation area (i.e., with an abundance of a least 50 plants per acre) and a density of at least 500 trees and shrubs per acre of which at least 350 per acre are trees in forested cover types;

3. More than 80 percent areal cover by non-invasive hydrophytes (e.g. excluding phragmites, purple loosestrife, reed canary grass, buckthorn) in emergent areas and more than 60 percent areal cover by non-invasive hydrophytes in shrub of forested areas with a least 15 percent being woody species;

4. Control of phragmites, purple loosestrife, Russian and autumn olives, buckthorn and/or multiflora rose within the compensation area; and

5. Slope/soil stability within and adjacent to the compensation area.

The annual reports will also include four appendices comprised of the following:

A Special Conditions from the Permit for the Portland International Jetport and a summary of the mitigation goals;

B As-built plans showing the location of the stations used to monitor species planted in designed wetland (PEM, PSS, PFO) communities;

C Species list inventory of dominant (> 5 percent cover) volunteer species at each monitoring station; and

D Representative photographs of each monitoring station.

2.4.3 Post-Construction Assessment

After the first five full-growing seasons (beginning prior to June 1), an assessment of the wetland compensation site shall be performed which:

1) Evaluates attainment of the original or modified goals established for the compensation site;

2) Describes problems and solutions during construction maintenance/monitoring;

3) Identifies agency procedures or polices that encumbered implementation of the compensation plan; and

4) Recommends measures to improve similar wetland compensation projects.

In addition to addressing the above topics, the assessment report will also include four appendices comprised of the following:

A Results of a function and value assessment of the compensation site;

B Mapping of the constructed wetland compensation area supported by areal computations and multi-parameter data transects, etc. that justify the mapping in accordance with criteria (data sheets and transects) of the 1987 *Corps of Engineers Wetland Delineation Manual;*

C Comparison of Appendix B plans above with the as-built plans of Appendix B in the Monitoring Reports; and

D Representative photographs of the compensation sites from stations used during the monitoring studies.

The assessment report will be submitted to the MDEP and Corps by December 15 of the year the assessment is conducted. Written approval from the Corps is typically required to authorize preparation of the Assessment by the same party that prepared the Monitoring Reports.

SUPPORTING INFORMATION
LOTS 14 – 17
AND
STORMWATER MANAGEMENT BASIN
MAINE WETLANDS BANK
WESTBROOK

NEW ENGLAND DISTRICT
MITIGATION PLAN CHECKLIST

(see New England District Mitigation Guidance document for clarifying information)

Project: Portland International Jetport
File No: NAE-2008-00053
Corps Project Manager: Jay Clement
City: Portland
State: Maine
Plan Title: Natural Resources Protection Act Application, Portland International Airport (PWM)
Plan Preparer: TRC
Plan Date: October 2008

TABLE OF CONTENTS

A. General Information

1. [OK] Mitigation plan and documentation submitted as one complete package.
2. Site location:
   a. [OK] Locus map(s)
   b. [Y] Aerial photo(s) Figures 2 and 3

this was only provided for the Maine Wetlands Bank site

   c. [Y] Latitude/Longitude of mitigation site(s) in decimal format. Figure 3
   d. [OK] 8-digit Hydrologic Unit Code(s) for impact area(s) and mitigation area(s).

01060001

B. Impact area(s)

1. [OK] Wetland acreage at each impact site.

11.58 acres at five major areas – see Table 9-1

2. [OK] Wetland classes at each impact site. Refer to Table 1 (page 1-5)

PEM ~~2.84a~~ POW 0.05 PSS 5.29
PEM/PSS ~~4.89a~~ PEM 5.37 PFO 0.87
PEM/PSS ~~3.85a~~ – *unclear on Table 9-1 if this is PFO*

3. [OK] Stream(s) at each impact site.

Apparently only a few small drainageways

4. [OK] Describe both site specific and landscape level wetland and stream functions and values at each impact site.

*Wildlife habitat and sediment/toxicant/pollutant retention are principal functions, plus nutrient removal/retention/ transformation, surface water conveyance, threatened/endangered species habitat (state listed upland sandpiper (*Bartramia longicauda*) and New England cottontail (*Sylvilagus transitionalis*), which is also proposed for federal listing).*

Table 12-1 separates aquatic resources into "Waters of the United States" and "Man-Induced Wetlands" – this is confusing as these terms are not equivalent or mutually exclusive. "Waters of the US" refers to jurisdiction, which may include man-induced wetlands. The latter term merely refers to method of formation of wetlands and that their delineation must be done using the Problem Areas section of the '87 Manual (e.g., lacking hydric soils indicators, they may be identified with hydrophytic vegetation and wetland hydrology indicators alone), but this does not generally affect jurisdiction.

5. [OK] Describe type and purpose of work at each impact site.

Airport safety improvements, including filling wetlands to reduce bird usage, taxiway and runway improvements, and terminal expansion.

6. [OK] Relationship to watershed or regional plans for the area discussed.

C. Mitigation area(s)

1. Background information

a. [OK] Mitigation alternatives.

While the Maine Wetlands Bank and Larrabee Farms sites may be determined to be appropriate compensatory mitigation as each is a pooled mitigation site, they do not meet the definition and requirements of a "mitigation bank" per Corps guidance or the cited Mitigation Rule and therefore, receive no special preference for use.

b. [ ] Existing wildlife use. TP2 Pg 2-7

c. [ ] Existing soil. Pg 2-5, 11, 12, 13

d. [ ] Existing vegetation. Figs 3 and 4

e. [ ] Surrounding land uses. Pg 2-5, Figs 3 & 4

f. [ ] USFWS and/or NOAA Clearance Letter or Biological Opinion

g. [ ] SHPO Cultural Resource Clearance Letter

> Supporting Information

2. Mitigation proposed

a. [OK] Wetland acreage and mitigation type proposed at each site.

Maine Wetlands Bank:

2.0 a. restoration within stormwater basin - ??? OK per 1/30/09 Mtg.

1.7 a. restoration

2.3 a. enhancement

4.0 a. preservation (beyond above) wetland and upland

Larrabee Farms:

3.53 a. creation

96.48 a. additional preservation

b. [ ] Wetland classes (e.g., Cowardin, et. al. and hydrogeomorphic classification) proposed at each site. TP4 pg 2-14, Figures 3 and 4.

c. [✓] Site specific and landscape level functions and values proposed at each site. TP 2 Pg 2-1

d. [OK] Describe nature of any stream mitigation.

Preservation along the banks of the Nonesuch River at the Larrabee Farms site.

e. [OK] Reference site(s).
f. [ ] Design Constraints Figs 3 and 4 pgs 2-7 – 2-14
g. [OK] Construction oversight.
h. [OK] Project construction timing.
i. [ ] Responsible parties for all aspects of project. Supporting Information plus FP 1 pg 2-10, FP 5 pg 2-15,
j. [ ] Appropriate financial assurances.
k. [ ] Potential to attract waterfowl and other bird species that might pose a threat to aircraft? Figures 3 and 4, Supporting Information

D. Hydrology

1. [ ] Evidence of adequate hydrology to support the desired wetland or stream.
   a. [ ] "Typical" year water budget pg 2-10 – 2-13
   b. [ ] "Wet" year water budget
   c. [ ] "Dry" year water budget
2. [ ] Water source(s)
3. [N/A] Vernal pool (if any) hydrology is appropriate.

E. Grading Plan

1. Plan View
   a. [ ] Existing and proposed grading plans. Figures 3 and 4, FP 3-5 pg 2-10
   b. [OK] Microtopography
   c. [ ] Scale is in the range of 1"=20' to 1"=100'. Figures 3 and 4
   d. [ ] All items on the plan are legible. Electronic documents are encouraged (e.g., Portable Document Format); otherwise plans should be on 8 ½ x 11" sheets.
   e. [ ] Plans have a bar scale. Figures 3 and 4
   f. [ ] The drawings show the access for maintenance and monitoring. FP 2 pg 2-10
2. [ ] Representative cross-sections Figure 3
3. [ ] Other - Specific staff recommendations related to grading.

F. Topsoil

1. [ ] Proposed source of topsoil. FP 2 pg 2-14
2. [OK] Twelve or more inches of natural or manmade topsoil in all wetland mitigation areas.
3. [ ] Appropriate organic content of topsoil. FP 2 pg 2-14

G. Planting Plan

1. [ ] Plans use scientific names. Figures 3 and 4
2. [OK] Plant materials are native and indigenous to the area of the site(s); invasive species, nonnative species, and/or cultivars are not proposed for planting or seeding.
3. [OK] Vegetation community types or zones are classified in accordance with Cowardin, et al. (1979) or other similar classification system.
4. [ ] Plan view drawings show proposed locations of planted stock. Figures 3 and 4
5. [ ] More than 50% of the plantings in each zone are structural determinants for the community type designated for that zone. Figures 3 and 4

6. [ ] Woody stock density is appropriate. #4 Pg 2-14, Figures 3 & 4
7. [ ] Herbaceous stock density is appropriate. #5 Pgs 2-14 Figure 3
8. [ ] Seed mix composition is provided. Figure 3
9. [ ] Representative cross section plans showing vegetative community zones. Figure 3
10. [ ] Relocation of plantings allowed when appropriate. Note 4 Figure 3
11. [ ] Other - Specific staff recommendations related to planting.

H. Coarse Woody Debris and Other Features

[OK] Appropriate amounts and range of decomposition of coarse woody debris are proposed.

I. Erosion Controls

[OK] Erosion control removal deadline is included.

J. Invasive and Noxious Species #6 pg 2-14

1. [ ] Risk – includes evaluation of the potential for unwanted species or varieties
2. [ ] Constraints – regulatory or environmental factors affecting control strategies
3. [ ] Control Plan – addresses a scope commensurate with risk & constraints

K. Off-Road Vehicle Use

1. [ ] No off-road vehicle use in immediate vicinity, or if so, control measures addressed.
2. [ ] Control plan, if appropriate. #2 pg 2-15

L. Preservation Supporting Information

1. [ ] Adequate buffers
2. [N/A] Wetlands within subdivisions are protected along with appropriate buffers.
3. [ ] Required preservation language is included.
4. [ ] Plans of preservation area(s).
5. [ ] Form of legal means of preservation
6. [ ] Documentation of acceptance by receiving agency (if applicable)

M. Monitoring Plan Pgs 2-15 – 2-18

[ ] Appropriate monitoring is proposed and language included.

Much of the pertinent language is missing, including that regarding success standards. The language in our most recent checklist guidance is recommended.

N. Assessment Plan Pg 2-18

[ ] An appropriate assessment plan is proposed and language included.

O. Contingency #3 Pg 2-15, Pg 2-16

[ ] Plan for dealing with unanticipated site conditions or changes.

P. Long-term Stewardship

[ ] Plan for long-term stewardship is included. Supporting Information

Q. Other Comments 1/30/2009 Mtg

It is stated that more detailed information will be submitted in the final mitigation plan so much of the detail noted as lacking above is expected to be submitted then.

Overall, use of the Maine Wetlands Bank and Larrabee Farms for compensatory mitigation for this project appears appropriate. However, the amounts of compensation presently proposed do not seem adequate (using the recommended ratios, total credits for the proposal would be 10.19, versus the 11.58 acres of impact). While the degraded nature of the wetlands to be impacted is recognized and incorporated into the evaluation, so, too, is the nature of the mitigation. Of particular concern is the stormwater management basin at the Maine Wetlands Bank. We do not generally accept compensatory mitigation within stormwater management facilities, due to the periodic maintenance of such facilities, their inability to perform a full suite of wetland functions, and lack of long term sustainability of these functions. In this specific case, an exception may be made to accept some compensation credit from this area, but at a diminished rate (e.g., 0.15 credit instead of 1.0 credit, decreasing total mitigation credits available to 9.34). This leaves a deficit in compensation of 2.24 credits. This deficit can be decreased due to the degraded nature of the wetlands to be impacted to approximately 1.0 credit. This 1.0-credit deficit could be met by additional mitigation at Larrabee Farms, payment into the in-lieu fee program (approximately $165,963.60), or inclusion of an additional mitigation proposal.

ERS Scientist: Paul Minkin Date Plan Reviewed: 12 December 2008

U.S. Department
of Transportation
**Federal Aviation
Administration**

New England Region

12 New England Executive Park
Burlington, MA 01803-5299

November 16, 2000

Mr. Cole Peters
Duke Engineering and Services
500 Washington Ave.
Portland, ME 04103

Dear Mr. Peters:

As a follow-up to our conversation last Thursday and the information you provided in your October 23rd mitigation plan submittal, the FAA concurs with your assessment that the proposed project at Karen Drive in Westbrook, Maine should not result in the attraction of hazardous wildlife and therefore complies with FAA AC150/5200-33. This, of course, is based on the successful development of the site as intended. If the site does not develop as intended or for any other reason results in the attraction of hazardous wildlife, appropriate modification to the site must be undertaken to rectify the problem.

As we discussed, the FAA did not provide an "approval" such as this for the Smiling Hill Farm site since we accepted the Environmental Assessment and wrote our Finding of No Significant Impact that included it.

If you have any questions regarding this matter, please give me a call at (781) 238-7613.

Sincerely,

Frank Smigelski
Environmental Specialist

CC: Jeff Schultes

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

September 28, 2000

Colen R. Peters
Duke Engineering Services
500 Washington Avenue
Portland, Maine 04103

OCT - 3

Project: MHPC #2170 - Commercial Subdivision on County Road
Location: Westbrook, Maine

Dear Mr. Peters:

In response to your recent request, I have reviewed the information received September 14, 2000 to initiate consultation on the above referenced project. We are reviewing this project pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Based upon the proposed scope of work for this project and the project location, no additional identification efforts are warranted at this time as there is adequate documentation for a finding on historic properties. Our office feels that the area of potential effects does not contain resources eligible for listing in the National Register of Historic Places. Therefore, I find no historic properties [historic, architectural or archaeological] affected by this project.

Please contact Dana R. Vaillancourt of my staff if you require further assistance in this matter.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/drv

PHONE: (207) 287-2132

FAX: (207) 287-2335

Duke Engineering & ServicesSM
A Duke Energy Company

500 Washington Avenue
Portland, Maine 04103

207 775-4495
Fax 207 775-1031

850.00.0002.01
2.0

September 13, 2000

Mr. Earle Shettleworth, Jr., Director
Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, ME 04333-0065

Subject: **Request for Information on Historic Structures or Archaeological Sites**
County Road, Westbrook

Dear Mr. Shettleworth:

Duke Engineering & Services, Inc. (DE&S) is assisting Maine Wetlands Bank, LLC with the preparation of wetland mitigation plans requiring approval from the Maine Department of Environmental Protection (MDEP) and the U.S. Army Corps of Engineers. The ± 61-acre parcel where this project is proposed is displayed on the attached location map (Figure 1) and is part of two commercial subdivisions that received Site Location Permits from the MDEP in 1985 and 1986.

We are requesting your review to determine whether any significant historic or archeological resources are known to occur on the site. If you have any questions, please feel free to contact me at 775-4495.

Sincerely,

DUKE ENGINEERING & SERVICES, INC.

Colen R. Peters
Senior Wetland Scientist

CRP/kjp
Enclosures

cc: R. Cleaves
File

J:\Projects\ME Wetland Bank\Shettleworth-000913.wpd

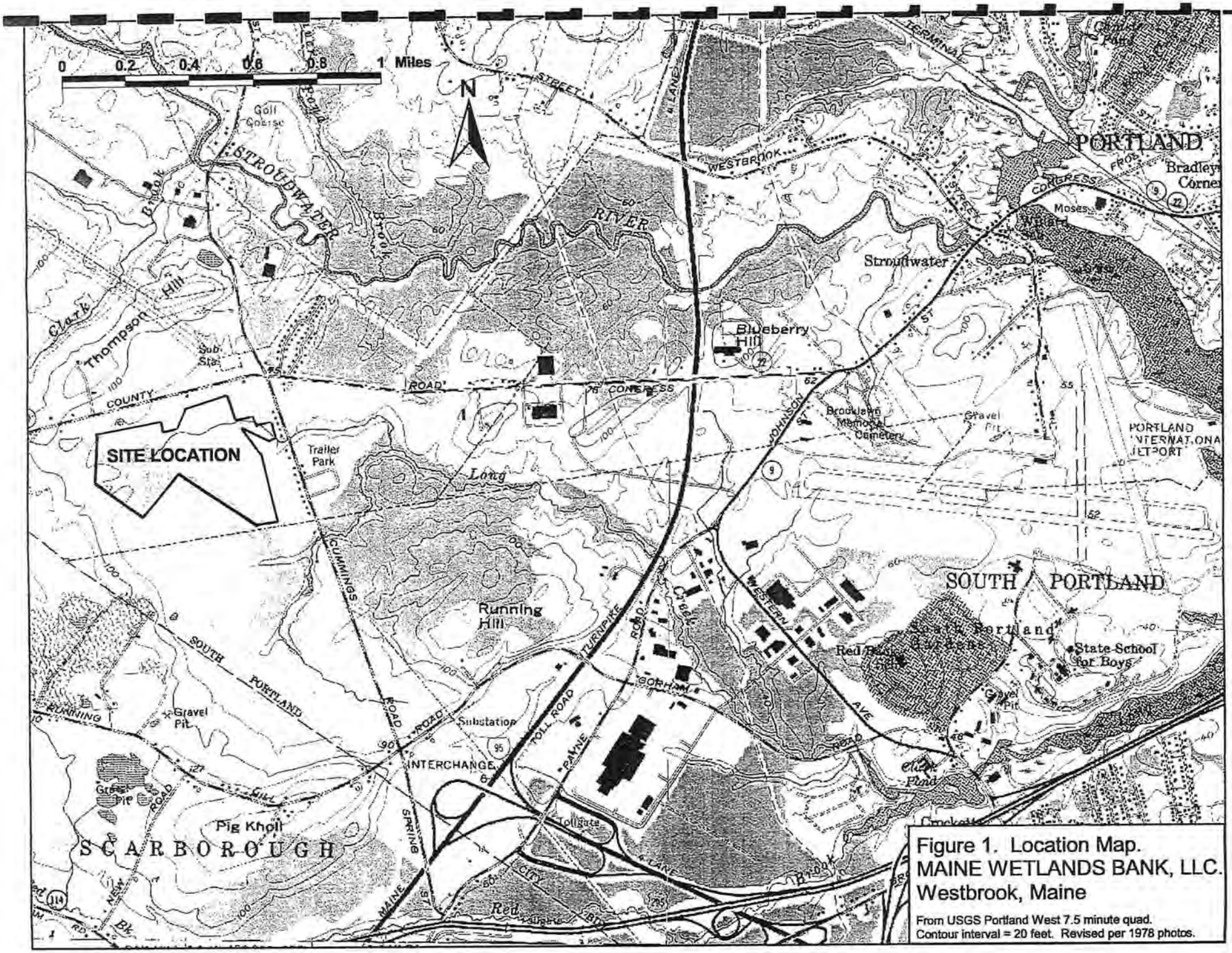


Figure 1. Location Map.
MAINE WETLANDS BANK, LLC.
Westbrook, Maine

From USGS Portland West 7.5 minute quad.
Contour interval = 20 feet. Revised per 1978 photos.

DECLARATION OF COVENANTS AND RESTRICTIONS

THIS DECLARATION OF COVENANTS AND RESTRICTIONS is made this _____day of _____, 2009, by (name) , (a Maine corporation having a place of business at (street address), (city or town), Cumberland County, Maine, (zipcode), (herein referred to as the "Declarant"), pursuant to State of Maine Department of Environmental Protection Natural Resource Protection Act (or Order), Project Number _____, dated _____, 2009 (hereinafter referred to as "Order"), relating to preservation of an approximately 10 acre parcel of land comprised of Lots 14- 17 and a portion of an adjacent stormwater management basin at the Glassworld Industrial Park near County Road, Westbrook.

RECITALS

WHEREAS, the Declarant holds title to certain real property situated in (town), Maine described in a deed from (name) to (name) dated _____, 20____, and recorded in Book ____ Page ____ at the Cumberland County Registry of Deeds, and the Declarant is the successor in title to _____ by deeds recorded in Book_____, Page ____,(and Book _____, Page _____,) all in said Registry; and

WHEREAS, Declarant desires to place certain deed covenants, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Covenant Area") described as follows:

****Insert property description here**** Exhibit A

WHEREAS, pursuant to the Natural Resources Protection Act, Title 38 M.R.S.A. Section 480-A et seq. and Chapter 310 of regulations promulgated by the Maine Department of Environmental Protection (the "Wetland Protection Rules"), Declarant has agreed, in satisfaction of paragraph _____ of the Order, to impose certain covenants and restrictions on the Covenant Area as more particularly set forth herein and has agreed that such covenants and agreements may be enforced by the Maine Department of Environmental Protection (hereinafter the "MDEP") or any successor in interest.

NOW, THEREFORE, the Declarant hereby declares that the Covenant Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the covenants, conditions and restrictions set forth herein (sometimes referred to as the "Covenants and Restrictions"). The Covenants and Restrictions shall run with the Covenant Area and shall be binding on all parties having any right, title and interest in and to the Covenant Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or

future owner or occupant of the Covenant Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Covenant Area subject to the Covenants and Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Covenants and Restrictions hereinafter set forth.

1. Restrictions on Covenant Area. Unless the owner of the Covenant Area, or its successors or assigns, obtains the prior written approval of the MDEP, (or any successor thereof), the Covenant Area shall remain undeveloped in perpetuity.

a. no soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Covenant Area and the surface waters contained thereon, nor shall the topography of the area be altered or manipulated in any way;

b. no trees, grasses, shrubs, vines, or other vegetation shall be cut, destroyed, or sprayed with biocides, except that de minimis flower picking shall be allowed, and clearing will be allowed for the maintenance of any path or trail, and dead wood which is leaning or fallen may be removed;

c. no ditches shall be dug, and no draining of the Covenant Area shall take place, and no pumping or any other removal of water shall occur on the Covenant Area, nor shall the manipulation or alteration of natural water courses or hydrology occur;

d. no building, sign, fence, utility pole, or other temporary or permanent structure will be constructed, placed or permitted to remain on the Covenant Area;

e. no trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment shall be permitted on the Covenant Area; and

[OPTIONAL f. no wildlife shall be taken, killed, harmed or removed from the Covenant Area. Enforcement of this restriction is the sole responsibility of the Declarant.**]**

Any activity on or use of the Covenant Area inconsistent with the purpose of these Covenants and Restrictions is prohibited. Prior to undertaking any changes in the use of the Covenant Area, the Declarant, its successors and assigns, shall consult with the MDEP regarding the proposed changes to determine the effect of such changes on the conservation values of the Covenant Area. The MDEP shall have the right to approve such changes in use if such uses do not impair or impede the conservation values of the Covenant Area or the purpose of the Covenants and Restrictions.

2. Enforcement. The MDEP may enforce any of the Covenants and Restrictions set forth in Section 1 above. Any future alterations of the Covenant Area must receive the prior approval in writing from the MDEP.

3. Binding Effect. The restrictions set forth herein shall be binding on any present or future owner of the Covenant Area. If the Covenant Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions but only to the extent that any of the Covenant Area is included within such owner's property.

4. Amendment. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Covenant Area and by the MDEP (or any successor thereto).

5. Effective Provisions of Declaration. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a covenant running with the land as a burden and upon the title to the Covenant Area.

6. Severability. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity of enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. Governing Law. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

(COMPANY/CORPORATE NAME)

_____

BY:
ITS: (Company or Corporate Title)

STATE OF MAINE
(Cumberland), ss. _____, 2009.

Personally appeared before me the above named (name), (company or corporate title), (COMPANY OR CORPORATE NAME), and acknowledged the foregoing instrument to be (his/her) free act and deed in (his/her) said capacity and the free act and deed of said (company or corporate name).

_____
Notary Public

_____

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 3/18/09

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: City of Portland, Portland International Jetport, c/o Arthur Sewall, 1001 Westbrook Street, Portland, Maine 04102

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: New England District; City of Portland; NAE-2008-00053

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Place fill below the ordinary high water line of an unnamed tributary to Long Creek, in its adjacent freshwater wetlands, and in freshwater wetlands adjacent to the Fore River at Portland, Maine in order to upgrade facilities at the Portland International Jetport. Regulated activities include the construction of a new taxiway adjacent to Runway 18-36; construction of an 1,100' extension of Runway 18-36; expansion of the terminal area west of the existing terminal facility; a designated aircraft de-icing pad and de-icing fluid recovery facility; a number of safety improvements to Runway 11-29; various drainage improvements; and the elimination of a wildlife hazard area on the east end of Runway 11-29. Approximately 11.58 acres of wetland will be impacted by the project.

SEE ATTACHED TABLE OF WATERS AND WETLANDS AND THEIR IMPACTS

State: **Maine** County/parish/borough: **Cumberland** City: **Portland**
Center coordinates of site (lat/long in degree decimal format): Lat. **43.6465774°** N, Long. **70.3098803° W.**
Universal Transverse Mercator: **Zone 19**
Name of nearest waterbody: **Fore River & Long Creek**

Identify (estimate) amount of waters in the review area: **See attached Table**

Non-wetland waters: **1000** linear feet: **2-3** width (ft) and/or acres.
Cowardin Class: **Palustrine**
Stream Flow: **Perennial**
Wetlands: **11.58** acres.
Cowardin Class: **Palustrine Forested, Scrub-Shrub, Emergent & Open Water**

Name of any water bodies on the site that have been identified as Section 10 waters: **Fore River & Long Creek**

Tidal: **Same**

Non-Tidal: **Unnamed tributary to Long Creek**

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: **Multiple; earliest - 1999**

☒ Field Determination. Date(s): **Multiple; earliest - 1999**

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement

action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Contained in administrative record.**

X Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☒ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☒ Corps navigable waters' study: Portland Harbor.

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24,000; Portland West**.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation **Cumberland County**

☒ National wetlands inventory map(s). Cite name: **Portland West**

☐ State/Local wetland inventory map(s): .

☒ FEMA/FIRM maps: **Various as Mapped in the MEGIS database:**

☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): **MEGIS Ortho Rectified mapping of various dates; historic photos provided by applicant/agent**.
or ☒ Other (Name & Date): **Ground photos provided by applicant/agent**.

☒ Previous determination(s). File no. and date of response letter: **199902074**.

☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Jay L. Clement 3/25/09

Jay L. Clement Date
Senior Project Manager
Maine Project Office

3-23-09

Arthur Sewall Date
Director of Operations
Portland International Jetport

Table 1
Summary of Wetland Characteristics and Impacts, Portland International Jetport

Wetland	Photo	Delineation	Wetland Type [1]	Wetland Function/Value(s) [2]	Impact Area/Type
A	1	October 1997 – Smart Associates [3]	E2EM1 (Fore River)	FFA, FSH, PE, SS, WLH, R, A	No Impact
D	8	" " "	Mowed (airfield) PEM2	Surface water conveyance	No Impact
E		" " "	Mowed (airfield) PEM2 (isolated)		No Impact
F		" " "	Mowed (airfield) PEM2 (isolated)	ESH ?	No Impact
H	9	" " "	Drainage ditch PEM1	Surface water conveyance	0.64 acre PEM
L	2	" " "	PEM1 (wildlife hazard) / PSS1	WLH, ESH (PSS portion)	2.58 acres PEM / 2.31acres PSS
N		" " "	PSS1	Surface water conveyance	No Impact
S	7	June 2007 – TRC	Mowed PEM2	WLH	0.54 acre PEM
T (B)		October 2006 – Smart Associates [4]	PEM1	STPR, WLH	No Impact
V (D)	3	" " "	PEM1	STPR, NRRT, WLH	1.61 acres PEM
W (E)	4	" " "	POWh	STPR, NRRT, WLH, A	0.05 acre POW
X (F)	5	" " "	PEM1	STPR, NRRT, WLH, A	No Impact
Y (G)	6	" " "	E2EM1 (Long Creek)	FFA, FSH, PE, SS, WLH, R, A	No Impact
Z (H)		" " "	PSS1 (isolated)	WLH	No Impact
AC	11	October 1991 – Normandeau Associates [5]	PEM1/PSS1	STPR, WLH	2.98 acres PSS [6]
AE	10	" " "	PFO1 (now isolated)	WLH	0.87 acre PFO
				Total Area of New Impact	**11. 58 acres**

[1] Wetland types from USFWS *Classification of Wetlands and Deepwater Habitats* (Cowardin et al, 1979) with net acreage of impact:
E2EM – Estuarine, inter-tidal, persistent emergent
0.05 acre – POWh – Palustrine, open water, diked/impounded
4.83 acre – PEM1 – Palustrine, persistent emergent
0.54 acre – PEM2 – Palustrine, non-persistent (mown) emergent
5.29 acre – PSS1 – Palustrine, broad-leaved deciduous scrub shrub
0.87 acre – PFO1 – Palustrine, broad-leaved deciduous forested

[2] Based on the September 1999 supplement to the New England Division of the Corps *Descriptive Approach* to assessing wetland functions and values described in *The Highway Methodology Workbook.* Functions and values present in wetlands at PWM include: FFA – floodflow alteration; F/SH – fish/shellfish habitat; STPR – sediment, toxicant, pollutant retention; NRRT – nutrient removal/retention/transformation; PE – production export; SS – sediment/shoreline stabilization; WLH – wildlife habitat; R – recreation; A – Visual quality/ aesthetics; ESH – threatened/endangered species habitat. Wetland functions and values are described in greater detail in Attachment 12 of the NRPA application.

[3] Part of: 1999 *Preferred Facilities Improvement Plan* Applications to the US Army Corps of Engineers and Maine Department of Environmental Protection.

[4] Described in : 2006 *Wetlands Technical Report for Portland International Jetport* by The Smart Associates (Alphabetic wetland label has been changed from original in () to prevent duplicative labeling of previous delineations).

[5] Contained in: 1991*Draft Environmental Assessment/Regulatory Feasibility Study for Airport Access Road, Congress Street Parcel.*

[6] 2.03 acres of impact to this wetland has been previously impacted and compensated for.

Appendix E

BIOLOGICAL INFORMATION

APPENDIX E
BIOLOGICAL INFORMATION

This appendix contains a biological resources inventory prepared by TRC Companies for the project area. The report indicates that no federally listed species or critical habitats are present in the proposed development area under consideration at Portland International Jetport. Additionally, the report recommends consultation between the Portland International Jetport and the Maine Department of Inland Fisheries and Wildlife to agree on potential conservation measures for the New England cottontail rabbit, a candidate species for federal listing under the *Endangered Species Act* and listed as endangered by the State of Maine.

This appendix also includes the Incidental Take Plan (ITP) for the New England cottontail rabbit. The ITP outlines the mutually agreed upon mitigation measures necessary to compensate for the loss of New England cottontail rabbit habitat present within the proposed project area.

Biological Resources Inventory Report
Portland International Jetport (PWM)
Portland and South Portland, Maine

Prepared for:

The US Federal Aviation Administration
Burlington, MA

The Portland International Jetport
Portland, ME

and

DeLuca Hoffman Associates, Inc.
South Portland, ME

Prepared by:

TRC Companies, Inc.
400 Southborough Drive
South Portland, ME

March 14, 2008

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF APPENDICES

1.0 INTRODUCTION

The Portland International Jetport in Portland and South Portland, Maine (Exhibit A) has conducted environmental studies and analyses in preparation for implementing a five-year Capital Improvement Plan and Wildlife Hazard Management Plan. These activities require preparation of an Environmental Assessment (EA) pursuant to the requirements of Section 102(2) (c) of the *National Environmental Policy Act* (NEPA) *of 1969* (PL 91-190, 42 USC 4321 et. seq.) as outlined in 40 CFR 1500-1508. The Federal Aviation Administration (FAA) has been designated as the Lead Agency in the NEPA process. An component of these studies and analyses includes preparation of a Biological Resources Inventory of the potential development area (Exhibit B) that characterizes available sensitive habitat and documents the occurrence of threatened or endangered species subject to the provisions of the *Endangered Species Act* (ESA) *of 1973*. To address the content for biological assessments described in 50 CFR Ch IV §402.12(f), environmental scientists and wildlife biologists from TRC's South Portland, Maine office conducted field surveys, researched published information sources and consulted with federal and State of Maine resource agencies in the course of preparing this Biological Resources Inventory for the FAA.

2.0 PORTLAND INTERNATIONAL JETPORT

The Portland International Jetport (PWM) is located between Interstates 95 and 295 and is bordered on the north and east by the tidal Fore River and its tributary Long Creek. Within these two Interstates, major arterial highways including Route 22 or Congress Street and Route 9 or Johnson Road and Western Avenue encircle PWM on the west and south (Exhibit B). In operation since 1934, and now Maine's largest commercial airport, PWM is located immediately to the northeast of the Maine Mall area, the largest retail, commercial, and office complex north of Boston (http://www.southportland.org/index).

The five-year Capital Improvement Plan and Wildlife Hazard Management Plan (CFR Title 14 FAR Part 139.337) are generally comprised of five elements displayed and described on Exhibit C. Four of these occur within the existing airfield security fence or in the immediate vicinity of the terminal and encompass:

- Implementation of a Wildlife Hazard Management Plan at the end of Runway 29 to deter or prevent concentrations of flocking birds specifically known to include blackbirds and starlings;
- Terminal Area Improvements including construction of new apron areas on developed and undeveloped areas between Jetport Boulevard and the terminal;
- Cargo Facility Improvements; and
- Runway 11 – 29 improvements.

The fifth element entails Runway 18 – 36 improvements, that to a considerable extent, consist of extending the runway and parallel Taxiway C 1,100 feet to the south and outside the area now enclosed by the existing airfield security fence.

Routine scheduled vegetation management for aviation safety requirements, general operations or drainage and stormwater management occurs throughout virtually the entire area inside the existing PWM airfield fence. Vegetation management is uncommon or has occurred less frequently in shrubby or undeveloped areas where portions of the Wildlife Hazard Management Plan and new apron areas for Terminal Area Improvements are proposed.

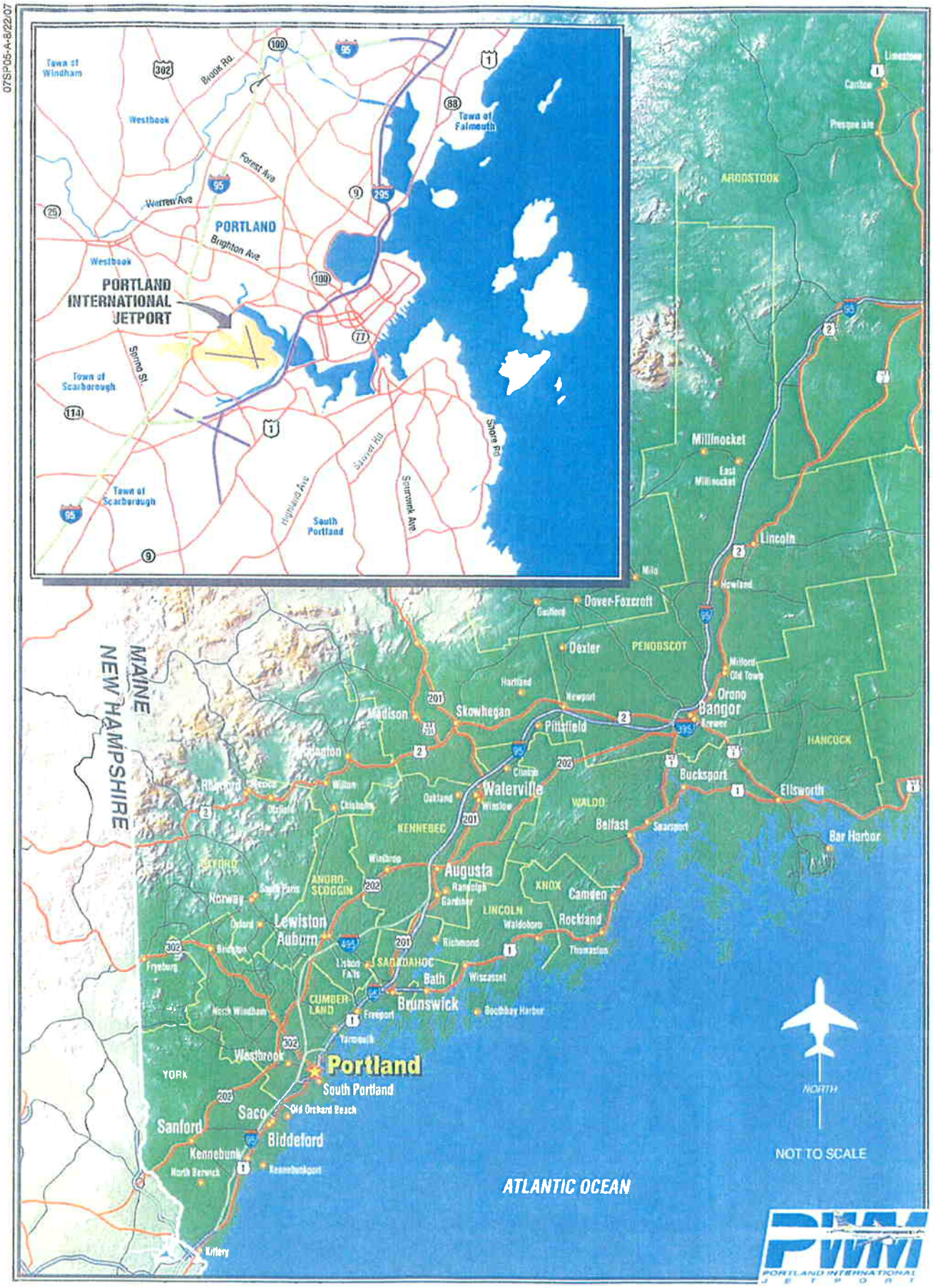


Exhibit A
LOCATION MAP

Exhibit B
POTENTIAL DEVELOPMENT AREA

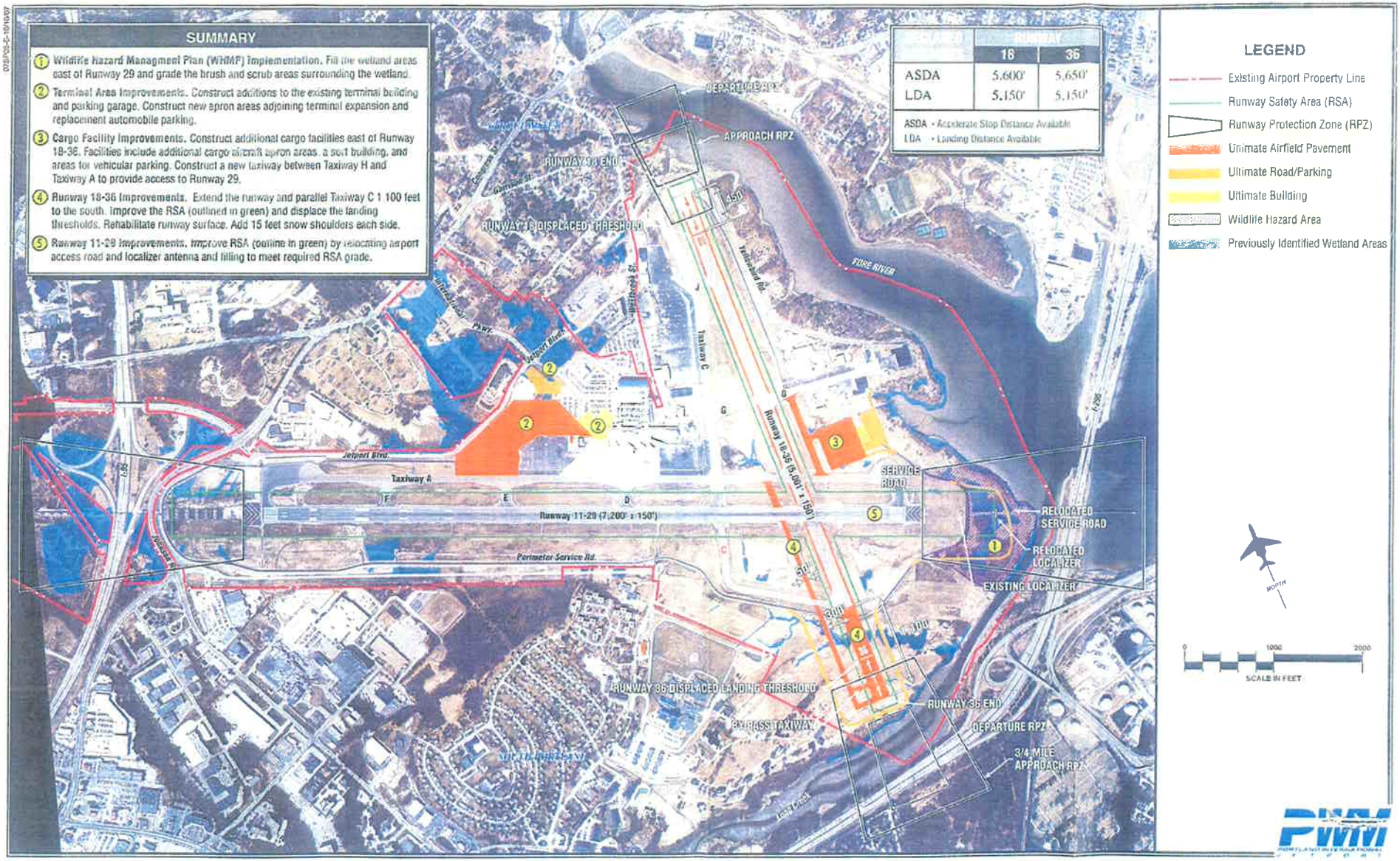


Exhibit C
PROPOSED AIRPORT DEVELOPMENT

Although presently undeveloped, virtually all of the Runway 11 – 29 improvements proposed outside the security fence occur on land of the former Carter Farm which became the site of the Maine State Reform School (now Maine Youth Center). For 120 years from ground breaking in 1851 through 1970, vegetables and feed crops were grown here for ancillary farm animals including chickens, horses and oxen, and a dairy farm and piggery operated by the School to train and sustain its occupants (Oulette, L.G., 2000 – *History of Southern Maine Juvenile Facility and Maine Youth Center, 1850 to 1998*). Evidence of this former land use continues to be evident in the fallow fields and is exhibited by grading and drainage patterns, old-field succession plant communities and roads used into the 1970's for construction of the adjacent Interstate 295 and bridge over the Fore River.

Freshwater and tidal wetland communities at PWM have been delineated based on methods of the *1987 Corps of Engineers Wetland Delineation Manual.* Wetlands in the vicinity of the five elements listed above are also displayed on Exhibit C and if not in an isolated depression, drain to the Fore River. As characterized by the National Wetland Inventory classification system (Cowardin et al., 1979) three general wetland types occur in the proposed development area. Within the airfield security fence, regularly mown emergent wetland communities would be classified as palustrine non-persistent emergent (PEM2). Shrub thickets, dominated by hydrophytic shrubs such as speckled alder (*Alnus incana*) or arrowwood (*Viburnum dentatum*) and occurring in portions of the Wildlife Hazard Management area or where new apron areas are proposed for Terminal Area Improvements, would be classified as palustrine deciduous scrub-shrub (PSS1). Outside the security fence such as where crossed by the proposed extension of Runway 36, the marsh community dominated by species such as cattail (*Typha*) would be classified as palustrine persistent emergent (PEM1). A more detailed description of the delineated wetlands, plant species and wetland communities has been prepared and is part of the EA for PWM.

Published information reviewed at the onset of preparing the Biologic Resources Inventory appears in Appendix A. In particular, one of a series of *Beginning with Habitat* (BWH) maps entitled *High Value Plant and Animal Habitats* and dated March 21, 2006 displays information for South Portland and the adjoining portion of Portland that includes PWM. The map series is compiled by the Maine Department of Inland Fisheries and Wildlife (MDIFW) and also presents data provided by the Maine Natural Areas Program (MNAP) and the US Fish and Wildlife Service (USFWS). While the map notes it is non-regulatory and is intended for planning purposes only, under the heading of: *Descriptions of Labeled High Value Plant and Animal Habitats*, the map indicates "*No High Value Plant or Animal Habitats found within the City of South Portland*". This statement is consistent with an absence in South Portland of symbols or color patterns on the map proper which also shows no indication of High Value Plant or Animal Habitats for the portion of PWM that occurs in Portland. The BWH map also indicates that Essential Wildlife Habitat for bald eagle (*Haliaeetus leucocephalus*), roseate tern (*Strena dougallii*), piping plover (*Charadrius melodus*) and least tern (*Strena antillarum*) does not occur at or near PWM. Mapping by MDIFW specific to Essential Wildlife Habitats for Maine also indicates that no Essential Wildlife Habitat occurs within two miles of PWM and is supported by the absence of Portland or South Portland on MDIFW's *Index to Essential Wildlife Habitats by Town* (Appendix A).

3.0 AGENCY CONSULTATION

The US Fish and Wildlife Service was contacted for comment during the early stages of preparing the Biological Resources Inventory. The Service's November 15, 2007 reply, which references the PWM project as 53411-2008-FA-0081, appears in Appendix B.

