PORT OF SEATTLE
MEMORANDUM

COMMISSION AGENDA **Item No.** 5a

Date of Meeting October 11, 2011

DATE: October 4, 2011

TO: Tay Yoshitani, Chief Executive Officer

FROM: Mike Ehl, Director, Airport Operations
Wayne Grotheer, Director, Aviation Project Management Group

SUBJECT: Lagoon 3 Bird Wires Project (CIP # C800417) at Seattle-Tacoma International Airport

Amount of This Request: $169,000 **Source of Funds:** Airport Development Fund

Total Estimated Cost: $1,631,000

ACTION REQUESTED:

Request Port Commission authorization for the Chief Executive Officer to prepare design and construction bid documents for the Lagoon 3 Bird Wires project. The budget requested for this design work is $169,000, while the total estimated budget for the completed project is $1,631,000.

SYNOPSIS:

This is a safety improvement project that will reduce the risk of aircraft strikes with waterfowl. Federal Aviation Regulations (FAR) part 139.337 require airports, including Seattle-Tacoma International Airport (STIA), to take immediate measures and mitigate wildlife hazards whenever hazardous conditions exist. A particular emphasis is placed on identification and mitigation of wildlife attractants within and near the airfield.

This project will reduce access by waterfowl to the industrial wastewater system (IWS) Lagoon 3, which is located near the south end of the airfield about 1,000 ft. from the approach end of runways 16L/34R and 16C/34C. The proximity of Lagoon 3 to the ends of the runways can be seen on Exhibit A. The inability of waterfowl to access the pond will reduce their presence in the area as well as reduce an operational need for conducting repeated wildlife hazard mitigation measures, such as launching pyrotechnics and shooting with firearms.

BACKGROUND:

Ponds are an attractant to wildlife, particularly waterfowl. Lagoon 3, with an approximate length of 1200' and width of 500', is identified as one of the most prominent waterfowl attractants at STIA. Pond liners are presently being used to prevent vegetation growth which would give rise to a variety of food resources and therefore would be a further attraction for wildlife. However, snails, which provide a food source for some waterfowl and shorebirds, have been recently found in the lagoon.

Lagoon 3 lies in the area within a 10,000-foot radius of the runway centerline, which is defined as the FAA critical zone with respect to airport wildlife hazard management. Over 75% of all civil bird-aircraft strikes occur within a horizontal distance of 10,000 feet from an airfield. The U. S. Department of Agriculture's (USDA's) Wildlife Services, through an interagency agreement with the Federal Aviation Administration, compiled 109,085 wildlife strike reports from 1,659 USA airports and 534 foreign airports from January 1990 to December 2010. The number of reported wildlife strikes is estimated to represent only about 39% of the wildlife strikes that have occurred.

Wildlife strikes are an increasing and significant potential hazard at STIA. A total of 51 wildlife strikes were recorded at STIA in 2009. In 2010, the number of wildlife strikes increased to 69. The frequency with which hazardous birds were harassed and lethally removed has increased dramatically since 2002 when Lagoon 3 monitoring for 1 to 2 hours per week began. During 2009, a total of 144 birds were dispersed and 29 lethally removed. By contrast, in 2010 a total of 607 birds were dispersed and 104 lethally removed.

Besides being an air safety hazard, bird strikes can result in significant costs from the damage to aircraft. The estimated cost of at least one 2010 bird strike at STIA is known to exceed $450,000. On April 4, 2006, a US Airways Airbus 319 struck a single Green-winged teal (duck) when over IWS Lagoon 3. After the bird was ingested in to the engine the aircraft made an precautionary landing at STIA. The cost to the airline was 85 hours out of service in Seattle. When sufficient repairs could not be made here, the aircraft was shuttled back to the east coast for further evaluation and repairs. The final costs for damage and downtime were not available to the Port of Seattle. Damage from a bird-aircraft strike at the Orlando-Sanford Airport in 2010 reportedly cost $4,570,000.

Different species of waterfowl and other water associated birds (killdeer, gulls, cormorants) will access ponds differently, some from above and some from the sides. Therefore, preventing waterfowl access from the both the top and sides is necessary to effectively discourage their presence in the area. Considerations in the selection of the best measure to use at Lagoon 3 include the anticipated effectiveness, the size of the pond, constructability, ease of maintenance, and initial and longer-term maintenance costs. The cost of this project increased from $386,000 to $1,631,000 as Airport staff reviewed various deterrent options and configurations to deter waterfowl and other water-associated birds and determined that installing netting over the top and around the perimeter of Lagoon 3 is the only way to positively exclude birds from using the site. Other measures would be ineffective over the long-term as birds adapt to them or would not prevent birds from accessing Lagoon 3.

PROJECT JUSTIFICATION:

This is a safety improvement project that will reduce waterfowl access to Lagoon 3 near the STIA runways. Federal Aviation Regulations (FAR) Part 139.337 require airports, including STIA, to take immediate measures and mitigate wildlife hazards whenever hazardous conditions exist. Mitigation plans to reduce the attraction of waterfowl to the area will improve air traffic safety at STIA.