The reply concludes that no federally-listed species (Appendix B) under the jurisdiction of USFWS are known to occur in the PWM project area. Consequently, unless a new species or habitat is listed under the ESA, or the PWM project is modified in a manner not considered during the earlier review by

USFWS or new information reveals impacts by the PWM project which affects listed species or critical habitat, the USFWS has concluded "*no further action is required under Section 7 of the ESA*". To obtain a current account of state-listed species, contact with the MNAP and the MDIFW was also recommended by the Service.

In its November 15, 2007 reply the USFWS also indicated that the New England cottontail (NEC) rabbit (*Sylvilagus transitionalis*), a federal candidate species listed for possible protection under the ESA, had been observed in the vicinity of PWM. Field surveys for potential presence and habitat along with consideration of NEC during project planning were therefore encouraged by the USFWS.

The final comments in the USFWS reply focused on the recommendation for an interagency site (IA) visit to view wetlands and other habitat in the project area. Observations made during the site visit were expected to facilitate review of the project locations and components; focus discussions related to avoidance and minimization of wetland impacts and provide for informed recommendations on anticipated wetland compensation plans.

4.0 RESPONSE TO AGENCY CONSULTATION

Animal species currently identified as endangered or threatened by MDIFW under the Maine Endangered Species Act are listed in Appendix C. The NEC rabbit appears on the Maine list under the heading of endangered mammals. Subsequent to the initial review of published information and commencement of field surveys, TRC environmental scientists and wildlife biologists contacted MDIFW and conducted a field walk on July 19, 2007 with wildlife biologists Judy Camuso and Thomas Hodgman. The field walk was scheduled in response to TRC wildlife biologists' observation of three and eight adult upland sandpipers (*Bartramia longicauda*) respectively on June 18 and July 3, 2007. The sandpipers were sighted to the south of Runway 11-29 in the vicinity of the regularly mown area near Taxiway C. Upland sandpiper appears on the Maine list under the heading of threatened birds. Upland sandpiper was not observed at PWM on any other occasion during six days of early summer bird surveys. No other federal or state listed species were observed during any of these surveys.

The afternoon field walk with MIFW encompassed the proposed development areas inside the airfield fence and also the areas of general aviation and Runway 36 improvements proposed to the south of the airfield fence (Exhibit C). The expansiveness and routine vegetation management at PWM and other airports are recognized as providing habitat requirements preferred by the upland sandpiper (Appendix C). No upland sandpipers were observed during the site walk. MIFW suggested during the site walk that NEC may also occur in the PWM project area based on past records from the vicinity and the presence of potentially favorable habitat. MIFW concluded proper consultation had been initiated under the provisions of Maine's Endangered Species Act (12 MRSA §12801-12808) and that further coordination including attendance at permitting meetings should continue.

In response to USFWS's November 15, 2007 recommendations and following a fresh snowfall, a two-mile track survey for NEC was conducted on December 10, 2007. The survey was conducted in the project area to the south of Runway 36 and no evidence of NEC was observed (i.e. tracks, runs, pellets).

On December 12, 2007, an interagency (IA) meeting and site visit was held with representatives from PWM, the USFWS, the US Army Corps of Engineers, the US Environmental Protection Agency, the USDA Wildlife Services Program, the Maine Department of Environmental Protection, and MDIFW. Elements of the Capital Improvement Plan displayed on Exhibit C and the Wildlife Hazard Management Plan (CFR Title 14 FAR Part 139.337) were discussed. Results of not observing NEC during the December 12, 2007 survey were also presented to attendees and the USFWS provided PWM with a map

identifying a location of NEC last observed in January 2001. The siting made seven years ago in Portland occurred outside the project area to the north of the Congress Street and Johnson Road intersection approximately 0.75 mile to the northwest of the PWM terminal. On the BWH map in Appendix A, a MIFW consultation zone is identified in a similar location. During the IA site visit, MIFW recommended expanding the NEC track survey area to include the shrubby thicket between Jetport Boulevard and the PWM terminal where Terminal Area Improvements (#4 Exhibit C) are proposed. On December 14, 2007, following another fresh snowfall, a track survey for NEC was conducted throughout the shrubby thicket and no evidence of NEC was observed.

A third track survey was conducted on January 16, 2008 and incorporated USFWS and MIFW field survey and sampling methods that reflect anatomical characteristics and habitat requirements specific to NEC. The survey route covered the same area viewed on December 10, 2007 and also extended outside the airfield fence northward of Runway 29 to the proposed cargo facilities area (#5 Exhibit C). Approximately 150 feet northward of a fence corner located to the south of Runway 29, tracks measured as being of a size consistent with that of NEC were found in a run leading from a very dense sapling thicket and through the fence. Fecal pellets from this location were collected in a sterile container and one day later turned over to MIFW for DNA analysis. No evidence of NEC was observed at any other location during the January 16, 2008 survey. Conditions at the location where tracks and droppings were found are consistent with the habitat cover type, size and densities (as much as 24,000 stems per acre) favored by NEC and do not occur in any of the other locations viewed during the two previous track surveys.

5.0 EVALUATION OF POTENTIAL EFFECTS

From its review of the Portland International Jetport (53411-2008-FA-0081) the US Fish and Wildlife Service has determined "*no federally-listed species under the jurisdiction of the Service known to occur in the project area. Accordingly, no further action is required under Section 7 of the ESA ...*" (Appendix B). Results of supplemental onsite surveys and review of the literature and other information by environmental scientists and wildlife biologists presented in this Biological Resources Inventory Report support this determination. Based on consideration of the determination and subsequent studies it can be concluded no federally-listed species or critical habitat are present in the Proposed Development Areas (Exhibit C) at the Portland International Jetport.

Upland sandpipers, a bird species listed as threatened by the State of Maine, were observed inside the airfield security fence in the vicinity of a portion of one of the five Proposed Development Areas (Exhibit C). The Maine Department of Inland Fisheries and Wildlife has been notified of these observations. As is the case at other airports in Maine where occurrence of upland sandpiper is documented, regular vegetation management of expansiveness airfields promotes and maintains habitat preferred by this species. Continued consultation between Portland International Jetport and the Maine Department of Inland Fisheries and Wildlife is recommended to identify and cooperatively agree on potential conservation measures for upland sandpiper such as but not limited to: live trapping, transplantation, habitat management or other protective guidelines recognized by the Maine Endangered Species Act (12 MRSA §12804-12806).

Field evidence suggests New England cottontail rabbit, a candidate species for federal listing on the ESA and listed as endangered by the State of Maine, occurs in a portion of another one of the five Proposed Development Areas that is also located inside the airfield security fence. The Maine Department of Inland Fisheries and Wildlife has been provided with information related to these observations. Species, life-form, density and size of the vegetative cover in this area furnishes habitat protected from avian predation and enclosure within the security fence provides habitat protected from land-based predators.

Continued consultation between Portland International Jetport and the Maine Department of Inland Fisheries and Wildlife is recommended to identify and cooperatively agree on potential conservation measures for the New England cottontail rabbit such as but not limited to: live trapping, transplantation, habitat management or other protective guidelines recognized by the Maine Endangered Species Act (12 MRSA §12804-12806).

APPENDIX A

Beginning with Habitat Map

Essential Wildlife Habitats Map

and

Index to Essential Wildlife Habitats by Town

About Beginning with Habitat

Beginning with Habitat is a habitat-based landscape approach to assessing wildlife and plant conservation needs and opportunities. The goal of the program is to maintain sufficient habitat to support all native plant and animal species currently breeding in Maine by providing each Maine town with a collection of maps and accompanying information depicting and describing various habitats of statewide and national significance found in the town. These maps provide communities with information that can help guide conservation of valuable habitats.

Program Overview

The landscape approach to habitat conservation was initially developed by the University of Maine's Cooperative Fish and Wildlife Research Unit (CFWRU) under the direction of the Department of Inland Fisheries and Wildlife (MDIFW) (Krohn and Hepinstall 2000). Data on plants, natural communities, and wildlife habitats of national interest were later added by the Maine Natural Areas Program (MNAP) and the US Fish and Wildlife Service (USFWS).

By overlaying maps of the habitat needs of all of Maine's vertebrate species with Maine's primary land cover types (forests, fields, wetlands) in a geographic information system (GIS), the CFWRU reports that 80-95% of all of Maine's terrestrial vertebrate species would likely be present if riparian habitats, high value animal habitats, and large habitat blocks are protected.

The Beginning with Habitat booklet and accompanying maps provide you with habitat data and conservation recommendations in three primary areas that you can use to build a system of interconnected and conserved lands.

Riparian Habitat is the transitional zones between aquatic habitats and wetlands and dry or upland habitats and includes the banks and shores of streams, rivers, ponds, and lakes, and the upland

About BwH

- About Beginning with Habitat program overview
- Maine's Wildlife Legacy
- Focus Areas of Ecological Significance

Supporting Documents

- Beginning with Habitat booklet (pdf, 1.5 mb)
- Conserving Wildlife in Maine's Developing Landscape (pdf, 628kb)
- The Economic Arguments for Conservation (pdf, 2.6mb)
- What Conservation looks like in Maine (pdf, 3.7mb)

edge of wetlands. Riparian Habitat provides habitat for many plants and animals occurring in Maine. Towns have the opportunity to protect a large portion of Riparian Habitat simply by fully enacting and enforcing Maine's Shoreland Zoning provisions. This includes a 75-foot buffer around second order and larger streams and a 250-foot buffer around rivers, lakes, ponds, and non-forested wetlands greater than 10 acres.

High Value Plant and Animal Habitats include Rare Plant Locations and Rare or Exemplary Natural Communities; Essential Habitat (designated for some endangered animals); Significant Wildlife Habitat (for deer, waterfowl and wading birds, heron rookeries, nesting seabirds, and shorebirds); and Rare Animal Locations (for endangered species and species of special concern) as identified and mapped by the Maine Natural Areas Program and the Department of Inland Fisheries and Wildlife. High Value Habitat for USFWS Priority Trust Species is also included. Several of these habitats are offered some degree of protection under state law but may warrant further local protection.

Large Habitat Blocks provide habitat for certain plants and animals not already included in Riparian or High Value Habitats. These blocks are especially important to species with large home ranges, such as bobcat, and other species, such as the black-throated blue warbler, who may have small home ranges but will only be successful over the long term in larger habitat blocks. Large blocks also are likely to include a wider diversity of species than smaller blocks. Conservation of Large Habitat Blocks also presents opportunities to promote and preserve active farmland and woodlots, provide recreational opportunities, conserve aquifers, and maintain scenic vistas.

Supplemental maps showing private conservation and public lands; watersheds; wetlands; and habitat for USFWS priority trust species give you information you can use in your land use planning and protection efforts.

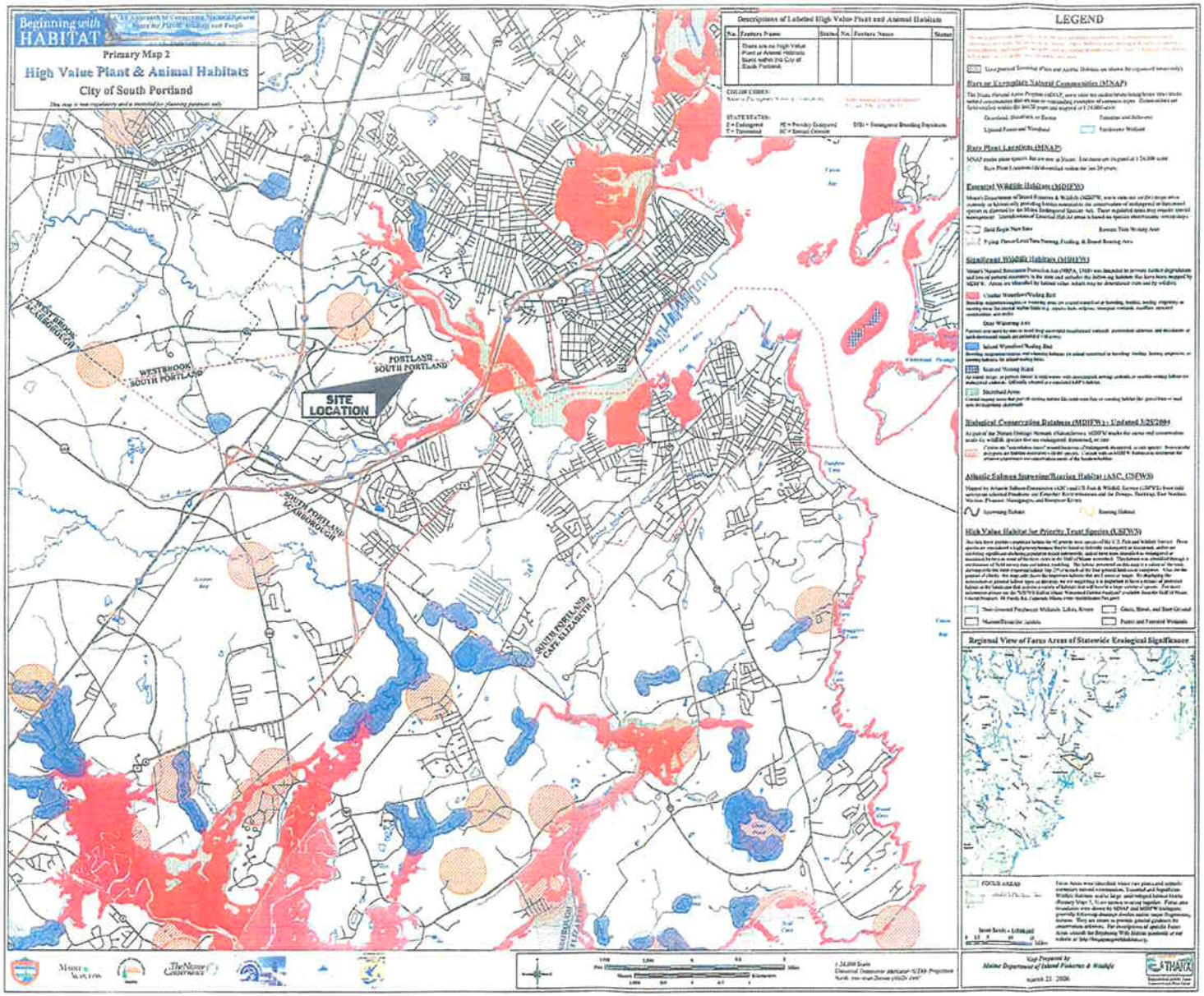
We hope the data, maps, written material and suggestions for local conservation strategies will help inform and guide your town's growth in such a way that 50 years from now those who want to can still fish, hunt, photograph or watch wildlife and otherwise enjoy the wealth of a rich and diverse outdoor heritage.

Back to top of page

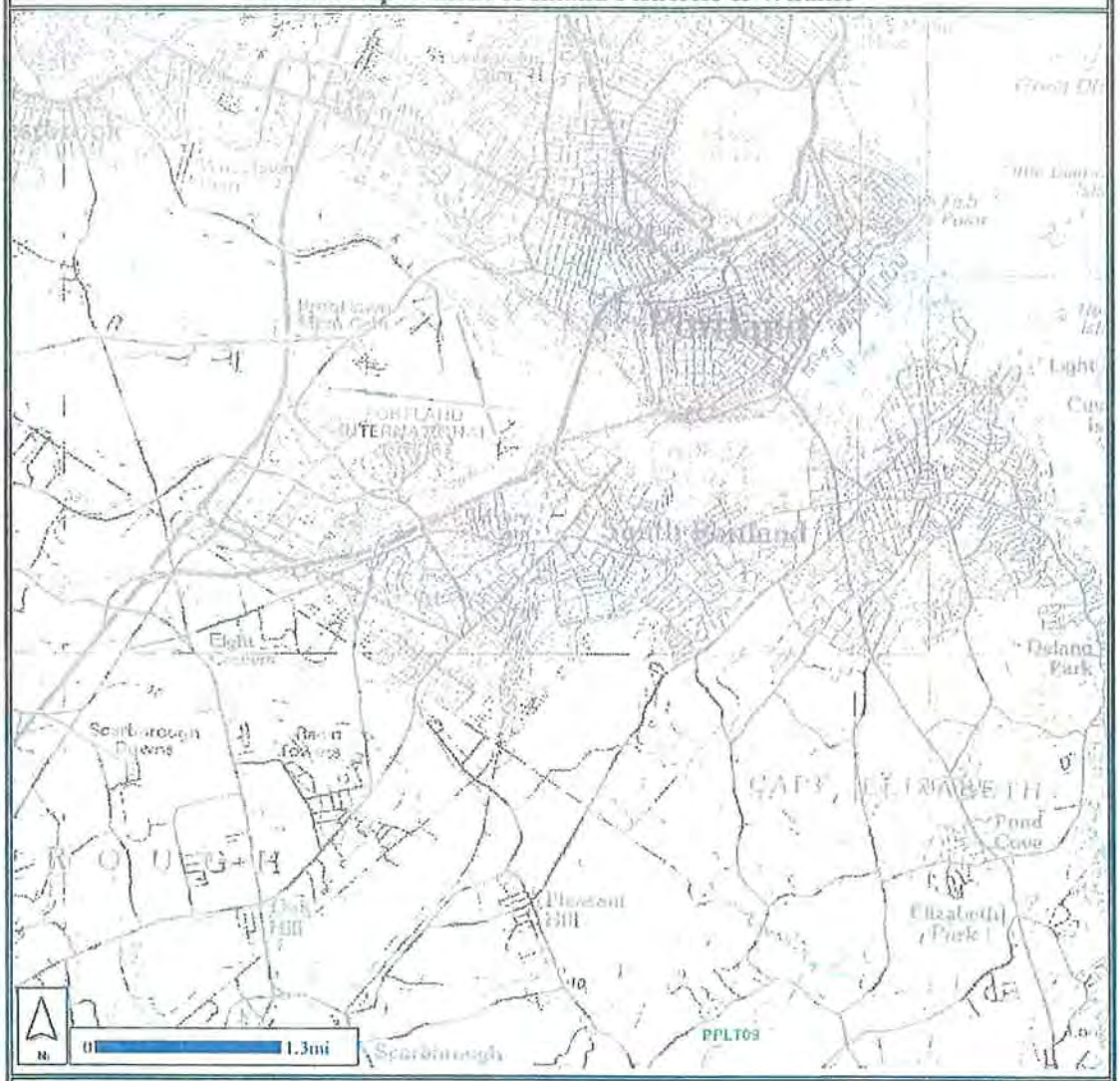
home | about bwh | community involvement | the maps | faq's | contacts

For comments or more information on Beginning with Habitat products and services, please send e-mail to maine.bwh@maine.gov

Or contact us by mail or phone at:
Beginning with Habitat
41 State House Station, Augusta, Maine 04333-0041
(207) 287-5254


Beginning with HABITAT
Primary Map 2
High Value Plant & Animal Habitats
City of South Portland
SITE LOCATION
WESTBROOK
SOUTH PORTLAND
PORTLAND
SOUTH PORTLAND
SCARBOROUGH
CAPE ELIZABETH
LEGEND
Regional View of Focus Areas of Statewide Ecological Significance

Essential Wildlife Habitats for Maine
Maine Department of Inland Fisheries & Wildlife



Bald Eagle Nest Site (BE)

Boundaries are shown as a solid circular line. The inside of the line is the edge of the boundary. Each circle has a radius of 1,320 feet and is centered approximately on the nest. The area of each circle is 126 acres. The line on the map determines the boundary.

Roseate Tern Nesting Area (RT)

Boundaries are shown as a solid line. The inside of the line is the edge of the boundary. The boundary line is approximately 1,320 feet from the low tide edge of the nesting island or the part of the island used for nesting. The line on the map determines the boundary.

Piping Plover/Least Tern Nesting, Feeding, and Brood-rearing Area (PPLT)

Essential Habitat within the boundary line encompasses portions of the coastal sand dune system and associated coastal wetlands. For shaded areas, boundary lines are delineated in more detail on composite aerial photos ("Boundary Line Detail Photos for Piping Plover and Least Tern Essential Habitats"),which are available at town offices in affected municipalities; MDIFW offices in Gray, Augusta, and Bangor; and online at www.state.me.us/ifw/wildlife/etweb/habitat/boundarylinedetailphotos.htm. Outside of shaded areas, where the line is solid, the line on the map determines the boundary and the inside of the line is the edge of the boundary. Where the line is dashed, the boundary is determined by the edge of the coastal wetlands as defined by 38 M.R.S.A., Section 480-B. Cross-hatched areas are not part of the Essential Habitat.

Essential Habitats depicted on this map are valid as of the most recent regulatory update, effective March 1, 2006. Copies of official signed and dated Essential Habitat maps are available from all MDIFW offices, and from town offices in affected municipalities.

For a complete description of Essential Habitat and regulations pertaining thereto, refer to Chapter 8.05 of the Department Regulations and 12 M.R.S.A. Part 13, Chapter 925, Subchapter 3.

INDEX TO ESSENTIAL WILDLIFE HABITATS BY TOWN

TOWN NAME	ESSENTIAL HABITAT ID#
Addison	BE049G, BE049H, BE051F, BE052G, BE127C, BE127D, BE167C, BE195B, BE196A, BE418A, RT021
Alexander	BE074D
Alna	BE212B
Argyle Twp	BE184B, BE357A
Attean Twp	BE309A, BE309B, BE444A
Auburn	BE274B, BE408A
Augusta	BE317A
Baileyville	BE117A, BE140C, BE266A
Bar Harbor	BE028D, BE201A, BE241A, BE286A, BE346A
Baring Plt	BE132B, BE353A
Bath	BE011H, BE011I, BE345A, BE351A
Beals	BE119E, BE125E, BE125F, BE148B, BE148C, BE342A
Beaver Cove	BE209A, BE209C
Beddington	BE142C
Belgrade	BE244B
Benton	BE251A, BE278A, BE278B
Biddeford	PPLT11, RT001
Big Moose Twp	BE177C
Blue Hill	BE022A, BE169C, BE169D, BE169E
Boothbay	BE217A, BE292B

NOTE: Towns not listed in this index do not have Essential Habitats designated at this time. 3/16/05

Oakfield BE344A

Oakland BE416A

Ogunquit PPLT01

Old Orchard Beach PPLT04, PPLT08

Old Town BE277A

Orland BE166A, BE166B, BE393A

Orono BE277A

Orrington BE220A, BE220B, BE319A

Osborn BE221B

Passadumkeag BE095B, BE095C, BE304B

Pembroke BE065B, BE065D, BE066H, BE069D, BE069E, BE101B, BE101C, BE381A

Penobscot BE020B, BE020E, BE421A, BE422A

Perkins Twp (Sagadahoc Co.) BE007A, BE008B

Perry BE069D, BE069E, BE071D, BE133A, BE133B, BE161A, BE223A, BE223B, BE233A

Phippsburg BE168B, BE168C, BE290A, BE345A, BE396A, BE432A, PPLT05, RT002, RT003

Pittsfield BE203B

Pittston BE005D

Pittston Academy Grant BE320A

Plymouth BE382A

Plymouth Twp BE182A

Portage Lake BE228C, BE228D

Princeton BE256C, BE256E, BE260A

Prospect BE094A

Pukakon Twp BE081C, BE258A

Rangeley BE398A

Richardsontown Twp BE252C

Richmond BE102B, BE192B

Rockwood Strip T1R1 ..... BE280A

Rockwood Strip T2R1 ..... BE185B

Rome BE287A

Roque Bluffs BE056C, BE056E, BE056F, BE128B

Roxbury BE282A

Saco PPLT08, RT005

Sakom Twp BE081C, BE200A

Sandwich Academy Grant BE185A, BE185B

Sapling Twp BE177A, BE177B, BE177C

Scarborough PPLT04, PPLT09, PPLT12

Searsmont BE336A

Searsport BE339A

Sedgwick BE021D, BE022A, BE293B

Sidney BE262A, BE443A

Sinclair Twp BE227A, BE227B, BE227C, BE247A

Skowhegan BE414A

Smithfield BE287A

Solon BE415A

Soper Mountain Twp BE090A, BE090C, BE322A

Sorrento BE035D, BE036D, BE037A, BE037C, BE037J

Southport BE249C

South Bristol BE217A, RT010

Spencer Bay Twp BE092F, BE092G

Square Lake Twp BE207C, BE226C, BE447A

St. George BE238A, RT017, RT022

Starks BE291A

APPENDIX B

US Fish and Wildlife Service
November 15, 2007 Comments
Portland International Jetport
(#53411-2008-FA-0081)

and

Species in Maine
Listed Under
US Endangered Species Act

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
1168 Main Street
Old Town, ME 04468
(207) 827-5938 Fax: (207) 827-6099

In Reply Refer To: 53411-2008-FA-0081
FWS/Region5/ES/MEFO

November 15, 2007

Ms. Molly Walker
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Dear Ms. Walker:

Thank you for your letter dated October 31, 2007 requesting information or recommendations from the U.S. Fish and Wildlife Service. This form provides the Fish and Wildlife Service's (Service) response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location: Portland International Jetport proposed improvements

Log Number: 53411-2008-FA-0081

Endangered Species Act Comments

Based on the information currently available to us, there are no federally-listed species under the jurisdiction of the Service known to occur in the project area. Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action. Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up-to-date account of state-listed species in the project area.

The New England cottontail rabbit (*Sylvilagus transitionalis*), a candidate for federal listing, has been observed in the vicinity of the Portland Jetport and could occur on airport property. This species uses old field and scrub shrub habitats (both upland and wetland). We encourage you to conduct surveys to determine the presence of this species or its habitat on the project area. The New England cottontail was officially listed as a candidate species for federal listing on September 12, 2006 (Federal Register 71(176):53756-53835). Thus, the New England

cottontail will likely be federally listed in the future. At this time, the New England cottontail is afforded no protection under the Federal ESA. However, we strongly encourage you to consider this species in your project planning. The Service is particularly interested in efforts to minimize adverse impacts to cottontail habitat and to promote the creation and protection of additional habitat, particularly in areas adjacent to known cottontail occurrences. Cooperative efforts at cottontail conservation now could possibly preclude the need for future listing under the ESA.

Fish and Wildlife Coordination Act Comments

Based on the information you provided and our general knowledge of the Portland International Jetport, it appears as though wetlands and streams will likely be impacted by the various airport improvement projects. Although some wetlands and streams at the Jetport are disturbed and degraded from current airport facilities (e.g., the service road) and maintenance activities, these wetlands can still provide valuable fish and wildlife habitat; particularly those that are located adjacent to the Fore River and Long Creek.

To facilitate our review of these projects, we strongly suggest that an interagency site visit be scheduled with both state and federal review agencies. We are particularly interested in visiting the areas off the end of Runway 29, where the Wildlife Hazard Management Plan activities are proposed, and the end of Runway 36 where a runway extension and safety area improvements are proposed. We would like to evaluate the habitat value of the wetlands and other habitats located between the runways and Long Creek and the Fore River. We would also like to visit the wetlands located between the airport access road and the current surface parking areas where terminal area improvements are proposed.

Having first-hand understanding of the specific fish and wildlife habitats in the project areas will help us all to best focus discussions related to impact avoidance and minimization. Furthermore, given the proposed extent of wetland impacts, it seems probable that a wetland compensation plan will be necessary. Development of this plan will benefit greatly if the review agencies are familiar with the specific wetland areas that will be filled or otherwise affected and can make informed recommendations on the approach of the compensation plan.

Based on the proposed timing of these projects, it appears that a site visit will be necessary before the 2008 growing season. While it could be a challenge to schedule, a fall or winter site visit should avoid times when the ground is covered with snow. We will provide more site-specific comments related to fish and wildlife habitat and likely project impacts to these resources after we have done a site visit.

Thank you for the opportunity to provide these comments early in your planning process. If you have any questions or want to schedule a site visit, please call Wende Mahaney at (207) 827-

5938, Ext. 20. Questions specific to the New England cottontail can be directed to Mark McCollough at (207) 827-5938, Ext. 12.

Sincerely,

Lori H. Nordstrom

Lori H. Nordstrom,
Field Supervisor

cc: Jay Clement, ACOE – Manchester, ME
Trish Garrigan, EPA – Boston, MA
Marcy Scott, NMFS – Gloucester, MA
Steve Timpano, MDIFW – Augusta, ME
Reading File

DEPARTMENT INFORMATION

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- Hunting and Trapping
- Laws and Rules
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  - Species Information
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  - Where to See Wildlife

Home > Wildlife > Species Information > Maine Endangered Species Program > Endangered and Threatened Species > Federal List

Maine Endangered Species Program/Federal List

The following species, currently or historically occurring in Maine, are listed under the U.S. Endangered Species Act:

S = State Endangered under the Maine Endangered Species Act
s = state threatened under the Maine Endangered Species Act
? = status uncertain in Maine

U.S. Endangered Species

Birds

Eskimo Curlew - *Numenius borealis* **?**

Roseate Tern - *Sterna dougallii* **S**

Mammals

Eastern Cougar - *Felis concolor couguar* **?**

Finback Whale - *Balaenoptera physalus*

Gray Wolf - *Canis lupus* **?**

Humpback Whale - *Megaptera novaeangliae*

Northern Right Whale - *Eubalaena glacialis*

Sei Whale - *Balaenoptera borealis*

Sperm Whale - *Physeter catodon*

Reptiles and Amphibians

Atlantic Ridley - *Lepidochelys kempi*

Leatherback - *Dermochelys coriacea*

Fish

Atlantic Salmon - *Salmo salar*

Shortnose Sturgeon - *Acipenser brevirostrum*

Butterflies and Skippers

Karner Blue - *Lycaeides melissa samuelis* **?**

Beetles

American Burying Beetle - *Nicrophorus americanus* **?**

U.S. Threatened Species

Birds

Bald Eagle - *Haliaeetus leucocephalus* **s**

Piping Plover - *Charadrius melodus* **S**

Mammals

Canada Lynx - *Lynx canadensis*

Reptiles and Amphibians

Loggerhead - *Caretta caretta*

APPENDIX C

Species Listed Under Maine Endangered Species Act

Upland Sandpiper

and

New England Cottontail Rabbit

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Home > Wildlife > Species Information > Maine Endangered Species Program > Endangered and Threatened Species > State List

Maine Endangered Species Program/State List

Maine Endangered Species

Maine Threatened Species

The following species are listed under the Maine Endangered Species Act:

F = Federally Endangered under the U.S. Endangered Species Act
f = federally threatened under the U.S. Endangered Species Act

Maine Endangered Species

Birds

American Pipit *(Anthus rubescens)* (Breeding population only)

Black Tern *(Chlidonias niger)*

Golden Eagle *(Aquila chrysaetos)*

Grasshopper Sparrow *(Ammodramus savannarum)*

Least Bittern (*Lxobrychus exilis*)

Least Tern *(Sterna antillarum)*

Peregrine Falcon (*Falco peregrinus)* (Breeding population only)

Piping Plover *(Charadrius melodus)* **f**

Roseate Tern *(Sterna dougallii)* **F**

Sedge Wren *(Cistothorus platensis)*

Fish

Redfin Pickerel (*Esox americanus americanus*)

Invertebrates

Butterflies and Skippers

Clayton's Copper *(Lycaena dorcas claytoni)*

Edwards' Hairstreak *(Satyrium edwardsii)*

Hessel's Hairstreak *(Callophrys hesseli)*

Juniper hairstreak (*Callophrys gryneus*)

Katahdin Arctic *(Oeneis polixenes katahdin)*

Dragonflies and Damselflies

Rapids Clubtail *(Gomphus quadricolor)*

Mayflies

Flat-headed Mayfly (Roaring Brook Mayfly) *(Epeorus frisoni)*

Mammals

New England Cottontail (*Sylvilagus transitionalis*)

Reptiles

Snakes

Black Racer *(Coluber constrictor)*

Turtles

Blanding's Turtle *(Emys blandingii)*

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Maine Endangered Species Program/State List

Maine Endangered Species

Maine Threatened Species

The following species are listed under the Maine Endangered Species Act:

F = Federally Endangered under the U.S. Endangered Species Act
f = federally threatened under the U.S. Endangered Species Act

Maine Endangered Species

Birds

American Pipit *(Anthus rubescens)* (Breeding population only)

Black Tern *(Chlidonias niger)*

Golden Eagle *(Aquila chrysaetos)*

Grasshopper Sparrow *(Ammodramus savannarum)*

Least Bittern (*Lxobrychus exilis*)

Least Tern *(Sterna antillarum)*

Peregrine Falcon (*Falco peregrinus)* (Breeding population only)

Piping Plover *(Charadrius melodus)* f

Roseate Tern *(Sterna dougallii)* F

Sedge Wren *(Cistothorus platensis)*

Fish

Redfin Pickerel (*Esox americanus americanus*)

Invertebrates

Butterflies and Skippers

Clayton's Copper *(Lycaena dorcas claytoni)*

Edwards' Hairstreak *(Satyrium edwardsii)*

Hessel's Hairstreak *(Callophrys hesseli)*

Juniper hairstreak (*Callophrys gryneus*)

Katahdin Arctic *(Oeneis polixenes katahdin)*

Dragonflies and Damselflies

Rapids Clubtail *(Gomphus quadricolor)*

Mayflies

Dot-Headed Mayfly (Pocono Brook Mayfly) *(Epeorus frisoni)*

Mammals

New England Cottontail (*Sylvilagus transitionalis*)

Reptiles

Snakes

Black Racer *(Coluber constrictor)*

Turtles

Blandings Turtle *(Emys blandingii)*

Maine Threatened Species

Birds

- Arctic Tern (*Sterna paradisaea*)
- Atlantic Puffin (*Fratercula arctica*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Barrow's Goldeneye (*Bucephala islandica*)
- Black-crowned Night Heron (*Nycticorax nycticorax*)
- Common Moorhen (*Gallinula chloropus*)
- Great Cormorant (*Phalacrocorax carbo*) (Breeding population only)
- Harlequin Duck (*Histrionicus histrionicus*)
- Razorbill (*Alca torda*)
- *Short-eared Owl (Asio flammeus)* (Breeding population only)
- Upland Sandpiper (*Bartramia longicauda*)

Fish

- Swamp Darter (*Etheostoma fusiforme*)

Invertebrates

Butterflies and Moths

- Purple Lesser Fritillary (*Boloria chariclea grandis*)
- Sleepy Duskywing (*Erynnis brizo*)

Dragonflies and Damselflies

- Boreal Snaketail (*Ophiogomphus colubrinus*)
- Ringed Boghaunter (*Williamsonia lintneri*)

Freshwater Mussels

- Brook Floater (*Alasmidonta varicosa*)
- Tidewater Mucket (*Leptodea ochracea*)
- Yellow Lampmussel (*Lampsilis cariosa*)

Mayflies

- Tomah Mayfly (*Siphlonisca aerodromia*)

Moths

- Pine Barrens Zanclognatha (*Aanclognatha martha*)
- Twilight Moth (*Lucia rachalae*)

Mammals

- Northern Bog Lemming (*Synaptomys borealis*)

Reptiles

Turtles

- Spotted Turtle (*Clemmys guttata*)

STATE
THREATENED


Andy Wetk

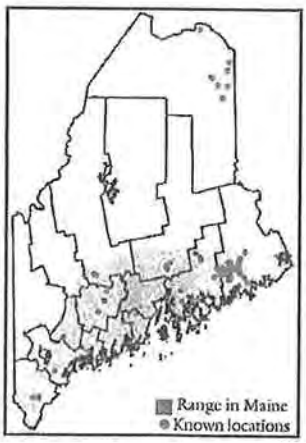
Upland Sandpiper

(Bartramia longicauda)

Description

Upland sandpipers (or "uppies" to birders) provide an added dimension to grasslands. Their musical call, stirring courtship flights, and habit of perching on fenceposts enliven the rural landscape. Upland sandpipers are among the rarest and most appealing of grassland birds in the Northeast. They are large shorebirds (12 inches high, 26-inch wingspan) identified by a small head, long neck, long tail, black rump, overall buffy plumage with intricate brown markings, and yellow legs. Feathers on the back are olive-buff and strongly barred dark brown with pale buff fringes. The dark streaking on the buff-colored breast contrasts with prominent dark chevrons along the white flanks. The wings are long and pointed. In flight, the undersides of the wings are white and strongly barred dark brown. The tops of the wings are blackish at the tip and brown next to the body. The upland sandpiper has a prominent dark eye and crown stripe. Its short bill is curved slightly downward. When alighting, the species momentarily holds its wings straight up. Its call is a liquid, mellow *ch-wut*, and in flight it whistles a strong *qui-di-di-du*.

Range and Habitat



The upland sandpiper breeds across North America from Alaska, the prairie Provinces, Midwestern states, and northern tier states to Maine. The highest nesting densities are in the northern prairie states and provinces. In Maine, upland sandpipers breed in large grasslands and barrens along the coast and eastern Aroostook County. Most of the state's population nests in the Downeast blueberry barrens. Wintering areas are in South America, with the largest concentrations in Argentina.

Upland sandpipers require large fields (greater than 150 acres), with open shortgrass areas such as blueberry barrens, meadows, pastures, hayfields, fallow agricultural fields, and airports. They occasionally breed in bogs and open peatlands. They prefer a mix of short and tall (less than 24-inch) grass interspersed with patches of bare ground. Fence posts, if available, are used for singing perches. The birds avoid fields with uniform coverage of dense grass and legumes, or a thick layer of dead vegetation. They will use fields dominated by bunchgrasses or blueberry plants.

Life History and Ecology

Upland sandpipers first breed at one year of age. Adults arrive on breeding grounds in Maine from late April to early May. Males call while they circle high above their territories. Upland sandpipers are monogamous, and are thought to arrive on their breeding areas already paired. After elaborate courtship displays, they select a nest site. They nest in extensive, open tracts of short grassland cover types. They are loosely colonial, and several nesting territories are usually grouped in fields. While nest sites are defended, nearby loafing and feeding sites are shared communally. The nest is a shallow scrape in the ground lined with dry grass, with overhanging vegetation for concealment. A clutch of four eggs is incubated for 21-27

days. Within a day of hatching, chicks leave the nest. At least one parent guards the chicks until fledging occurs at 30-34 days of age. Feeding and brood-rearing occur in open, short, grassy cover types. Prey items are primarily insects and include grasshoppers, crickets, and other small invertebrates.

Threats

Upland sandpipers were more common in Maine in the 1800s when a higher percentage of the state was in farmland. Maine agricultural lands diminished from 33 percent of the landscape to 6 percent, as grasslands have reverted to forests or have been fragmented by residential and commercial development. As grasslands disappeared from the landscape in the 1890s, so did upland sandpipers. In the past 100 years, populations have probably stabilized or slightly increased. In the Northeast, hayfields were traditionally harvested in late summer and provided good habitat throughout the breeding season. Today most hayfields are mowed earlier and more frequently, or planted to crops. Pastures can be suitable habitat unless they are subject to heavy grazing. Extensive row crops or fields uniformly covered with mat-forming grasses are not suitable. Some agricultural pesticides negatively affect grassland birds or their insect food.

Conservation and Management

The upland sandpiper was listed as threatened in Maine in 1997 because of small populations, regional population declines, and diminishing habitat in the Northeast. It is also listed as a Migratory Bird Species of Management Concern in the Northeast by the U.S. Fish & Wildlife Service. Historically, upland sandpipers were common summer residents in Maine and were distributed among 13 counties. At the peak of agricultural development in the late 1800s, upland sandpipers were considered common.

After 1950, declining agriculture and increasing reforestation resulted in widespread loss of potential breeding habitat. Since 1989, upland sandpipers have been reported at 73 sites in 11 counties. Current breeding habitat is limited to the few remaining large grasslands and blueberry barrens in the state. Continued existence of this species depends on maintaining these habitats. Maine has the largest upland sandpiper population in the Northeast (currently about 150 pairs), and as such will play an important role in conservation of the species in the region. Additional research is needed to document the species' nesting ecology, populations, productivity, survival of chicks, and limiting factors. Habitat protection, enhancement, and management are key to the species' recovery. Nests, eggs, and fledglings of upland sandpipers are protected from take by the Maine Endangered Species Act.

The upland sandpiper shares its habitat with many other rare or declining species such as the grasshopper sparrow (endangered), short-eared owl, vesper sparrow, horned lark, killdeer, bobolink, meadowlark, northern harrier, and savannah sparrow. All these species rely on grasslands, and all are declining in the Northeast. Conservation of the upland sandpiper depends on maintaining the remaining grassland areas of the state, particularly fields greater than 150 acres.

Recommendations:

✔ Prior to land development or managing grasslands and barrens, consult with a biologist from MDIFW to assist with planning.

✔ Municipalities should strive to maintain important grasslands and barrens identified by MDIFW as open space, identify these areas in comprehensive plans, and conserve accordingly.

✔ Use voluntary agreements, conservation easements, conservation tax abatements and incentives, and acquisition to protect important habitat for threatened and endangered species.

✔ Maintain known nesting areas in native grasses, little bluestem, or low-growing shrubs like lowbush blueberry and do not develop or convert them to other land uses.

✔ When managing grasslands, employ best management practices using guidelines in Massachusetts Audubon Society's *Conserving Grassland Birds* publications (www.massaudubon.org).

✔ Avoid mowing nesting areas between May 1 and August 5. If mowing is necessary prior to early August, mark nest sites or locations of young birds and leave patches of unmowed grass or low-growing shrubs. Raise the mowing bar to greater than six inches to prevent destruction of nests and young birds.

✔ Keep grazing animals off known nesting fields during the critical nesting period (May 1 to August 5).

✔ Maintain approximately 40 percent of the vegetation cover at a height of 8-12 inches, with minimal litter and grass cover. Maintain some patches of bare ground, scattered tall forbs (8-25 inches), and short shrubs for song perches.

✔ Manage multiple, contiguous fields to provide a mosaic of grassland types by mowing, burning, or late-season grazing. Mow every 2-5 years to inhibit establishment of shrubs and trees.

✔ Burn fields every 5-10 years after September 1 or before May 1. Do not burn more than 50 percent of a grassland within a year.

✔ Avoid or minimize herbicide and pesticide applications, or employ integrated pest management techniques.

✔ Limit commercial gravel and sand mining in grasslands and blueberry barrens. Restore old gravel pits and agricultural fields to grasslands and low shrubs.

U.S. Fish & Wildlife Service

New England Cottontail

Sylvilagus transitionalis

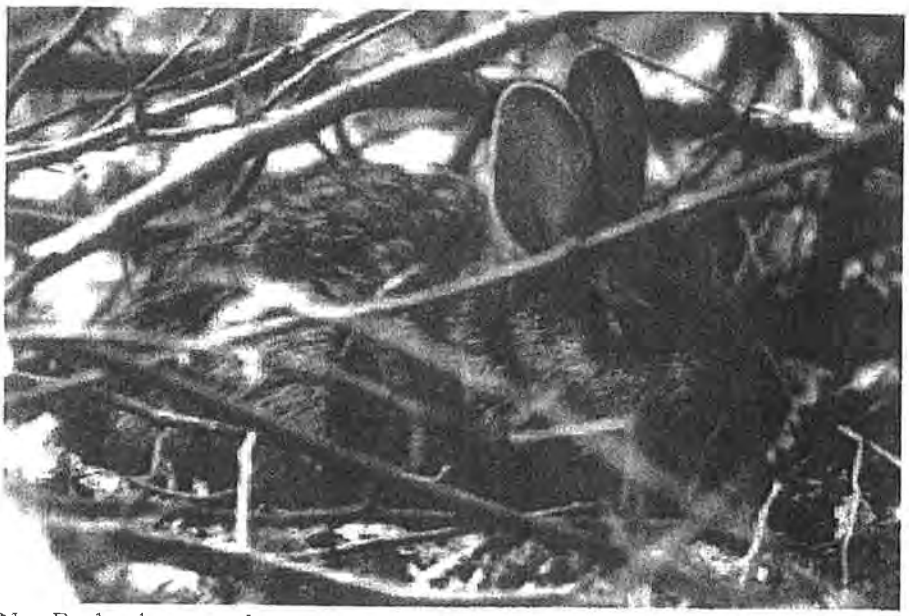
Disappearing rabbit trick

Why would a rabbit, the epitome of prolific breeding, be considered for protection under the Endangered Species Act? The New England cottontail is in just this predicament. Its population numbers are declining. As recently as 1960, New England cottontails were found east of the Hudson River in New York, across all of Connecticut, Rhode Island and Massachusetts, north to southern Vermont and New Hampshire, and into southern Maine. Today, this rabbit's range has shrunk by more than 75 percent. Its numbers are so greatly diminished that it can no longer be found in Vermont and has been reduced to only five smaller populations throughout its historic range.

Where the bunnies are

The New England cottontail prefers early successional forests, often called thickets, with thick and tangled vegetation. These young forests are generally less than 25 years old. Once large trees grow in a stand, the shrub layer tends to thin, creating habitat that the New England cottontail no longer finds suitable.

Active at dawn and at dusk or night, the New England cottontail feeds on grasses and plant leaves in spring and summer and eats bark and twigs in winter. Home ranges vary from one-half to 8 acres, with adult males having larger home ranges than females. Research has shown that New England cottontails on patches of habitat larger than 12 acres are healthier than those on patches less than 7 acres. Presumably, rabbits on small patches of habitat deplete their food supply sooner and have to eat lower quality food, or may need to search for food in areas where there is more risk of being killed by a predator.



Anne Brown

New England cottontail

Why are their numbers declining?

Biologists believe the reduced extent of thicket habitat is the primary reason for the decline in numbers and range of New England cottontails. Prior to European settlement, New England cottontails were probably found along river valleys where floods and beavers created the disturbances needed to generate its preferred habitat. Forest insect outbreaks, large storms like hurricanes and ice storms, and wild fire also created disturbances in the forest that promoted thicket growth. During colonial times, much of the New England forest was cleared for agriculture and then subsequently abandoned during the early 1900s. This abandoned farmland allowed for a great deal of early successional habitats to develop. Today, these habitats are aging while others have been developed and are no longer suitable for the New England cottontail.

The introduction of exotic invasive species, such as multiflora rose, honeysuckle bush and autumn olive, in the last century has changed the type of habitat available to New England cottontails. These plants form the major component of many patches where cottontails can be found. It may be that stands dominated by non-native species do not provide rabbits with the food resources that native plant species do.

Today white-tailed deer are found in extremely high densities throughout the range of New England cottontails. Deer not only eat many of the same plants but also affect the structure and density of many understory plants that provide thicket habitat for New England cottontails.

Introduced competitor

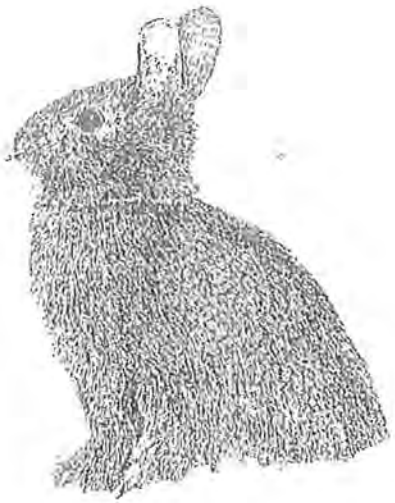
In the early 1900s until the 1960s, hunting clubs and some eastern states introduced another species of rabbit, the eastern cottontail, into New England. Eastern cottontails appear able to thrive in a greater variety of habitats than New England cottontails through its ability to detect predators sooner. This helps eastern cottontails forage more safely in relatively open cover, while New England cottontails risk predation whenever they leave the security of their dense thicket habitats. The slightly better ability to avoid predators enables eastern cottontails to live in more diverse habitats, such as fields, farms and forest edges, and they are gradually replacing New England cottontails in many habitat patches.

Identity is more than skin deep

It is nearly impossible to distinguish a New England cottontail from an eastern cottontail by looking at them. The minor differences of ear length, body mass, and presence or absence of a black spot between the ears and a black line on the front of each ear are subtle enough to be missed and are not 100 percent accurate. Scientists used to rely on examining the rabbits' skulls for positive identification, but can now use DNA analysis of fecal pellets. Since rabbits drop fecal material all around their territory, the extracted DNA from pellets collected throughout the region can provide a picture of where the New England cottontail is found.

Helping the cottontail

The New England cottontail is the subject of research and habitat management in New York and the New England states. Halting the decline of scrub and brushland habitat is paramount, as is identifying potential habitat free of competing eastern cottontail to which New England cottontails could be restored. The U.S. Fish and Wildlife Service shares the concern for the future of New England's only native cottontail. Working together, states and federal agencies may help improve the chances of survival for the New England cottontail.



Northeast Region
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035
413/253 8200
http://northeast.fws.gov

Federal Relay Service
for the deaf and hard-of-hearing
1 800/877 8339

U.S. Fish & Wildlife Service
1 800/344 WILD
http://www.fws.gov

August 2006

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES AND WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0041

JOHN ELIAS BALDACCI
GOVERNOR

ROLAND D. MARTIN
COMMISSIONER

October 28, 2009

Paul Bradbury, Manager
Portland International Jetport (PWM)
1001 Westbrook St.
Portland, ME 04102.

Mr. Bradbury,

Attached please find an Incidental Take Plan (ITP) for the Maine-endangered, New England cottontail (NEC). The ITP addresses the unavoidable loss of New England cottontail habitat resulting from the required implementation of FAA mandated safety improvements associated with a Wildlife Hazard Management Plan for Runway 29 at the Portland International Jetport (PWM).

This ITP incorporates all input and comments mutually agreed upon by the parties entering into the ITP. Specifically,

-- PWM will contribute an amount not to exceed $1,000,000.00 to secure and permanently protect core NEC habitat as compensation for the unavoidable loss of NEC habitat at PWM,

-- In addition, PWM is committing $20,000 toward the combined costs relating to capture and post-capture monitoring of the NEC to be relocated from PWM. MDIFW, its agents, or assigns will be responsible for capture and post-capture monitoring of the NEC. PWM will provide all necessary and appropriate access to MDIFW, and it agents, or assigns to undertake and accomplish the capture of the NEC. PWM will also notify MDIFW 4 weeks prior to the clearing of NEC habitat to allow for a second trapping effort to ensure all NECs are removed from the habitat, and

-- Expenditure of these funds for the conservation and recovery of the NEC and/or its habitat will be solely the discretion of MDIFW.

MDIFW understands that its issuance of the ITP addresses the sole, outstanding element necessary before the FAA to consider issuing an essential Finding of No Significant Impact determination, and that this finding will enable the US Army Corps of Engineers to issue permits, under the Clean Water Act. MDIFW's issuance of the ITP is also necessary for the Maine Department of Environmental Protection to issue related Natural Resource Protection Act and Site Location of Development permits. Finally, these approvals must be obtained before PWM can receive funding to schedule, contract and initiate its Five-Year Capital Improvement Plan and Wildlife Hazard Management Plan.

Sincerely,

Kenneth D. Elowe, PhD.
Bureau of Resource Management

Pc: Stadler, Matula, Dressler, Jakubas, DePue, Pratte, Camuso

PHONE: (207) 287-5202

FISH AND WILDLIFE ON THE WEB:
www.mefishwildlife.com

EMAIL ADDRESS:
ifw.webmaster@maine.gov

Incidental Take Plan for the New England Cottontail (*Sylvilagus transitionalis*) Portland International Jetport (PWM) *Portland and South Portland, Maine*

Prepared for:

The US Federal Aviation Administration
Burlington, MA

The Portland International Jetport
Portland, ME

Submitted to:

The Maine Department of Inland Fisheries and Wildlife
Gray and Augusta, ME

Prepared by:

TRC Companies, Inc.
400 Southborough Drive
South Portland, ME

October 26, 2009

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EXHIBITS

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1.0 INTRODUCTION

The Portland International Jetport (PWM) in Portland and South Portland, Maine has conducted environmental studies and analyses in preparation for implementing a five-year *Capital Improvement Plan and Wildlife Hazard Management Plan.* PWM is located between Interstates 95 and 295 and is bordered on the north and east by the tidal Fore River and its tributary Long Creek (Figure 1). Within these two Interstates, major arterial highways including Route 22 or Congress Street and Route 9 or Johnson Road and Western Avenue encircle PWM on the west and south. In operation since 1934, and now Maine's largest commercial airport, PWM is located immediately to the northeast of the Maine Mall area, the largest retail, commercial, and office complex north of Boston (http://www.southportland.org/index).

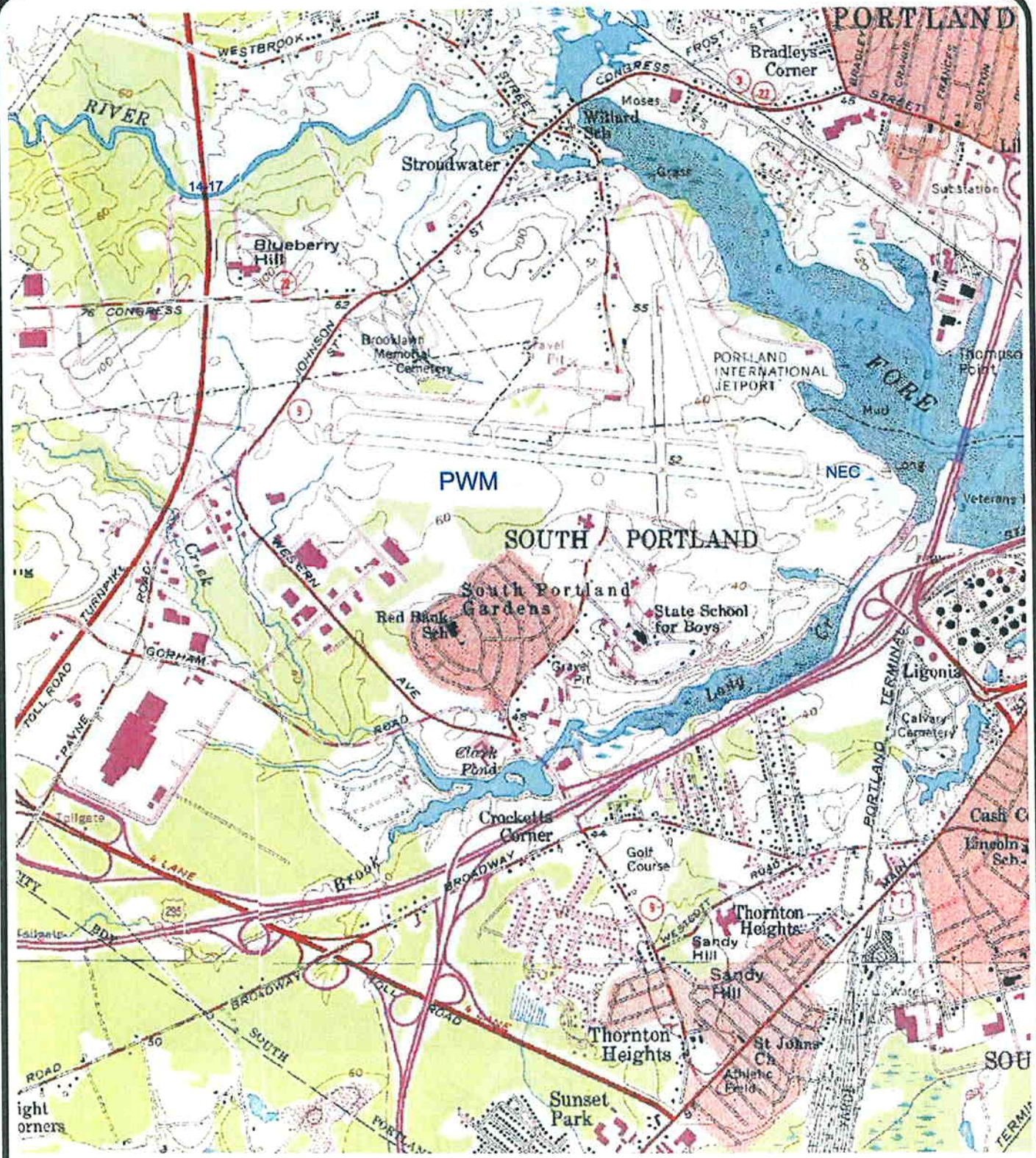
An update to the airport's Master Plan was completed in 2007 and approved by Portland City Council in 2008. The purpose of the Master Plan update was to evaluate the airport's ability to meet design standards and provide a safe and efficient operating facility for existing and anticipated future users of the airport. This update provided an inventory of existing facilities, projected aviation demand forecasts, and identified facility requirements to accommodate forecasted demand. The study also examined airside and landside alternatives and recommended an airport layout and improvement schedule. Among other things, the Master Plan identified the need to provide additional commercial airline terminal facilities and enhance operational safety. Actions identified to enhance operational safety included: providing adequate runway safety area (RSA) for Runway 18-36 and a new taxiway to reduce runway incursion potential, as well as providing additional runway length for Runway 11-29 by removing a starling roost that now imposes substandard safety area dimensions on the declared useable distance for the runway.

The five-year *Capital Improvement Plan and Wildlife Hazard Management Plan* (WHMP) are generally comprised of five elements displayed and described on Exhibit 1B, the development concept formulated from the 2007 airport master planning process. Four of these occur within the existing airfield security fence or in the immediate vicinity of the terminal and encompass:

- Implementation of WHMP at the end of Runway 29 to deter or prevent concentrations of flocking birds specifically known to include blackbirds and starlings;
- Runway 11 – 29 improvements;
- Cargo Facility Improvements; and
- Terminal Area Improvements including construction of new apron areas on developed and undeveloped areas between Jetport Boulevard and the terminal.

The fifth element entails Runway 18 – 36 improvements, which generally consist of extending the runway and parallel Taxiway C a distance of 1,100 feet to the south and outside the area now enclosed by the existing airfield security fence.

These activities require amendment of the existing Site Location Act permit issued by the Maine Department of Environmental Protection (MDEP). For components of this work that must occur in freshwater wetlands, permits are also required from the MDEP under the Natural Resources



APPROXIMATE SCALE

0 2000 4000

FEET

TRC

400 Southborough Dr.
South Portland, Maine 04106
(207) 879-1930

USGS QUADRANGLE 7.5 MINUTE
PORTLAND WEST

FIGURE 1

PORTLAND INTERNATIONAL JETPORT

PWM - NEC @ Rnwy 29

City of South Portland

Map For Reference Only
Not a Legal Document

The City of South Portland makes no claims and no warranties, concerning the validity, expressed or implied, of the accuracy of the GIS data presented on this map.

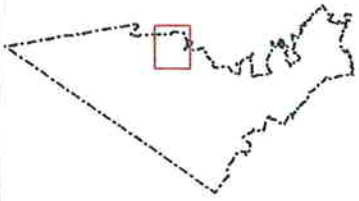


FIGURE 2

Protection Act (NRPA) and the US Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act.

Implementation of the five-year *Capital Improvement Plan and WHMP* at PWM also require preparation of an Environmental Assessment (EA) pursuant to the requirements of Section 102(2) (c) of the *National Environmental Policy Act* (NEPA) *of 1969* (PL 91-190, 42 USC 4321 et. seq.) as outlined in 40 CFR 1500-1508. The Federal Aviation Administration (FAA) has been designated as the Lead Agency in the NEPA process. A component of these studies and analyses included preparation of a Biological Resources Inventory (BRI) of the potential development area which characterizes available sensitive habitat and documents occurrence of threatened or endangered species subject to the provisions of the *Endangered Species Act* (ESA) *of 1973*. To address the content for biological assessments described in 50 CFR Ch IV §402.12(f), environmental scientists and wildlife biologists from TRC's South Portland, Maine office conducted field surveys, researched published information sources and consulted with federal and State of Maine resource agencies in the course of preparing the BRI for the FAA.

2.0 OCCURRENCE OF NEW ENGLAND COTTONTAIL AT PWM

As a candidate for federal listing under the ESA (USFWS, 2006) and based on records of being observed in old field and shrubby habitats near PWM, in its November 15, 2007 response pursuant to Section 7 of the ESA, the US Fish and Wildlife Service (USFWS) encouraged PWM to conduct surveys for New England cottontail (NEC) rabbit (*Sylvilagus transitionalis*). The siting made seven years ago in Portland occurred outside the project area approximately 0.75 mile to the northwest of the PWM terminal and to the north of the Congress Street and Johnson Road intersection.

Following fresh snowfalls, track surveys were undertaken at PWM by TRC during the winter of 2007–2008. The surveys were initiated on December 10, 2007 along a two-mile circuit using USFWS and MIFW field survey and sampling methods that reflect anatomical characteristics and habitat requirements specific to NEC. A second track survey following another fresh snowfall was conducted on December 14, 2007, throughout the shrubby thicket between Jetport Boulevard and the PWM terminal where Terminal Area Improvements (#4 Exhibit 1B) are proposed. No evidence of NEC was observed during either survey.

The third track survey on January 16, 2008 covered the same area viewed during the first survey and was the first time sign of NEC was encountered. Approximately 150 feet north of the fence corner located to the south of Runway 29, tracks measured as being of a size consistent with that of NEC were found in a run leading from the very dense sapling thicket and through the fence toward Long Creek. Fecal pellets from this location were collected in a sterile container and one day later turned over to MIFW for DNA analysis. The third track survey also extended northward of Runway 29 outside the airfield fence to the cargo facilities area. However no other evidence of NEC was observed at any other location during the January 16, 2008 survey.

Since the winter 2007-2008 surveys, PWM has actively coordinated with MDIFW and USFWS relative to NEC including meetings on: September 8, October 14, November 24, 2008 and a field review of NEC habitat at PWM on September 16, 2008.

PWM also coordinated with MDIFW and USFWS during collection of field samples for a DNA study of NEC by researchers from the University Of New Hampshire (UNH). On January 27, 2009, a field survey of the shrub thicket inside the security fence was conducted by TRC in conjunction with the USFWS. In addition to finding multiple regularly used runs and collecting vials of pellets, three active burrows were found in the patch. Two burrows were associated with stumps and one was in a low bank. Analytical results from the UNH testing provided by the USFWS indicate the pellets collected inside the security fence were from five different males. Other results for samples collected by the USFWS from patches east side of Yellowbird Lane and outside the security fence the north of Runway 29 are from two different females.

Where tracks and droppings were found inside the security fence, habitat is consistent with the cover type, size and densities (as much as 24,000 stems per acre) favored by NEC and do not occur in any of the other locations viewed during the three 2007-2008 track surveys. The approximately 13-acre shrub thicket where NEC sign was found is dominated by speckled alder (*Alnus incana*), bayberry (*Myrica pennsylvanica*), willows (*Salix* spp.), Tartarian honeysuckle (*Lonicera tatarica*), white birch (*Betula popufolia*) and quaking aspen (*Populus tremuloides*) and occurs between the perimeter access road and the security fence (Figure 2). NEC droppings and tracks were also observed in this area on January 2, 2009.

Although scrub shrub thickets are found at other locations throughout PWM, none appear to have the combination of characteristics found in the 13-acre patch at the end of Runway 29. Habitat patches smaller than 6.2 acres in Maine (or approximately half the size of the Runway 29 patch) are considered to be population sinks (USFWS, 2008). Species, life-form, density and size of the vegetative cover in the 13-acre patch provide habitat protected from avian predation and enclosure within the security fence furnishes habitat protected from land-based predators.

Review of six aerial photographs spanning the last 45 years illustrates how NEC habitat has developed at the end of Runway 29. Photographs taken in May of 1964 predate construction of I-295 and at this location show forest that most likely would not have provided NEC habitat. May 1970 photographs show construction of I-295 to be well underway with most of the trees removed and much of the area being used for soil disposal from I-295; with this level of activity therefore being unfavorable to NEC habitation. October 1980 photographs follow completion of I-295 and the area remains semi-cleared with a scrub shrub community beginning to appear. By June 1997, scattered shrub thickets are present but do not dominate the 13-acre area; much of which appears to continue to be in the midst of old-field succession or potentially even periodically mown. As of 2003, the shrub thicket is generally similar in extent to what is displayed in May 2005 (Figure 2) and what now exists. From this time-series analysis of aerial photographs, it would therefore appear that NEC habitat at the end of Runway 29 has existed for little more than the last decade.

MDIFW also reports NEC occurs on the west side of the Maine Turnpike and part of this parcel includes approximately 90-acres owned by the City of Portland for aviation lights and the Runway Protection Zone (RPZ) at the end of Runway 11 (Exhibit 1B). Along with ground juniper (*Juniper communis*) and apple trees, the RPZ contains dense shrubby vegetation (Figure 4) similar to that found at the end of Runway 29. Track surveys conducted here by USFWS and TRC on two different occasions during the winter of 2008-2009 yielded no sign of NEC.

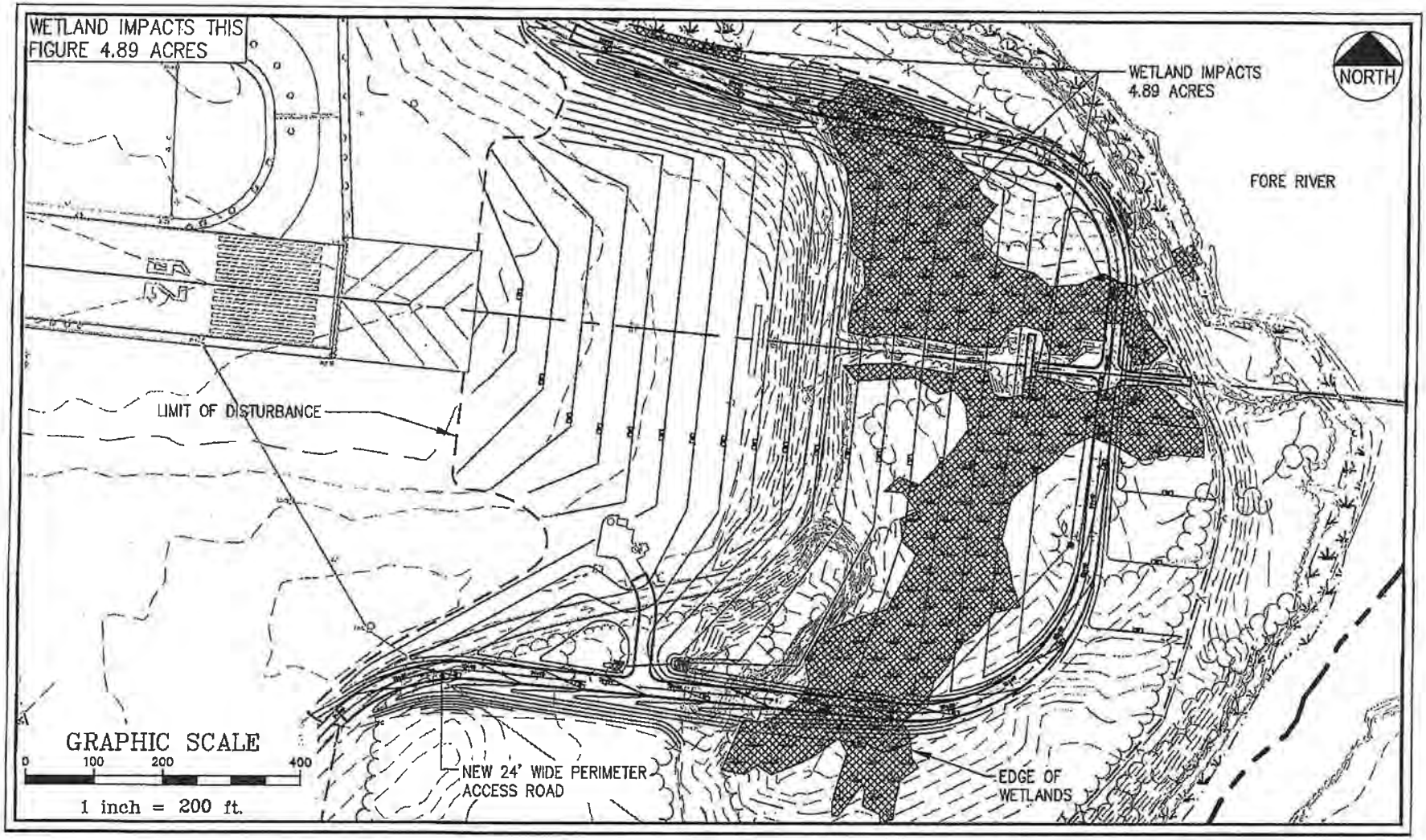


FIGURE:	BOOK: PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:	
3	REFER TO EXHIBIT A IN SLDA APPLICATION	PORTLAND AND SOUTH PORTLAND, MAINE	RUNWAY 11-29 SAFETY AREA	CITY OF PORTLAND	
	LEGAL DESCRIPTION: REFER TO PLANS IN SLDA APPLICATION	WATER BODY: FORE RIVER AND TIDAL PORTION OF LONG CREEK	ABUTTERS: SEE EXHIBIT 25 OF SLDA APPLICATION	SCALE: 1"=200' DATUM: NGVD29 DATE: 12.12.08	Deluca-Hoffman Associates, Inc.

3.0 PWM WILDLIFE HAZARD MANAGEMENT PLAN

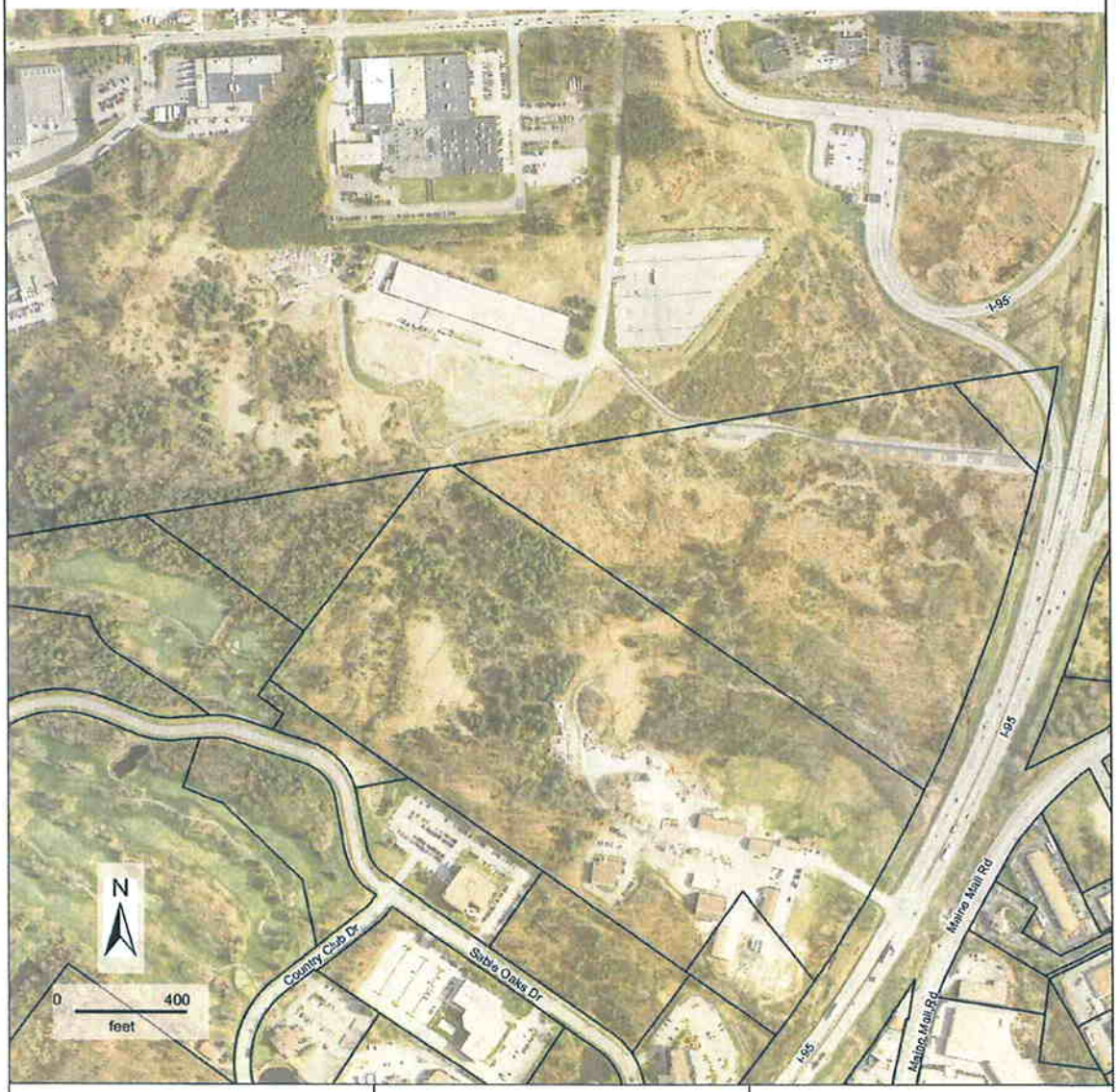
Federal Aviation Agency (FAA) Advisory Circular (AC) #150/5200-33B provides guidance on certain land uses that have the potential to attract wildlife on or near public-use airports and identifies development projects (construction, expansion and renovation) affecting aircraft movement near hazardous wildlife attractants. The AC ranks 25 species groups of wildlife by relative hazard to aircraft based on three criteria: "*Damage, major damage and effect on flight*". While deer are ranked with the highest relative score, large flocking birds such as geese are also ranked high and gulls are mid-range. Although coyotes and small flocking birds such as blackbirds or starlings are ranked lower, and in the 2nd decile, as reported in the 2002 Memorandum of Agreement between the FAA, US Air Force, US Army, USEPA, USFWS and USDA, the number of reported strikes between 1990 and 1999 that caused damage to an aircraft, or which had an adverse effect on flight, are as follows for specific wildlife groups: gulls-874, geese-458, deer-285, ducks-166, blackbirds/starlings-136 and coyotes/foxes-18. This data includes only civilian US aircraft and the FAA estimates wildlife strike reports it received represent less than 20% of the actual number where the financial threshold for the lowest category of significance (Class C Mishap) exceeds $20,000. The FAA recommends public-use airport operators implement the standards and practices of the AC and these standards must be used for those airports that receive Federal grant-in-aid assistance.

In response to the findings of a Wildlife Hazard Assessment (WHA) and in accordance with the requirements of AC#150/5200-33B (predecessor-33A) a *Wildlife Hazard Management Plan* (CFR 14 FAR Part 139.337) has been prepared for PWM by the USDA's APHIS Wildlife Services Program. The WHMP was finalized in March 2007 and recommends that the wetland be filled and that the upland shrub thicket adjacent to wetland be cleared and graded at the approach end of Runway 29. Chapters 3.0 and 6.0 of the WHMP address *Habitat Management* and *Wildlife Hazard Management Procedures* respectively. Removal of "*a starling roost...in wetland vegetation ..... on the approach to Runway 29*" (USDA-APHIS, 2007 pages 15, 33) is one major component of the work addressed by PWM's application to amend the MDEP Site Location Act permit (Figure 3).

The Wildlife Hazard Area consists of a *Phragmites,* cattail (*Typha* spp.) and alder-dominated PEM1/PSS1 (palustrine persistent emergent / palustrine deciduous scrub shrub) wetland community that has been designated as Wetland L, and the adjoining upland shrub thicket dominated by honeysuckle at the east end of Runway 29. The location of the wetland and the upland shrub thicket are depicted on Exhibit 1B with a purple hatch around #1. The upland shrub thicket here corresponds to the habitat used by NEC (Figure 2).

Due to a "zero tolerance for mammals" established by the WHMP, which in addition to deer, includes but is not limited to coyotes and foxes, elimination of protective cover for these species such as the shrub thicket, is one form of mammal hazard management recommended by the WHMP. Controlling rodents highly attractive to canines and raptors including hawks and harriers is another form of food/prey-base habitat management encouraged by the WHMP.

PWM - NEC W of MTA



City of South Portland

Map For Reference Only
Not a Legal Document

The City of South Portland makes no claims and no warranties, concerning the validity, expressed or implied, of the accuracy of the GIS data presented on this map.

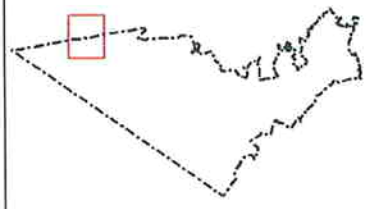
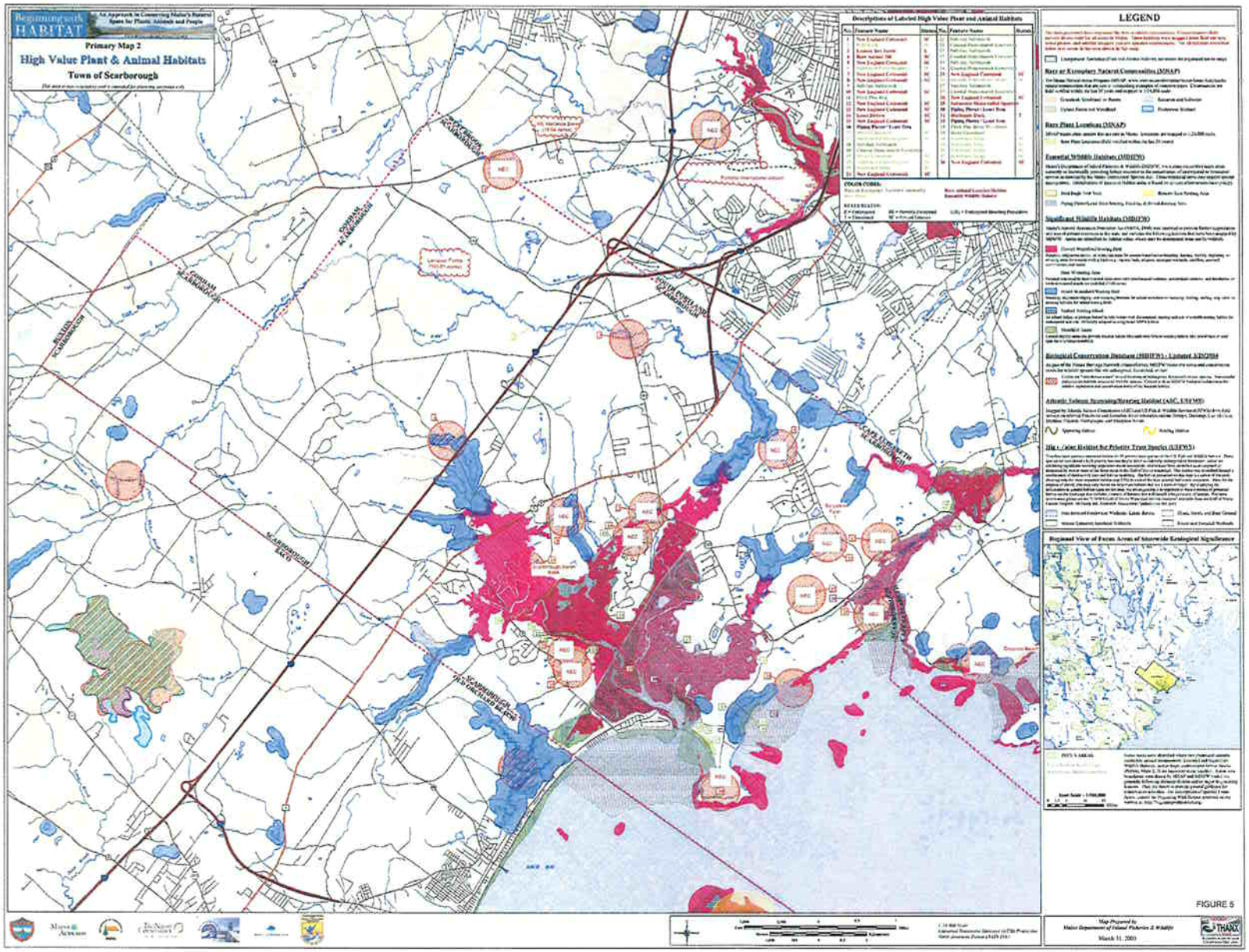


FIGURE 4


Beginning with HABITAT
An Approach to Conserving Nature's Natural Spaces for Plants, Animals and People
Primary Map 2
High Value Plant & Animal Habitats
Town of Scarborough
Descriptions of Labeled High Value Plant and Animal Habitats
LEGEND
Regional View of Focus Areas of Statewide Ecological Significance
FIGURE 5

4.0 INCIDENTAL TAKE PLAN FOR NEW ENGLAND COTTONTAIL

Due to the occurrence of the New England cottontail and its listing as an "endangered species" in Maine, MDIFW has directed PWM to prepare an Incidental Take Plan (ITP) pursuant to the requirements of the Maine Endangered Species Act (MESA - 12 MRSA Part 13 §12808 (3)). The content of an ITP must address six elements comprised of the following (§12808 (3B 1-6)):

1. *A description of the specific activities sought to be authorized by the ITP and an analysis of the potential alternatives;*

2. *The individual and cumulative effects that may reasonably be anticipated to result from the proposed actions covered by the plan;*

3. *The recovery measures the applicant will implement to prevent, minimize and mitigate the individual and cumulative effects and any provisions that are necessary to prevent, minimize and mitigate circumstances that are likely to impair the recovery of any endangered or threatened species covered by the plan;*

4. *The procedures for monitoring the effectiveness of the recovery measures in the plan;*

5. *The anticipated costs of implementing the plan and the availability of necessary funding for the applicant to implement the plan; and*

6. *Other modifications to the plan or other additional measures, if any, that the department* (MDIFW) *may require and such other matters as the department determines to be necessary for the recovery of species consistent with this section.*

Information addressing each of these elements is presented in the following *Incidental Take Plan for New England Cottontail Rabbit at the Portland International Jetport.* PWM understands MDIFW will seek input from knowledgeable individuals or groups regarding this ITP.

4.1 Specific Actions to be Authorized by the ITP

The extent of the specific work that is requested to be authorized by this ITP is displayed on the Runway 29 Safety Area Improvements Grading and Drainage Plan (Figure 3) submitted to MDEP in the Site Location Application and as Drawing Sheet 21 in Attachment 6 of the October 31, 2008 NRPA application. This work relates to implementation of the WHMP and improvements to the Runway Safety Area (RSA) for Runway 29. The location where work would occur is also displayed on Figure 2.

Activities depicted on Figure 3 that are necessary for implementing the WHMP consist of placing fill in the wetland on the north and south sides of the MASLR (medium intensity approach lighting system) maintenance road to eliminate the starling (*Sternus vulgaris*) roost that now occupies the stands of *Phragmites* and cattail (*Typha* spp.). Beyond the limit of fill and to minimize wetland impacts in areas where existing grades are conducive, shrub vegetation that

provides cover for rodents and other mammals will be removed within the existing security fence and replaced with a grassed cover that can be mown periodically.

Other activities depicted on the drawing that relate to Runway 29 RSA improvements include:

- Placement of fill to meet RSA grade requirements (< 5.0%);
- Relocation of the Runway 29 localizer antenna; and
- Relocation of a segment of the airfield perimeter service road.

Not implementing the WHMP and the RSA improvements would be in conflict with FAA AC #150/5200-33B; thereby jeopardizing PWM's eligibility for receiving Federal grant-in-aid assistance and must therefore be discounted as an alternative.

Other alternatives for controlling or eliminating the starling roost have been evaluated and rejected by the WHMP. Although effective on a sporadic basis, integrated harassment (i.e. pyro-technics, distress calls, etc), requires continuous monitoring and maintenance and becomes unreliable due to the adaptability of the targeted species. Wetness and soft ground conditions make removal of roost vegetation costly and would necessitate specialized mowing equipment not currently owned by PWM. Elimination of roost habitat by this method would also require regular monitoring and maintenance and is vulnerable to potentially miring equipment in a critical location that could be disruptive to airport operations. Covering the roost with exclusion netting has also been rejected due to impracticality and limitations on the height and character of netting support structures in the RSA. Utilization of similar alternatives for the food/prey-base habitat management required to address the WHMP's zero tolerance for mammals is rejected for these same reasons.

The activities required for the Runway 29 RSA improvements generally occur within the footprint of where fill must be placed to eliminate the bird roost and control rodent and mammal habitat for implementation of the WHMP. The airfield perimeter service road is aligned along the outer limit of this fill and the Runway 29 localizer antenna is on this fill between the road and the end of the runway. Grading for these RSA improvements must comply with FAA slope specifications.

4.2 Individual and Cumulative Effects Anticipated from Implementation of Actions

Implementation of the WHMP and the RSA improvements will improve safety and bring Runway 29 into compliance with FAA requirements but will also contribute to individual effects on the New England cottontail which could then be an additional contributor to cumulative effects.

The September 16, 2008 field review with MDIFW and USFWS was conducted to identify the extent of NEC habitat within the security fence at the end of Runway 29. This NEC habitat patch has since been measured to cover an area of approximately 13 acres (Figure 2). Approximately five of the 13 acres is wetland that is to be filled, the loss of which is being offset by offsite compensatory mitigation addressed by MDEP and Corps of Engineers permitting.

Track surveys conducted in conjunction with the USFWS on January 27, 2009 confirm NEC continues to occupy the patch and three, actively-used burrows were also discovered. In addition to habitat observations, fecal pellets were collected from more than a dozen locations dispersed throughout the patch for DNA analyses that are able to differentiate individual animals. Along with other information such as parentage, the DNA data can therefore provide an indication of the number of individuals using this patch. From reported population densities of approximately one to two rabbits per acre (USFWS, 2008; DeGraaf and Yamasaki, 2001; Litvaitis and Jakubas, 2004) and with no consideration of habitat character or food quality, a population of potentially 13 - 26 rabbits could arithmetically be attributed to the 13-acre patch. However, tracks and habitat quality indicate this high a number of individuals for this patch is extremely unlikely and the number of dens would appear to be a more likely indicator of the number of NEC in this patch. The DNA results from five males in this patch during the winter of 2008 – 2009 therefore help quantify the actual number of individuals to be affected by implementation of the WHMP and RSA improvements.

4.3 Proposed Recovery Measures and Monitoring Procedures

Provisions for conservation of endangered species available under the Maine Endangered Species Act (MESA) include acquisition of land, propagation, live trapping, transplantation, regulated taking and cooperative agreements (12 MRSA §12804-12806). PWM is prepared to enter into a cooperative agreement through the ITP to implement measures to include acquisition of land, live trapping and transplantation (12 MRSA §12804-1A, C, D).

Acquisition of land is a means to address the NEC habitat that must be impacted for implementation of the WHMP and the Runway 11–29 safety-related improvements. As is the case for other wetlands at PWM that must also be impacted for implementation of the five-year *Capital Improvement Plan and Wildlife Hazard Management Plan* the five acres of wetland in the 13 acre patch will be offset by mitigative compensation addressing permitting requirements of the MDEP under the Natural Resources Protection Act (NRPA) and the US Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act.

Management goals and objectives covering a period of 15 years have been established for the NEC in Maine (MDIFW, 2006a, b). One identified population objective is to maintain and/or create a minimum of 18 core populations in habitat patches $\geq$ 25 acres (MDIFW, 2006b). Historically, NEC has been documented to occur at several locations south of greater Portland including locations in rural areas of Cape Elizabeth and Scarborough (Figure 5). Establishment of core populations in habitat patches within either of these municipalities is within the historic range of the NEC, a component of another population objective of the management plan (MDIFW, 2006b).

To compensate for the unavoidable loss of NEC habitat at PWM, by and through the ITP, PWM will contribute an amount not to exceed $1,000,000.00 to secure and permanently protect core NEC habitat patches that are > 25 acres.

In conjunction with the USFWS, MDIFW has identified a property that meets the identified NEC habitat objective of providing >25 acres. The property is considered to be a conservation priority for acquisition and protection; conservation NGOs are now actively and productively negotiating its purchase. The parcel is proximal to an existing core population of NEC and the Spurwink River Division of the Rachel Carson Wildlife Refuge.

In addition PWM is committing $20,000 toward the combined costs relating to capture and post-capture monitoring of the NEC to be relocated from PWM. MDIFW, its agents, or assigns will be responsible for capture and post-capture monitoring of the NEC. [Current plans are to trap and transfer the rabbits to a propagation pen located at the University of New Hampshire. Offspring of these rabbits will be translocated to suitable habitat in Maine.] PWM will provide all necessary and appropriate access to MDIFW, and it agents, or assigns to undertake and accomplish the capture of the NEC. PWM will also notify MDIFW 4 weeks prior to the clearing of NEC habitat to allow for a second trapping effort to ensure all NECs are removed from the habitat

Expenditure of these funds for the conservation and recovery of the NEC and/or its habitat will be solely the discretion of MDIFW.

Because NECs are a state endangered species, MDIFW staff from the Wildlife Resources Assessment Section Mammal Group will supervise contractors and volunteers to capture and transfer NEC from PWM. Trapping the NECs from the Jetport will occur in two sessions, one in February 2010 and again prior to habitat clearing to ensure all rabbits are removed from the property prior to construction. The trapping is expected to take 7 – 10 days for each session. Capture and transfer protocols include:

a. Cage traps baited with alfalfa or dried apples will be set in the habitat that will be removed.

b. Traps will be checked at least twice a day. If extreme cold conditions or rain are predicted, traps will be closed.

c. Captured rabbits should be weighted, sexed, and a measurement of right hind foot taken for a measure of body condition.

d. After processing, rabbits should be kept in a dark quiet holding box until release.

e. Rabbits will be transferred to the facility at UNH immediately after processing to minimize stress to the animal.

4.4 Anticipated Costs of Implementing and Funding the ITP

Costs of implementing PWM's ITP for NEC relate to three specific elements: capture, post capture monitoring and compensating for the unavoidable loss of NEC habitat related to improvements for the Runway 29 Safety Area. By and through the ITP, $20,000 is being committed toward the combined costs relating to capture and post-capture monitoring of the NEC to be relocated from PWM. In addition, to compensate for the unavoidable loss of NEC habitat at PWM, by and through the ITP, an amount not to exceed $1,000,000.00 to secure and permanently protect core NEC habitat patches that are > 25 acres.