Project Objectives:

The objective is to reduce the presence of waterfowl at Lagoon 3 in order to improve air safety at STIA.

PROJECT SCOPE OF WORK AND SCHEDULE:

Scope of Work:
This project will install netting at Lagoon 3 to reduce the presence of waterfowl near STIA.

Schedule:

Design Complete	March, 2012
Commission Authorization to Advertise	March, 2012
Advertise	March, 2012
Construction Complete	October, 2012

FINANCIAL IMPLICATIONS:

Budget/Authorization Summary:

Original Budget	$ 386,000
Budget Increase	$1,245,000
Revised Budget	$1,631,000
Previous Authorizations this CIP	$ 0
Current request for authorization	$ 169,000
Total Authorizations, including this request	$ 169,000
Remaining budget to be authorized	$1,462,000

Budget Status and Source of Funds:

This project is included in the capital budget and plan of finance as a business plan prospective project within CIP #C800417. The funding source will be the Airport Development Fund. Related construction costs identified as expense costs will also be funded with the Airport Development Fund.

Financial Analysis and Summary:

CIP Category	Compliance
Project Type	Health, Safety and Security
Risk adjusted Discount rate	N/A
Key risk factors	N/A
Project cost for analysis	$1,631,000
Business Unit (BU)	Airfield
Effect on business performance	NOI after debt service will increase
IRR/NPV	N/A
CPE Impact	$.01 increase in 2013, but no change compared to business plan forecast as this project was included.

Lifecycle Cost:

The estimated useful life for the recommended netting option is 40 years for posts, 15 years for supporting cabling and 6 years for top and perimeter nettings.

The estimates for 40 years life-cycle cost include inspections, maintenance of wire and netting, and vegetation control. Annual Operation & Maintenance (O&M) expenses are estimated at $2,500. The estimates do not include the cost for wires or nettings replacement as noted above, netting is estimated to need replacing every 6 years after installation and the support wires are estimated to need replacing approximately every 15 years after installation. Capital projects to renew and replace the netting and support wires will be brought forward at the time of need.

ENVIRONMENT AND SUSTAINABILITY:

Certain products of the full netting system may contain recycled materials, such as steel. However, the inclusion of recycled steel would be market driven and not a project requirement.

The elimination of access to Lagoon 3 by waterfowl will reduce the need to use lethal methods for their removal near STIA.

STRATEGIC OBJECTIVES:

This project supports the Port's strategy for a World-Class Airport that is safe and secure. Moving forward with this project will improve safety by minimizing the chances for birds to become ingested into aircraft engines.

TRIPLE BOTTOM LINE SUMMARY:

Applying full bird nettings over and also around the perimeter of IWS Lagoon 3 will minimize the access of birds to the pond and discourage their presence in the area. This will increase air traffic safety at STIA.

ALTERNATIVES CONSIDERED AND THEIR IMPLICATIONS:

1) Alternative 1 - Do Nothing: The increased habitual use of IWS Lagoon 3 by waterfowl is well documented in the weekly airport survey data. The pond is located at the south end of runway 16C/34C and adjacent to runway 16L/34R. Doing nothing would result in an increasing potential risk of bird-aircraft strikes and not comply with FAR requirements. There is no capital cost with this approach. The "do nothing" approach is not recommended.

2) Alternative 2 - Other Deterrent Devices: Other deterrent devices, such as a remote control air boat, have been used experimentally at STIA. The tool is effective only when a person is present to operate it. A sprinkler system was also utilized in Lagoon 3 as a means to scare birds away but was removed due to its ineffectiveness. Sprinklers and similar devices have limited effectiveness as birds become accustomed to them. The capital cost associated with this approach would be low but so would the effectiveness. The approach of using these types of devices is not recommended.

3) Alternative 3 - Bird Wires: The original basis for the project consisted of installing a single level of bird wires over Lagoon 3. Additionally, various configurations of stretching single and multiple levels of bird wires, both with and without perimeter netting, were evaluated for this alternative. These options ranged in cost from $533,000 to $1,169,000. None of these options would provide a sufficient deterrent or obstacle to prevent birds from accessing Lagoon 3 in some manner and creating an air safety hazard. The use of bird wires is not the recommended alternative.

4) Alternative 4 - Full Bird Netting: This alternative for the project would be to install netting over the top and around the perimeter of Lagoon 3. Bird netting is the only way to positively exclude birds from using the site. The cost for this alternative is the highest cost but minimizes access by waterfowl. The capital cost for Alternative 4 is estimated to be $1,631,000 with a potential expense cost of $150,000 for managing stormwater during construction. **This is the recommended alternative.**

OTHER DOCUMENTS ASSOCIATED WITH THIS REQUEST:

Exhibit A: Drawing of IWS Lagoon 3.

PREVIOUS COMMISSION ACTION:

None.