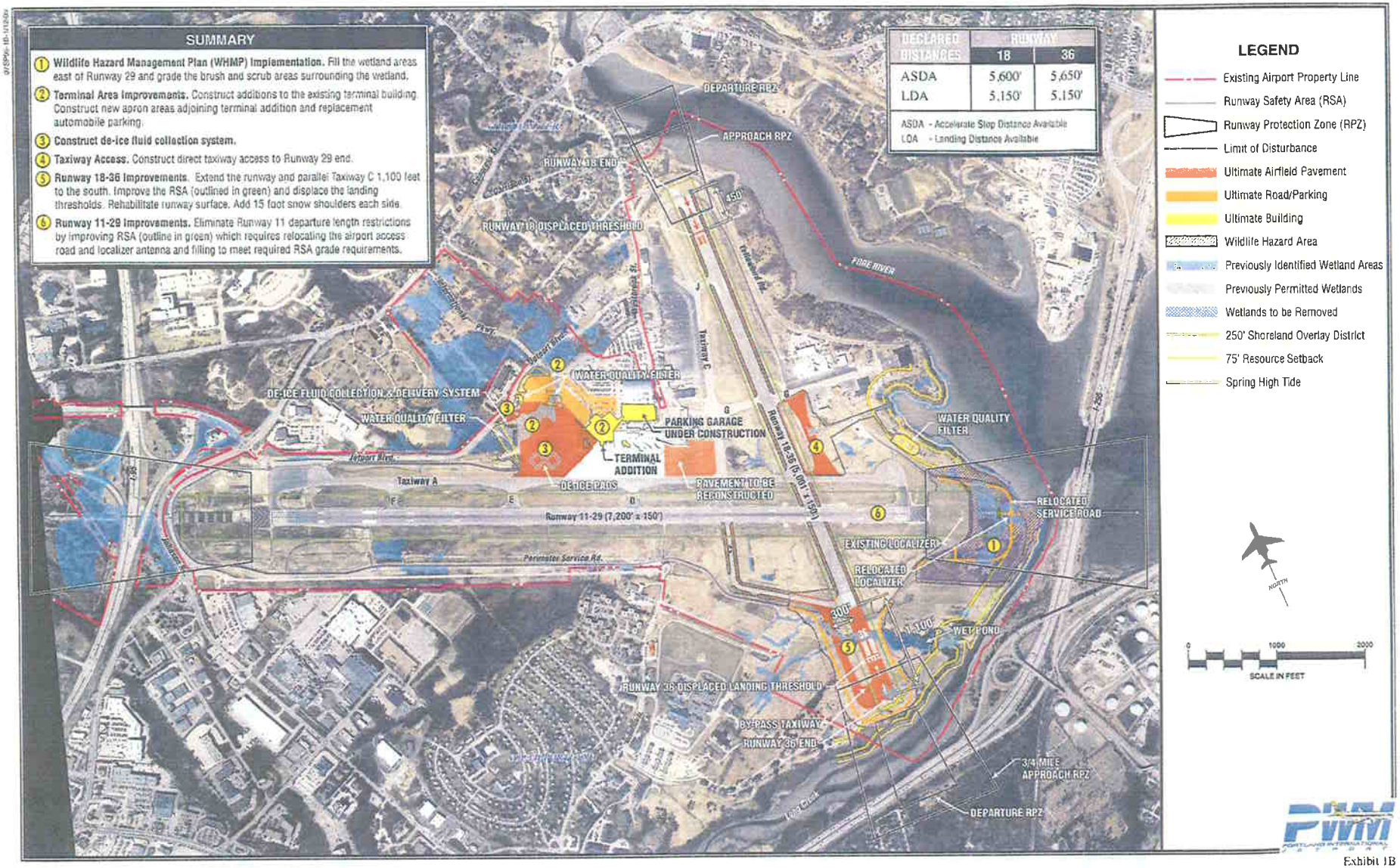


Exhibit 1B
PROPOSED AIRPORT DEVELOPMENT

Expenditure of these funds for the conservation and recovery of the NEC and/or its habitat will be solely the discretion of MDIFW.

4.5 MDIFW Modifications of the ITP

Continued consultation between Portland International Jetport and the Maine Department of Inland Fisheries and Wildlife is recommended to identify and cooperatively agree on measures necessary for capture and relocation of New England cottontail from the area addressed by this Incidental Take Plan.

PWM understands MDIFW will seek input from knowledgeable individuals or groups regarding this ITP. On June 17, 2009, PWM presented to the New England cottontail work group an update on efforts to prepare the ITP. As necessary, PWM is prepared to continue to work with and MDIFW to finalize and implement this Incidental Take Plan for New England cottontail at the Portland International Jetport.

5.0 REFERENCES CITED

Arbuthnot, M. 2008: *A landowner's guide to New England cottontail habitat management*, Environmental Defense Fund, 36 pgs.

Litvaitis, J.A., and Jakubas, W.J., *New England Cottontail (Sylvilagus transitionalis) Assessment 2004*, Department of Natural Resources, University of New Hampshire and Maine Department of Inland Fisheries and Wildlife, 73 pgs.

Maine Department of Inland Fisheries and Wildlife, 2003: *Beginning with habitat program* http://www.beginningwithhabitat.org/index.html .

Maine Department of Inland Fisheries and Wildlife, 2006a: *Feasibility Statements for New England Cottontail Goals & Objectives*, 11 pgs.

Maine Department of Inland Fisheries and Wildlife, 2006b: *New England Cottontail Management Goals and Objectives 2006 – 2021*, 2 pgs.

USDA Animal Plant and Health Inspection Service (APHIS) Wildlife Services Program, 2007: *Wildlife Hazard Management Plan* (CFR 14 FAR Part 139.337), Portland International Jetport (PWM), 39 pgs plus Appendices.

US Fish and Wildlife Service, 2006: New England Cottontail (*Sylvilagus transitionalis*) fact sheet.

US Fish and Wildlife Service, 2008: Species assessment and listing priority form - *Sylvilagus transitionalis*, 33 pgs.

Appendix F

CULTURAL RESOURCES SUPPORTING INFORMATION

APPENDIX F
CULTURAL RESOURCES SUPPORTING INFORMATION

This appendix contains copies of reports and studies prepared for this Environmental Assessment as well as written comments received.

Written Responses Received **Page**

Reports and Studies **Page**

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

November 19, 2007

Ms. Molly Waller
Airport/Environmental Planner
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Project: MHPC # 1961-07 - Environmental Assessment for proposed improvements at Portland International Airport

Town: Portland, ME

Dear Ms. Waller:

In response to your recent request, I have reviewed the information received November 5, 2007 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended.

The southern extension of Runway 18-36 (the 36 approach end) is the location of three prehistoric archaeological sites, numbers 8.22, 8.23, and 8.24. Phase II (National Register eligibility) archaeological survey is required for these three sites prior to construction. Data recovery or other archaeological mitigation may be required if any of these three sites is found to be National Register eligible. We have been told that the archaeological Phase II fieldwork was completed during the fall of 2007, but we are awaiting the report.

The National Register listed Stroudwater and State Reform School (now known as Brick Hill) Historic Districts are located in the vicinity of the Runway 18-36 improvement. A full evaluation of the audible and visual impact of the proposed projects on historic resources needs to be conducted. We have enclosed maps of the historic district boundaries for your information.

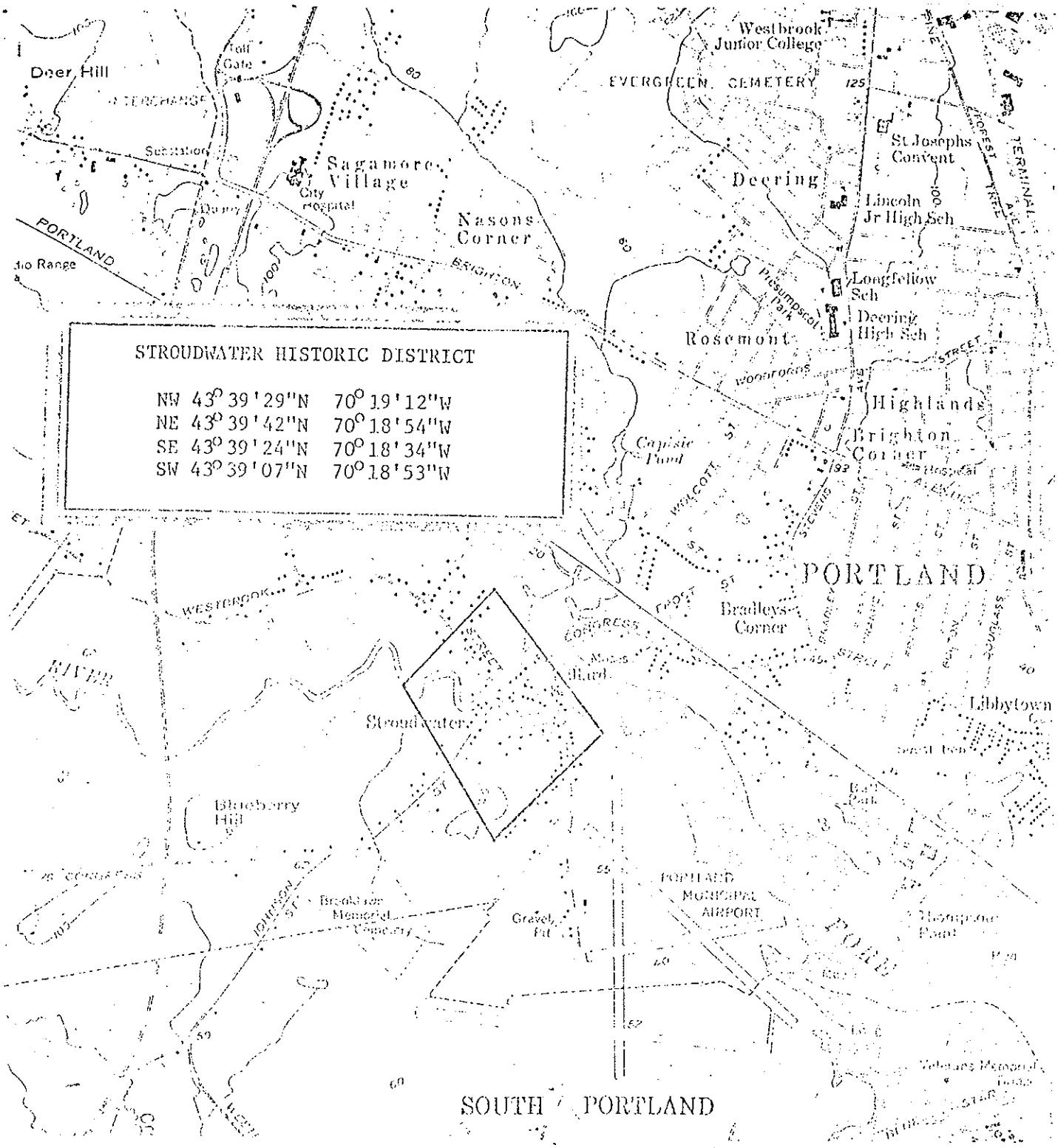
Once this information is received, our office will forward a response regarding the results of our evaluation. Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

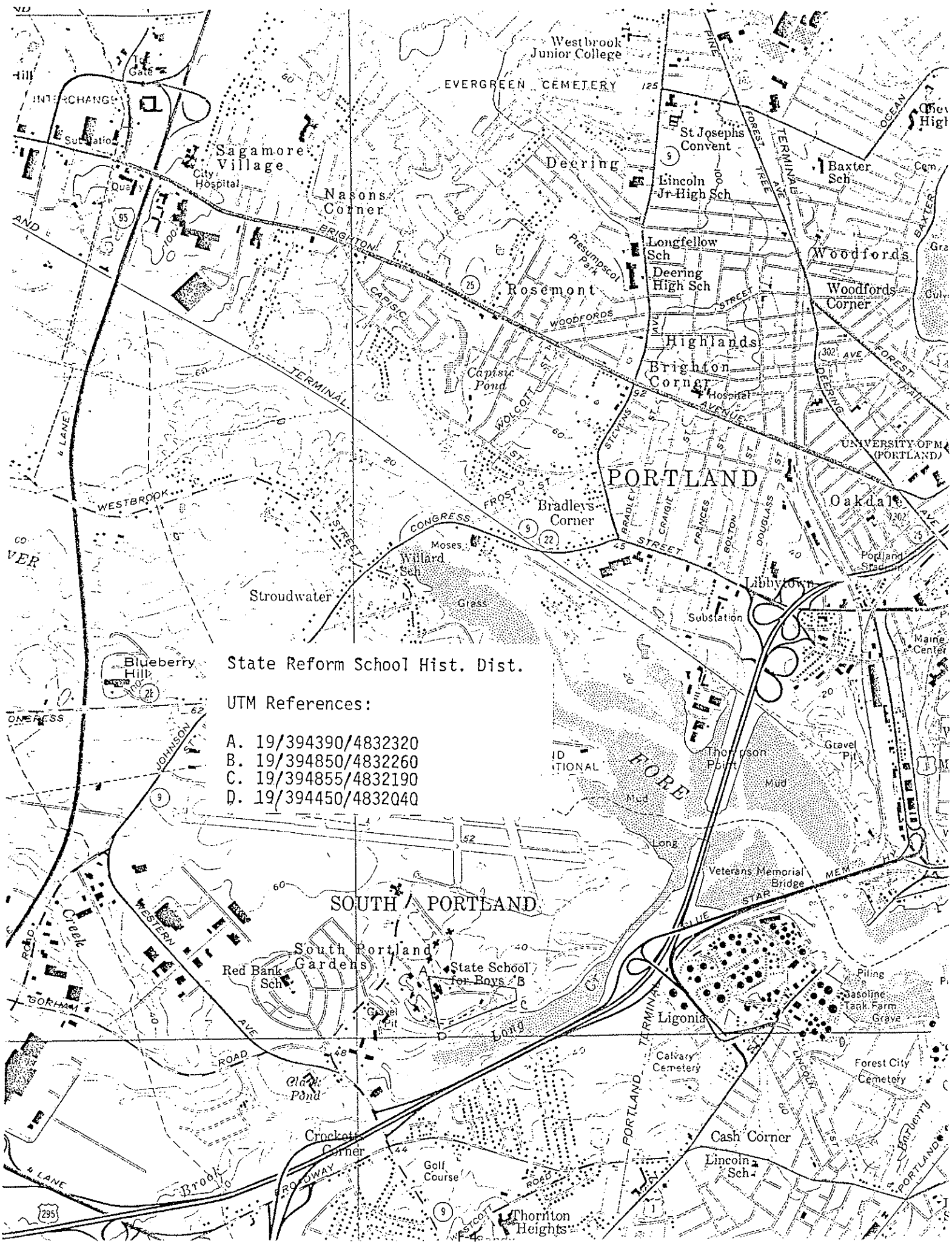
Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

PHONE: (207) 287-2132

FAX: (207) 2


STROUDWATER HISTORIC DISTRICT
NW 43° 39' 29"N 70° 19' 12"W
NE 43° 39' 42"N 70° 18' 54"W
SE 43° 39' 24"N 70° 18' 34"W
SW 43° 39' 07"N 70° 18' 53"W
Deer Hill
Toll Gate
Sagamore Village
City Hospital
Nasons Corner
PORTLAND
Westbrook Junior College
EVERGREEN CEMETERY
St Joseph's Convent
Deering
Lincoln Jr High Sch
Longfellow Sch
Deering High Sch
Rosemont
Highlands
Brighton Corner
Capisic Pond
Bradleys Corner
PORTLAND
Stroudwater
Blueberry Hill
Brookside Memorial Cemetery
Gravel Pit
PORTLAND MUNICIPAL AIRPORT
Libbytown
SOUTH PORTLAND


State Reform School Hist. Dist.
UTM References:
A. 19/394390/4832320
B. 19/394850/4832260
C. 19/394855/4832190
D. 19/394450/4832040
PORTLAND
SOUTH PORTLAND
Westbrook Junior College
EVERGREEN CEMETERY
Sagamore Village
City Hospital
Nasons Corner
Deering
St Josephs Convent
Lincoln Jr High Sch
Baxter Sch
Longfellow Sch
Deering High Sch
Woodfords
Woodfords Corner
Rosemont
Highlands
Brighton Corner
Capisic Pond
Presumpscot Park
Bradleys Corner
Oakdale
Libbytown
Substation
Stroudwater
Willard Sch
Moses
Gress
Blueberry Hill
Thompson Point
Gravel Pit
Mud
Long
Veterans Memorial Bridge
Maine Center
Piling
Gasoline Tank Farm
Graves
Ligonia
Calvary Cemetery
Forest City Cemetery
Cash Corner
Lincoln Sch
Thornton Heights
Golf Course
Crockett Corner
Clark Pond
South Portland Gardens
Red Bank Sch
State School for Boys
Gravel Pit
Brook
Creek
TERMINAL
BRIGHTON
WESTBROOK
CONGRESS
FROST
WOODFORDS
DEERING
FOREST
PINE
OCEAN
BAXTER
WOLCOTT
CAPISIC
STEVENS
BRADLEY
CRAIGIE
FRANCES
BOLTON
DOUGLASS
JOHNSON
WESTERN
GORHAM
ROAD
BROADWAY
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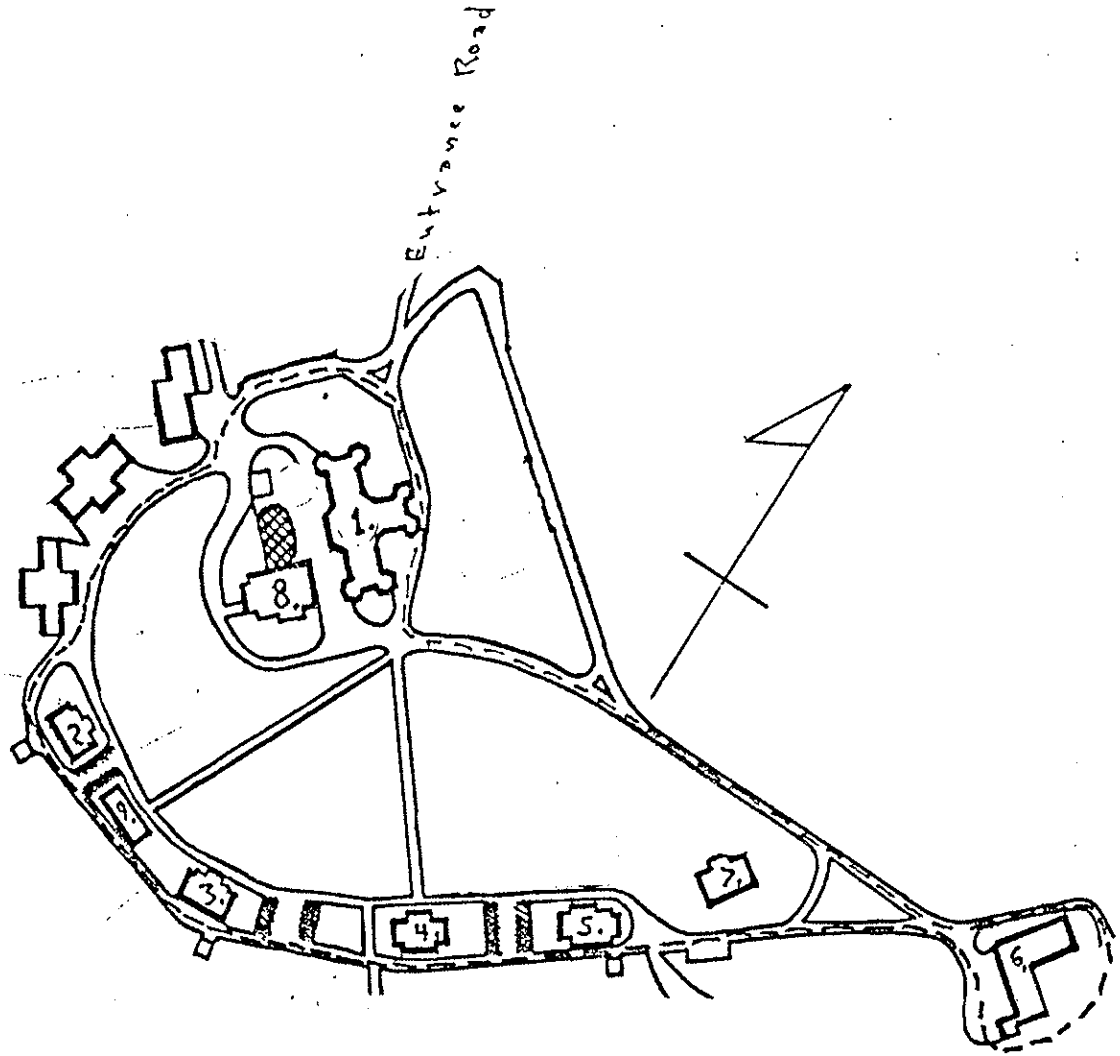

State Reform School Historic District, Portland, Maine

District Boundary- - - - - - - -

Scale: 1:3600 0' 150' 300'

PENOBSCOT INDIAN NATION
BONNIE NEWSOM - ARCHAEOLOGY DEPARTMENT
12 WABANAKI WAY, INDIAN ISLAND, ME 04468
E-MAIL: bnewsom@penobscotnation.org Fax: 207-817-7463

NAME	Michelle Ricci
ADDRESS	U.S. Department of Transportation Federal Aviation Administration 12 New England Executive Park Burlington, MA 01803
OWNER'S NAME	Portland International Jetport
TELEPHONE	(781) 238-7631
FAX	
EMAIL	michelle.ricci@faa.gov
PROJECT NAME	Jetport Improvements
PROJECT SITE	Portland, ME
DATE OF REQUEST	November 19, 2007
DATE REVIEWED	December 17, 2007

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, and subsequent updates.

Also, if Native American cultural materials are encountered during the course of the project, please contact me at (207) 817-7332. Thank you.

BONNIE NEWSOM, THPO
Penobscot Nation

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

FAX Cover Sheet

Date: 12/19/2007 ***Number of Pages:*** (3)

To: Molly Waller
Company: Coffman Associates
FAX #: 816-524-2575
Telephone #:

From: Robin Stancampiano
Title: R & C Coordinator
FAX #: 207/287-2335
Tel. #: 207/287-2132

Notes:

Molly - We recommend that you select a historic preservation consultant who has specific experience on airport projects and assessing visual effects on historic properties. Let me know if you have other questions, Robin

DATE: _____
TIME FAXED: _____ a.m.
_____ p.m.
FAXED BY: _____

PHONE: (207) 287-2132

PRINTED ON RECYCLED PAPER

FAX: (207) 287-2335

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

FAX Cover Sheet

Date: 12/20/2007 ***Number of Pages:*** (3)

To: Molly Waller
Company: Coffman Associates
FAX #: 816-524-2575
Telephone #:

From: Robin Stancampiano
Title: R & C Coordinator
FAX #: 207/287-2335
Tel. #: 207/287-2132

Notes:

Molly - Please see attached guidance from the ACHP on assessing visual & audible effects for the Portland Jetport project.

Hope this helps, Robin

DATE:
TIME FAXED: a.m.
p.m.
FAXED BY:

PHONE: (207) 287-2132

FAX: (207) 287-2335

Stancampiano, Robin

From: Katry Harris [kharris@achp.gov]
Sent: Thursday, December 20, 2007 11:47 AM
To: Stancampiano, Robin
Subject: RE: guidance on assessing visual and audible effects

Our regulations explain that the application of the Criteria of Adverse Effects is dependant on and relative to an understanding of the characteristics which make a historic property or district eligible for or listed on the National Register of Historic Places. So the first step is to be clear about why the historic district is eligible or listed. Then consider whether adding the visibility of the runway or airplanes taking off/landing or the noise of aircraft would diminish those characteristics of the district.

An example of a consultation in progress, is FAA's plans to construct a new runway at the Taos Airport in Taos, NM. There, the Taos Pueblo, an NHL and World Heritage Site, is significant not only for its architecture and its associations with specific events, but also because it illustrates the continuous lifeways of a people since pre-European settlement. Therefore, FAA found that the visibility of these modern flying machines caused by the new runway and associated flight tracks would detract from the essentially pre-historic setting integral to the pueblo as a historic property. There were also concerns about the visual and audible effects disturbing the religious and cultural practices of the pueblo people, but that just reinforced the adverse effect finding.

FAA is also currently considering the potential visual impacts of the proposed redesign of the Philadelphia International Airport. In that more urban, modern setting, I expect that noise will be a bigger issue than visual effects, but they are not yet ready to made an adverse effect finding. In that case, I will be surprised if adverse visual effects are identified. However, it is likely that adverse audible effects will be identified for historic properties that are open to and interpreted for the public. For instance, if you've ever had occasion to be at Arlington Cemetery while planes are landing at Reagan National Airport, you know that its hard to reflect on the significance of unknown soldiers or JFK's flame with a 737 at 1000 feet.

Of course, one of the key words in the Criteria of Adverse Effects is "diminishment". The historic property does not have to sink to the level of ineligibility in order to have an adverse effect. So I expect the consideration of potential visual and audible effects on historic properties will be challenging to FAA and its contractors as well as others consulting parties, including the SHPO. I hope you find these comments helpful. Feel free to contact me or to refer the FAA to me regarding this issue.

Katry Harris
Historic Preservation Specialist
Advisory Council on Historic Preservation
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From: Stancampiano, Robin [mailto:Robin.Stancampiano@maine.gov]
Sent: December 19, 2007 9:29 AM
To: Katry Harris
Subject: guidance on assessing visual and audible effects

Morning Katry-

Does the ACHP have suggestions/guidance on assessing visual impacts, particularly as they relate to airports? We are reviewing an airport improvement project and the runways are proposed to be extended near NR listed

historic districts. We requested that the applicant provide an evaluation of the visual and audible impacts and they are looking for a better definition so they can hire a consultant.

Thank you for your time, Robin

Robin Stancampiano
Architectural Historian
–Review & Compliance/CLG Coordinator
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7/93 (Revised 09/25/07)

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JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

September 30, 2008

Mr. Christopher M. Hugunin
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Project: MHPC # 1961-07 - Environmental Assessment for proposed improvements at Portland International Airport

Town: Portland, ME

Dear Mr. Hugunin:

In response to your recent request, I have reviewed the information received July 25 and August 5, 2008 to continue consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Our staff archaeologists, Dr. Arthur Spiess and Leon Cranmer, have reviewed the Phase II prehistoric archaeological survey report by Dr. Richard Will (TRC), and the historic archaeology "Phase 0 Walkover Survey" by Anthony Booth and Kathleen Wheeler. Both reports are acceptable as written. We concur with the conclusions of the reports that 1) no historic archaeological sites are present in the project area, and 2) prehistoric archaeological sites 8.24 and 8.22 are not eligible for listing in the National Register (not significant).

Regarding historic architectural resources, we have reviewed the "Assessment of Visual Effects - Environmental Assessment for Proposed Improvements at Portland International Airport" prepared by VHB/Vanasse Hangen Brustlin, Inc. dated June 2008. We do not concur with the No Historic Properties Affected conclusion presented in this report. We disagree that the integrity of the State Reform School's setting will not be diminished by the proposed undertaking. Per your letter of July 31, 2008, it is our understanding that a full assessment of noise emissions is currently underway. We are unable to determine a finding of effect for this undertaking until we receive and evaluate the noise assessment. Section 106 consultation with our office is not complete for this undertaking as of this date.

Once the information requested above is received, our office will forward a response regarding the results of our evaluation. Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

cc. Colin Peters, TRC

PHONE: (207) 287-2132

FAX: (207) 287-2335

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November 21, 2008

Mr. Christopher M. Hugunin
Coffman Associates
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Project: MHPC # 1961-07 - Environmental Assessment for proposed improvements at Portland International Airport

Town: Portland, ME

Dear Mr. Hugunin:

In response to your recent request, I have reviewed the information received October 31, 2008 to continue consultation on the above referenced project pursuant to Section 106 of the National Historic Preservation Act, as amended.

Based on the materials submitted, I have concluded that the proposed undertaking will have no adverse effect upon historic properties, as defined by Section 106.

Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

PHONE: (207) 287-2132

FAX: (207) 287-2335

TRC Portland Jetport Phase 0 Walkover Survey
Portland, Cumberland County, Maine
Revised July 15, 2008

by Anthony Booth, M. A.
and Kathleen Wheeler, Ph. D., RPA

Independent Archaeological Consulting, LLC
Portsmouth, New Hampshire

Independent Archaeological Consulting, LLC (IAC) has completed a sensitivity assessment of new developments at the Portland International Jetport in Portland, Maine (Figure 1). On Monday, October 15, 2007, IAC archaeologists performed a walkover survey at the Portland Jetport where future construction and expansion of the existing airport is planned. The archaeologists found no potential Euroamerican archaeological sites within the areas of potential development (APD) that are presently undeveloped. No additional archaeological survey is recommended for the present project. During the walkover survey, IAC archaeologists identified a wharf on the property that is probably associated with the State Reform School. IAC recorded this wharf in the Maine Historical Archaeological Sites Inventory as the Portland Jetport Wharf, ME 402-012.

IAC was contracted by TRC Solutions, Inc., to conduct the historical archaeology phase of this project. Kathleen Wheeler served as Principal Investigator and conducted background research and reviewed areas to be inspected. Anthony Booth and Jacob Tumelaire conducted the walkover survey and contributed to the report. Both Dr. Wheeler and Mr. Booth exceed the qualifications for professional archaeologists set by the Department of the Interior for 36 CFR 61.5 eligibility and are certified Level-2 Historical Archaeologists in Maine.

TRC provided project plans to IAC prior to conducting the October 2007 inspection, with revised plans submitted to IAC in April and June 2008. IAC archaeologists defined four of the five proposed areas of potential development (APDs) as having low archaeological sensitivity because of existing development and disturbances. These non-sensitive APDs are shown on Figure 2 and include terminal area improvements and parking on the north side of Runway 11-29 (#2 on figures), cargo facility and service road improvements at the northeast corner of the runways (#3) and also access road improvements at the east end of Runway 11-29 (#1 and #5). Potentially sensitive APDs are in the southern part of the property near the State Reform School Historic District and include a runway extension and service road improvements (#4).

Booth and Tumelaire inspected two areas at the Jetport in October 2007, but one of these areas has since been dropped from the study. The remaining area (#4) still under consideration for this project relates to improvements at the southern end of Runway 18-36, near the boundary of the State Reform School Historic District (Figures 3 and 4).

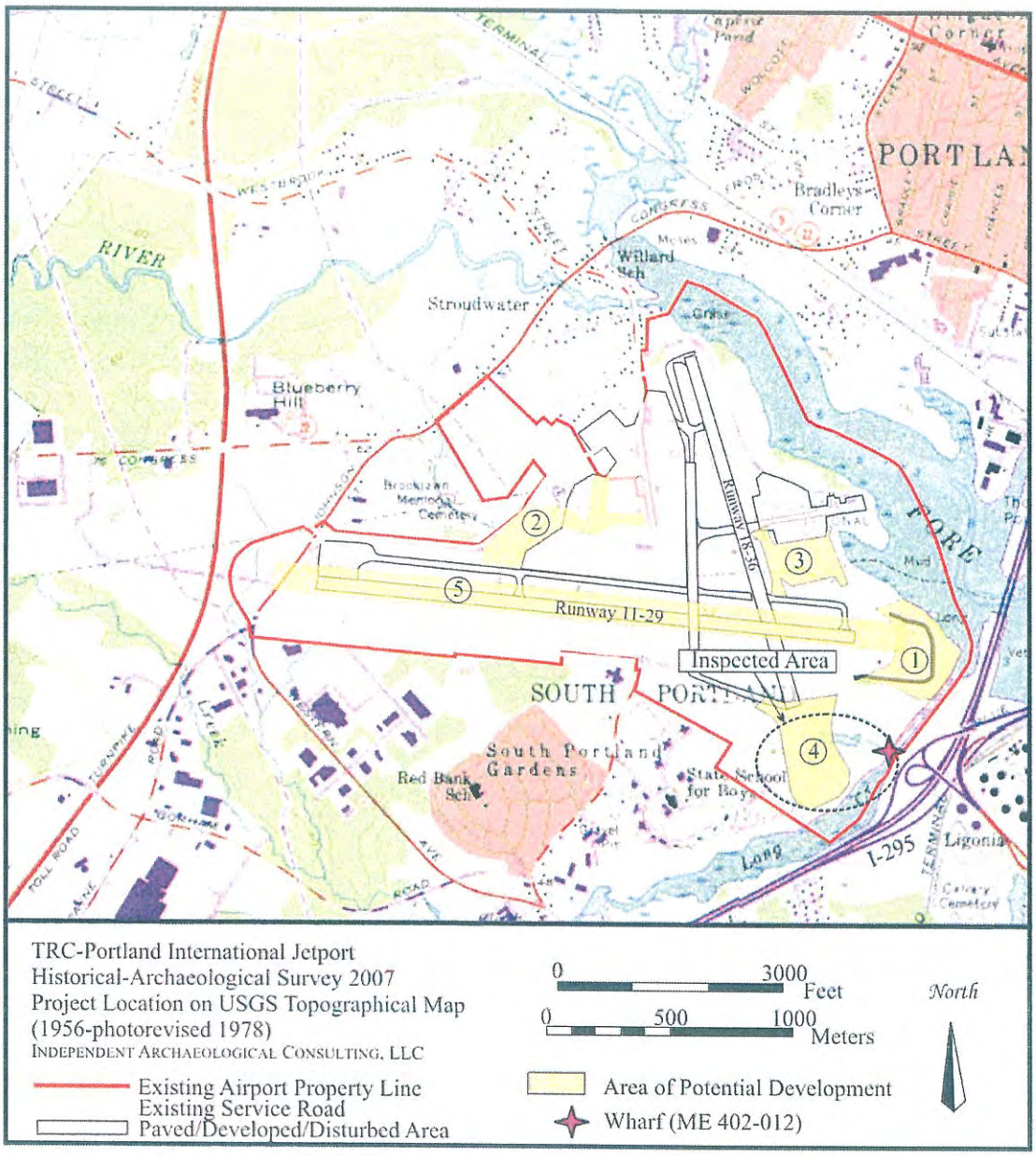

Figure 1. Project location in South Portland, Maine, showing airport, APDs, inspected areas and wharf site ME 357-129.

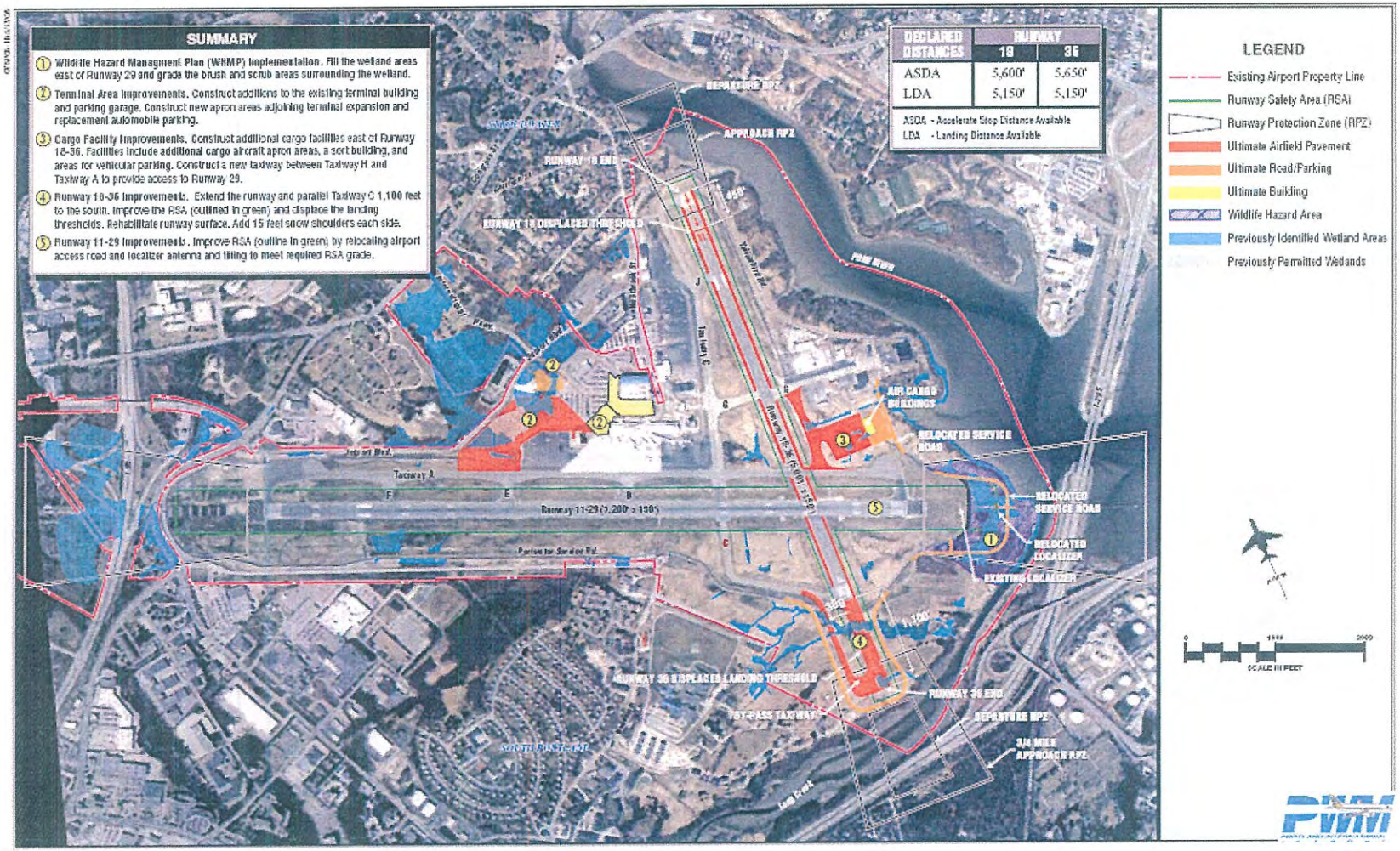

Figure 2. Aerial image of the Portland International Jetport with proposed development.

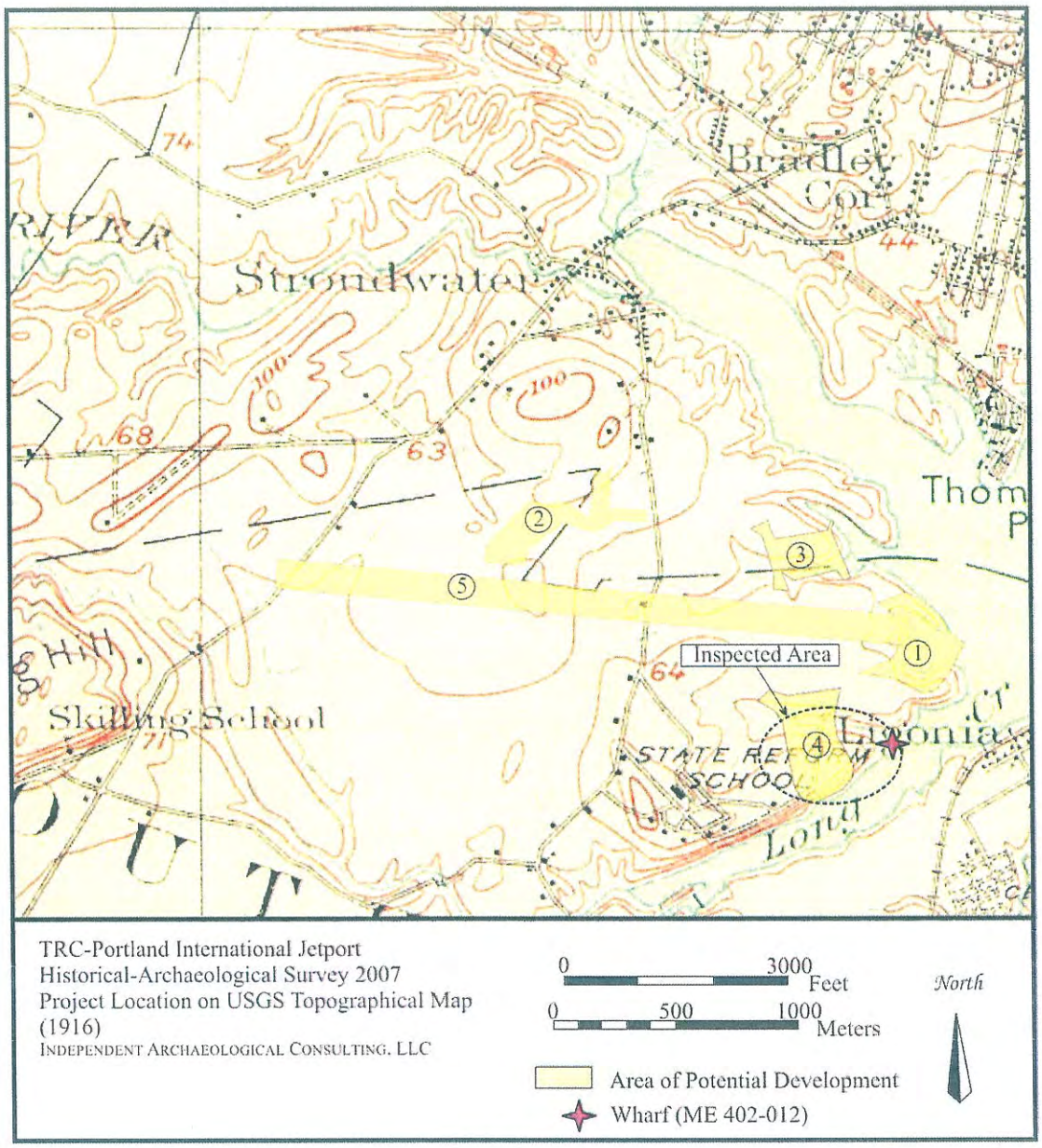

Figure 3. APD locations on 1916 USGS map.

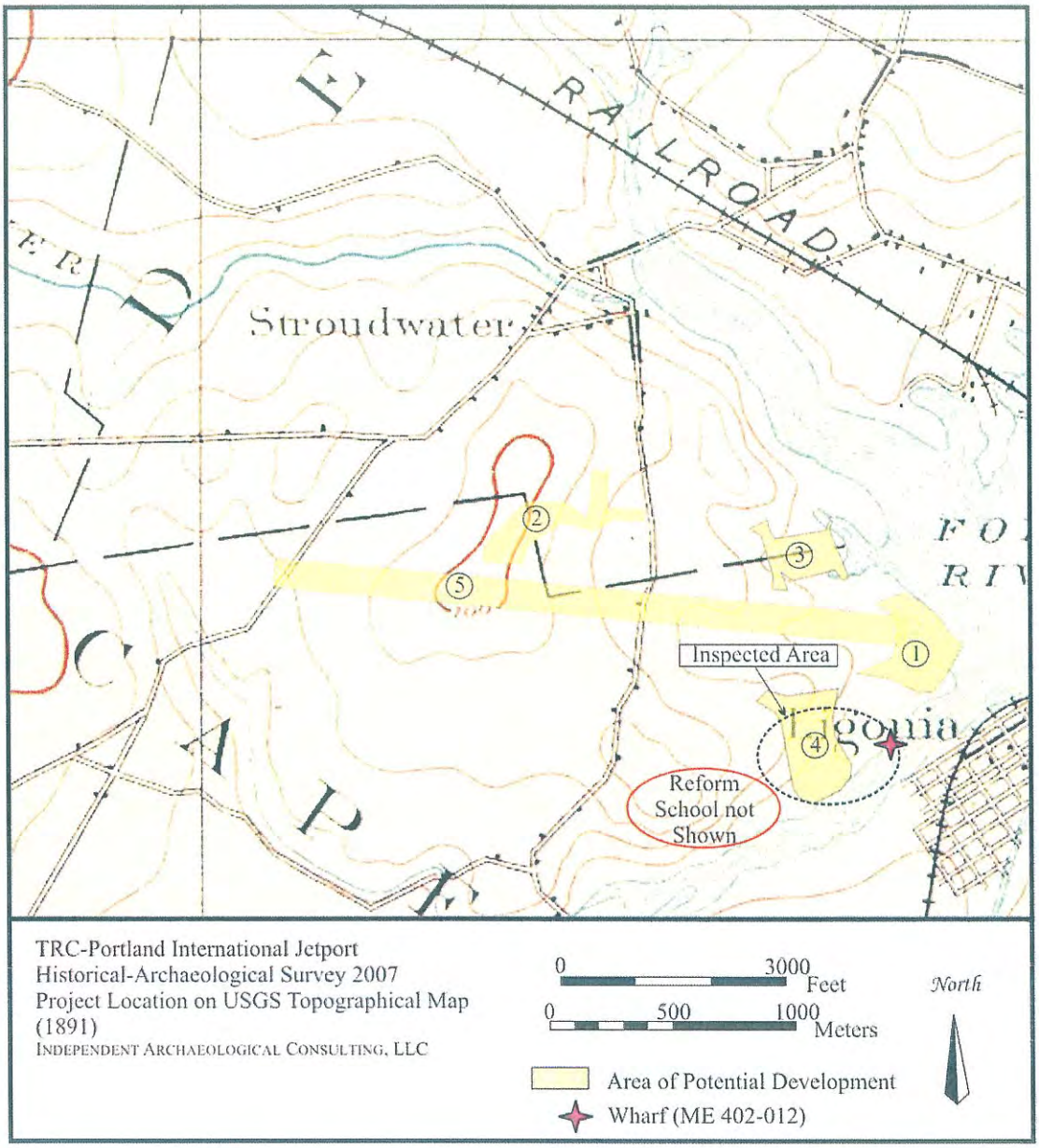

Figure 4. APD locations in 1891 USGS map.
Note that the Reform School was not shown on map, but it was extant by 1891.

Original construction for Runway 29 and subsequent development at the Fore River end has significantly disturbed areas #1 and #5. Construction of Runway 29 began in 1955 and the terrain for this nearly mile-long runway changed in elevation by about 20 vertical feet of cut at the west end (Runway 11) to as much as 30 vertical feet of fill at the east (Runway 29) end. The runway extended into mudflats of the tidal Long Creek by as much as 100 feet. Similar information is also depicted in longitudinal cross sections aligned along the center-line of the runway. By 1956, US Geological Survey aerial views show the project well underway. A comparison of the 1916 USGS map (Figure 3) with the 1978 USGS (Figure 1) portrays the significant difference in the terrain in area #1.

About ten years later, the east of Runway 29 was further modified as a four-lane bridge over the Fore River was planned for 1967. The construction straightened more than a mile of Long Creek, shifting its confluence with the Fore River to at the east end of Runway 29. Here surplus soil was disposed to the west, landward side, at the foot of Runway 29. As a result of this mid-20th century disturbance, Runway 29 (#5) as well as most of the area #1 encompassed by the perimeter service roads at the end of the runway are not sensitive for archaeological resources. Extensive improvements and parking in the terminal and cargo areas (#2 and #3) are considered not sensitive for the same reason.

IAC archaeologists inspected the southernmost APD at the Runway 18-36 extension and access road reroute (#4). The area was considered to be of high sensitivity as it bordered the State Reform School Historic District. The Reform School was added to the National Register in 1985 and includes 200 acres and seven buildings. The school began in 1851 and is still in operation (Oullette 2000).

The reform school involved teaching boys trades as part of the rehabilitation training. Of these, agriculture and brick-making were dominant early on. The southern APD extends into a field that lies directly north of the barn, now a renovated building, and has recently been mowed (Plate 1). This field appears to have been one used by the school in the 19th century. Apparently, the school had a system of waste collection that fed into a reservoir, which was used as manure to fertilize the fields (Oullette 2000:15). The location of this reservoir is unknown to us at this time, but two manholes and an underground sewage or drainage line exist in the southern APD and may relate to that manure collection system (Figure 5: Plate 2). A standing outhouse of mid-20th-century construction is placed over one of the manholes, suggesting the relationship between the drainage line and this human necessity (Plate 3). While the presence of the sewer line is interesting, it does not constitute a significant archaeological resource, and we recommend no additional survey of it.

Brick making was another important aspect of the reform school. It began in 1857 and lasted until 1876. There was a source of clay on the property which also bordered Long Creek providing water transportation. The brick making industry on the property included a kiln house, tool house, wharf and a barge or "gondola" [gundalow?] (Oullette 2000:5, 29). State reports indicate that the brickyard complex was "torn down" in 1878, including the wharf, but IAC believes that a wharf located on the airport property on Long Creek east of the southern APD relates to the Reform School brickyard (see Figure 3).

The Portland Jetport Wharf (ME 402-012) is located on the east side of the airport property adjacent to Long Creek at the mouth of the stream outlet of the dammed pond. It consists of at least a dozen round beams, three piles, some planks and many bricks (Plates 4-7). The bulk of the fill within the timber cribwork is brick, capped with clay and sand. There is also a high amount of brick bats and terra cotta tiles or pipes scattered along the shoreline here, probably eroding from the wharf, or perhaps remnants of the brick making industry on the property.

Plate 1. Overview of field at southern APD, looking northeast.

Plate 2. Manhole cover in field, southern APD looking north.

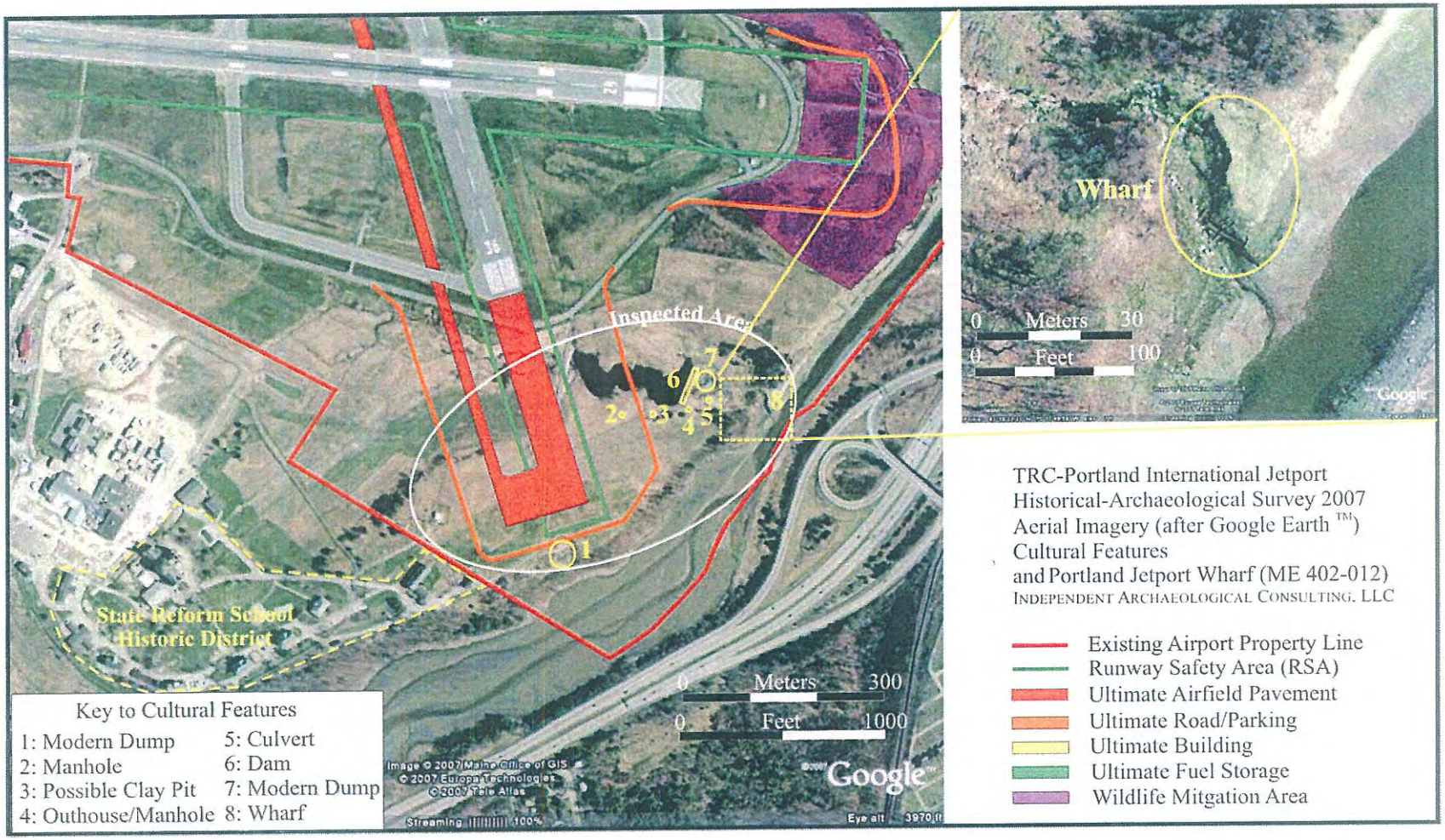

Figure 5. Aerial image of the southern APDs showing locations of cultural features.

Plate 3. Outhouse, looking northeast.

Plate 4. Wharf remains, looking northeast.

Plate 5. Timber, planking, bricks and terra cotta pipe (lower left) looking east.

Plate 6. Interior of cribbing, looking east.

Plate 7. Wharf detail. Note the vertical pile in bottom right and treenails in upper beam.

Additional clues as to the identity of the wharf are in Oullette's report, which cites the school's annual reports. The report for 1878 states that the "last remnants of the brickyard are torn down and the barge or gondola used for transporting the brick by water is sold. The wharf is also torn down" (Oullette 2000:29). The wharf remains that we identified represented a rather intact structure, which runs counter to the 1878 report. However, this report may have been referring to another wharf, or the writer's ideas about what constituted a wharf being "torn down" are not entirely accurate.

We believe that the close proximity of the wharf site to the Reform School and the fact that a field lane connects the two is convincing evidence that the wharf was in fact part of the 1850s-1870s brick making industry of the Reform School. This identity may make the site eligible for inclusion in the State Reform School Historic District. Additional research is necessary to determine this possibility, but in terms of the current airport expansion project, the site is not threatened and additional archaeological work is not recommended. We do recommend that airport officials and construction project managers take the appropriate steps to having this potential cultural resources evaluated prior to any future possible impacts.

IAC noted other features on the property, including a dam and two dumps, but these are not considered to be important archaeological sites. All appear to date to the mid-20th century and it is not clear if they are from airport construction, Reform school renovations, or both. A dump at the boundary of the southern APD contains mostly wooden pallets, a metal bed frame and a television console. A dump east of the dam contains mostly wood and wire snow fencing, wood cable spools, concrete and asphalt. This latter dump most likely relates to airport construction.

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Phase II Prehistoric Archaeological Investigation of the Portland International Jetport Improvements Project, South Portland, Cumberland County, Maine

Submitted to:

Mr. Colin Peters.
TRC
400 Southborough Drive
South Portland, ME 04106

Submitted by:

Dr. Richard Will
TRC
71 Oak Street
Ellsworth, ME 04605

May 21, 2008

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Appendices

Introduction

The Portland International Jetport plans to make improvements to various facilities as shown in Figure 1. In summary, they include runway improvements; cargo facility, terminal area, general aviation, and taxi improvements; access road improvements; and implementation of a plan for monitoring wildlife hazards. Most of these improvements are in areas that are already heavily built (e.g., areas 4 and 5) or in areas that are underlain by thick fill (e.g., at then end of Runway 11). These areas were visited by Dr. Will in 2007; the only area identified as sensitive for Precontact period archaeological resources was located off the end of Runway 36 where access road improvements are planned. This area originally consisted of a 75 acre land parcel that was acquired by the Jetport and surveyed for archaeological resources (Phase I) in 2002 (see Moore and Will 2002).

Three sites were identified on that parcel during the Phase I archaeological survey that were located at the south end of Runway 36 and either near the bank of Long Creek (Site 8.22 and Site 8.23) or adjacent to a small tributary or holding pond (Site 8.24). The Phase I report identified two sites (8.22 and 8.24) (Figure 2) that required additional study (Phase II) to determine whether they were eligible for listing to the National Register of Historic Places (NRHP) (Moore and Will 2002:35). The remainder of this report describes and discusses the Phase II evaluation of these two sites. Fieldwork occurred in July 2007 under favorable weather conditions. Dr. Richard Will, who supervised the Phase I investigation, also supervised the Phase II study.

Landscape Formation and Precontact Cultural Context

A complete discussion of the Late Pleistocene and Early Holocene environment of the project area appears in the Phase I report (Moore and Will 2002:7-9). Similarly, the Precontact cultural context for the project area was described in the Phase I archaeological report (Moore and Will 2002:3-6).

Importantly, probable till deposits were located in the western part of the project; however, most of the project area where the archaeological sites are located, occur on Presumpscot Formation silty sediments (see Bloom 1960; Thompson and Borns 1985). These deposits were laid down during retreat of the Laurentide Ice Sheet and marine incursion approximately 13,000 years ago (see Kelley et al. 1992).

Precontact archaeological sites had not been previously identified within the project area until the Phase I survey was completed. The most common type of archaeological site in the coastal region, including the two that were found during the Phase I survey, is a shell midden. This type of site is found all along the Maine coast. Shell middens contain discarded shells of clams, oysters, mussels and quahogs; food bone remains of terrestrial and marine animals, and discarded artifacts.

Sometimes, they contain house floors or living surfaces, and even human burials. Most of the shell midden sites in Maine date to the Ceramic period (ca, 3000-500 years ago). Casco Bay is well known for the numerous Ceramic period shell midden sites that have been found on the mainland coast as well as on offshore islands (Hamilton 1991; Yesner 1980)

Previous Phase I Archaeological Investigations

Archaeological Research Consultants, Inc. of Ellsworth, Maine conducted a Phase I archaeological study of the 75-acre land acquisition and development project at the Portland International Jetport, Portland Maine in 2002 (Moore and Will 2002). The work was undertaken for Coffman Associates, Kansas City, MO. Five areas were tested; all of them were located at the south end of the airport terminal off Runway 36. Two Precontact period sites were discovered that were recommended for Phase II evaluation for eligibility for listing to the NRHP. Mr. Earle G. Shettleworth, Jr., Maine State Historic Preservation Officer, concurred with this recommendation on December 23, 2002 (letter from Mr. Shettleworth to Mr. Steven Benson, Coffman Associates).

Review of the Phase I archaeological investigation of each Precontact period site is presented here.

Site 8.22. This site is located on a high terrace overlooking Long Creek beyond the south end of Runway 36 (Moore and Will 2002:23-26) (Figure 2). The UTM coordinates for the site are 19/E395359/N4832289. The site was discovered in a grassy field in test Area 2 (transects 2-6). The area consisted of the terrace edge of Long Creek. The landform dropped sharply, approximately 20 m, down to the creek. The break in slope was vegetated with mature oak and minor amounts of maple, birch, and beech. The southern end of the area was overgrown with sumac and was apparently used as a dumping area in the past by the Maine State School for Boys (Moore and will 2002:23). The area was level away from the terrace and thickly overgrown with weeds and high grass.

A thick Ap soil horizon covered the site area to an average depth of 20-25 cm bs. It was dark brown in color, and was underlain by pale yellow to olive brown B soil horizon. In some cases, mixed soil horizons were found to a depth of 90 cm bs in test area 2.

Precontact period artifacts were recovered from 16 testholes along the bank and about 40 m into the backshore on a small knoll. The site consisted of a thin, diffuse shell midden. Recovered artifacts included Late Ceramic period pottery sherds and quartz and chert lithic debitage. Faunal remains included unburned fish, bird, and mammal bone fragments. The area has been previously plowed and portions of the site were disturbed and mixed with glass, metal, and coal slag. Shell was also exposed at the surface. The bone remains may have been historic in age due to their association with historic items.

Site 8.24. This site was located in the north end of test area 4, south of Runway 36. It sits on the north side of a holding pond (created by damming a small tributary to Long Creek) on an elevated landform that is approximately 3 to 4.5 m above the pond. The UTM coordinates for the site are 19/E395125/N4832530.

The landform sloped gently to the pond and with the exception of s few small shrubs and tree saplings, was covered with thick weeds and tall grass. One transect of 12 testholes was place in this area, which was dissected by a small gully (Moore and Will 2002:33). Like test area 2, a thick Ap soil horizon was present to 20-25 cm bs in test area 4. It abruptly transitioned into a light-brown to olive brown B soil horizon. The B soil horizon became more compact and turned to a gray color with depth.

Artifacts recovered from the site included Late Ceramic period (ca 950-450 years BP) pottery sherds (N=2). One of the sherds was shell tempered and fabric impressed. Faunal material included clam shell (*Mya arenaria*) fragments and an unburned large mammal bone fragment (probably a cow long bone fragment). Historic artifacts consisting of nails, metal, and glass, were also found in the area.

Phase II Methods and National Register Eligibility Assessment

The purpose of the 2007 Phase II investigation of the two Precontact period sites was to determine whether either of them was potentially eligible for listing to the NRHP. Field methods involved identifying site boundaries with 50 cm^2 testholes and excavating 1 m^2 test units to collect materials for analyzing and documenting significance. Both testholes and test units were excavated to culturally-sterile subsoil using methods approved by the Maine Historic Preservation Commission for Phase II archaeological investigations. All testholes and test units were documented on standardized recording forms, which appear in Appendix I. All cultural materials recovered were bagged with an appropriate provenience label and brought to the TRC office in Ellsworth, Maine for further study. Laboratory procedures involved artifact cleaning and production of a catalog of all the cultural materials recovered (Appendix II). Laboratory analyses were contingent on the types of cultural remains recovered and their significance to understanding the nature of site occupation and cultural preferences of the inhabitants.

Site Size determination. Site size was determined by excavating testholes at regular intervals (5 and 10 meter intervals) until the site boundaries are reached. There are certain contexts that aided to reduce the number of testholes excavated to find boundaries. One of them is natural. For example, the edge of the Long Creek forms the eastern boundary of site 8.22.

Site Significance. The ultimate objective of the Phase II investigation was to determine whether either site 8.24 or 8.22 was significant when evaluated against Criterion D in the NRHP. Criterion D states that an archaeological site must "have yielded, or may be likely to yield, information important in prehistory or history" (http://www.cr.nps.gov/nr/publications/bulletins/arch/pt4.htm). This evaluation can be performed in either a local, state, or national context.

One of the first considerations for the application of Criterion D to an archaeological site is to determine whether the site has integrity. In other words, whether the context in which artifacts are recovered has a strong correlation with the one in which the cultural materials were initially deposited The actual artifacts only tell a small part of the story of the past. Consequently, archaeological deposits that have been severely disturbed, either by natural or cultural processes, have less integrity (and consequently potentially much less importance) than those that have not been disturbed. Evaluating site integrity is a necessary first step in establishing site significance. It can only be accomplished by understanding site stratigraphy and site formation processes (the events that have transpired to alter the archaeological deposits during the time interval between when the original inhabitants left the site and an archaeologist begins investigation of it). Careful fieldwork and clear understanding of site stratigraphy are required to interpret integrity.

Archaeological analyses are undertaken on materials recovered to support cultural contexts. In this circumstance, except for the discovery of green bones (a cow and a pig burial) at the southern end of site 8.22 (see Figure 3), only lithic and ceramic analyses were conducted. These were completed in relation to establishing the sites' chronology, cultural affiliation, and its significance. The criteria used in Maine to establish NRHP eligibility are summarized in Table 1 and they are organized by cultural period. The data for this summary table were extracted and summarized from the many Precontact period cultural context documents prepared by Dr. Arthur Spiess of the MHPC (e.g., Spiess 1991; Wilson and Spiess 1990). Research significance themes that provide guidance on the types of analyses to complete, depending on the kinds of archaeological materials that are recovered, are presented in Table 2. The table offers a concise summary of information that is presented in the Maine State Plan for Prehistoric Archaeology (Spiess 1990) and they were used in this Phase II investigation to guide laboratory efforts.

Table 1. Summary Table of NRHP Eligibility Criteria

CONTEXT (Cultural period)	**NRHP Eligibility Criteria**
Fluted Point Paleoindian Tradition	1. At least one diagnostic Paleoindian artifact or a suite of diagnostic lithic materials must be present (i.e. an assemblage of high quality lithic materials not utilized by later inhabitants); AND 2. there must be evidence that the site was utilized either for habitation or one or more "specialized" activities (i.e., not just a "find spot"). 3. The site need not display primary context, BUT if artifacts from more recent Contexts are present, they should be easily segregated from the Paleoindian component. 4. The presence of features, caches, post molds, floral and/or faunal remains, charcoal, and spatial separation of artifacts meaningful to the reconstruction of behavioral patterns are not necessary, but will enhance site eligibility.
Late Paleoindian Period	1. Same Criteria as the Fluted Point Tradition except for presence of diagnostic lithic materials (i.e., there are none).
Early and Middle Archaic Period	1. A site must contain at least one component containing stone tools, debitage, features, floral subsistence, and/or faunal remains that can be confidently identified as Early AND/OR Middle Archaic. Because the Gulf of Maine Archaic minimized use of stone bifaces, component identification may also be based upon other diagnostic material culture (which include ground stone or quartz uniface tool types AND/OR a suite of lithic raw material as evidenced by debitage), AND a chronological date based upon association with a radiocarbon dated feature or a relative date on a stratum in a sealed alluvial context. 2. The Context must be separable from other components on the basis of horizontal patterning or vertical stratigraphy.
Laurentian Tradition or Small-Stemmed Point or Moorehead Phase	1. The site must have a separable component (vertical and/or horizontally) from material of other cultures; AND 2. diagnostic artifacts must be associated with one or more of the following: a) features, b) calcined or non-calcined faunal remains, c) charred plants remains, and/or d) human remains.
Susquehanna Tradition	1. Same Criteria as the Laurentian Tradition

Table 1. Summary Table of NRHP Eligibility Criteria, Continued

CONTEXT (Cultural period)	NRHP Eligibility Criteria
Ceramic Period	1. A site must contain at least one Ceramic period component that must be separable by horizontal distribution or vertical stratigraphy, OR some combination of the above AND typological OR raw material analysis; AND 2. the component must contain ceramics, lithic AND/OR bone artifacts that are diagnostic to some subdivision of the Ceramic Period (either one OR several CP1-7 units or Early/Middle/Late division as commonly understood); AND 3. the component must at least in part remain in intact context OR site matrix, mostly undisturbed by manmade or natural forces such that there is a close association between diagnostic elements of material culture AND one of the following: a) one or more features, such as a hearth or a living floor, b) a fossil soil surface, and/or 3) a refuse deposit; AND 4. the component must also contain one OR more in addition to stone tools: radiocarbon dateable charcoal, charred plant remains, faunal remains, human remains, AND/OR mortuary goods or personal adornment.
Early Contact Period	1. A site must contain a datable component that can be demonstrated by the presence of certain European manufactured goods AND/OR Native American "remanufactured" items from European materials; AND 2. some or the entire component must be separable (horizontally or vertically) from preceding or later admixture. 3. Note: The presence of features house or village plans, floral and/or faunal materials, and ability to associate site with an ethnohistoric text are not necessary, but will enhance site eligibility.

Note 1: This is a summary table only. The language contained in the text version of the eligibility criteria is controlling. Note 2: Any site that can make an extraordinary contribution to any Research Significance Theme for any of the following contexts identified below is eligible for listing in the NRHP.

Table 2. Archaeological Research Significance Themes.

Research Theme	Description
1. Cultural History	Elucidating archaeological cultural chronologies and tracing ethnohistory and ancestry of Native American groups
2. Settlement Patterns	Studying distribution of sites across state, in relation to specific land forms, and with respect to intrasite patterning
3. Subsistence Patterns	Studying faunal and floral remains for interpreting intrasite and intersite variation in food acquisition and use

Table 2. Archaeological Research Significance Themes, Continued

Research Theme	Description
4. Mortuary Practices	Studying burial remains including single graves and cemeteries to develop interpretations of various aspects of social organization and religious beliefs
5. Transportation, Travel, Trade, and Commerce	Investigating quarrying activities and movement of lithic materials and other goods across the landscape. It also includes studying the scale of regional cultural contacts that occurred among people and the identification of reasons for such contacts
6. Social and Political Organization	Examining sites or groups of sites to investigate sociopolitical organization, especially of groups organized into units larger than the band
7. Laboratory and Field Techniques	Investigating sites where the situation allows for the application of field and laboratory techniques not currently used or the testing of new techniques
8. Anthropological Archaeology	Investigating anthropological issues that are associated with the study of "New Archaeology"
9. Human Biology	Studying human skeletal remains for the purpose of learning about demographics, general health, disease, and diet of prehistoric people
10. Environmental Studies	Covering topics directly related to understanding the paleoenvironmental contexts of sites that have significance in relation to other themes
11. Non-Mortuary Practices	Including the study of special purpose sites such as petroglyphs that can contribute to understanding non - material aspects of past cultures
12. Cultural Boundaries	Studying sites that contribute information on location and changes in location of cultural boundaries through time and across state

Source: Spiess (1990: 121-26).

Phase II Investigation of Site 8.22

Fieldwork at site 8.22 was completed between July 11 and July 16, 2007. A total of 22.0 m^2 was excavated that included 72 testholes and 4 test units (see Figure 3). The testing occurred in two areas that had previously been identified during Phase I.

The stratigraphy, as documented in testholes and test unit records that appear in Appendix Ia, was the same as that reported in the Phase I report as well. A thick plow zone was underlain by either B or BC soil horizons to the maximum depth of testing (see Plate 1). The minimum depth at which

excavation was terminated was 24 cm bs and the maximum depth was 70 cm bs. The average depth of testing was 47 cm bs. Table 3 shows the vertical distribution of artifacts recovered from the site. Although 50 percent of them were recovered from arbitrary levels 2 and 3, another 48 percent of them were roughly equally recovered from deeper levels, which confirmed field conclusions that the area is heavily disturbed by plowing. In addition, a cow and a pig burial were discovered at the southern end of the site in test unit N108/E111. The burials were recorded but not removed (see Plate 1).

Precontact Period Artifacts. Sixty-six artifacts were recovered of which 77% are lithic (n=51) and 23% are ceramic (n=15). An artifact catalog appears in Appendix II.

Biface. A single broken and weathered felsite biface was recovered from test unit N126/EI24. Its dimensions are 47.4 cm long, 37.7 cm wide, and 10.4 cm thick. The outline morphology and flaking technology suggest that it is a Late Archaic period (Susquehanna tradition) specimen.

Debitage. Fifty pieces of debitage were recovered. 31 pieces are sandstone, 11 are quartz, 4 are felsite, 3 are chert, and 1 is slate.

Ceramics. Fifteen fragments of aboriginal ceramics were recovered. The ceramic sherds are very small. Most of them belonged to thinned-walled vessels that were shell-tempered suggesting a Middle to Late Ceramic period attribution (CP 5-6). Most exterior surfaces are heavily abraded and decoration is difficult to discern.

Table 3. Vertical Distribution of Artifacts

Level	Biface	Debitage	Ceramics	Totals	%
1		1		1	2
2	1	11	5	17	26
3		13	3	16	24
3-4		8		8	12
3-5		4	6	10	15
4		8	1	9	14
5		5		5	7
Totals	1	50	15	66	100

Summary. A thick plow zone was encountered in all units excavated at Site 8.22. The spatial distribution of materials observed at the site indicates that the shell midden was small and subsequent to deposition had been significantly impacted by tilling in the historic period. While shell is found sporadically in most testholes near the front of the terrace margin, the densest concentration

of shell fragments is limited to an area that is only roughly 20 m x 10 m in the central portion of the area tested (Figure 3). The entire site area approximately measures 25 m x 25 m.

A single flake was recovered during Phase I from the point of a terrace segment located 30 m southeast of the shell concentration. This hole was bracketed unsuccessfully with three additional testholes in 2002. In 2007, an additional four testholes were placed at cardinal points from the original testhole at a distance of 2 m. Two additional lithic flakes were collected from two holes. The remainder of the southeast segment was extensively tested with negative results. These three flakes are likely related to the broad scatter of artifact remains and do not represent a unique activity area or loci. The presence of a Late Archaic period biface fragment and Late Ceramic period ceramic sherds with no stratigraphic separation makes delineation of these two cultural components impossible.

Historic use of the terrace surface was also in evidence, both in the form of historic materials observed in testholes (typical glass, brick, metal), and in the form of surface and subsurface disturbances to the terrace landform and sediments. A large sumac thicket at the northern side of the site conceals a probable historic debris dump, and two of the 50 cm shovel testholes unearthed the skeletal remains of farm animals that had been buried near the edge of the terrace. One bull/steer skull was uncovered at a depth of approximately 50 cm below surface and the skeletal remains of a pig (tentative ID) were discovered about 2 m away. Wall profiles reveal that shallow pits or trenches were dug to facilitate burial of these animals.

The integrity of site 8.22 has been severely compromised by Euroamerican activities. In addition, the site does not meet any of the NRHP eligibility criteria identified in Table 1, nor are there any research themes identified in Table 2 that could be addressed with the data collected from this site during two phases of archaeological investigation.

Phase II Investigation of Site 8.24

Site 8.24 site sits on the northern side of the small impoundment/holding pond just south of the Jetport fence (see Figures 2 and 4 and Plate 2). During Phase I survey in 2002, two aboriginal ceramic sherds, clam shells, and an unburned bone were collected from shovel testholes suggesting that the area may have been occupied by people starting in the Late Precontact period. In addition to these Precontact materials, a quantity of historic (Euroamerican) material was also recovered from the site suggesting recent use of the area. All materials were collected from the uppermost 30 cm bs in a zone impacted by plowing.

During the Phase II survey in 2007, an additional 42 50 cm^2 testholes (10.5 m^2 total) were excavated in an attempt to determine the boundaries of the Precontact materials and any

concentrations that could indicate intensively utilized areas on the site. All Phase II testholes were excavated on a metric grid that was extended over the entire area that had been earlier tested: the grid location was recorded using GPS for eventual integration into a project GIS or spatial database.

Interestingly, no Precontact period artifacts were collected from Site 8.24 during the present survey. Soft shell clamshells were diffusely scattered over the area. As previously reported (Moore and Will 2002), historic debris was present in the site area that included an assortment of glass, brick, and metal that is scattered over much of the area tested. A likely dump was encountered on the west side of the site near the abandoned road that extends north/south across the property. This is likely a demolition debris dump as a large amount of brick, coal, cement, nails, window glass and other assorted building materials were found densely packed in a localized area. These materials were documented and described on testhole records, but were not collected.

Due to the absence of Precontact cultural evidence in any of the testholes, no 1 m^2 test units were excavated.

Summary. No additional Precontact period artifacts were discovered during Phase II investigation of site 8.24. This area is extensively disturbed as evidenced by a well developed plow zone and wide-spread historic debris. One possibility to account for the absence of additional Precontact period artifacts may be that those discovered during Phase I survey in 2002 were mechanically transported from site 8.22 either by plowing or some other earth-disturbing activity. This site lacks integrity and is not eligible for listing in the NRHP.

General Conclusions

No further archaeological investigations are recommended for sites 8.22 and 8.24. Over 10 m^2 of excavation at site 8.24 failed to recover Precontact period materials verifying that those discovered in 2002 during the Phase I investigations. In all 22 m^2 was sampled at site 8.22. While Precontact cultural resources were recovered, they are diffusely scattered over a broad area and they maintain no stratigraphic integrity. All materials were collected from the plow zone and are variably mixed with building and agricultural debris. Neither Precontact period site appears eligible for listing in the NRHP and no further archaeological study of these deposits is recommended. Revised Maine Archaeological Site Survey forms appear in Appendix III.

References Cited

Bloom, A. L.

1960 **Late Pleistocene Changes in Sea Level in Southwestern Maine**. Maine Geological Survey, Department of Conservation, Augusta, p. 143.

Hamilton, N.

1991 Final Report for Northeast Casco Bay and Casco Bay Intensive Site Survey: 1988 and 1989. Report on file with the Maine Historic Preservation Commission, Augusta.

Kelley, J. T., S. M. Dickson, D. F. Belknap, and R. Stuckenrath, Jr.

1992 Sea Level Change and Late Quaternary Sediment Accumulation on the Southern Maine Inner Continental Shelf. **Society of Economic Palcontologist and Mineralogist** 48:23-34.

Moore, E. and R. Will

2002 Phase I Archaeological Survey of the Portland International Jetport Project, South Portland, Cumberland County, Maine. Report on file with the Maine Historic Preservation Commission, Augusta.

Spiess, A. E.

1990 Maine's Unwritten Past: State Plan for Prehistoric Archaeology. (2nd Draft) Report on file with the Maine Historic Preservation Commission, Augusta.

1991 The Ceramic Period Context. Report on file with the Maine Historic Preservation Commission, Augusta.

Thompson, W. B., and H. W. Borns, Jr. (eds.)

1985 Surficial Geologic Map of Maine. **Maine Geological Survey**, Department of Conservation, Augusta.

Wilson, D. R. and A.E. Spiess

1990 Study Unit I: Fluted Point Paleoindian. Maine Archaeological Society Bulletin 30(1):15-31.

Yesner, D. R.

1980 Archaeology of Casco Bay: A Preliminary Report. Report on file with the Maine Historic Preservation Commission, Augusta.

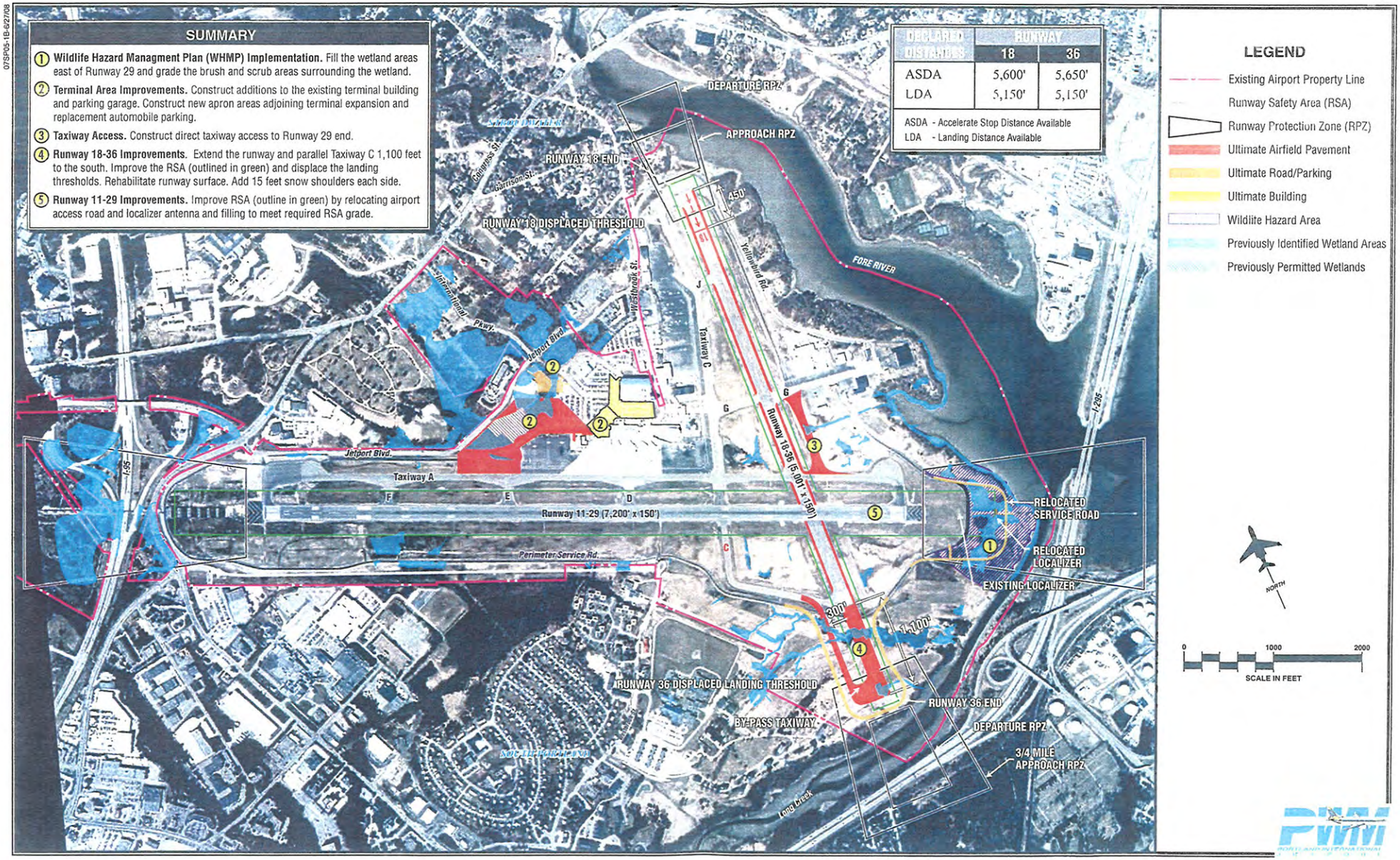
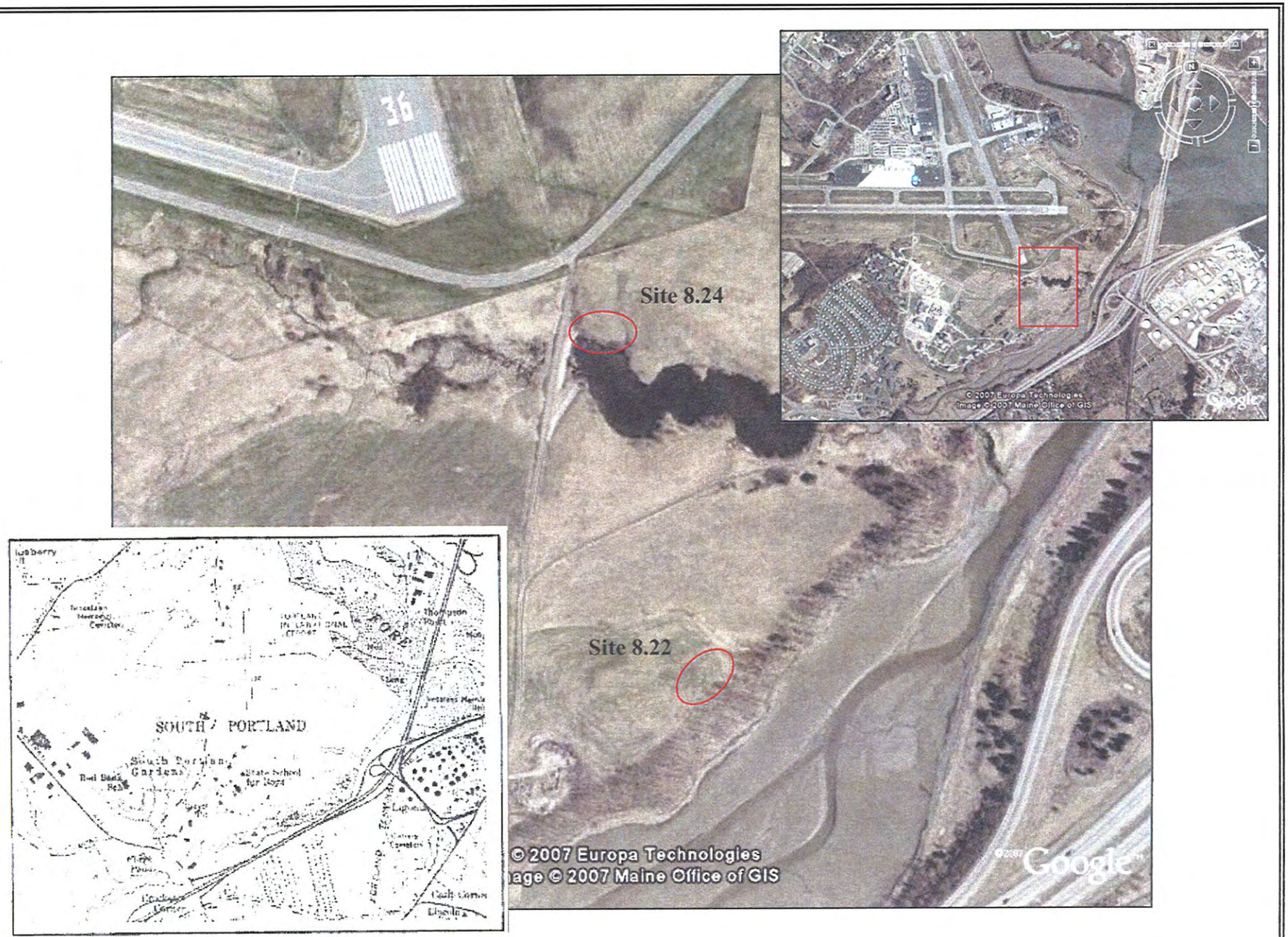


Exhibit 1B
PROPOSED AIRPORT DEVELOPMENT

Figure 1. Aerial image of Portland International Jetport with proposed development.



USGS 7.5 minute series, Portland West quadrangle

TRC
71 Oak Street
Ellsworth, Maine 04605
207-667-4055

Portland Jetport Expansion Project

Figure 2. Aerial orthophotograph showing location of archaeological sites investigated. *Source: Google Earth*

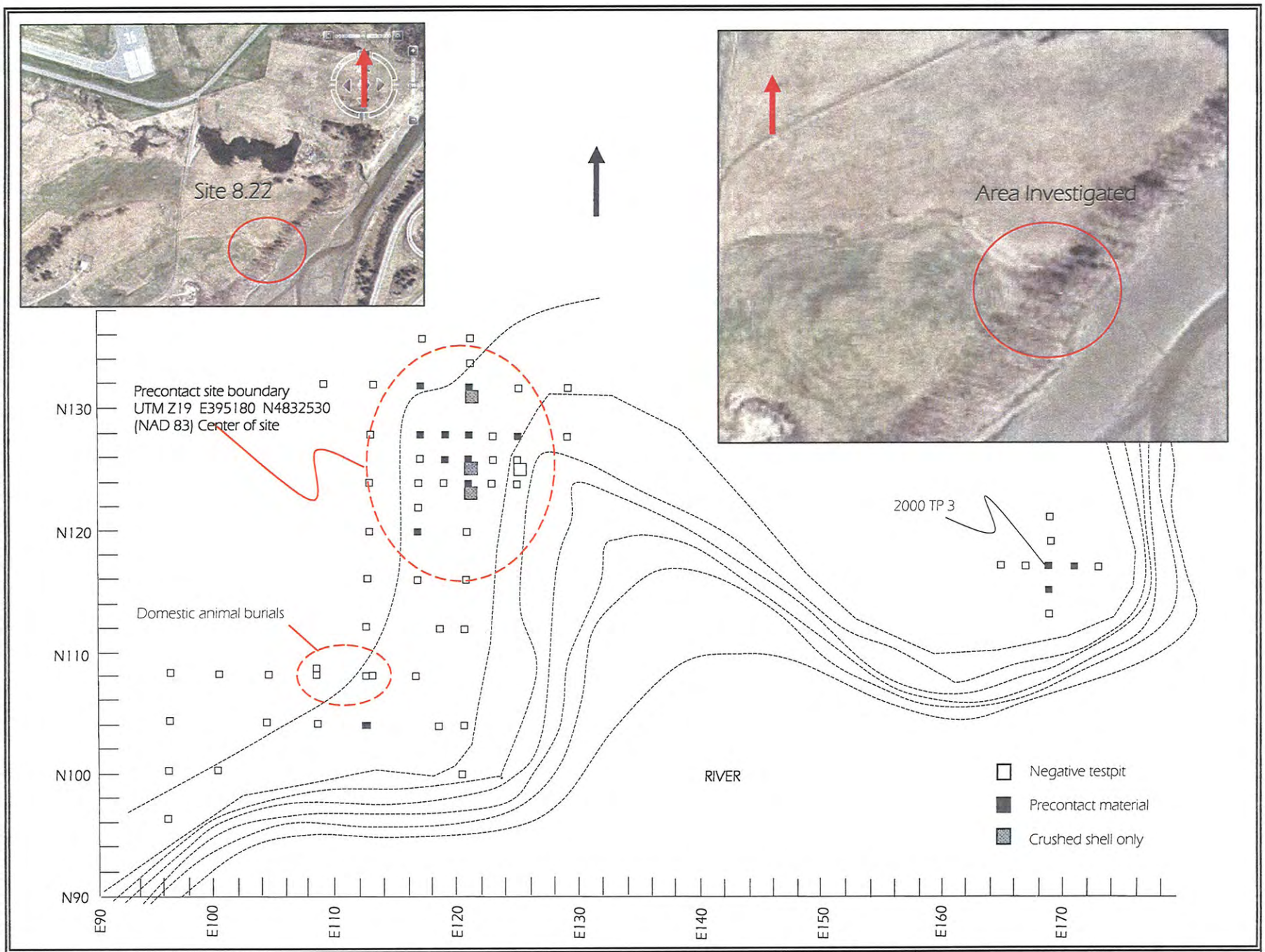


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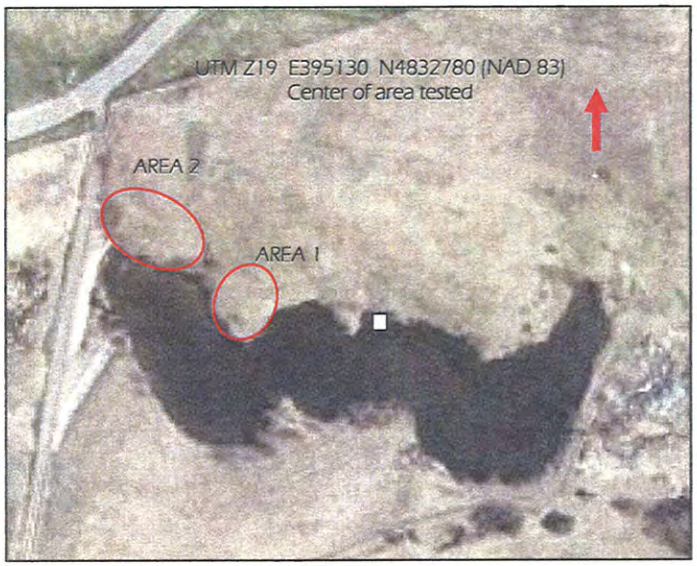
Figure 3. Location of Phase II archaeological testholes and test units excavated at Site 8.22.



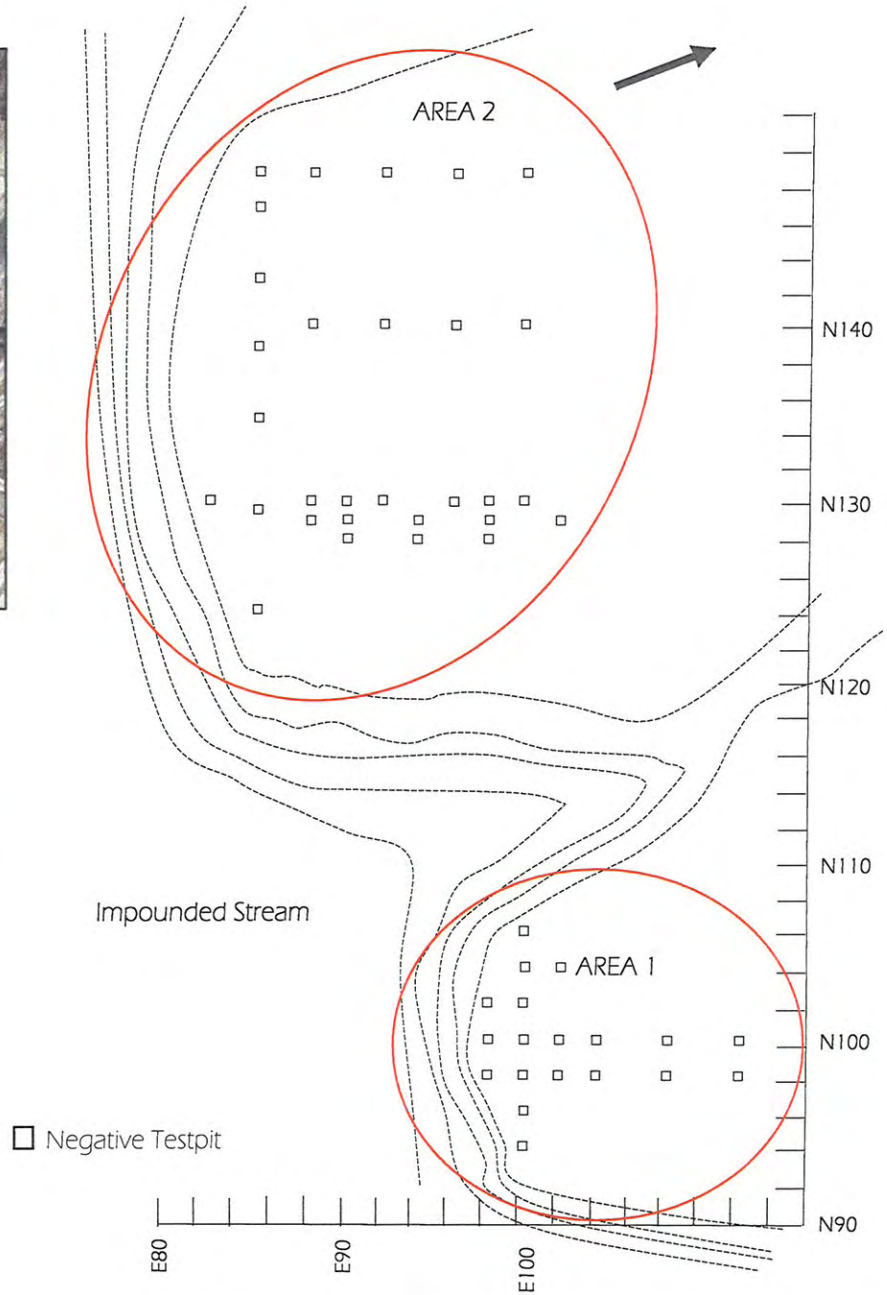


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Figure 4. Location of Phase II archaeological testpits excavated at Site 8.24.

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Assessment of Visual Effects – Environmental Assessmentof Proposed Improvements at Portland International Jetport

Portland and South Portland, Maine

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June 2008

Assessment of Visual Effects

Introduction

This report documents the results of a visual effects assessment conducted in the Area of Potential Effects (APE) for the Proposed Improvements at the Portland International Jetport (the project) in the following municipalities: the City of Portland, Maine and the City of South Portland, Maine (Figure 1). An Environmental Assessment (EA) is being prepared pursuant to the requirements of Section 102(2) of the National Environmental Policy Act (NEPA) of 1969 and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E, Environmental Impacts: Policies and Procedures and FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. The FAA will act as the lead agency for the project. The FAA has determined that the proposed project is an undertaking as defined by Section 106 of the National Historic Preservation Act (36 CFR 800, as amended) and that this undertaking has the potential to affect historic properties.

The Portland International Jetport is owned and operated by the City of Portland (the City). The Airport is bounded to the east by the Fore River, to the south by I-295, on the west by I-95, and on the north by Stroudwater Village. The area including and surrounding the Airport is generally level and can be characterized as highly developed with commercial, transportation, industrial, and residential uses. The Airport has been incrementally expanded and improved since its acquisition by the City of Portland in 1936, when it was re-named the Portland Municipal Jetport. The airfield was originally used as Stroudwater resident Dr. Clifford Strange's private flying field beginning in the late 1920s.

The purpose of this Section 106 Determination of Effect report is to assess the project's visual effects to two National Register-listed historic districts within the Area of Potential Effects (APE) for the project. These districts are the Stroudwater Historic District in Portland, which lies directly north of the eastern end of the airport, and the State Reform School/Brick Hill Historic District in South Portland which is south and west of the airport. Coffman Associates, which is preparing the Environmental Assessment for the City of Portland, solicited comments on the project from a number of agencies in October

2007. In response, the Maine Historic Preservation Commission (MHPC) noted the presence of the two National Register-listed historic districts in the vicinity of the airport and requested a full evaluation of the audible and visual impacts of the proposed projects on these historic districts (Figure 2).[1] The MHPC also requested archaeological survey of three previously identified archaeological sites at the southern end of Runway 18-36; this survey and any other associated archaeological investigations, as well as the assessment of audible impacts to the historic districts, are being conducted by others. This report will assist the FAA in their consultation with the Maine Historic Preservation Commission (MHPC) regarding the possible visual effects to the National Register-listed State Reform School/Brick Hill Historic District and Stroudwater Historic District resulting from the proposed project.

Description of Undertaking

The proposed improvements at Portland International Jetport are identified within the Airport's five-year Capital Improvement Plan (CIP) and Wildlife Hazard Management Plan (WHMP). These projects, which are listed and then described in more detail below, were evaluated through recently completed planning processes.[2]

- Implementation of Wildlife Hazard Management Plan Recommendations
- Terminal Area Improvements
- Cargo Facility Improvements
- Runway 18-36 Improvements
- Runway 11-29 Improvements
- Improvements to On-Airport Access Roads

Implementation of Wildlife Hazard Management Plan Recommendations

Pursuant to Title 14 of the Code of Federal Regulations (CFR) Part 139.337(e.1), the Jetport recently developed a Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture Wildlife Hazard Group. The plan was finalized in April 2007. Within the plan it is recommended that the wetland that exists on the approach end of Runway 29 be filled and the brush and scrub which exists near this wetland be cleared and graded. The filled wetland would be covered with grass that would be mowed in the future. The environmental impacts of the implementation of this recommendation are being evaluated within this EA.

According to the WHMP, this wetland area contains cattails and other vegetation which attracts large flocks of blackbirds and European starlings. Starling and blackbird roosts located near airports pose an aircraft safety hazard because of the potential for birds to be

[1] Earle G. Shettleworth, Jr., State Historic Preservation Officer, Maine Historic Preservation Commission, letter to Ms. Molly Waller, Coffman Associates, November 19, 2007

[2] Project Description, Portland international Jetport Environmental Assessment, document attached to letter from Ms. Molly Waller, October 31, 2007

ingested into jet engines, resulting in aircraft damage or loss and, at times, human injuries. The location of the wetland and brush/scrub area is depicted with purple hatch lines on Figure 3.

Terminal Area Improvements

A long-term passenger terminal building study was completed concurrently with the Airport Master Plan in 2006. A primary conclusion of the terminal planning process was that the terminal building has existing capacity and circulation deficiencies that need to be addressed and cannot be resolved without expanding the facility. The terminal building plan extends the departure concourse to the west to add additional aircraft contact gates. A new core structure west of the existing building is planned to accommodate new ticketing and baggage makeup with in-line explosive detection devices. Finally, an expanded second floor would provide larger passenger screening points, secure hold room, and concessions areas. Replacement terminal employee parking is planned north of the existing surface parking areas to accommodate spaces lost due to the terminal building expansion. The location of the various terminal improvements are depicted on Figure 3.

Cargo Facility Improvements

As shown on Figure 3, additional air cargo development to meet forecast short-term demand is proposed east of Runway 18-36 along Taxiway G. Air cargo sort buildings, vehicle parking, and related truck courts are planned on the east side of the apron. A new taxiway between Taxiway G and Taxiway A provides access to Runway 29 and is intended to reduce the number of runway crossings and the potential for runway incursions.

Runway 18-36 Safety Improvements

Several improvements are planned for Runway 18-36 to more effectively serve as a back-up to Runway 11-29 when it is closed for maintenance or other reasons. Runway 18-36 now serves a limited role in maintaining the continuity of air service when Runway 11-29 is closed, as Runway 18-36 can accommodate the regional jet and turboprop aircraft that use the airport in scheduled airline and air cargo services. The improvements to Runway 18-36 include upgrading design standards, a 1,100-foot extension to the south, and wider and longer runway safety areas (RSA) behind each end to bring RSA to federal safety standards. Fifteen-foot snow shoulders are also planned on each side of the runway. Finally, a portion of Taxiway C is planned to be constructed parallel to Runway 18-36 to more efficiently connect Runway 36 to the terminal facilities.

Runway 11-29 Safety Improvements

Analysis during the Master Plan process showed that existing airport users have a need for 7,200 feet of departure and landing distance in each direction on Runway 11-29. Only Runway 29 currently provides 7,200 feet of landing and departure length. Runway 11 is limited to 6,800 feet of landing and departure and landing length to ensure that Federal

Aviation Administration (FAA) runway safety area (RSA) standards can be met for aircraft using Runway 11. Projects are planned to the Runway 11 RSA to eliminate the need to restrict the Runway 11 landing and departure length and provide the needed 7,200 feet of landing and departure length on Runway 11. These safety improvements include relocating a portion of the perimeter service road, the localizer antenna, and bringing the RSA area to standard.

Improvements to On-Airport Access Roads

As depicted in orange on Figure 3, a number of on-airport access road improvements are planned to accommodate the proposed airport improvements.

Scope and Methodology

The scope of this project is to assess the visual effects of proposed improvements on the National Register districts that lie north and south of the Portland International Jetport. These districts are the Stroudwater Historic District, which is just north of the east end of the airport, and the State Reform School/Brick Hill Historic District, which lies south and of the airport.

The district nominations were acquired to determine the districts' areas of significance and to identify the characteristics which qualified them for listing in the National Register of Historic Places. The visual effects assessment is based on: (1) the National Register-qualifying characteristics that might be adversely affected by the introduction of new visual elements associated with the project (historic properties for which visual setting is one of the characteristics that qualify them for listing in the National Register); and (2) evaluating whether or not the proposed new visual elements would affect the characteristics that qualify the resources for inclusion in the National Register in a manner that would diminish their integrity. Additional research was also undertaken to document more recent alterations to the districts.

Fieldwork, including photography and visual analysis, was conducted to ascertain the condition and integrity of the districts since their original listing in the National Register of Historic Places.

Identification of Historic Properties

As noted above, the Maine Historic Preservation Commission (MHPC) identified two National Register-listed historic districts and three previously-identified prehistoric archaeological sites within the APE for this undertaking. The historic districts are the State Reform School/Brick Hill Historic District in South Portland and the Stroudwater Historic District in Portland. Investigations required for the

archaeological sites are being undertaken by others. More detailed information on the historic districts is presented below.

■

State Reform School/Brick Hill Historic District

The State Reform School/Boy's Training School Historic District in South Portland was listed in the National Register of Historic Places in 1985. The district is also now referred to as the Brick Hill Historic District to acknowledge the recent re-development of the complex's older buildings for affordable housing and office use. The National Register nomination lists 7 contributing buildings on the 20-acre parcel: an Administration Building, 4 residences (cottages), a barn, and a school building. Two buildings that dated from 1956 and c. 1971 were noted as non-contributing and have since been removed. A gable-front building that appears to date from the 19th century, but which has mid-20th century garage doors, is not mentioned in the nomination. Photographs #1-22 provide representative images of the district; the photograph locations are indicated on Figure 4.

The historic district's areas of significance are architecture and social/humanitarian at the state level. Architecture was noted as an area of significance due to the district's representation of designs by several important architects. The 1851-53 Romanesque Revival Administration Building, which for over 40 years solely served as the school and dormitory, was designed by Gridley J. F. Bryant, a Boston architect recognized for his prison and other institutional building designs. The first two of an eventual four Colonial Revival cottages were designed by Portland's leading architect John Calvin Stevens in 1893 and 1897. George Coombs and Eugene Gibbs of Lewiston, Maine designed the two later cottages and the barn (Grounds Building), which features a jerkin-head gable end, in 1903-1904. Although the name of the designer of the 1921 Colonial Revival school building is not noted in the nomination, it is presumed that it was constructed from plans by an architect. The Administration Building is a pivotal focus on the complex, standing centrally and alone on the north side. The other six buildings are arranged in a semi-circular layout to the south, separated from the Administration Building by a wide lawn with walkways partially lined by mature trees.

The district was also recognized for its significant association with social/humanitarian endeavors in the state. Established in 1850 as the first reform school for boys in the state, this institution served its original purpose until 2000. Similar to many 19th century institutional facilities, the school was sited on a generously-sized open tract of land on the edge of a larger community, physically and socially removed from perceived urban ills and attractions.

The period of significance was not specifically noted, but is presumed to be 1851, when the first building was constructed on the 20-acre parcel, to 1921 when the last structure over 50 years old was built.

Since the National Register listing in 1985, the complex has undergone physical changes through its transformation from an institutional facility to a mixed-use office and residential development that stressed retention of original architectural character. Alterations to the individual buildings include a large modern addition to the barn, rehabilitation of the Administration Building into offices, and the conversion of the cottages and school building to apartments; the character-defining features of all buildings have been respected in these adaptive reuse projects. Specific projects which received state or federal funding or other involvement were reviewed by the Maine Historic Preservation Commission.

The district's semi-isolated campus-like setting and location on a hill overlooking the Fore River to the east and Long Creek to the south is only minimally affected by the adjacent residential developments, including some still under construction, to the north and west. The Portland International Jetport lies approximately ½ mile to the north and east on lower ground. The runways are the most visible element from the majority of the school complex due to their size. The concentration of airport buildings are further than ½ mile in the distance and are not visually distracting due to the school's elevated location in relationship to them.

■

Stroudwater Historic District

The Stroudwater Historic District, listed in the National Register of Historic Places in 1973, was Portland's first historic district. The National Register nomination for the 140-acre district includes over 30 residences, sites of former industrial activities, a burying ground, and a section of the Cumberland and Oxford Canal that is on the east side of the Fore River. The 1755 George Tate House at 1270 Westbrook Street within the district is a National Historic Landmark. The district is also a local historic district, in which alterations and new construction are reviewed and approved by the City of Portland Historic Preservation Committee.[3] Photographs #23-56 illustrate the district's current appearance; Figures 5 and 6 depict the photograph locations.

The district is recognized for its significance in architecture, commerce, industry, and transportation. The nomination does not indicate the level of significance, but it may be either state or local. The district's period of significance spans the dates of 1727, when a permanent community was first established here, to the 1860s, when the community's industrial activities ceased, mainly as a result of the dominance of two railroad lines in the vicinity that substantially diminished the formerly bustling canal traffic. Although the quiet character of the community is alluded to in the National Register nomination, this quality was clearly not part of its historic character when it

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[3] http://www.portlandmaine.gov/planning/hpactivities.asp#protect

served as an industrial center and it not considered a characteristic for which the district qualifies for listing in the National Register.[4]

Many examples of 18th and 19th architectural styles, including Capes, Georgian, Federal, Italianate, and Queen Anne, are represented in the district, which is mainly residential in character**.** Its location, however, at the confluence of the Stroudwater and Fore Rivers, resulted in its genesis and later development in the early 19th century as an industrial hub. Industrial and commercial endeavors began in 1727 with its establishment as an industrial community focused on cutting and shipping timber for masts bound for England. After the American Revolution, the community engaged in shipping lumber, shipbuilding, and other industrial ventures, including a tannery. The 1830 completion of the Cumberland and Oxford Canal renewed the shipbuilding and lumbering activities that had lagged during the War of 1812. The construction of two railroad lines - the Atlantic & St. Lawrence in 1853 and the Portland & Ogdensburg in 1870 – took shipping activities away from the canal, while the railroad bridge for the latter railroad prevented ships from sailing down the Fore River, which resulted in the closure of the shipyards.

The lack of economic activity in the area after the Civil War effectively preserved the community's older residential architecture, although its industrial and commercial properties vanished. The properties have clearly been maintained and a small number of 20th century residences have been added to the area. In the late 1920s, Dr. Clifford Strange built a private flying field off of Westbrook Street south of the community. Westbrook Street, the main north-south road in the district, provided primary access to the airport for a number of decades. It has now been terminated at a cul-de-sac at the district's south end, which is separated by a tall fence from the airport property.

Assessment of Visual Effects

In accordance with 36 CFR Part 800, Section 800.5, it is necessary to apply the Criteria of Adverse Effect in projects that could potentially impact historic properties. In consultation with the appropriate SHPOs, the agency official, in this case FAA, shall apply the Criteria of Adverse Effect to historic properties within the APE. The agency official shall consider any views concerning such effects that have been provided by consulting parties and the public.

Definition of Effect

An *Effect* is defined as an alteration to the characteristics of a historic property that qualify it for inclusion in or eligibility for the National Register. The two possible results of identification and evaluation are explained below.

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[4] Wengren, Mary-Eliza, National Register Nomination for Stroudwater Historic District, 1972. Section 7. Description, page 2 notes "Other modern homes are now spread out in the countryside around the village and the Portland International Jetport borders it on the southeast, but these surroundings, except for their noise, do not intrude in the village."

No Historic Properties Affected

If the agency official finds that either there are no historic properties present or that there are historic properties present but the undertaking will have no effect upon them as defined in Section 800.16(i), the agency official shall provide documentation of this finding, as set forth in Section 800.11(d) to the SHPO/Tribal Historic Preservation Office (THPO). The agency official shall notify all consulting parties, including Native American tribes and Native Hawaiian organizations, and make the documentation available for public inspection prior to approving the undertaking. If the SHPO/THPO or the ACHP (if it has entered the Section 106 process) does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under Section 106 are fulfilled.

Historic Properties Affected

If the agency official finds that there are historic properties that might be affected by the undertaking, or the SHPO/THPO or the ACHP objects to the agency official's finding under paragraph (d)(1) of this section, the agency official shall notify all consulting parties, including Native American tribes or Native Hawaiian organizations, and invite their views on the effects and assess adverse effects, if any, in accordance with Section 800.5.

Criteria of Adverse Effect

An *Adverse Effect* is found when an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for inclusion in the National Register. Adverse Effects may include reasonably foreseeable impacts that could be caused by the undertaking and that may be cumulative, may occur later in time, or may occur farther removed in distance. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
(iii) Removal of the property from its historic location;
(iv) Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;

(vi) Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (Section 800.5[a]).

Conclusion – No Historic Properties Affected

The proposed improvements at the Portland International Jetport will not alter, directly or indirectly, any of the characteristics of the State Reform School/Brick Hill Historic District and Stroudwater Historic District that qualify these properties for inclusion in the National Register of Historic Places and would not diminish the integrity of the properties' location, design, setting, materials, workmanship, feeling, or association. Therefore, a finding of No Historic Properties Affected is recommended as the proposed project will have no adverse effect on these historic properties.

The proposed project includes the lengthening of the south end of Runway 18-36 and other safety improvements. The proposed improvements will increase the safety of operations on this runway. Runway 18-36 will only be used when Runway 11-29 is closed for maintenance or other situations, including certain wind conditions. The runway extension will cause aircraft to be lower on approach to landing on Runway 36 since the landing threshold is pushed south. The departure position is moved 1,100 feet south which moves plane departures visually closer to the State Reform School Historic District. The departure point for planes on Runway 18 will remain the same. The improvements will not result in larger planes using Runway 18-36, nor will it increase the number of takeoffs and landings on this runway.

The runway extension to 18-36 will not visually impact the Stroudwater Historic District as the extension is proposed at the opposite (south) end of the airport. As a result, aircraft will approach at a slightly higher elevation over the extreme southeast corner of the Stroudwater Historic District due to the displaced landing threshold at the north end of the runway.

The building and parking additions proposed at the terminal and in the cargo area east of Runway 18-36 are at too far of a distance visually from both districts to produce an adverse visual effect, particularly since existing airport buildings and structures are already in these areas. The filling of the wetland and removal of vegetation adjacent to this wetland in the approach area of Runway 29 to improve safety conditions will have no adverse visual effect as these areas are too far removed visually from the districts. Alterations to access roads and taxiways will not produce visual adverse effects as the improvements only involve re-alignment and paving.

References

Beard, Frank A. and Roger Reed
1985 National Register nomination for the State Reform School/Boys' Training School Historic District

McGowan, Myranda and Benjamin Smith, Muskie School of Public Service, University of Maine
2005 A Case Study of the Brill [sic] Hill Development in South Portland, Maine, May 2005

Peters, Mark
2005 "Extreme Makeover Begins at Old MYC [Maine Youth Center]", *Portland Press Herald*, August 14, 2005

Wengren, Mary-Eliza
1072 National Register nomination form for the Stroudwater Historic District

Website, City of Portland, Maine – Planning Division
http://www.portlandmaine.gov/planning/historic.asp

Website, Portland International Jetport
www.portlandjetport.org/history.asp "History of the Portland International Jetport"

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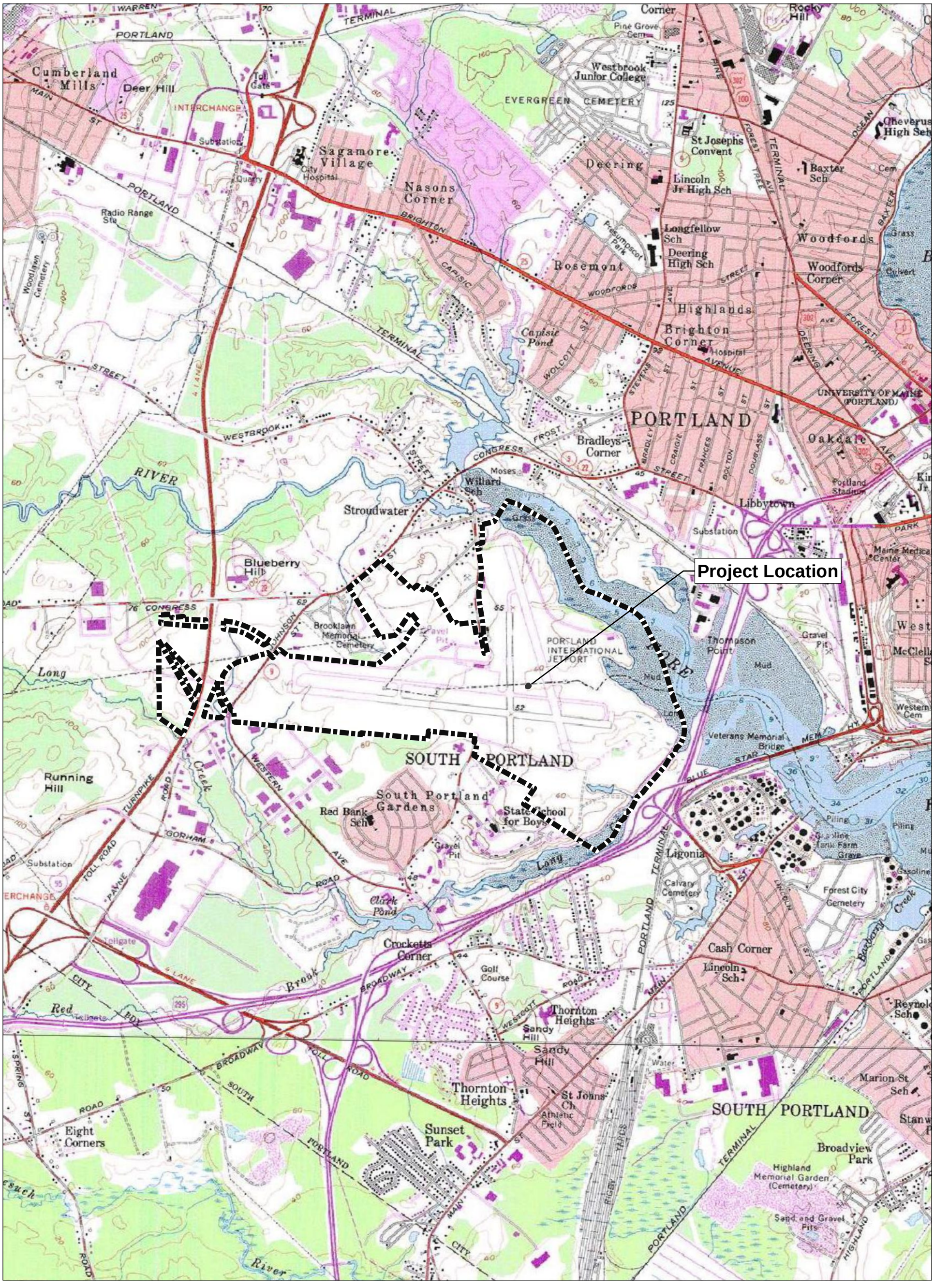
Appendix A

Figures 1-6

\\Mawatr\ev\10510.00\GIS\project\Figure1_HistoricDistricts.mxd



Source: Maine GIS

0 1,000 2,000 Feet

Vanasse Hangen Brustlin, Inc.

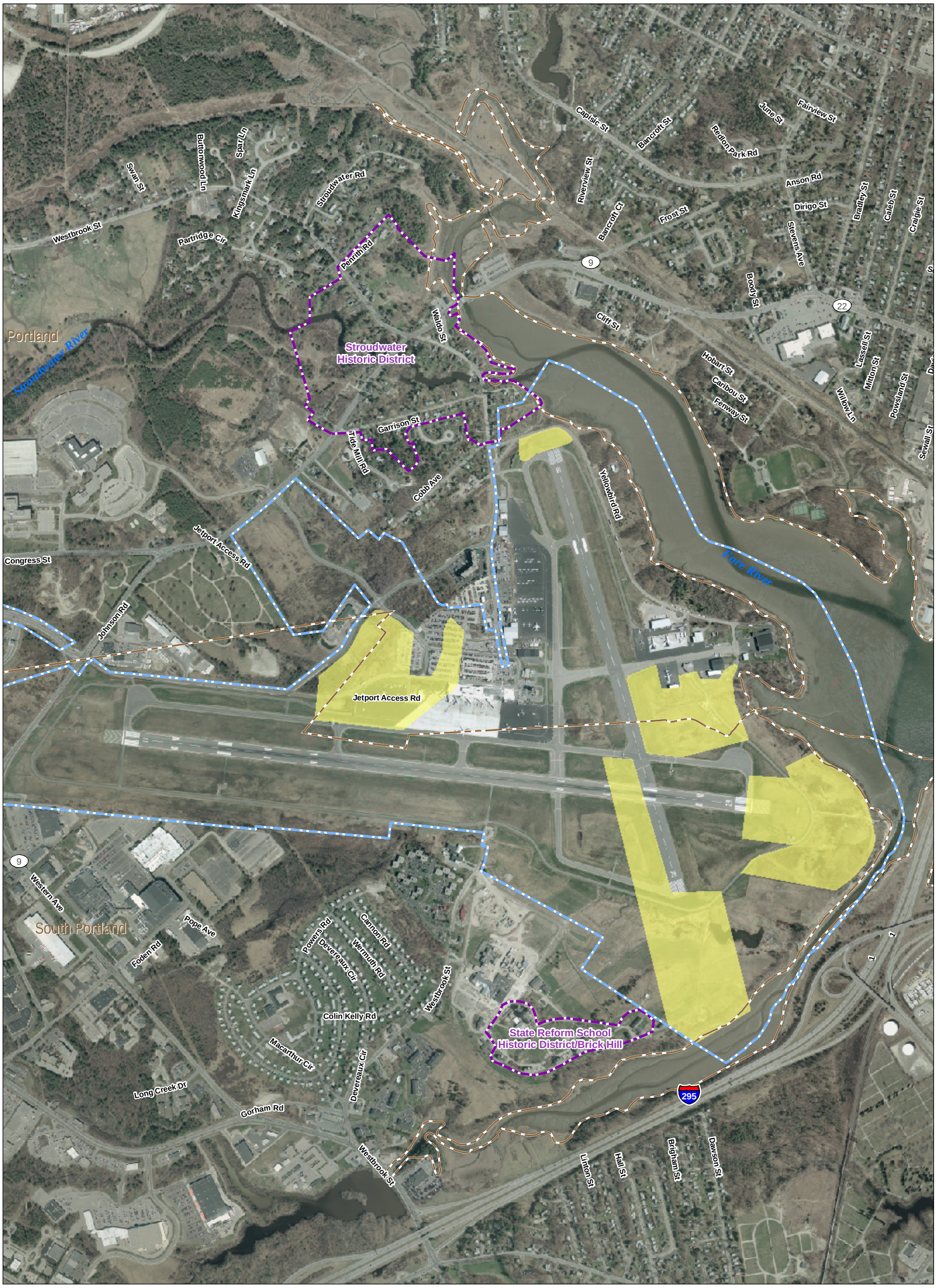
Legend

Airport Property Line

Figure 1

Project Location - Proposed Improvements at Portland International Jetport

\\Mawatr\ev\10510.00\GIS\project\Figure1_HistoricDistricts.mxd



Source: Maine GIS

Vanasse Hangen Brustlin, Inc.

Legend

- Airport Property Line
- Potential Development Area
- Historic District
- Municipal Boundary

Figure 2

Location of Historic Districts Proximate to Portland International Jetport, Portland and South Portland, Maine

07SP05-B-10/10/07

SUMMARY

1. **Wildlife Hazard Managment Plan (WHMP) Implementation.** Fill the wetland areas east of Runway 29 and grade the brush and scrub areas surrounding the wetland.
2. **Terminal Area Improvements.** Construct additions to the existing terminal building and parking garage. Construct new apron areas adjoining terminal expansion and replacement automobile parking.
3. **Cargo Facility Improvements.** Construct additional cargo facilities east of Runway 18-36. Facilities include additional cargo aircraft apron areas, a sort building, and areas for vehicular parking. Construct a new taxiway between Taxiway H and Taxiway A to provide access to Runway 29.
4. **Runway 18-36 Improvements**. Extend the runway and parallel Taxiway C 1,100 feet to the south. Improve the RSA (outlined in green) and displace the landing thresholds. Rehabilitate runway surface. Add 15 feet snow shoulders each side.
5. **Runway 11-29 Improvements.** Improve RSA (outline in green) by relocating airport access road and localizer antenna and filling to meet required RSA grade.

DECLARED DISTANCES	RUNWAY 18	RUNWAY 36
ASDA	5,600'	5,650'
LDA	5,150'	5,150'

ASDA - Accelerate Stop Distance Available
LDA - Landing Distance Available

LEGEND

- Existing Airport Property Line
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)
- Ultimate Airfield Pavement
- Ultimate Road/Parking
- Ultimate Building
- Wildlife Mitigation Area

DEPARTURE RPZ
APPROACH RPZ
RUNWAY 18 END
450'
RUNWAY 18 DISPLACED THRESHOLD
STROUDWATER
Congress St.
Garrison St.
International Pkwy.
Jetport Blvd.
Westbrook St.
Yellowbird Rd.
FORE RIVER
Taxiway C
Taxiway A
Runway 11-29 (7,200' x 150')
Runway 18-36 (5,001' x 150')
Jetport Blvd.
I-95
Johnson Rd.
Perimeter Service Rd.
SERVICE ROAD
RELOCATED SERVICE ROAD
RELOCATED LOCALIZER
EXISTING LOCALIZER
50'
300'
1,100'
RUNWAY 36 DISPLACED LANDING THRESHOLD
RUNWAY 36 END
BY-PASS TAXIWAY
DEPARTURE RPZ
3/4 MILE APPROACH RPZ
SOUTH PORTLAND
Westbrook St.
Long Creek
I-295

NORTH

0 1000 2000
SCALE IN FEET

PORTLAND INTERNATIONAL JETPORT

Figure 3
PROPOSED AIRPORT DEVELOPMENT

File source \\Mawatr\ev\10510.00\GIS\project\HistoricDistricts_StateReform.mxd

Source: 1994 Aerial Photography (Maine GIS)

0 80 160 Feet

Legend

#→ Location and Direction of Photograph

Historic District Boundary (Approximate)

Vanasse Hangen Brustlin, Inc.

Figure 4

State Reform School/Brick
Hill Historic District, South Portland, Maine

Location of Photographs #1-22

File source \\Mawatr\ev\10510.00\GIS\project\Figure4_StroudwaterNorth.mxd

Source: 1994 Aerial Photography (Maine GIS)

0 80 160 Feet

Legend

(#) → Location and Direction of Photograph

Historic District Boundary (Approximate)

Vanasse Hangen Brustlin, Inc.

Figure 5
Stroudwater Historic District,
Portland, Maine

Location of Photographs #23-31 and #46-51

F-62

File source \\Mawatr\ev\10510.00\GIS\project\Figure6_StroudwaterSouth.mxd

Source: 1994 Aerial Photography (Maine GIS)

0 80 160 Feet

Legend

(#) → Location and Direction of Photograph

Historic District Boundary (Approximate)

Vanasse Hangen Brustlin, Inc.

Figure 6

Stroudwater Historic District,
Portland, Maine

Location of Photographs #32-45 and #52-57

F-63

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Appendix B

Photographs #1-56

1. Portland International Jetport—Visual Assessment, Portland, ME. View of NW corner of State Reform School/Brick Hill Historic District, S. Portland, Photographer facing SW, April 2008

2. Portland International Jetport—Visual Assessment, Portland, ME. View of Administration Bldg., State Reform School/Brick Hill Historic District, S. Portland, Photographer facing NE, April 2008

3. Portland International Jetport—Visual Assessment, Portland, ME. View of Administration Building, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing NW, April 2008

4. Portland International Jetport—Visual Assessment, Portland, ME. View of eastern end of State Reform School/Brick Hill Historic District, S. Portland, Photographer facing W, April 2008

5. Portland International Jetport—Visual Assessment, Portland, ME. View of Grounds Building, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing SE, April 2008

6. Portland International Jetport—Visual Assessment, Portland, ME. View of Grounds Building, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing S, April 2008

7. Portland International Jetport—Visual Assessment, Portland, ME. View of garage, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing SE, April 2008

8. Portland International Jetport—Visual Assessment, Portland, ME. View of A.R. Gould School, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing E, April 2008

9. Portland International Jetport—Visual Assessment, Portland, ME. View of A.R. Gould School, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing N, April 2008

10. Portland International Jetport—Visual Assessment, Portland, ME. View from southern end of State Reform School/Brick Hill Historic District, S. Portland, towards airport, Photographer facing NE, April 2008

11. Portland International Jetport—Visual Assessment, Portland, ME. View from north-eastern area of State Reform School/Brick Hill Historic District, S. Portland, Photographer facing NE, April 2008

12. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #5, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing SW, April 2008

13. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #5, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing SE, April 2008

14. Portland International Jetport—Visual Assessment, Portland, ME. View of Administration Building and grounds to south and airport beyond to north, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing N, April 2008

15. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #4, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing NE, April 2008

16. Portland International Jetport—Visual Assessment, Portland, ME. View west towards Cottages #3 and #4, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing W, April 2008

17. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottages #2 and Cottage #3, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing S, April 2008

18. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #3, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing ,SW, April 2008

19. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottages #1 and 2, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing E,

20. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #4, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing W, April 2008

21. Portland International Jetport—Visual Assessment, Portland, ME. View of Cottage #4, State Reform School/Brick Hill Historic District, S. Portland, Photographer facing S, April 2008

22. Portland International Jetport—Visual Assessment, Portland, ME. View of more recent development north of State Reform School/Brick Hill Historic District, S. Portland, Photographer facing N, April 2008

23. Portland International Jetport—Visual Assessment, Portland, ME. View of Stroudwater Historic District and Fore River from Congress Street, Portland, Photographer facing SW, April 2008

24. Portland International Jetport—Visual Assessment, Portland, ME. View of Congress Street, Stroudwater Historic District, Portland, Photographer facing W, April 2008

25. Portland International Jetport—Visual Assessment, Portland, ME. View of north side of Congress Street, Stroudwater Historic District, Portland, Photographer facing E, April 2008

26. Portland International Jetport—Visual Assessment, Portland, ME. View of Stroudwater Baptist Church, 1729 Congress Street, Stroudwater Historic District, Portland, Photographer facing W, April 2008

27. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street, south of Congress Street, Stroudwater Historic District, Portland, Photographer facing S, April 2008

28. Portland International Jetport—Visual Assessment, Portland, ME. View of Congress Street, Stroudwater Historic District, Portland, Photographer facing E, April 2008

29. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street, with George Tate House at 1270 Westbrook Street on right, Stroudwater Historic District, Portland, Photographer facing SW, April 2008

30. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing SE, April 2008

31. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street at Waldo Street, Stroudwater Historic District, Portland, Photographer facing N, April 2008

32. Portland International Jetport—Visual Assessment, Portland, ME. View of east side of Westbrook Street and Fore River, Stroudwater Historic District, Portland, Photographer facing E, April 2008

33. Portland International Jetport—Visual Assessment, Portland, ME. View of Stroudwater River and dam, west of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing S, April 2008

34. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing S, April 2008

35. Portland International Jetport—Visual Assessment, Portland, ME. View of Garrison Road Extension, Stroudwater Historic District, Portland, Photographer facing E, April 2008

36. Portland International Jetport—Visual Assessment, Portland, ME. View of Garrison Road Extension, Stroudwater Historic District, Portland, Photographer facing W, April 2008

37. Portland International Jetport—Visual Assessment, Portland, ME. View of Garrison Road extension house, Stroudwater Historic District, Photographer facing S, April 2008

38. Portland International Jetport—Visual Assessment, Portland, ME. View of west side of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing SW, April 2008

39. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing S, April 2008

40. Portland International Jetport—Visual Assessment, Portland, ME. View of east side of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing NE, April 2008

41. Portland International Jetport—Visual Assessment, Portland, ME. View of southern end of Westbrook Street just north of airport, Stroudwater Historic District, Portland, Photographer facing April 2008

42. Portland International Jetport—Visual Assessment, Portland, ME. View of west side of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing SW, April 2008

43. Portland International Jetport—Visual Assessment, Portland, ME. View of Fore River and area to west and north from airport's northern border, Stroudwater Historic District, Portland, Photographer facing NE, April 2008

44. Portland International Jetport—Visual Assessment, Portland, ME. View of Garrison Street, west of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing E April 2008

45. Portland International Jetport—Visual Assessment, Portland, ME. View of north side of Garrison Street at Westbrook Street, Stroudwater Historic District, Portland, Photographer facing NW, April 2008

46. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street north of Congress Street, Stroudwater Historic District, Portland, Photographer facing N, April 2008

47. Portland International Jetport—Visual Assessment, Portland, ME. View of Waldo House, 1365 Westbrook Street, Stroudwater Historic District, Portland, Photographer facing NE, April 2008

48. Portland International Jetport—Visual Assessment, Portland, ME. View of Westbrook Street towards Congress Street, Stroudwater Historic District, Portland, Photographer facing S, April 2008

49. Portland International Jetport—Visual Assessment, Portland, ME. View of Stroudwater Burying Ground, west side of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing SW, April 2008

50. Portland International Jetport—Visual Assessment, Portland, ME. View of Stroudwater Burying Ground, west side of Westbrook Street, Stroudwater Historic District, Portland, Photographer facing W, April 2008

51. Portland International Jetport—Visual Assessment, Portland, ME. View of house at SW corner of Westbrook and Congress Streets, Stroudwater Historic District, Portland, Photographer facing SW, April 2008

52. Portland International Jetport—Visual Assessment, Portland, ME. View of Congress Street, Stroudwater Historic District, Portland, Photographer facing NE, April 2008

53. Portland International Jetport—Visual Assessment, Portland, ME. View of house on east side of Congress Street, Stroudwater Historic District, Portland, Photographer facing E, April 2008

54. Portland International Jetport—Visual Assessment, Portland, ME. View of west side of Congress Street, Stroudwater Historic District, Portland, Photographer facing N, April 2008

55. Portland International Jetport—Visual Assessment, Portland, ME. View of Congress Street, Stroudwater Historic District, Portland, Photographer facing NE, April 2008

56. Portland International Jetport—Visual Assessment, Portland, ME. View of Garrison Street, Stroudwater Historic District, Portland, Photographer facing E, April 2008

Appendix G

LAND USE ASSURANCE LETTER

PWM
PORTLAND INTERNATIONAL JETPORT
One Stop to the World

Paul Bradbury, P.E.
Airport Director

1001 Westbrook Street
Portland, Maine 04102
Phone: 207-874-8877
Fax: 207-774-7740
www.portlandjetport.org

Owned by the City of Portland

November 5, 2008

Mr. Bryon H. Rakoff
Manager, Planning & Program Branch
Federal Aviation Administration
New England Region
ANE-600
12 New England Executive Park
Burlington, MA 01803

Re: ***Land Use Assurances for Portland International Jetport***

Dear Mr. Rakoff:

The City of Portland as grant sponsor of the Portland International Jetport makes the following statement of compatible land use assurance pursuant to Section 511(a)(5) of the Airport and Airway Improvement Act of 1982, as amended:

The City of Portland provides assurance that appropriate action has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the vicinity of the Portland International Jetport to activities and purposes compatible with normal airport operation, including landing and takeoff of aircraft.

Sincerely,

Paul H. Bradbury
Airport Director

cc: Arthur Sewall, PWM Director Operations
Christopher M. Hugunin, Coffman Associates

Appendix H

REQUIRED ANALYSIS FOR EACH ENVIRONMENTAL IMPACT CATEGORY

APPENDIX H
REQUIRED ANALYSIS FOR EACH ENVIRONMENTAL IMPACT CATEGORY

The purpose of this appendix is to provide detailed descriptions of the analyses undertaken for each of the impact categories in Chapter Four of this EA. Appendix A of FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, summarizes the requirements and procedures to be used in environmental impacts analysis. This appendix summarizes the pertinent sections of this FAA Order. Also provided within the following sections are established FAA "thresholds of significance." These thresholds assist the FAA in determining when an impact should be considered significant.

Only those resource categories which are present in the Portland International Jetport environs are discussed on the following pages. Following is a list of impact categories discussed as well as the page number the discussion can be found in Chapter Four.

AIR QUALITY

The FAA is responsible for ensuring that appropriate analysis be contained within *National Environmental Policy Act* (NEPA) documents to disclose the potentially significant impact of a proposed action on the attainment and maintenance of air quality standards established by law or administrative determination. It is also the FAA=s responsibility to assure that proposed actions conform with applicable State Implementation Plans (SIPs) when they have been prepared and adopted.

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere. The significance of a pollutant concentration is determined by comparing it to the state and federal ambient air quality standards. The United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), lead (Pb), ozone (O_3), and particulate matter (PM-10 and PM-2.5).

Based upon both federal and state air quality standards, a specific geographic area can be classified under the federal and state *Clean Air Act* (CAA) as either being an "attainment," "non-attainment," or "maintenance" area for each criteria pollutant. The criterion for non-attainment designation varies by pollutant.

AIR QUALITY STANDARDS AND REGULATORY SETTING

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible near-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for each pollutant as presented in **Table A**. Primary air quality standards are established at levels to protect the public health from harm with an adequate margin of safety. Secondary standards are set at levels necessary to protect the public health and welfare from any known or anticipated adverse effects of a pollutant. All areas of the country are required to demonstrate attainment with the NAAQS.

The federal air quality standards focus on limiting the quantity of six criteria pollutants:

- Ozone (O_3)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO_x)
- Nitrogen Dioxide (NO_x)
- Particulate Matter (PM_{10} and $PM_{2.5}$)
- Lead (Pb)

Air contaminants increase the aggravation and production of respiratory and cardiopulmonary diseases. The standards also establish the level of air quality which is necessary to protect the public health and welfare including, among other things, affects on crops, vegetation, wildlife, visibility, and climate, as well as affects on materials, economic values, and on personal comfort and well-being.

TABLE A
State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
Carbon Monoxide (CO) in parts per million (ppm)	8-hour 1-hour	9 35	– –
Nitrogen Dioxide (NO_x) in ppm	Annual	0.053	0.053
Ozone (O_3) in ppm	1-hour 8-hour	0.12 0.08	0.12 0.08
Lead (Pb) in micrograms per cubic meter	Quarterly Average	1.5	1.5
Particulate Matter (PM_{10}) in micrograms per cubic meter	Annual 24-hour	50 150	50 150
Particulate Matter ($PM_{2.5}$) in micrograms per cubic meter	Annual 24-Hour	65 15	65 15
Sulfur Dioxide (SO_x) in ppm	Annual 24-hour 3-hour	0.03 0.14 –	– – 0.50

Source: U.S. Environmental Protection Agency

THRESHOLDS OF SIGNIFICANCE

Potentially significant air quality impacts associated with an FAA project or action would occur if the project or action exceeds one or more of the NAAQS for any of the time periods analyzed.

BIOTIC RESOURCES

A NEPA document's Biotic Resources impact analysis must address the effects of the Proposed Action Alternative and the No Action Alternative on the various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, marine mammals, coral reefs, etc.) in a particular area. The FAA also includes rivers, lakes, wetlands, forests, upland communities, and other habitat types supporting flora and aquatic and avian fauna in this section. This section must also address action-related effects and consequences on state-listed rare or unique species or their habitats.

THRESHOLDS OF SIGNIFICANCE

The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise about the protection or management of the affected species:

- Action effect on population dynamics.
- Action effects on sustainability and reproduction rates.
- Natural and artificial mortality (aircraft strikes).
- The minimum population size needed to maintain the affected populations.

COASTAL ZONE MANAGEMENT

Coastal zones are those waters and their bordering areas in states along the coastlines of the Atlantic and Pacific Oceans and the Gulf of Mexico and the shorelines of the Great Lakes. These zones include islands, beaches, transitional and intertidal areas, and salt marshes.

Coastal zone management plan consistency provisions apply only to states having a Coastal Zone Management Plan (CZMP) the National Oceanic and Atmospheric Administration (NOAA) has approved. Approved CZMPs contain a coastal state's objectives, policies, and standards to minimize direct effects on its coastal or shoreline resources and information the Coastal Zone Management agency needs to assess an action's consistency with the CZMP. This information often addresses recreational, historical, cultural, or aesthetic values. CZMPs also identify coastal or shoreline segments to which the CZMP applies. The State of Maine has an approved CZMP.

THRESHOLDS OF SIGNIFICANCE

No specific impact thresholds have been established for this resource category.

COMPATIBLE LAND USE

An airport=s compatibility with surrounding land uses is usually associated with the extent of the airport's noise impacts. Airport projects such as those needed to accommodate fleet mix changes, an increase in operations at the airport, or air traffic changes are examples of activities which can alter noise impacts and affect surrounding land uses. Typically, if the noise analysis concludes that there is no significant impact, a similar conclusion usually can be made with respect to compatible land use. However, if the proposed action would result in other impacts exceeding thresholds of significance which have land use ramifications, such as disruption of communities, relocation of businesses or residences, and induced socioeconomic impacts, the effects of the land use impacts shall also be discussed within this section.

THRESHOLDS OF SIGNIFICANCE

When the noise analysis determines that a significant impact will occur over noise-sensitive areas within the 65 DNL noise contour, the compatible land use discussion should include a discussion on mitigation measures to be taken along with other land use controls. Special consideration needs to be given to unique and sensitive Section 4(f) properties.

CONSTRUCTION

Temporary environmental impacts may occur as a result of construction activities. Primarily, these impacts would relate to noise resulting from heavy construction equipment, fugitive dust emissions, and potential impacts on water quality from runoff and soil erosion from exposed surfaces.

THRESHOLDS OF SIGNIFICANCE

Construction impacts alone are rarely significant. Refer to the air quality, water, fish, plants, wildlife, and other relevant impact categories for discussions regarding potential construction impacts.

ENERGY SUPPLY, NATURAL RESOURCES AND SUSTAINABLE DESIGN

Energy requirements associated with the Proposed Action Alternative generally fall into two categories: (1) those that relate to changed demands for stationary facilities (i.e., airfield lighting and terminal building heating); and (2) those that involve the movement of air and ground vehicles (i.e., fuel consumption). In addition to fuel, the use of natural resources includes construction materials, water, and manpower.

THRESHOLDS OF SIGNIFICANCE

An impact arises where a project will have a measurable effect on local energy supplies or would require the use of an unusual material or one in short supply. Increased consumption of fuel by aircraft is examined where ground movement or run-up times are increased substantially without offsetting efficiencies in operational procedures, or if the faction includes a change in flight patterns. Ground vehicles' fuel consumption is examined only if the action would add appreciably to access time, or if there would be a substantial change in movement patterns for on-airport service or other vehicles.

HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the *Resource Conservation Recovery Act* (RCRA) (as amended by the *Federal Facilities Compliance Act of 1992*) and the *Comprehensive Environmental Response, Compensation, Liability Act* (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

Consideration should be given regarding the hazardous nature of any materials or wastes to be used, generated, or disturbed by the proposed action, as well as the control measures to be taken.

THRESHOLDS OF SIGNIFICANCE

Thresholds of significance are typically only reached when the resource agency has indicated that it would be difficult to issue a permit for the proposed development. A significant impact may also be realized if the proposed action would affect a property listed on the National Priorities List (NPL).

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project=s environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) *of 1966*, as amended, the *Archaeological and Historic Preservation Act* (AHPA) *of 1974*, the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act* (NAGPRA) *of 1990*. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historical, architectural, archaeological, and cultural resources.

Section 106 of the NHPA of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties and determine if any properties in, or eligible for inclusion in, the National Register of Historic Places are present in the area. In addition, it affords the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the council.

The ARPA is triggered by the presence of archaeological resources on federal or Indian lands. The AHPA describes the process when consultation with resource agencies indicates that there may be an impact on significant scientific, prehistoric, historic, archaeological, or paleontological resources. The process provides for the preparation of a professional resource survey of the area. Should the survey identify significant resources, the National Register process described above will be followed. Should the survey be inconclusive, a determination is made whether it is appropriate to provide a commitment to halt construction if resources are recovered, in order for a qualified professional to evaluate their importance and provide for data recovery, as necessary.

The NAGPRA is triggered by the possession of human remains or cultural items by a federally funded repository or by the discovery of human remains or cultural items on federal or tribal lands and provides for the inventory, protection, and return of cultural items to affiliated Native American Groups. The Act includes provisions that, upon inadvertent discovery of remains, the action will cease in the area where the remains were discovered and the appropriate agency will be notified.

The *Antiquities Act of 1906* was the first general law providing protection for archaeological resources. It protects all historic and prehistoric sites on federal lands and prohibits excavation or destruction of such antiquities without the permission of the Secretary of the department having jurisdiction.

The *Historic Sites Act of 1935* declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It gives the Secretary of the Interior authority to make historic surveys, to secure and preserve data on historic sites, and to acquire and preserve archaeological and historic sites. This Act also establishes the National Historic Landmarks program for designating properties having exceptional value in commemorating or illustrating the history of the United States.

The *American Indian Religious Freedom Act of 1978* requires consultation with Native American groups concerning proposed actions on sacred sites, on federal land, or affecting access to sacred sites. It establishes federal policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their right to free exercise of their religion. It allows these peoples to access sites, use and possess sacred objects, and freedom to worship through ceremonial and traditional rites. The Act requires federal agencies to consider the impacts of their actions on religious sites and objects that are important to Native Americans regardless of the eligibility for the NRHP. Executive Order 13175, *Consultation and*

Coordination with Indian Tribal Governments, and the Presidential Memorandum of April 29, 1994, *Government to Government Relations with Native American Tribal Governments,* outline the government-to-government consultation process between the federal agency and the potentially affected tribe.

THRESHOLDS OF SIGNIFICANCE

The action would affect a property that is on or eligible for inclusion in the NHRP if it has the potential to alter the characteristics of the property which make it eligible for listing. Federal agencies can make one of three types of "effects findings" for an action: "no properties effected," "no adverse effect," and "adverse effect." The level of finding depends upon how severely a project would alter the characteristics of a property that make it eligible for the NRHP. Although the FAA works closely with the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer (THPO), the FAA is ultimately responsible for the effect decision, not the SHPO or THPO.

The Section 106 consultation process includes consideration of alternatives to avoid adverse effects on National Register listed or eligible properties; of mitigation measures; and of accepting adverse effects. The FAA makes the final determination on the level of effect and advice from the SHPO/THPO may assist FAA in making that determination.

LIGHT EMISSIONS AND VISUAL IMPACTS

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light, such as a Runway End Identifier Light (REIL), would produce glare on any adjoining site, particularly residential uses.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

THRESHOLDS OF SIGNIFICANCE

No specific impact thresholds have been established for this resource category.

NOISE

Aircraft sound emissions are often the most noticeable environmental impact an airport will produce on a surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable. To determine noise-related impacts that the proposed action could have on the environment surrounding the airport, noise exposure patterns based on projected future aviation activity were analyzed.

AIRCRAFT NOISE ANALYSIS METHODOLOGY

The basic methodology employed to define aircraft noise levels involves the use of a mathematical model for aircraft noise predication. The Yearly Day Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility with certain land uses, meaning that noise levels below 65 DNL are considered compatible with certain underlying land uses. Most federally funded airport noise studies use DNL as the primary metric for evaluating noise.

DNL is defined as the average A-weighted sound level as measured in decibels (dB) during a 24-hour period. A 10-dB penalty applies to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL is a summation metric which allows objective analysis and can describe noise exposure comprehensively over a large area.

Since noise decreases at a constant rate in all directions from a source, points of equal DNL noise levels are routinely indicated by means of a contour line. The various contour lines are then superimposed on a map of the airport and its environs. It is important to recognize that a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. DNL calculations do not precisely define noise impacts. Nevertheless, DNL contours can be used to: (1) highlight existing or potential incompatibilities between an airport and any surrounding development; (2) assess relative exposure levels; (3) assist in the preparation of airport environs land use plans; and (4) provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations, and building codes. The noise contours for Portland International Jetport have been developed using the Integrated Noise Model (INM) Version 7.0a.

INM Input

A variety of user-supplied input data is required to use the INM. This includes the airport elevation, average annual temperature, airport area terrain, aircraft activity levels, aircraft type, runway use, a mathematical definition of the airport runways, the mathematical description of ground tracks above which aircraft fly, and the assignment of specific take-off weights to individual flight tracks.

- **Activity Data**

Airport activity is defined as the take-offs and landings by aircraft operating at the facility; this is also referred to as aircraft operations. Activity is further described as either *local*, indicating aircraft practicing take-offs and landings (i.e., performing touch-and-go=s), or *itinerant*, referring to the initial departure from or final arrival at the airport. As mentioned previously, existing airport activity (i.e., take-offs and landings, or operations by aircraft) were derived from counts conducted by the Airport Traffic Control Tower (ATCT) at the Portland International Jetport. Projected activity levels were taken from the FAA *Terminal Area Forecast* for Portland International Jetport. **Table B** provides a breakdown of operations for the existing condition as well as the two forecast years (2012 and 2017). The forecast year operations were derived from the FAA TAF.

TABLE B
Aircraft Operations and Fleet Mix
August 2007 to July 2008

Aircraft	Operations
ITINERANT	**61,721**
Air Carrier	**37,590**
Airbus A320	3,428
Boeing 717	2,442
Boeing 727-200	1,066
Bombardier Q400	540
Canadair Regional Jet 200	10,426
Canadair Regional Jet 700	6,462
Canadair Regional Jet 900	1,992
Cessna 208 Caravan	3,140
McDonnell-Douglas DC9 30/40/50	640
DeHavilland Dash-8	642
Embraer EMB145 Regional Jet	3,544
Embraer EMB170 Regional Jet	3,268
Military (including local)	**1,016**
Boeing KC135	208
Lockheed P3 Orion	635
Lockheed C130	173
General Aviation and Air Taxi	**23,115**
Single Engine Piston - Fixed Propeller	4,735
Single Engine Piston - Variable Pitch Propeller	3,163
Multi-Engine Piston	2,574
Cessna 441	2,148
DeHavilland Twin Otter	2,194
Cessna Citation V	1,051
Cessna Citation X	324
Falcon 20	162
Falcon 900	324
Cessna Citation III	1,864
Canadair CL600	405
Gulfstream II	52
Gulfstream IV/400	129
Gulfstream V/500	81
Westwind IA1125	324
Learjet 25	81
Learjet 35	891
Beechjet 400A	2,415
Helicopter (Bell 206)	196
LOCAL	**12,186**
Multi-Engine Piston	1,869
Single Engine Piston - Fixed Propeller	7,478
Single Engine Piston - Variable Pitch Propeller	2,839
TOTAL ALL OPERATIONS	**73,907**

Source: FAA Air Traffic Activity Data System (ATADS), Coffman Associates analysis

TABLE B (continued)
Aircraft Operations and Fleet Mix

Aircraft	Operations 2012	Operations 2017
ITINERANT		
Air Carrier	41,421	44,994
Airbus A300-600	-	93
Boeing 727-200	1,064	1,162
McDonnell-Douglas DC9 30/40/50	638	697
Cessna 208 Caravan	2,553	2,696
Boeing 757-200	372	807
Boeing 737-900	372	807
Boeing 737-800	1,115	1,418
Boeing 717	1,115	1,614
Airbus A320	2,230	2,214
Canadair Regional Jet 900/Embraer 190	743	2,017
Canadair Regional Jet 700/Embraer 170	2,230	3,228
Canadair Regional Jet 200/Embraer 145	24,529	24,207
Bombardier Q400	2,973	2,824
Beechcraft 1900	1,487	1,210
Military (including local)	**1,384**	**1,384**
Boeing KC135	283	283
Lockheed P3 Orion	865	865
Lockheed C130	236	236
General Aviation and Air Taxi	**26,767**	**27,412**
Single Engine Piston - Fixed Propeller	5,540	5,640
Single Engine Piston - Variable Pitch Propeller	3,706	3,760
Multi-Engine Piston	2,316	2,115
Cessna 441	2,407	2,093
DeHavilland Twin Otter	2,458	2,137
Cessna Citation V	1,443	1,425
Cessna Citation X	385	438
Falcon 900	577	658
Cessna Citation III	1,443	438
Canadair CL600	674	1,535
Gulfstream IV/400	192	219
Gulfstream V/500	192	219
Learjet 35	2,406	3,398
Beechjet 400A	2,332	2,631
Helicopter (Bell 206)	695	705
TOTAL ITINERANT	**69,572**	**73,791**
LOCAL	**8,931**	**8,931**
Multi-Engine Piston	1,370	1,370
Single Engine Piston - Fixed Propeller	5,480	5,480
Single Engine Piston - Variable Pitch Propeller	2,081	2,081
TOTAL ALL OPERATIONS	**78,503**	**82,722**

Source: FAA *Terminal Area Forecast*, Coffman Associates analysis

- **Fleet Mix**

The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The aircraft fleet mix is also summarized in **Table B.**

The period from August 2007 to July 2008 represents the current mix of aircraft operating at the airport.

The existing fleet mix was derived from an examination of aircraft landing fee reports maintained by the City of Portland for commercial airline activity. A review of the flight tracking management system, also maintained by the City of Portland, was used to determine general aviation, air taxi, and military aircraft fleet mix. The flight management tracking system tracks almost every flight to and from the airport. Four seasonal periods were surveyed and combined together to determine relative percentages of operations over a one-year period. The period of analysis included four one-week periods in April, July, and November 2007, and January 2008. The 2012 and 2013 forecast fleet mix were estimated based upon projected changes in the airline and air cargo fleet mix occurring at a national level and expected to occur at Portland International Jetport.

For the general aviation and air taxi fleet mix, one aircraft type may be used in the INM to represent many different aircraft types as not each aircraft type in use is contained within the INM. The following paragraphs outline the database selections used for input into the INM.

- **Business Jet Aircraft**. For the business jet fleet, the Citation III effectively represents the Cessna Citation 560 and 650. The Cessna Citation 500 is used to represent the Citation 500, 501, and 525 as well as the Mitsubishi MU-300. The Cessna Citation 550 represents the Citation Bravo 550 and the Citation II. The Gulfstream GV/500/550 represents the Gulfstream V as well as the Bombardier Global Express. The IAI Westwind and Astra aircraft. The Lear 25 is used to represent the Lear 23, 24, and 25 series aircraft as well as the Hawker 125 and the BAE 125-700A. Aircraft such as the Lear 30, 40, 50, and 60 series, in addition to the Hawker 800XP and the Falcon 900EX, are effectively represented by the LEAR35 designator. Business jet models such as the Gulfstream II, Lear 23, 24, and 25, and the IA 1125 are Stage II aircraft constructed before 1976. These aircraft are projected to be retired from the national fleet mix in the 2012 and 2017 projections.

- **Turbo-Prop Aircraft**. The Cessna 441 effectively represents the light turbo-prop aircraft such as the Beech King Air, Gulfstream Commander, and others.

- **Twin Piston Aircraft**. The database list recommends the BEC58P, the Beech Baron, to represent the light twin piston aircraft such as the Piper Navajo, Beech Duke, Cessna 310, and others.

- **Single-Engine Aircraft**. The INM utilizes two composite single-engine models. The FAA=s substitution list indicates that the general aviation single-engine variable pitch propeller model, the GASEPV, represents a number of single-engine general aviation aircraft such as: Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, Piper PA-32, and Mooney manufactured aircraft. The general aviation single-engine fixed pitch propeller model, the GASEPF, represents the Cessna 150 and 172, Piper Archer, Piper PA-28-140 and -180, and the Piper Tomahawk among others.

- **Helicopter**. The B206L, typically the Jet Ranger, served to simulate helicopter operations at the airport.

All the above choices conform to the Pre-Approved Substitution List published by the FAA Office of Environment and Energy (AEE) branch in Washington, D.C.

- **Time-of-Day**

The time-of-day at which operations occur is important as input to the INM due to the 10 decibel weighting of nighttime (10:00 p.m. to 7:00 a.m.) flights. In calculating airport noise exposure, one operation at night has the same noise emission value as 10 operations during the day by the same aircraft. Estimates for nighttime activity were derived from review of the flight tracking management system maintained by the City of Portland. **Table C** summarizes assumptions for nighttime operations.

- **Runway Use**

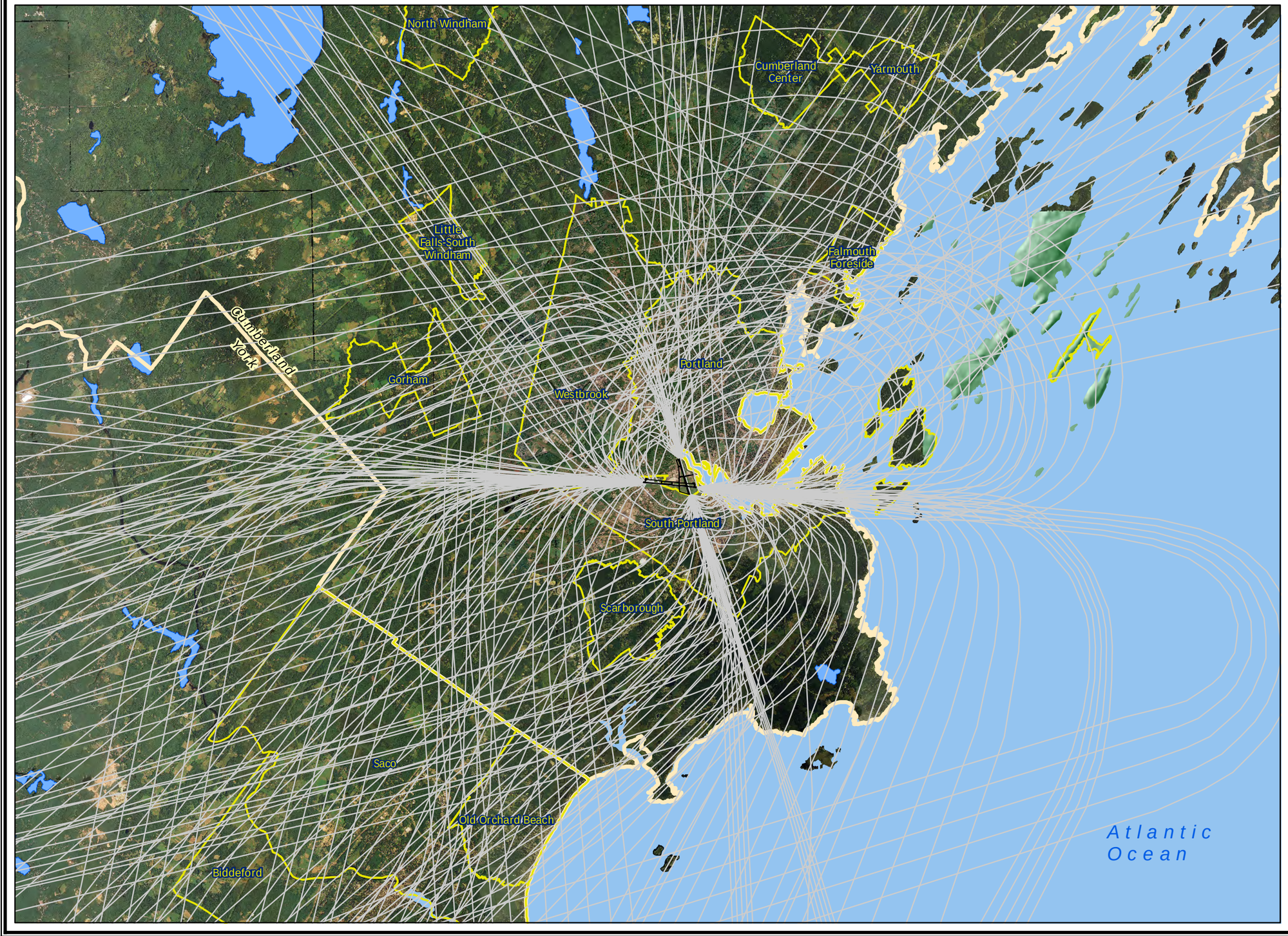
Runway use is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and take-off into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, voluntary noise abatement procedures, or local operating conventions.

The runway usage at Portland International Jetport was established after review of the flight management tracking system maintained by the City of Portland and those runway use assumptions historically used in noise modeling purposes for the airport as contained within the 2004 Noise Compatibility Study.

Table C summarizes the runway use percentages for existing and future conditions, as well as for the Proposed Action Alternative and the No Action Alternative. A small increase in regional jet and business jet use of Runway 18-36 is assumed following the Runway 18-36 extension in the Proposed Action Alternative. Without the runway extension, the regional and business jet use of Runway 18-36 will not increase. This is represented in the No Action runway use assumptions.

- **Flight Tracks**

The noise contours were developed utilizing the same study files from the 2004 Title 14 of the Code of Federal Regulations (CFR) Part 150 Noise Compatibility Plan for Portland International Jetport. These study files for the Noise Compatibility Plan for the Portland International Jetport model accounts for each aircraft along flight tracks during an average 24-hour period. **Exhibit A** depicts the consolidated departure flight tracks used in the INM. INM consolidated flight tracks are developed by plotting the centerline of a concentrated group of tracks and then dispersing the consolidated tracks into multiple sub-tracks that conform to the radar track data. **Exhibit B** depicts the consolidated arrival tracks and **Exhibit C** depicts the consolidated touch-and-go tracks (local training operations).



Portland International Jetport

Departures

Portland International

Departure Tracks

County Boundary

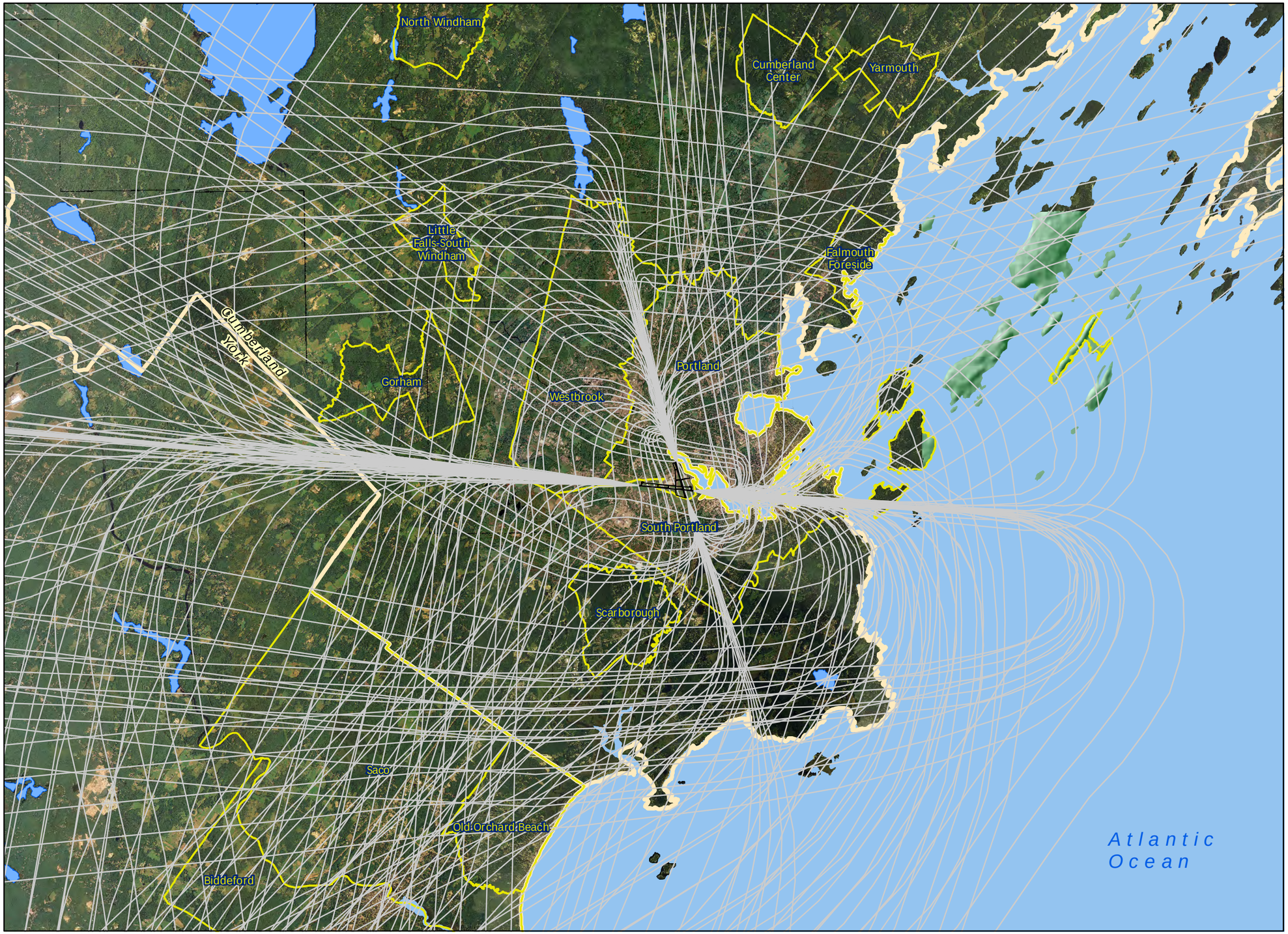
Inland Water

Oceans

Miles
0 1 2 3 4
0 2 4 6 8
Kilometers

PWM PORTLAND INTERNATIONAL JETPORT

Exhibit A
MODELED DEPARTURE FLIGHT TRACKS



Portland International Jetport

Arrivals

Portland International

Arrival Tracks

County Boundary

Inland Water

Oceans

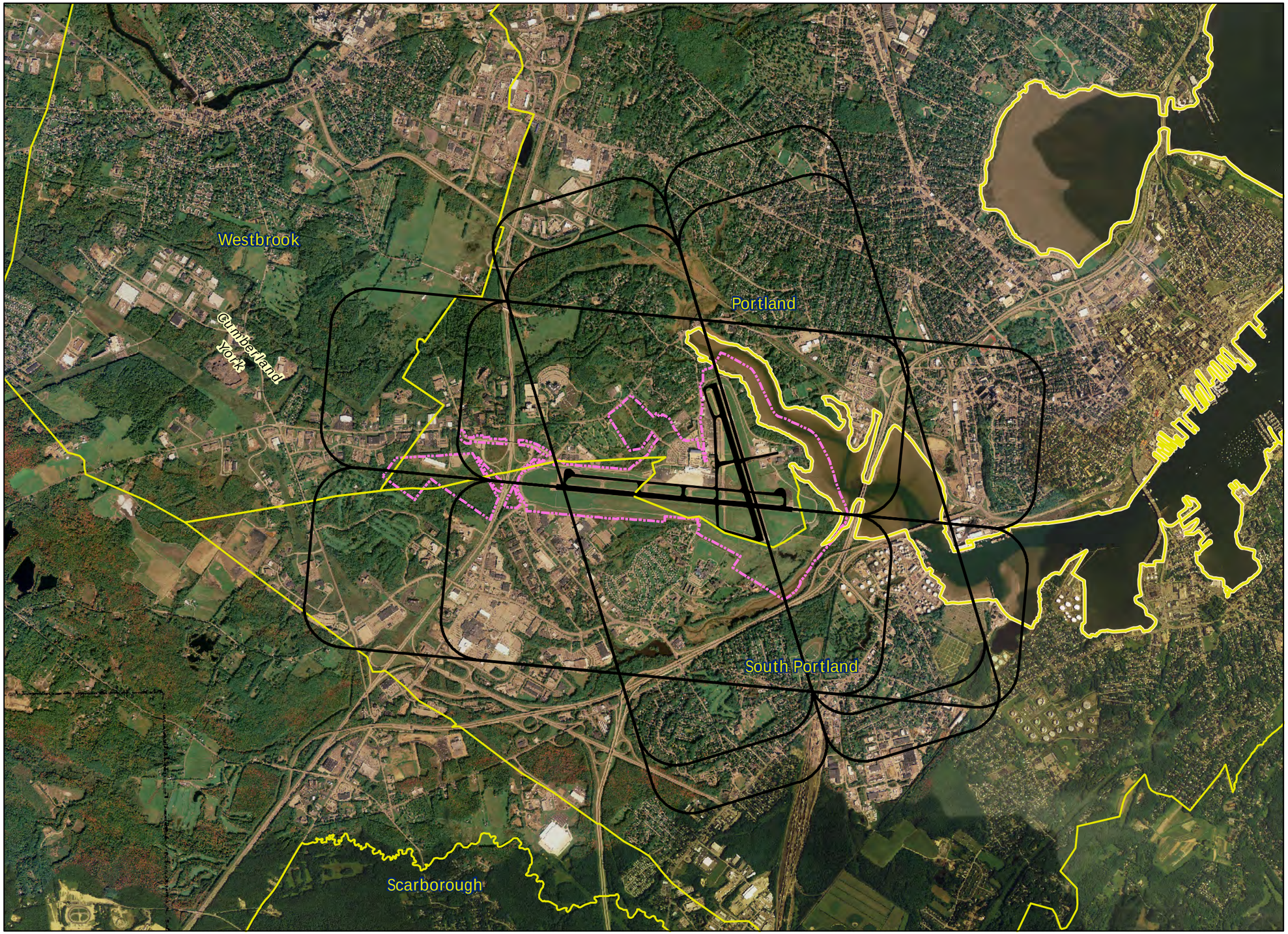
North

Miles
0 1 2 3 4

0 2 4 6 8
Kilometers

PWM
PORTLAND INTERNATIONAL JETPORT

Exhibit B
MODELED ARRIVAL FLIGHT TRACKS



Portland International Jetport

Touch and Go

Touch & Go

Urban Areas

Portland International

Airport Property

Miles
0 0.25 0.5 0.75 1

0 0.5 1 1.5 2
Kilometers

PWM
PORTLAND INTERNATIONAL JETPORT

Exhibit C
MODELED TOUCH AND GO

TABLE C
Proposed Action
Runway Use

	2007/2008					2012					2017				
	Night	11	18	29	36	Night	11	18	29	36	Night	11	18	29	36
Airline/Air Cargo															
Large Aircraft															
Arrivals	29%	43%	0%	56%	0%	30%	43%	0%	56%	0%	28%	43%	0%	56%	0%
Departures	28%	34%	0%	65%	0%	31%	34%	0%	65%	0%	29%	34%	0%	65%	0%
Regional Jets															
Arrivals	21%	41%	1%	57%	1%	24%	40%	3%	51%	6%	22%	40%	3%	51%	6%
Departures	23%	30%	1%	66%	1%	25%	29%	2%	65%	4%	24%	29%	2%	65%	4%
Turboprops															
Arrivals	12%	34%	9%	48%	9%	12%	34%	9%	48%	9%	10%	34%	9%	48%	9%
Departures	17%	32%	6%	58%	4%	17%	32%	6%	58%	4%	15%	32%	6%	58%	4%
Military															
L188															
Arrivals	0%	39%	9%	48%	4%	7%	39%	9%	48%	4%	7%	39%	9%	48%	4%
Departures	0%	28%	12%	58%	2%	18%	28%	12%	58%	2%	18%	28%	12%	58%	2%
KC135															
Arrivals	0%	43%	0%	57%	0%	0.0%	43%	0%	57%	0%	0.0%	43%	0%	57%	0%
Departures	0%	34%	0%	66%	0%	0.0%	34%	0%	66%	0%	0.0%	34%	0%	66%	0%
C130															
Arrivals	0%	39%	8%	49%	4%	0.0%	39%	8%	49%	4%	0.0%	39%	8%	49%	4%
Departures	0%	34%	12%	53%	1%	0.0%	34%	12%	53%	1%	0.0%	34%	12%	53%	1%
General Aviation															
Business Jets															
Arrivals	6%	40%	1%	57%	2%	3%	39%	2%	56%	4%	3%	39%	2%	56%	4%
Departures	17%	34%	4%	61%	1%	13%	31%	6%	59%	4%	12%	31%	6%	59%	4%
Multi-Engine Piston/Turboprop															
Arrivals	3%	20%	17%	54%	9%	3%	20%	17%	54%	9%	3%	20%	17%	54%	9%
Departures	9%	13%	24%	56%	7%	9%	13%	24%	56%	7%	9%	13%	24%	56%	7%
Single Engine Piston															
Arrivals	3%	23%	11%	43%	23%	3%	23%	11%	43%	23%	3%	23%	11%	43%	23%
Departures	9%	10%	27%	48%	15%	9%	10%	27%	48%	15%	9%	10%	27%	48%	15%

Source: Coffman Associates analysis

INM OUTPUT

Output data selected for calculation by the INM are annual average noise contours in DNL. Computer files developed from data described in the previous sections provided input to the INM, which generated output files for years and alternatives being evaluated. In accordance with FAA Order 1050.1E, the 65, 70, and 75 DNL noise contours were produced for each alternative.

THRESHOLDS OF SIGNIFICANCE

FAA Order 1050.1E defines a significant noise impact as one which would occur if the proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 DNL or more, at or above the 65 DNL noise exposure level when compared to the No Action Alternative for the same timeframe. Noise-sensitive land uses are defined in 14 CFR Part 150.

TABLE C
No Action
Runway Use

	2007/2008					2012					2017				
	Night	11	18	29	36	Night	11	18	29	36	Night	11	18	29	36
Airline/Air Cargo															
Large Aircraft															
Arrivals	29%	43%	0%	56%	0%	30%	43%	0%	56%	0%	28%	43%	0%	56%	0%
Departures	28%	34%	0%	65%	0%	31%	34%	0%	65%	0%	29%	34%	0%	65%	0%
Regional Jets															
Arrivals	21%	41%	1%	57%	1%	24%	41%	1%	57%	1%	22%	41%	1%	57%	1%
Departures	23%	30%	1%	66%	1%	25%	30%	1%	66%	1%	24%	30%	1%	66%	1%
Turboprops															
Arrivals	12%	34%	9%	48%	9%	12%	34%	9%	48%	9%	10%	34%	9%	48%	9%
Departures	17%	32%	6%	58%	4%	17%	32%	6%	58%	4%	15%	32%	6%	58%	4%
Military															
L188															
Arrivals	0%	39%	9%	48%	4%	7%	39%	9%	48%	4%	7%	39%	9%	48%	4%
Departures	0%	28%	12%	58%	2%	18%	28%	12%	58%	2%	18%	28%	12%	58%	2%
KC135															
Arrivals	0%	43%	0%	57%	0%	0.0%	43%	0%	57%	0%	0.0%	43%	0%	57%	0%
Departures	0%	34%	0%	66%	0%	0.0%	34%	0%	66%	0%	0.0%	34%	0%	66%	0%
C130															
Arrivals	0%	39%	8%	49%	4%	0.0%	39%	8%	49%	4%	0.0%	39%	8%	49%	4%
Departures	0%	34%	12%	53%	1%	0.0%	34%	12%	53%	1%	0.0%	34%	12%	53%	1%
General Aviation															
Business Jets															
Arrivals	6%	40%	1%	57%	2%	3%	40%	1%	57%	2%	3%	40%	1%	57%	2%
Departures	17%	34%	4%	61%	1%	13%	34%	4%	61%	1%	12%	34%	4%	61%	1%
Multi-Engine Piston/Turboprop															
Arrivals	3%	20%	17%	54%	9%	3%	20%	17%	54%	9%	3%	20%	17%	54%	9%
Departures	9%	13%	24%	56%	7%	9%	13%	24%	56%	7%	9%	13%	24%	56%	7%
Single Engine Piston															
Arrivals	3%	23%	11%	43%	23%	3%	23%	11%	43%	23%	3%	23%	11%	43%	23%
Departures	9%	10%	27%	48%	15%	9%	10%	27%	48%	15%	9%	10%	27%	48%	15%

Source: Coffman Associates analysis

SECONDARY (INDUCED) IMPACTS

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. When such potential exists, the EA shall describe in general terms such factors. Examples include: shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development. Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.

THRESHOLDS OF SIGNIFICANCE

No threshold of significance has been established for this impact category.

SECTION 4(f)

Section 4(f) of the Department of Transportation Act of 1966 is currently codified as 49 USC Section 303(c). Section 4(f) states that, subject to exceptions for *De minimis* impacts, the Secretary of Transportation (Secretary) may approve a transportation program or project requiring the use of publicly owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the official having jurisdiction over those resources only if: (1) there is no prudent and feasible alternative that would avoid using those resources, and (2) the program or project includes all possible planning to minimize harm resulting from the use.

Section 4(f) is considered satisfied with respect to historic sites and parks, recreation areas, and wildlife and waterfowl refuges if the Secretary makes a *de minimis* impact finding. These requirements apply only to actual physical impacts, *not* constructive use. The FAA may make *De minimis* findings for historic sites on behalf of the Secretary if: (a) under Section 106 of the *National Historic Preservation Act* (NHPA), it has determined the project will not adversely affect *or* not affect historic properties; (b) the Section 106 finding has received written concurrences from the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO) (and the Advisory Council on Historic Preservation [ACHP], if the ACHP is participating); and (c) the Section 106 finding was developed in consultation with parties consulting in the Section 106 process. The FAA may make *De minimis* findings for parks, recreation areas, and wildlife or waterfowl refuges on behalf of the Secretary if: (a) it has determined, after public notice and opportunity for public review and comment, that the project will not adversely affect the activities, features, and attributes of the eligible Section 4(f) property; and (b) the officials with jurisdiction over the Section 4(f) property have concurred with FAA's determination.

THRESHOLDS OF SIGNIFICANCE

When the proposed action involves a physical use that would be more than minimal, a constructive use would occur. In either case, mitigation is not enough to sustain the resource's designated use.

SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact, such as areas encompassed by noise levels in excess of 65 DNL.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they may be exposed to.

The acquisition of the residences and farmland is required to conform with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URARPAPA). These regulations mandate that certain relocation assistance services be made available to homeowners/tenants of the properties. This assistance includes help finding comparable and decent substitute housing for the same cost, moving expenses, and in some cases, loss of income.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for this impact category are reached if the project negatively affects a disproportionately high number of minority or low-income populations or if children would be exposed to a disproportionate number of health and safety risks. Significant socioeconomic impacts would result if an extensive number of residents need to be relocated and sufficient replacement housing is unavailable; if extensive relocation of business is required and this relocation would create a severe economic hardship for the affected communities; if disruptions of local traffic patterns would substantially reduce the level of service of the roads serving the airport and the surrounding community; or, if there would be a substantial loss in the community tax base.

WATER QUALITY

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion as well as the storage and handling of fuel, petroleum products, solvents, etc.

THRESHOLDS OF SIGNIFICANCE

Water quality regulations and issuance of permits will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts. Difficulties in obtaining needed permits for the project, such as National Pollutant Discharge Elimination System (NPDES) or Section 404 permits, typically indicate a potential for significant water quality impacts.

WETLANDS AND WATERS OF THE U.S.

The U.S. Army Corps of Engineers (COE) regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*.

Wetlands are defined by Executive Order 11990, *Protection of Wetlands*, as those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

THRESHOLDS OF SIGNIFICANCE

As outlined within FAA Orders 1050.1E and 5050.4A, a significant impact to wetlands would occur when the proposed action causes any of the following.

- The action would adversely affect the function of a wetland to protect the quality or quantity of municipal water supplies, including sole source, potable water aquifers.
- The action would substantially alter the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected.
- The action would substantially reduce the affected wetland's ability to retain floodwaters or storm-associated runoff, thereby threatening public health, safety, or welfare.
- The action would adversely affect the maintenance of natural systems that support wildlife and fish habitat or economically important timber, food, or fiber resources in the area or surrounding wetlands.
- The action would be inconsistent with applicable state wetland strategies.

CUMULATIVE IMPACTS

Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time. In determining whether a proposed action will have a significant impact, consideration should be given to whether the proposed action is related to other actions with individually insignificant but cumulatively significant impacts. The analysis should include identification and consideration of the cumulative impacts of ongoing, proposed, and reasonably foreseeable future actions and may include information garnered from FAA NEPA processes and, where available, environmental management systems.

THRESHOLDS OF SIGNIFICANCE

There is no significance threshold established for this category.

Appendix J

AIR EMISSIONS INVENTORY REPORT

Appendix J
AIR EMISSIONS INVENTORY REPORT

As discussed in Chapter Four, an air emissions inventory summary was conducted to determine the level of emissions resulting from implementation of alternatives analyzed within this Environmental Assessment. This appendix includes assumptions used in calculating construction emissions for the emissions inventory.

Additionally, this appendix includes the summary tables from the Emission Dispersion Modeling System (EDMS) Version 5.0.1, NONROAD, and MOBILE6.2 emissions models.

Construction

A construction emissions inventory was prepared using the Environmental Protection Agency's (EPA) NONROAD and MOBILE6.2 emissions models. The NONROAD model estimates emissions related to non-highway approved vehicles such as heavy construction equipment. The MOBILE6 model evaluates highway vehicle emissions such as those from dump trucks or light-duty work trucks.

The NONROAD and MOBILE6.2 models do not calculate lead emissions; therefore, an assessment of these impacts cannot be made. Additionally, ozone emissions are not calculated by the emissions models; however, volatile organic compounds (VOC) are a precursor to ozone. VOCs combine with sunlight and oxides of nitrogen (NOx) to form ozone. Therefore, VOC emissions are used to estimate ozone emissions.

Table J1 summarizes the assumptions for construction equipment use. Construction emissions for the Proposed Action Alternative are included in **Table J2**. Output data from the NONROAD and MOBILE6.2 emissions models are expressed in tons per year.

Table J1
Construction Equipment Use Estimates

	Total Hours									
Equipment Type	Terminal Improvements	Taxiway C Extension	Terminal Apron Phase I	Terminal Apron Phase II	Terminal Apron Phase III	Runway 18-36 Snow Shoulders	WHMP, Runway 11-29 Improvements	Access Taxiway	Runway 18-36 Extension	Water Quality Pond
Pick ups and Misc. Vehicles	416	120	800	600	80	200	300	500	1500	200
Crawler Loader	500	0	0	0	0	0	0	0	1200	0
Highway Trucks	800	200	1200	900	130	600	600	600	2500	200
Other Construction Equipment	112	120	400	300	80	250	200	250	1000	160
Rubber Tired Loader	40	200	500	700	130	120	200	700	1500	100
Compactor Roller	16	200	640	400	60	250	200	300	1000	80
Pulvimixer	20	0	0	0	0	0	0	0	0	0
Pier Drilling Rig	40	0	0	0	0	0	0	0	0	0
Skid Steer Loader	160	0	0	0	0	0	0	0	0	0
Back Hoe	0	0	250	100	40	40	0	100	500	0
Plate Compactor	128	100	500	400	20	120	300	300	500	80
Rough Terrain Lift	240	0	0	0	0	0	0	0	0	0
Crane	560	0	50	0	0	0	0	0	0	20
Concrete Pump	160	0	600	600	48	0	0	0	0	0
Asphalt Pavers	240	40	60	30	10	100	40	60	120	0
Concrete Pavers	60	0	0	0	0	0	0	0	0	0
Rollers	240	120	180	90	20	300	120	180	300	0
Scrapers	0	0	0	0	0	0	0	0	0	0
Paving Equipment	240	40	60	30	10	100	40	60	120	0
Signal Boards	2190	0	40	40	0	80	0	120	0	0
Trenchers	80	0	40	0	0	60	0	0	40	0
Bore Drill Rigs	0	0	0	0	0	0	0	0	200	0
Excavators	1360	200	600	800	130	560	700	600	2400	200
Concrete Industrial Saw	12	10	40	40	30	30	20	40	40	20
Cement Mixers	120	8	500	400	300	0	20	40	120	10
Graders	40	40	140	200	32	60	200	200	500	0
Off Highway Trucks	240	0	0	0	0	0	250	0	320	40
Crushing/Proc Equipment	80	0	0	0	0	0	0	0	100	0
Rubber Tired Dozer	220	200	320	300	60	120	600	500	0	150
Off Highway Tractor	0	40	60	60	0	0	120	40	0	40
Dumpers/Tenders	0	0	0	0	0	0	0	0	0	0

Source: Coffman Associates analysis, OEST, Deluca-Hoffman

Table J2
Construction Emissions Summary

Project	VOC	PM10	PM25	CO	Nox	SO2
Water Quality Pond	0.545	0.599	0.581	3.161	7.588	1.315
Runway 18-36	6.269	6.471	6.277	34.025	74.172	12.786
Cargo Taxiway	2.402	2.554	2.477	13.582	30.688	5.222
Runway 11-29 Safety Area	1.874	2.069	2.007	10.843	26.398	4.637
Terminal	3.877	3.671	3.560	19.549	37.744	6.513
18-36 Snow Shoulder	1.144	1.236	1.199	6.388	14.178	2.527
Apron Phase 1	2.488	2.521	2.445	13.592	28.078	4.750
Apron Phase 2	2.414	2.566	2.489	13.513	30.537	5.244
Apron Phase 3	0.484	0.498	0.483	2.661	5.723	0.969
Taxiway C Snow Shoulders	0.763	0.842	0.816	4.454	10.365	1.779
Grand Total (Tons)	22.259	23.026	22.334	121.768	265.472	45.742

Source: Coffman Associates analysis

Output Reports

The following pages include the output reports from the EDMS, NONROAD, and MOBILE6.2 emissions models for the air emissions inventory.

Emissions Inventory Summary

(Short Tons per Year)

Baseline - Portland Intl Jetport 2008

Category	CO2	CO	THC	NMHC	VOC	TOG	NOx	SOx	PM-10	PM-2.5
Aircraft	34,651.434	473.599	52.034	58.706	58.230	59.257	91.654	14.190	2.337	2.337
GSE	N/A	177.062	N/A	5.791	6.024	6.666	18.256	0.497	0.470	0.450
APUs	N/A	8.501	0.522	0.603	0.600	0.603	4.058	0.739	0.790	0.790
Parking Facilities	N/A	6.327	N/A	0.674	0.683	0.723	0.613	0.003	0.013	0.009
Roadways	N/A	44.867	0.000	2.348	2.387	2.530	5.524	0.038	0.163	0.108
Stationary Sources	N/A	N/A	N/A	0.019	0.018	0.021	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	34,651.434	710.355	52.555	68.141	67.942	69.800	120.106	15.467	3.773	3.693

Emissions Inventory Summary

(Short Tons per Year)

Baseline - Portland Intl Jetport 2017

Category	CO2	CO	THC	NMHC	VOC	TOG	NOx	SOx	PM-10	PM-2.5
Aircraft	38,588.221	396.857	69.724	79.783	79.269	80.098	99.421	15.802	2.835	2.835
GSE	N/A	59.039	N/A	1.977	2.064	2.259	6.443	0.315	0.294	0.278
APUs	N/A	8.941	0.529	0.612	0.609	0.612	5.036	0.886	0.826	0.826
Parking Facilities	N/A	5.278	N/A	0.420	0.425	0.454	0.299	0.003	0.010	0.005
Roadways	N/A	38.781	0.000	1.603	1.631	1.728	2.979	0.035	0.130	0.070
Stationary Sources	N/A	N/A	N/A	0.021	0.021	0.023	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	38,588.221	508.896	70.253	84.415	84.019	85.175	114.178	17.042	4.096	4.015

Emissions Inventory Summary

(Short Tons per Year)

Baseline - Portland Intl Jetport 2012

Category	CO2	CO	THC	NMHC	VOC	TOG	NOx	SOx	PM-10	PM-2.5
Aircraft	33,624.107	379.448	65.821	75.244	74.751	75.569	83.188	13.769	2.526	2.526
GSE	N/A	119.394	N/A	3.883	4.044	4.460	12.706	0.311	0.404	0.385
APUs	N/A	7.036	0.432	0.500	0.497	0.500	4.351	0.767	0.678	0.678
Parking Facilities	N/A	5.650	N/A	0.513	0.519	0.553	0.450	0.003	0.011	0.007
Roadways	N/A	41.172	0.000	1.925	1.954	2.072	4.207	0.032	0.142	0.085
Stationary Sources	N/A	N/A	N/A	0.020	0.020	0.022	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	33,624.107	552.699	66.254	82.085	81.785	83.176	104.901	14.881	3.761	3.681

Emission Totals by Equipment Type and Pollutant

Diesel **Tons/Day** **Cumberland County**

Portland
2010 (Portland)
Typical weekday for July, 2009
Date of Model Run: Jan 21 14:29:43: 2009 Today's Date: 1/21/2009

Source Classification	Equipment Description	Exhaust VOC	Exhaust NOx	Exhaust CO	Exhaust PM10	Exhaust SO2	Exhaust CO2	Crankcase VOC	Diurnal VOC
CONSTRUCTION AND MINING EQUIPMENT									
	Bore/Drill Rigs	0.00	0.05	0.02	0.00	0.01	4.22	0.00	0.00
	Cement & Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00
	Cranes	0.01	0.09	0.02	0.01	0.01	9.57	0.00	0.00
	Crawler Tractor/Dozers	0.02	0.34	0.14	0.03	0.06	41.76	0.00	0.00
	Crushing/Proc. Equipment	0.00	0.02	0.01	0.00	0.00	1.68	0.00	0.00
	Dumpers/Tenders	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
	Excavators	0.02	0.30	0.12	0.03	0.06	41.89	0.00	0.00
	Graders	0.01	0.08	0.03	0.01	0.01	10.43	0.00	0.00
	Off-Highway Tractors	0.00	0.04	0.02	0.00	0.01	4.41	0.00	0.00
	Off-highway Trucks	0.02	0.30	0.10	0.02	0.05	35.90	0.00	0.00
	Other Construction Equipment	0.00	0.04	0.02	0.00	0.01	4.29	0.00	0.00
	Pavers	0.00	0.03	0.01	0.00	0.01	4.13	0.00	0.00
	Paving Equipment	0.00	0.01	0.00	0.00	0.00	0.62	0.00	0.00
	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00
	Rollers	0.01	0.08	0.04	0.01	0.01	10.35	0.00	0.00
	Rough Terrain Forklifts	0.01	0.11	0.07	0.01	0.02	13.42	0.00	0.00
	Rubber Tire Loaders	0.03	0.40	0.17	0.03	0.06	45.69	0.00	0.00

Emission Totals by Equipment Type and Pollutant

Diesel **Tons/Day** **Cumberland County**

Portland
2010 (Portland)
Typical weekday for July, 2009
Date of Model Run: Jan 21 14:29:43: 2009 Today's Date: 1/21/2009

Source Classification	Equipment Description	Vapor Displacement VOC	Spillage VOC	Hot Soak VOC	Running Loss VOC	Tank Permeation VOC	Hose Permeation VOC	Total VOC
CONSTRUCTION AND MINING EQUIPMENT								
	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cement & Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Crawler Tractor/Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Dumpers/Tenders	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Off-highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Rubber Tire Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.03

Source Classification	Equipment Description	Exhaust VOC	Exhaust NOx	Exhaust CO	Exhaust PM10	Exhaust SO2	Exhaust CO2	Crankcase VOC	Diurnal VOC
	Scrapers	0.01	0.09	0.04	0.01	0.02	11.27	0.00	0.00
	Signal Boards/Light Plants	0.00	0.01	0.01	0.00	0.00	1.14	0.00	0.00
	Skid Steer Loaders	0.05	0.19	0.22	0.04	0.03	18.94	0.00	0.00
	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00
	Tampers/Rammers	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
	Tractors/Loaders/Backhoes	0.06	0.27	0.26	0.04	0.04	27.65	0.00	0.00
	Trenchers	0.00	0.04	0.03	0.00	0.01	4.89	0.00	0.00
Construction and Mining Equipment Totals:		**0.25**	**2.52**	**1.35**	**0.24**	**0.41**	**293.36**	**0.01**	**0.00**
Grand Totals:		**0.25**	**2.52**	**1.35**	**0.24**	**0.41**	**293.36**	**0.01**	**0.00**

Source Classification	Equipment Description	Vapor Displacement VOC	Spillage VOC	Hot Soak VOC	Running Loss VOC	Tank Permeation VOC	Hose Permeation VOC	Total VOC
	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Signal Boards/Light Plants	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.05
	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tampers/Rammers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction and Mining Equipment Totals:		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.26**
Grand Totals:		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.26**

Emission Totals by Equipment Type and Pollutant

Diesel **Tons/Day** **Cumberland County**

Portland
2010 (Portland)
Typical weekday for July, 2009
Date of Model Run: Jan 21 14:29:43: 2009 Today's Date: 1/21/2009

Source Classification	Equipment Description	Exhaust VOC	Exhaust NOx	Exhaust CO	Exhaust PM25	Exhaust SO2	Exhaust CO2	Crankcase VOC	Diurnal VOC
CONSTRUCTION AND MINING EQUIPMENT									
	Bore/Drill Rigs	0.00	0.05	0.02	0.00	0.01	4.22	0.00	0.00
	Cement & Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00
	Cranes	0.01	0.09	0.02	0.00	0.01	9.57	0.00	0.00
	Crawler Tractor/Dozers	0.02	0.34	0.14	0.03	0.06	41.76	0.00	0.00
	Crushing/Proc. Equipment	0.00	0.02	0.01	0.00	0.00	1.68	0.00	0.00
	Dumpers/Tenders	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
	Excavators	0.02	0.30	0.12	0.03	0.06	41.89	0.00	0.00
	Graders	0.01	0.08	0.03	0.01	0.01	10.43	0.00	0.00
	Off-Highway Tractors	0.00	0.04	0.02	0.00	0.01	4.41	0.00	0.00
	Off-highway Trucks	0.02	0.30	0.10	0.02	0.05	35.90	0.00	0.00
	Other Construction Equipment	0.00	0.04	0.02	0.00	0.01	4.29	0.00	0.00
	Pavers	0.00	0.03	0.01	0.00	0.01	4.13	0.00	0.00
	Paving Equipment	0.00	0.01	0.00	0.00	0.00	0.62	0.00	0.00
	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00
	Rollers	0.01	0.08	0.04	0.01	0.01	10.35	0.00	0.00
	Rough Terrain Forklifts	0.01	0.11	0.07	0.01	0.02	13.42	0.00	0.00
	Rubber Tire Loaders	0.03	0.40	0.17	0.03	0.06	45.69	0.00	0.00

Emission Totals by Equipment Type and Pollutant

Diesel **Tons/Day** **Cumberland County**

Portland
2010 (Portland)
Typical weekday for July, 2009
Date of Model Run: Jan 21 14:29:43: 2009 Today's Date: 1/21/2009

Source Classification	Equipment Description	Vapor Displacement VOC	Spillage VOC	Hot Soak VOC	Running Loss VOC	Tank Permeation VOC	Hose Permeation VOC	Total VOC
CONSTRUCTION AND MINING EQUIPMENT								
	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cement & Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Crawler Tractor/Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Dumpers/Tenders	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Off-highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Rubber Tire Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.03

Source Classification	Equipment Description	Exhaust VOC	Exhaust NOx	Exhaust CO	Exhaust PM25	Exhaust SO2	Exhaust CO2	Crankcase VOC	Diurnal VOC
	Scrapers	0.01	0.09	0.04	0.01	0.02	11.27	0.00	0.00
	Signal Boards/Light Plants	0.00	0.01	0.01	0.00	0.00	1.14	0.00	0.00
	Skid Steer Loaders	0.05	0.19	0.22	0.04	0.03	18.94	0.00	0.00
	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00
	Tampers/Rammers	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
	Tractors/Loaders/Backhoes	0.06	0.27	0.26	0.04	0.04	27.65	0.00	0.00
	Trenchers	0.00	0.04	0.03	0.00	0.01	4.89	0.00	0.00
Construction and Mining Equipment Totals:		**0.25**	**2.52**	**1.35**	**0.23**	**0.41**	**293.36**	**0.01**	**0.00**
Grand Totals:		**0.25**	**2.52**	**1.35**	**0.23**	**0.41**	**293.36**	**0.01**	**0.00**

Source Classification	Equipment Description	Vapor Displacement VOC	Spillage VOC	Hot Soak VOC	Running Loss VOC	Tank Permeation VOC	Hose Permeation VOC	Total VOC
	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Signal Boards/Light Plants	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.05
	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tampers/Rammers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction and Mining Equipment Totals:		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.26**
Grand Totals:		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.26**

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: PWM.IN (file 1, run 1).                                       *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* Scenario Title : Master Example Input Demonstration

* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2009
                                     Month:  July
                  Gasoline Fuel Sulfur Content:   30. ppm
                    Diesel Fuel Sulfur Content:   15. ppm
                          Particle Size Cutoff:  2.50 Microns
                              Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV
 LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------
------    ------    ------    ------
   VMT Distribution:    0.3537    0.3860    0.1311              0.0361    0.0003
0.0019    0.0859    0.0050    1.0000

-----------------------------------------------------------------------------------
-----------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------
------    ------    0.0000    0.0000
              GASPM:    0.0038    0.0038    0.0042    0.0039    0.0374    ------
------    ------    0.0142    0.0048
            ECARBON:    ------    ------    ------    ------    ------    0.0462
0.0257    0.1144    ------    0.0099
            OCARBON:    ------    ------    ------    ------    ------    0.0130
0.0370    0.0579    ------    0.0050
                SO4:    0.0001    0.0004    0.0005    0.0004    0.0015    0.0002
0.0003    0.0009    0.0001    0.0004
   Total Exhaust PM:    0.0039    0.0042    0.0047    0.0043    0.0388    0.0594
0.0630    0.1732    0.0143    0.0201
              Brake:    0.0053    0.0053    0.0053    0.0053    0.0053    0.0053
0.0053    0.0053    0.0053    0.0053
               Tire:    0.0020    0.0020    0.0020    0.0020    0.0022    0.0020
0.0020    0.0065    0.0010    0.0024
           Total PM:    0.0112    0.0115    0.0120    0.0117    0.0463    0.0668
0.0703    0.1851    0.0206    0.0278
                SO2:    0.0019    0.0072    0.0112    0.0082    0.0163    0.0029
0.0055    0.0131    0.0032    0.0067
                NH3:    0.1017    0.1012    0.1001    0.1010    0.0451    0.0068
0.0068    0.0270    0.0113    0.0922

-----------------------------------------------------------------------------------
-----------------------------------
          Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                         ------    ------    ------    ------    ------    ------
            VMT Mix:    0.0890    0.2970    0.0907    0.0404    0.0000    0.0019

-----------------------------------------------------------------------------------
-----------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    ------    ------
              GASPM:    0.0039    0.0038    0.0042    0.0042    ------    ------
```

ECARBON:	------	------	------	------	0.1322	0.0249
OCARBON:	------	------	------	------	0.1902	0.0358
SO4:	0.0001	0.0005	0.0005	0.0005	0.0002	0.0003
Total Exhaust PM:	0.0040	0.0043	0.0047	0.0047	0.3225	0.0610
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Total PM:	0.0114	0.0116	0.0120	0.0120	0.3299	0.0684
SO2:	0.0024	0.0086	0.0112	0.0112	0.0040	0.0055
NH3:	0.1012	0.1012	0.1001	0.1001	0.0068	0.0068

Veh. Type:	HDGV2B	HDGV3	HDGV4	HDGV5	HDGV6	HDGV7	HDGV8A	HDGV8B
	------	------	------	------	------	------	------	------
VMT Mix:	0.0307	0.0011	0.0003	0.0009	0.0021	0.0009	0.0000	0.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
GASPM:	0.0366	0.0369	0.0503	0.0397	0.0386	0.0400	0.0430	0.0000
ECARBON:	------	------	------	------	------	------	------	------
OCARBON:	------	------	------	------	------	------	------	------
SO4:	0.0015	0.0015	0.0011	0.0012	0.0013	0.0012	0.0011	0.0000
Total Exhaust PM:	0.0382	0.0384	0.0514	0.0409	0.0399	0.0412	0.0442	0.0000
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0000
Tire:	0.0020	0.0030	0.0030	0.0030	0.0030	0.0030	0.0090	0.0000
Total PM:	0.0455	0.0468	0.0598	0.0493	0.0482	0.0496	0.0585	0.0000
SO2:	0.0157	0.0169	0.0176	0.0201	0.0198	0.0217	0.0231	0.0000
NH3:	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0000

Veh. Type:	HDDV2B	HDDV3	HDDV4	HDDV5	HDDV6	HDDV7	HDDV8A	HDDV8B
	------	------	------	------	------	------	------	------
VMT Mix:	0.0093	0.0029	0.0027	0.0011	0.0059	0.0091	0.0120	0.0400

Composite Emission Factors (g/mi):

Lead:	------	------	------	------	------	------	------	------
GASPM:	------	------	------	------	------	------	------	------
ECARBON:	0.0372	0.0294	0.0380	0.0335	0.0817	0.0843	0.1006	0.1535

PWM25

OCARBON:	0.0387	0.0306	0.0396	0.0349	0.0642	0.0662	0.0791	0.0485
SO4:	0.0005	0.0006	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011
Total Exhaust PM:	0.0765	0.0605	0.0783	0.0691	0.1467	0.1514	0.1807	0.2031
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0030	0.0030	0.0030	0.0030	0.0030	0.0090	0.0090
Total PM:	0.0838	0.0688	0.0866	0.0774	0.1550	0.1597	0.1950	0.2174
SO2:	0.0073	0.0081	0.0092	0.0095	0.0108	0.0125	0.0143	0.0150
NH3:	0.0270	0.0270	0.0270	0.0270	0.0270	0.0270	0.0270	0.0270

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0002	0.0010	0.0018

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.0928	------	------
ECARBON:	------	0.1201	0.2930
OCARBON:	------	0.0943	0.2302
SO4:	0.0005	0.0015	0.0011
Total Exhaust PM:	0.0933	0.2159	0.5243
Brake:	0.0053	0.0053	0.0053
Tire:	0.0030	0.0030	0.0030
Total PM:	0.1017	0.2242	0.5327
SO2:	0.0260	0.0216	0.0151
NH3:	0.0451	0.0270	0.0270

```
************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                           *
* Input file: PWM10.IN (file 1, run 1).                                *
************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* Scenario Title : Master Example Input Demonstration

* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2009
                                     Month:  July
                  Gasoline Fuel Sulfur Content:   30. ppm
                    Diesel Fuel Sulfur Content:   15. ppm
                          Particle Size Cutoff: 10.00 Microns
                              Reformulated Gas:  Yes

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV
 LDDT      HDDV        MC   All Veh
                GVWR:                <6000     >6000     (All)
                          ------    ------    ------    ------    ------    ------
------    ------    ------    ------
   VMT Distribution:    0.3537    0.3860    0.1311              0.0361    0.0003
0.0019    0.0859    0.0050    1.0000

-------------------------------------------------------------------------------------
-----------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------
------    ------    0.0000    0.0000
              GASPM:    0.0041    0.0041    0.0046    0.0043    0.0430    ------
------    ------    0.0205    0.0053
            ECARBON:    ------    ------    ------    ------    ------    0.0503
0.0279    0.1243    ------    0.0107
            OCARBON:    ------    ------    ------    ------    ------    0.0142
0.0402    0.0630    ------    0.0055
                SO4:    0.0001    0.0004    0.0005    0.0004    0.0015    0.0002
0.0003    0.0009    0.0001    0.0004
   Total Exhaust PM:    0.0042    0.0045    0.0051    0.0047    0.0445    0.0646
0.0684    0.1882    0.0206    0.0219
              Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
0.0125    0.0125    0.0125    0.0125
               Tire:    0.0080    0.0080    0.0080    0.0080    0.0086    0.0080
0.0080    0.0261    0.0040    0.0096
            Total PM:    0.0248    0.0251    0.0257    0.0252    0.0657    0.0851
0.0890    0.2268    0.0371    0.0440
                SO2:    0.0019    0.0072    0.0112    0.0082    0.0163    0.0029
0.0055    0.0131    0.0032    0.0067
                NH3:    0.1017    0.1012    0.1001    0.1010    0.0451    0.0068
0.0068    0.0270    0.0113    0.0922

-------------------------------------------------------------------------------------
-----------------------------------
          Veh. Type:     LDGT1     LDGT2     LDGT3     LDGT4    LDDT12    LDDT34
                         ------    ------    ------    ------    ------    ------
            VMT Mix:    0.0890    0.2970    0.0907    0.0404    0.0000    0.0019

-------------------------------------------------------------------------------------
-----------------------------------
 Composite Emission Factors (g/mi):
                Lead:    0.0000    0.0000    0.0000    0.0000    ------    ------
              GASPM:    0.0042    0.0041    0.0046    0.0046    ------    ------
```

ECARBON:	------	------	------	------	0.1436	0.0271
OCARBON:	------	------	------	------	0.2067	0.0390
SO4:	0.0001	0.0005	0.0005	0.0005	0.0002	0.0003
Total Exhaust PM:	0.0044	0.0046	0.0051	0.0051	0.3506	0.0663
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080
Total PM:	0.0249	0.0251	0.0257	0.0257	0.3711	0.0869
SO2:	0.0024	0.0086	0.0112	0.0112	0.0040	0.0055
NH3:	0.1012	0.1012	0.1001	0.1001	0.0068	0.0068

Veh. Type:	HDGV2B	HDGV3	HDGV4	HDGV5	HDGV6	HDGV7	HDGV8A	HDGV8B
	------	------	------	------	------	------	------	------
VMT Mix:	0.0307	0.0011	0.0003	0.0009	0.0021	0.0009	0.0000	0.0000

Composite Emission Factors (g/mi):

Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
GASPM:	0.0417	0.0422	0.0645	0.0481	0.0465	0.0485	0.0531	0.0000
ECARBON:	------	------	------	------	------	------	------	------
OCARBON:	------	------	------	------	------	------	------	------
SO4:	0.0015	0.0015	0.0011	0.0012	0.0013	0.0012	0.0011	0.0000
Total Exhaust PM:	0.0432	0.0437	0.0656	0.0494	0.0477	0.0497	0.0543	0.0000
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0000
Tire:	0.0080	0.0120	0.0120	0.0120	0.0120	0.0120	0.0360	0.0000
Total PM:	0.0638	0.0682	0.0902	0.0739	0.0723	0.0743	0.1028	0.0000
SO2:	0.0157	0.0169	0.0176	0.0201	0.0198	0.0217	0.0231	0.0000
NH3:	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0451	0.0000

Veh. Type:	HDDV2B	HDDV3	HDDV4	HDDV5	HDDV6	HDDV7	HDDV8A	HDDV8B
	------	------	------	------	------	------	------	------
VMT Mix:	0.0093	0.0029	0.0027	0.0011	0.0059	0.0091	0.0120	0.0400

Composite Emission Factors (g/mi):

Lead:	------	------	------	------	------	------	------	------
GASPM:	------	------	------	------	------	------	------	------
ECARBON:	0.0404	0.0319	0.0413	0.0364	0.0888	0.0916	0.1094	0.1669

PWM10

OCARBON:	0.0421	0.0332	0.0430	0.0379	0.0698	0.0720
0.0859	0.0527					
SO4:	0.0005	0.0006	0.0006	0.0007	0.0008	0.0009
0.0010	0.0011					
Total Exhaust PM:	0.0831	0.0657	0.0850	0.0750	0.1594	0.1645
0.1963	0.2206					
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
0.0125	0.0125					
Tire:	0.0080	0.0120	0.0120	0.0120	0.0120	0.0120
0.0360	0.0360					
Total PM:	0.1036	0.0902	0.1095	0.0996	0.1839	0.1890
0.2449	0.2692					
SO2:	0.0073	0.0081	0.0092	0.0095	0.0108	0.0125
0.0143	0.0150					
NH3:	0.0270	0.0270	0.0270	0.0270	0.0270	0.0270
0.0270	0.0270					

Veh. Type:	GasBUS	URBAN	SCHOOL
VMT Mix:	0.0002	0.0010	0.0018

Composite Emission Factors (g/mi):

Lead:	0.0000	------	------
GASPM:	0.1286	------	------
ECARBON:	------	0.1305	0.3185
OCARBON:	------	0.1025	0.2503
SO4:	0.0005	0.0015	0.0011
Total Exhaust PM:	0.1292	0.2345	0.5698
Brake:	0.0125	0.0125	0.0125
Tire:	0.0120	0.0120	0.0120
Total PM:	0.1537	0.2591	0.5944
SO2:	0.0260	0.0216	0.0151
NH3:	0.0451	0.0270	0.0270

Appendix K

PUBLIC INVOLVEMENT

APPENDIX K
PUBLIC INVOLVEMENT

This appendix contains materials relating to the public involvement process conducted during the preparation of the Environmental Assessment (EA) and for the Draft EA.

PUBLIC INFORMATION WORKSHOP

The first public information workshop was held on September 18, 2007. The purpose of this workshop was to familiarize the public with the environmental documentation process, the components of the Proposed Action, as well as obtain initial input. The workshop consisted of a number of display boards. Consultants and representatives of the City of Portland were available to answer questions regarding the EA process or proposed airport improvements. Copies of the meeting advertisement are included at the end of this appendix. No members of the public attended this meeting.

The second public information meeting was held on July 8, 2008. The purpose of this workshop was to familiarize the public with the environmental documentation process, the components of the Proposed Action, results of surveys, as well as obtain initial input. The workshop consisted of a number of display boards. Consultants and representatives of the City of Portland were available to answer questions regarding the EA process or proposed airport improvements. Copies of the meeting advertisement are included at the end of this appendix. No members of the public attended this meeting.

DRAFT EA

Beginning April 14, 2009 a copy of the Draft EA was made available for public and agency review on-line and at the following locations during normal business hours:

Airport Director's Office	City Clerk
Portland International Jetport	Room 203, City Hall
1001 Westbrook St.	389 Congress St
Portland, Maine 04102	Portland, Maine 04101

The comment period on the contents of the Draft EA began on April 14, 2009 and extended through May 26, 2009. Two written comments were submitted. A copy of these comment letters and responses are included in this appendix.

A public information workshop was held on May 13, 2009 from 5:30 pm to 7:00 pm at the Wyndham Portland Airport Hotel 363 Maine Mall Road South Portland, Maine 04106. The Draft EA was available for review during this period. Representatives from the City of Portland and consulting firms preparing the Draft EA were available to answer questions.

INTERNET

Throughout the EA process, the workshop materials were available on the project website, http://www.coffmanassociates.com/. The Draft EA was made available at www.portlandea.airportstudy.com.

This appendix contains copies of the following:

NOTICE OF A
PUBLIC INFORMATION WORKSHOP

for the Environmental Assesssment for

PWM

PORTLAND INTERNATIONAL
J E T P O R T

Tuesday, September 18, 2007
5:30 – 7:00 p.m.

Sheraton South Portland - Oxford Room

For more information or special needs,
please contact the airport staff at: (207) 773-8462

EVERYONE IS WELCOME
OPEN HOUSE FORMAT...DROP IN ANYTIME!

NOTICE OF A
PUBLIC INFORMATION WORKSHOP

for the Environmental Assesssment for

PWM

PORTLAND INTERNATIONAL
J E T P O R T

Tuesday, July 8, 2008
5:30 – 7:00 p.m.

Wyndam Portland Airport Hotel - Oxford Room
363 Maine Mall Rd
South Portland, ME 04106

For more information or special needs,
please contact the airport staff at: (207) 773-8462

EVERYONE IS WELCOME
OPEN HOUSE FORMAT...DROP IN ANYTIME!

PUBLIC NOTICE PUBLIC NOTICE

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR PORTLAND INTERNATIONAL JETPORT PORTLAND, MAINE APRIL 14, 2009

The City of Portland, as the sponsor for Portland International Jetport, has prepared a DRAFT ENVIRONMENTAL ASSESSMENT (EA) to examine the environmental consequences for proposed airfield and terminal development. Specific improvements include:

- **WHMP Implementation.** Pursuant to Title 14 of the Code of Federal Regulations (CFR) Part 139.337(e.1), the Jetport developed a Wildlife Hazard Management Plan (WHMP) in cooperation with the U.S. Department of Agriculture Wildlife Hazard Group in April 2007. Recommendations from the WHMP call for the filling of the wetland area beyond the Runway 29 end to eliminate habitat attractive to problematic wildlife. The cattails and other vegetation (phragmites) that grow in this area attract large flocks of blackbirds and European starlings. These birds roost and nest in this area which results in an aircraft safety hazard because of the potential for birds to be ingested into jet engines, resulting in aircraft damage or loss and, at times, human injuries.
- **Terminal Area Improvements.** During a terminal building planning process that was conducted concurrently with the 2007 Airport Master Plan, it was determined that the airport's existing terminal facilities do not meet existing passenger demand needs. Additional gates and apron area are needed to accommodate commercial service aircraft during peak hour traffic as well as during overnight hours. During overnight hours, aircraft are currently required to "double park" which results in safety and level of service concerns. Additionally, expanded check-in, baggage screening, and passenger queue areas are needed to conform to new Transportation Security Agency (TSA) requirements for baggage and passenger screening. Finally, additional curb length and public parking areas are needed to accommodate existing passenger levels.
- **Deicing Fluid Collection.** The Maine Department of Environmental Protection (MeDEP) has required that the Portland International Jetport develop a method to remove as much aircraft deicing fluid as practicable from Portland International Jetport's stormwater discharge by November 1, 2010.
- **Taxiway Improvements.** The 2007 Master Plan determined that direct access to the Runway 29 end from Taxiway G is needed to reduce the number of runway crossings and potential for runway incursions.
- **Runway 18-36 RSA and Length Improvements.** During the 2007 Airport Master Plan process it was determined that Runway 18-36 is deficient in providing the required runway safety area (RSA) per federal standards and additional runway length is needed to accommodate commercial service and cargo aircraft when Runway 11-29 is closed for maintenance purposes.
- **Runway 11-29 Length Needs.** Analysis undertaken during the 2007 Airport Master Plan revealed that existing airport users have a need for 7,200 feet of departure and landing distance in each direction on Runway 11-29. This departure and landing length is currently only provided for Runway 29. Runway 11 is limited to 6,800 feet of landing and departure lengths to ensure that RSA design standards are met beyond the Runway 29 end.

The EA discusses the purpose and need of the proposed project, evaluates alternatives, and identifies the environmental consequences of the proposed airfield and terminal development. The Federal Aviation Administration (FAA) is the lead federal agency for the project.

The Draft EA is available for viewing at the following locations:

Airport Director's Office Portland International Jetport 1001 Westbrook St. Portland, Maine 04102	City Clerk Room 203, City Hall 389 Congress St Portland, Maine 04101

A limited number of printed copies of the Draft EA are available from the City of Portland. The Draft EA can also be viewed at the following internet address: http://www.portlandea.airportstudy.com

Anyone wishing to submit comments on the project may send them in writing to the following address:

Mr. Arthur Sewall
Deputy Director Operations
Portland International Jetport
1001 Westbrook St.
Portland, ME 04102
207 233-1733 - Phone
207 828-0991 - Fax
ams@portlandmaine.gov

All comments must be received by 5:00 p.m. on Tuesday, **May 26, 2009** and will be responded to and included within the Final EA.

A Public Information Workshop will be held on Wednesday, **May 13, 2009** from 5:30 p.m. to 7:00 p.m. at the Wyndham Portland Airport Hotel 363 Maine Mall Road South Portland, Maine 04106. The Draft EA will be available for review during this period. Representatives from the City of Portland and consulting firms preparing the Draft EA will be available to answer questions. Written comments can be submitted at this meeting. All written comments received at the Public Information Workshop will be responded to and included within the Final EA. #3644795

Portland Press Herald
Est. 1862
Maine Sunday Telegram

I, Joan M. Jensen, Classified Legal Clerk of the Portland Press Herald and Maine Sunday Telegram newspapers of Portland, Maine, do hereby certify that the attached advertisement appeared in the April 14, 2009 edition of the Blethen Maine Newspapers.

Joan M. Jensen
Classified Legal Clerk

Subscribed and sworn to before me this 14th day of April, 2009

Notary Public

My commission expires

JENNIFER A. HARTEL
Notary Public, Maine
My Commission Expires April 30, 2011

Portland Press Herald
Est. 1862
Maine Sunday Telegram

I, Joan M. Jensen, Classified Legal Clerk of the Portland Press Herald and Maine Sunday Telegram newspapers of Portland, Maine, do hereby certify that the attached advertisement appeared in the May 3 and May 6, 2009 editions of the Blethen Maine Newspapers.

Joan M. Jensen
Classified Legal Clerk

Subscribed and sworn to before me this 8th day of May, 2009

Bonnie W. Lossett
Notary Public

My commission expires

March 9, 2013

Portland Press Herald
Est. 1862
Maine Sunday Telegram

NOTICE OF A PUBLIC INFORMATION WORKSHOP

for the Draft Environmental Assesssment for

Wednesday, May 13, 2009
5:30 – 7:00 p.m.

Wyndam Portland Airport Hotel - Oxford Room
363 Maine Mall Rd
South Portland, ME 04106

For more information or special needs,
please contact the airport staff at: (207) 874-8877

EVERYONE IS WELCOME
OPEN HOUSE FORMAT...DROP IN ANYTIME!

ENVIRONMENTAL ASSESSMENT

PUBLIC INFORMATION WORKSHOP MEETING ATTENDANCE RECORD

PWM PORTLAND INTERNATIONAL JETPORT

Meeting: Public Information Workshop #3 Date: May 13, 2009 Time: 5:30-7:00 p.m.

Place: Wyndham Portland Airport Hotel-Oxford Room

Please Print Neatly

363 Maine Mall Rd., South Portland, ME

NAME	ADDRESS	PHONE # / E-MAIL
1. DAVID Hanlin	1242 Westbrook St	Phone #: 879-7614 E-mail:
2. John Swan	1246 Westbrook St	Phone #: E-mail:
3. Robert Brooks	139 Fenway St., Portland	Phone #: 774-6904 E-mail: rbrooks@verrilldana.com
4. Jay Clement	US Army Corps of Engineers Manchester, ME	Phone #: E-mail:
5. Genie O'Brien	137b Westbrook St Portland ME	Phone #: 773-5260 E-mail: geniemeb@maine.rr.com
6. Tom Ainsworth	12 Garrison St	Phone #: 767-4824 w E-mail: tainsworth@atrlaw.pro
7.		Phone #: E-mail:
8.		Phone #: E-mail:
9.		Phone #: E-mail:
10.		Phone #: E-mail:
11.		Phone #: E-mail:
12.		Phone #: E-mail:
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16.		Phone #: E-mail:
17.		Phone #: E-mail:
18.		Phone #: E-mail:
19.		Phone #: E-mail:
20.		Phone #: E-mail:

Federal

Wayne Monroe
District Conservationist
Scarborough Service Center
U.S. Department of Agriculture
Natural Resource Conservation Service
306 U.S. Route 1
Scarborough, ME 04074

Jay Clement
New England District
U.S. Army Corps of Engineers
675 Western Avenue #3
Manchester, Maine 04351

Gordon Russell
Maine Field Office
U.S. Fish and Wildlife Service
1168 Main Street
Old Town, ME 04468

Regional Administrator for Habitat Conservation
Office of Protected Resources (F/PR)
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

State

Roland D. Martin, Commissioner
Maine Department of Inland Fisheries and Wildlife
284 State Street
41 State House Station
Augusta, ME 04333

Tom Hodgman, Wildlife Biologist
Maine Dept. of Inland Fisheries & Wildlife
650 State St.
Bangor, ME 04401-5654

Judy Camuso, Wildlife Biologist
Maine Dept. of Inland Fisheries & Wildlife
RR #1, 328 Shaker Road
Gray, ME 04039

James P. Brooks, Bureau Director
Maine Department of Environmental Protection
Bureau of Air Quality
17 State House Station
Augusta, Maine 04333

Andrew Fisk, Bureau Director

Maine Department of Environmental Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, Maine 04333

Mark Hyland, Bureau Director
Maine Department of Environmental Protection
Bureau of Remediation and Waste Management
17 State House Station
Augusta, Maine 04333

Linda Kokemueller
Maine Department of Environmental Protection
312 Canco Road
Portland, ME 04103

Earle G. Shettleworth, Jr.
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333

Robert G. Marvinney
Director
Department of Conservation
Bureau of Geology and Natural Areas
22 State House Station
Augusta, ME 04333-0022

Director
Department of Conservation
Bureau of Parks and Lands
22 State House Station
Augusta, ME 04333-0022

Martha Freeman
Director
Maine State Planning Office
38 State House Station, 184 State St.
Augusta, ME 04333

Local

Lee Urban, Director
City of Portland
Planning and Development Department
389 Congress Street
Portland, ME 04101

Public Works Department
City of Portland
55 Portland St.
Portland, ME 04101

James Gailey, Acting City Manager
City of South Portland
25 Cottage Road
P.O. Box 9422
South Portland, ME 04106

Ron Owens
Town Manager
Scarborough Town Manager's Office
Scarborough Municipal Building
P.O. Box 360
Scarborough, ME 04070-0360
Jerre Bryant

City Administrator
City of Westbrook
Mayor's Office
2 York Street
Westbrook, ME 04092

Michael K. McGovern
Town Manager
Town of Cape Elizabeth
P.O. Box 6260
Cape Elizabeth, ME 04107

Ms. Bonnie Newsom
Director, Cultural Preservation
Penobscot Indian Nation
Tribal Administration
12 Wabanaki Way
Indian Island, ME 04468

-----Original Message-----
From: Gregory Lull <glull@katahdinlab.com>
To: darth1129@aol.com
Sent: Wed, 15 Apr 2009 11:31 am
Subject: Supporting the Environmental Survey work at Portland Jetport

Mr. Sewall:

As both a resident of Portland living within a fairly close proximity to the airport, a frequent business traveler who uses this transportation hub and as an environmental chemist that has worked on analytical testing of samples from the site, I wanted to express my sincere and earnest interest in supporting this process. I work for Katahdin Analytical Services, a full service environmental testing lab located in Scarborough (we used to be located just under the flight path on the Westbrook / Portland / South Portland junction near Sable Oaks), and we have provided our testing services to the Jetport outfall areas for a number of years now. We hope to be able to continue as a resource for any future work, especially as this assessment study is continued.

Please feel free to contact me with any questions that might come up. I look forward to participating in the May 13th meeting.

Greg

Gregory Lull
Chemist / Tertiary Projects Manager
Katahdin Analytical Services
A Woman-Owned Small Business Enterprise
600 Technology Way
Scarborough, Maine 04074
Direct - 207.874.2409 x16
Mobile - 207.653.3474
Fax - 207.775.4029

Lull1

Lull 1: Comment Noted.

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

Regulatory Division
CENAE-R-51

June 2, 2009

Dwight Anderson, PE
DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, Maine 04106

Dear Mr. Anderson:

This is in response to your request for comment on the draft Environmental Assessment ("DEA") for the City of Portland to implement a number of improvements at the Portland International Jetport at Portland, Maine.

We have completed our review of the document and have prepared the attached comments. Applicable section numbers are included for your reference. In general the document provides an excellent overview of the deficiencies at the facility and alternative strategies for addressing those deficiencies. The Corps looks forward to continuing coordination with the interagency team as we move toward concluding our concurrent permit process.

If you have any questions concerning this matter, please contact Jay Clement of my staff at 207-623-8367 at our Manchester, Maine Project Office. Thank you for the opportunity to comment.

Sincerely,

Jay L. Clement for
Frank J. Del Giudice
Chief, Permits & Enforcement Branch
Regulatory Division

Attachment
Copies Furnished:
Trish Garrigan – USEPA
Wende Mahaney – USFWS
Marcy Scott - NMFS
Michelle Ricci – FAA
Bill Bullard – Maine DEP
Colen Peters - TRC

CORPS OF ENGINEERS COMMENTS ON
DRAFT ENVIRONMENTAL ASSESSMENT ("DEA")
FOR THE PORTLAND INTERNATIONAL JETPORT
CORPS FILE NO. NAE-2008-00053

1. There is no executive summary. While this is not necessarily required, it often helps reviewers and regulatory agencies. COE1

2. Section 1.1. FAA notes that the applicant's purpose is "to provide an aviation facility that safely meets the needs of the existing airport users and meets state requirements for stormwater discharge". The Corps encourages FAA to identify its own basic or overall project purpose as required by NEPA because it is this purpose that alternatives are ultimately compared against. Adopting the applicant's may not be sufficient. For example why would the purpose be to provide a facility when the facility already exists? Also, the improvement sub-actions should all relate directly to the project purpose. The need for terminal area improvements doesn't appear to relate to their purpose because it has more to do with volume and passenger demand than it does with safety. The same can be said for the Runway 11-29 Length needs. COE2

The Corps believes the basic project purpose is to upgrade the Portland International Jetport in order to comply with current FAA safety standards; to meet state requirements for stormwater discharge; and to meet current and reasonably projected demand. If FAA elects to include their own project purpose, please also note the Corps.

3. Chapter 2, Alternatives.

a. The Corps encourages that alternatives be analyzed and dismissed in accordance with the Section 404(b)(1) Guidelines, not with the term "unreasonable". If reasonability is a legitimate FAA dismissal criterion, then it should be clearly defined in the DEA. With a minimum of additional wording, the language in the guidelines could be added to make the analysis also compatible with the requirements of the Corps, the Maine DEP, and the federal resource agencies (US EPA, USFWS, and NMFS). The Corps wishes to see this language added to the DEA. Not only would these recommended changes comply with procedural MOAs among all of our agencies, they would likely eliminate the need for the applicant and his agents to produce a supplemental analysis for the Corps and DEP application processes. Please note that this comment pertains to all of the subsections in Chapter 2 dealing with alternatives. COE3

b. Section 2.7. The discussion of the no action alternative lumps all of the sub-actions into one discussion, concluding that it doesn't meet the basic project purpose. The Corps recommends that a no action alternative be analyzed for each sub-action, particularly in light of more intense local concerns with the Runway 18-36 expansion. Might the no action alternative be practicable for one or more of the individual sub-actions when it isn't if they're lumped together? In other words, might certain project elements be eliminated and still result in a viable project that meets the overall purpose? COE4

4. Section 3.7. Past projects on the airport property should include the last major upgrade (Corps Permit No. 199902074) as well as any lesser and more recent upgrades. Past

COE1: The City of Portland anticipated the need for an executive summary; however, the City envisioned this to be a separate stand-alone document. The separate document reduces printing costs as it will be a smaller document but will be able to succinctly address all the issues in the EA.

COE2: The purpose and need statement was revised to match that suggested by the Corps.

COE3: Changes were made to Chapter Two to bring the discussion of alternatives in alignment with 404(b)(1) Guidelines.

COE4: The no action alternative was rewritten to incorporate this comment.

development off site should include the construction of the new Boy Scout headquarters, the Congress Street interchange, the Jetport Plaza access road built by the City of South Portland, and the on going renovations and improvements to the Brick Hill Development. Reasonably foreseeable development should include at a minimum, DOT's construction of a new lane on I-295 between Exits 4 and 3 southbound (permitted), DEP/EPA waterquality and stormwater improvements within the Long Creek watershed, and Maine Turnpike Authority's proposed widening of the turnpike. This is an area of active commercial, industrial, and residential development so there will undoubtedly be other, as yet unidentified projects of that nature as well.

COE5

5. Section 4.2.11. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable indirect consequences to the environment (40 CFR Part 1508.8(b)). The DEA doesn't appear to have a very thorough discussion of indirect impacts. Indirect impacts for airports typically include, but are not limited to, the effect of fencing on wildlife, drainage and stormwater impacts, temporary or permanent clearing of vegetation either as part of construction or to meet FAA safety requirements, and water quality impacts (from salts, de-icing compounds, etc). Potential loss of riparian buffer vegetation and associated wildlife habitat along Long Creek was identified by several local citizens as an indirect impact. The Corps recommends that this section of the EA be expanded.

COE6

6. Section 4.3. Please refer to the comments for Section 3.7 for additional items to include in the discussion on cumulative impacts. Cumulative impacts are the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR Part 1508.7).

a. Federal actions in the area may include but are not limited to Corps permit actions and local initiatives by USFWS, NRCS, USDA, NOAA, and US EPA (through Maine DEP). The Corps recommends that each of these agencies be contacted to determine what actions, if any, have been taken, are presently underway, or are scheduled to occur that may have a bearing on the cumulative impact analysis and that the DEA be updated accordingly. The DEA should also reflect state, municipal, or private actions to the best of your ability.

As far as Corps permit actions, we have reviewed available databases for past permit actions in the general area (within an arbitrary 5-mile radius of the jetport). A total of 407 permit actions have been recorded for the area since 1979. For the most part, impacts to aquatic resources have been minimal and eligible for general permits. Authorized work includes small to moderate scale residential, commercial, and industrial developments, individual businesses, dredging, marinas, piers, floats, utility lines, transportation projects, schools, and golf courses.

To date the individual long-term and cumulative impact of these projects on aquatic resources has been minimal, particularly with project specific compensatory mitigation. Future proposals for similar work will be evaluated on a case-by-case basis by the Corps and the interagency review team in order to assess their individual and cumulative impact relative to the proposed project and any mitigation requirements. At this time there are no specific future proposals to evaluate other than those noted in the comments for Section 3.7.

COE7

COE5: Section 3.7 was rewritten to incorporate additional off airport development.

COE6: Additional text was added to Section 4.2.11 regarding indirect impacts.

COE7: The cumulative impact discussion was enhanced with the information provided by the Corps and additional research.

KANSAS CITY
(816) 524-3500

237 N.W. Blue Parkway
Suite 100
Lee's Summit, MO 64063

PHOENIX
(602) 993-6999

4835 E. Cactus Road
Suite 235
Scottsdale, AZ 85254